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
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AMERICAN VETERINARY REVIEW,

EDITED BY

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EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, February 15, 1906.

WHAT IS NAVICULAR DISEASE? What are the etiology and the pathogeny? These are the two important questions that are treated in a study published in Professor Leclainché's *Revue* by Mr. Pecus, Army Veterinarian, an indefatigable worker, and a prolific writer on very interesting subjects. The answer to the first question I may be allowed to answer at some length; that to the second more briefly.

The definition given of this disease by French writers varies. For Cadiot and Almy, it is a synovitis of the navicular joint, complicated with tendonitis and osteitis. Lesbre considers that the osteitis of the small sesamoid is consecutive to traumatism of the perforans tendon sliding upon the sesamoid groove. Another author thinks that it is an osteitis of the navicular bone with cartilaginous decortication, with wearing out of the tendon and synovitis as sequelæ. By others, again, the disease is classified as osteism or osteitis from overwork (*osteite de fatigue*).

Mr. Pecus considers it as a symptom of dry arthritis, and without giving the opinions of more authorities on this question, he says that from the above definitions it is clear that there is a great difference in the appreciation of the intimate essence of this affection, which was spoken of at the beginning of the

19th century. At any rate, laying aside for a moment the question of the real etiology, Mr. P. asks: if, after all, the alterations of the navicular apparatus constitute the entire affection of navicular disease, and in answer says he does not believe it, and that he will show that this affection is always accompanied by polyarticular lesions, with peripheric and sometimes central vascular and nervous lesions, which are the evident imprints of the passage of a general infection of the organism.

* * *

The observations that were gathered by Mr. Pecus, five in number, show that if the small sesamoid or navicular bone is affected with non suppurative chronic osteo-myelitis with dry tendo-synovitis, there are also in many arthrodias of the affected leg positive lesions of dry arthritis, which are not looked for, and yet have never been absent in the autopsies he has made. The following is the *résumé* of those autopsies:

Observation 1.—A twelve-year-old horse, destroyed for fracture of the right humerus, shows lesions of right anterior naviculararthritis, dry polyarthrititis, endocarditis on the left side. The polyarthrititis involved almost all the articulations of the right fore leg.

Obs. 2.—Mare, eleven years old, died with double pulmonary congestion. Navicular disease of both fore feet; symmetrical lesions of dry arthritis from the knees down, neurotomy of the right anterior leg.

Obs. 3.—Horse, six years old, destroyed because of anterior laminitis and naviculararthritis. Myelitis and encephalitis; dry arthritis of the four extremities; aortitis.

Obs. 4.—Horse, 11 years old, died of diaphragmatic hernia, with violent hæmorrhage into the pleural cavity. Navicular disease of the four extremities; generalized lesions of dry arthritis.

Obs. 5.—Mare, 17 years old, severe naviculararthritis, with fracture of the navicular bone. Disruption of the plantar aponeurosis; insertion of the perforans directly on the small sesamoid; dry polyarthrititis.

To resume : At the examination of all the joints of the extremities of these five subjects, symmetrical lesions have been found in a greater or lesser number, reminding of the dry arthritis or chronic rheumatism of man, and among them those of the radio-carpal, carpo-metacarpal, metacarpo and interphalangeal, which we may say are always present in navicular disease ; and in their presence, concludes Mr. Pecus, one is justified in considering this disease of horses as a symptom of a general affection belonging to the great category of the arthropathies, and peculiarly of dry arthritis as a mode of special termination of all species of chronic arthritis, be it of rheumatismal origin, due to traumatism, or resulting from an infection.

* * *

No ; navicular disease is not only an affection of the small sesamoid apparatus ; the post-mortems just considered have shown that many other articulations will present symmetrical lesions which existed on subjects affected with navicular disease, and if these polyarticular lesions class navicular disease among arthropics it is evident that vasculo-nervous lesions must also be found in connection with them, as it is observed in man suffering with those affections.

Let us see if there were :

For *arteries* : they were evident. In Obs. 3 and 4 lesions of mesarteriitis and endarteriitis of the plantar arteries were well marked.

For *veins* : In Obs. 2, 3, 4, and in another animal the digital and plantar veins were found also more or less diseased, with endo, meso and periphlebitis.

For *nerves* : those which had not been submitted to surgical interference, had not been divided, showed lesions of sclerosis of the interfascicular connective tissue — that is, perifascicular neuritis.

To resume : All the lesions met with in these observations of navicular disease can be gathered into two large groups : (1) *Local* lesions, of the navicular apparatus ; (2) *general* lesions, (a) polyarticular reminding of dry arthritis or chronic rheuma-

tism; (*b*) vascular and nervous lesions which may be peripheral and sometimes central. Indeed, in the spinal cord of the subject of Obs. 3, the inferior longitudinal fissure of the cord had disappeared in some part. All the lesions had for characteristic that they were not only symmetrical on the anterior extremities, but also on the hind legs, but in lesser degree.

* * *

In relation to the etiology and pathogeny, the author enters into a long consideration and comparison of the nature of navicular disease, and the possible effects of general infection of the organism, and resumes his remarks by saying: We, then, will say that a first serious infection during youth may have left in the animal chronic inflammatory lesions, upon the bloodvessels and peripheric nerves and sometimes on large vessels and nervous centres; also on the various arthrodias, on the bony marrow of the navicular bone and sometimes on that of other parts of the skeleton. All those lesions of infection of an absolutely healthy animal, may occur in a predisposed, arthritic, herpetic, or on a low conditioned organism, such as may be produced by physical overwork, acute disease, distemper, pasteurellose, rheumatism, etc., and then appears the manifestations of the affection which in reality is but a symptom of non-suppurative chronic infectious osteo-myelitis, accompanied by dry tendosynovitis upon the leg affected with vasculo-sclerosis of an animal which has become or was born arthritic.

In relation to the hereditary nature of the disease, Mr. Pecus, without solving the question, concludes on the necessity of excluding from reproduction all male and female subjects affected with navicular disease, no matter of what extent.

* * *

RADIUM IN RABIES.—Will radium, besides all the wonderful properties which we already know it to possess, enter into the domain of practical therapeutic use? is a question which seems to be justified, according to the notice printed in the *Bulletin of the Academy of Sciences*, which I find recorded in the *Semaine Veterinaire*. It says:

"Tizzoni and Bougiavanni have already mentioned the destroying action of the rays of radium upon the rabid virus when applied *in vivo* and *in vitro*. They complete and confirm their previous researches in a recent communication."

The rabid virus, decomposed *in vitro* by an exposure of 4, 6, or 36 hours to radium, is transformed into an excellent vaccine, which, inoculated in the eye of a rabbit, in one-drop dose, confers to this animal immunity against the virus of a dog made by subdural injection.

In vivo radium has also a powerful destroying power.

A subdural inoculation made on a rabbit does not give it rabies, if the animal is submitted to the rays of radium for one hour during eight consecutive days.

With animals inoculated for several hours in the eye or on the tract of the sciatic nerve, the curative effect of radium is most marked. The intensive treatment is very efficacious; all the animals are saved if treated 48, 86, or even 96 hours after the subdural inoculation of $\frac{1}{10}$ c.c. of fixed virus diluted in bouillon.

Even if the animal already shows a febrile condition, a loss in the initial weight, a marked weakening of the hind legs, a favorable result can be obtained, and from these results the authors conclude that treatment with radium rays will save an animal from death, even if rabies is already declared. Under the influence of the treatment the nervous symptoms will subside, the fever diminishes, and general improvement will take place, to be followed by recovery, while the control animal will die.

These effects obtained by radium are not by vaccination or serotherapy, and, therefore, radiotherapy is more indicated than either of them.

* * *

HOW MANY SLAUGHTERED ANIMALS CAN AN INSPECTOR EXAMINE IN ONE DAY?—This is a question which has been discussed for a long time among German sanitary veterinarians, and no doubt will prove interesting for those of other countries.

The *Revue Générale* reports from the *Zeitschrift für Fleisch und Milchhygiene* the following extracts :

Henschel, of the Berlin Abattoir, admits that in one day one inspector can examine 75 bovines, or 200 pigs, or 250 calves, or 400 sheep; these figures can be increased by one-third or by one-half in cases of need.

Falk, of Stettin, remarks rightly that it is difficult to give figures. The conditions of inspection are numerous. If the service is made by only one inspector, there will be bacteriologic or microscopic examinations which will take much of his time. Therefore, in this question, the only point in view must be the simple pure examination, without consideration of more precise observations to be made later.

With new obligations imposed on the inspectors by new regulations, K. Muller, of Stettin, gives the following figures: 7 minutes for a bovine, 3 for a pig, 1½ for a calf, or for a sheep, 7 for a horse. Six hours of work only can be demanded of the inspector, with two rests of half an hour each. With those conditions the total of animals examined can be considered as follows, providing the inspector has an assistant to take his notes: 52 bovines, or horses, 120 pigs, 240 calves, or sheep.

Opel, of Cologne, allows only 3 minutes for a steer, 1 for a pig, 45 seconds for a calf, or a sheep. He also admits six hours of inspection, but gives three rests of half an hour each, leaving them only 270 minutes of effective work, which allow the inspection of 90 bovines, or 270 pigs, or 360 calves or sheep. At Cologne the inspector (veterinarian, of course,) has three assistants.

According to Gohler, a veterinarian can examine in six hours about 75 bovines, 300 pigs, or 360 sheep or goats. Tuberculous, measly, septic animals or those slaughtered by necessity are not included in these figures.

Taking an average of those indications, an inspector ought to examine daily, say, 73 adult bovines, or 220 pigs, or 280 calves, or 340 sheep.

I would be glad to hear from our inspectors in the large cities in the United States, and particularly from Chicago.

THE MICROBIAN FLORA OF THE NASAL CAVITIES OF HORSES.—The presence of some microbes, pathogenous for man and for animals, has been made out in forages, in surrounding atmosphere, in the digestive canal, and in the respiratory tracts; and the search for those microbes in the healthy organisms presents, to the point of view of the pathogeny of diseases, a great interest. Many are those who have already entered into this line of investigation. Dr. D. de Angelis, working in the Laboratoire de Recherches of Alfort, has directed his in a field which he believes not yet explored, and has recorded under the title of "Microbian Flora of the Nasal Cavities of the Horse" what he has found. His observations were made on ten horses, aged between six and twelve years. The material to study was obtained with the greatest asepsy possible with metallic threads carrying a ball of wadding, which was afterwards placed in sterilized tubes. Cultures were then made immediately on proper media. The nasal cavities of horses are, of course, exceedingly rich in microbes, and among the many were streptococci, staphylococci, cocco-bacilli, *Bacillus subtilis*, streptobacilli of various species and fungi. The streptococci and staphylococci were found in the material obtained from the ten horses, and it is with them that the Doctor made his principal experiments on mice, rabbits, guinea-pigs, and horses. His conclusions are: (1) that in the nasal cavities of horses there are constantly one streptococcus and one staphylococcus which have no pathogenous power for small laboratory animals, but which are able to give rise in horses to the apparition of very characteristic local and general troubles; (2) that by the morphologic or biologic characters, and the aspect of their cultures, these microbes are identical with corresponding and already known pathogenous types; (3) that repeated inoculations of their cultures to a horse does not confer apparent immunity against the appearance of a local lesion nor of the general symptoms.

* * *

THE USE OF MALLEIN AS A CURATIVE AGENT.—A short while ago, in looking over the REVIEW of August, 1905, my at-

tention was called to a resolution passed at a meeting of the Minnesota State Veterinary Medical Association, which related to a circular sent out by the Pasteur Vaccine Co., in which the curative properties of mallein in glanders were claimed, and mallein recommended for treatment. The resolution first denounced the suggestions and claims of the P. V. C., and secondly recommended that all members of the Association, "if any such have been misled by such advertisement into using mallein as a curative agent shall hereafter desist from using the same, inasmuch as it is detrimental and dangerous, and it is not to be recommended in practice."

The effects of this and possibly other resolutions coming from veterinary societies could not be overlooked by the P. V. C. without concern; and, as one of the results, I received the visits of the President and of the General Secretary, who came to explain to me what they thought the cause of the trouble. It seems that the redaction of the circular was due to the misinterpretation of an over-zealous representative of the company, who from the directions and documents he had received thought he was justified in stretching the facts so as to reach better results. I could not do otherwise than criticize the circular, and endorse to some extent the resolutions of my friends in Minnesota. I am happy to say that the officers of the Pasteur Vaccine Company have recognized the error that has been committed, and the result will be the immediate issuance of an entirely revised circular, in which all allusions to the cure of glanders by mallein will be removed, and a very satisfactory addition made at my personal request, viz.: "*as far as possible, supplies of this article will be made to the profession only.*"

* * *

I think it is the moment or never to say "all's well that ends well."

May I, however, in conclusion, make a few remarks upon the whole affair, which may serve to remove some of the severe effects that the Minnesota resolution may give rise to, and mod-

ify them. The question of the curative powers of mallein have already been discussed here; I have tried to keep our readers posted as to what had been done in Europe by Nocard; our esteemed collaborator, Dr. Schwarzkopf, has made known in the REVIEW results which cannot be ignored. The writings found in European literature are speaking for themselves. Then what? What do we read in that superior work of Nocard and Leclainché, "Lês Maladies Microbiennes," page 199: "A complete cure is certainly possible at the beginning of the infection. The destruction of the bacilli and the cicatrization of the lesions take place in some animals without any interference, and they are specially assisted by various medications, and principally by inoculations of mallein." At page 252: "Mallein has a curative action in certain forms of recent infection. Helman has obtained the recovery of a glanderous horse, and its complete immunization. Semner and Itzkvoitch have observed the recovery of a case of experimental glanders in a colt. Pilavios, Bonome, Vivaldi, Jones, Schindelke, etc., have observed the cicatrization of glanderous lesions, or the complete recovery under the influence of repeated inoculations of mallein." And not in France only, but in Germany, Semner writes: "A first point is beyond doubt. Glanders may be cured under appropriate treatment."

In the presence of such facts, is not the error committed by the P. V. C. excusable; and is it not another to ask all desistment in resorting to mallein? Do not use it as a curative agent, no more than any other drug; but do not ignore the value of work done by such men as those I have mentioned above.

* * *

ANSWERS TO CORRESPONDENTS.—A few answers to my private mail from America.

Dr. Daniel Lemay:—I have received your note, and was unable to answer it in my last "Chronicles" from want of positive information. Prof. Cognot, whom I met since, and to whom I presented your request, told me that the subject of the application of ambryl in the treatment of wounds was still under ex-

perimental consideration, and that the apparatus was not yet in the market. It seems that it will take a couple of months before your request can be granted. Be assured that I will not neglect it.

Dear Old Friend L. McLean:—Your letter arrived late, and the veterinary mouth speculum some ten days later. Your little circular and the plate adjoined to it told me of the instrument and of its advantages. As you say, it certainly commends itself to the profession for its simplicity and adaptation for almost all kinds of manipulations about the mouth. No doubt it will prove indispensable to many, and I can assure you I would have had it in my instrument box. There is no further fear for one to have his hands scratched, and attendants to sick horses, assistants, nurses, or stablemen, will certainly ask for a *vest-pocket veterinary mouth speculum* when giving a bolus to a sick horse. I showed the little jewel at the Société Centrale this morning, and it met with great success.

Dr. E. L. Lewis (Waxahachie, Texas):—There are quite a number of veterinary publications here, but if you wish that which I think the best, it is that published by Prof. Leclainché, of the Veterinary School of Toulouse, H^e Garonne. If you will write to him, you can, for the sum of 15 francs, receive the *Revue Générale de Médecine Vétérinaire*, semi-monthly. You had better mention my name, or that of the REVIEW. I am sure there will be no delay. I wrote to Prof. Leclainché to send you a sample copy.

Dr. S. H. Ward (St. Paul, Minn.):—I have transmitted your request to Mr. Carré and Prof. Vallée, and they have promised me to send you the publications on the subject. A. L.

IS THE TICK TO GO?

A strong movement is now on foot to secure the coöperation of the Federal Government and State authorities to put into operation the system that has been evolved by the long study of the life-history of the *Boöphilus annulatus*, which is almost a guarantee of its eradication from the cattle herds of the Southern States. The subject of Texas fever was thoroughly and

intelligently treated in a long article in the March REVIEW, from the pen of Dr. D. Arthur Hughes, who devoted a large amount of time to the collection of data from first hands, and placed his information and conclusions before our readers in that clear and decisive manner characteristic of all of his writings. It is unnecessary here, therefore, to do more than to tell of the shaping of the means which are underway to set in motion the machinery for the extermination of the etiological factor in the great Southern scourge.

A bill carrying an appropriation of \$100,000 has been introduced in Congress by Mr. Ransdell, of Louisiana, and a meeting was arranged for with the Committee on Agriculture of the House, at which representatives of the Federal Department of Agriculture and a number of representative Southern men were present. These included Secretary Wilson, of the Department of Agriculture; Dr. A. D. Melvin, Chief of the Bureau of Animal Industry; and Drs. Marlatt and Hunter, of the United States Bureau of Entomology. The delegation from the South was made up of Profs. H. A. Morgan, of the Tennessee Experiment Station; A. M. Soule, Virginia Experiment Station; Col. R. J. Redding, Georgia Experiment Station; Mr. Wright, Assistant Commissioner of Agriculture of Georgia; Dr. Tait Butler, State Veterinarian of North Carolina; Dr. Ferneyhough, State Veterinarian of Virginia; Dr. W. H. Dalrymple, of the State University and Experiment Station of Louisiana; Mr. August Mayer, Shreveport, La., and others. The importance of the subject was fully recognized by the committee and the time allotted to the conference was extended to permit of a thorough discussion of the subject from all points of view. Each of the gentlemen was given a hearing, and Secretary Wilson, who was the last speaker, reviewed the subject *in extenso*, urging that the appropriation asked for be granted in the interests of the South, stating that large amounts of money had been given by Congress for the eradication of animal diseases in other sections of the country, and it was their duty to assist the South to get rid of a condition which had for so long

been an incubus on her live-stock industry. As a matter of fact, Secretary Wilson pointed out that it was this very disease which gave Germany her first excuse to discriminate against meats from the United States.

In a comprehensive and patriotic article in the *New Orleans Picayune* of March 1, Dr. W. H. Dalrymple, one of the conferees referred to, reviews the entire discussion by Secretary Wilson, and points out a practical method to deal with the subject. Concluding, he says: "We believe the cattle tick is doomed to extermination in the South. But it is a big problem, and will require the most hearty coöperation of all concerned, viz., individuals, local and State authorities, and the National Government, through its Department of Agriculture. Let us all get to work! American ingenuity, pluck and progress cannot be thwarted by a problem of this kind, however large it may appear. It is possible of solution with uniform effort. Let us get at it 'all together.'"

Later information foreshadows the passage of the enabling Bill, and when it does pass the money will become available at once, so that the Department may send its experts into the field without delay to begin a campaign of education among stockmen as to how to get rid of ticks as early as possible.

When this great task shall have been accomplished the American veterinary profession will have added another bright diamond in the diadem which it has been fashioning ever since the Bureau of Animal Industry was created. Pleuro-pneumonia, foot-and-mouth disease, dourine, Texas fever(?)! Will tuberculosis fall under the educational batteries of the modern veterinarian?

"THE JOURNAL OF TROPICAL VETERINARY
SCIENCE."

We have received the first number of the above quarterly journal, published at Lahore, India, and edited by H. T. Pease, M.R.C.V.S., etc., Principal of the Punjab Veterinary

College, Lahore; F. S. H. Baldrey, F.R.C.V.S., etc., Professor of Sanitary Science in the same school, and R. E. Montgomery (on special duty for the British Government investigating the diseases of camels).

The editorial introduction, explanatory of the field which it desires to cover, is as follows:

"The investigation of the diseases of animals in tropical and sub-tropical countries has assumed such magnitude of recent years, and its vital importance in connection with the welfare and progress of the British Empire has become so widely recognized, that we feel no apology is needed for the publication of a periodical dealing with a subject that has acquired the dimensions of a special study and almost, if such were ever possible, that of a science apart.

"It is now above a quarter of a century since the late Professor J. H. Steel, recognizing the demands of the times and foreseeing with a foresight characteristic of the man the requirements of the future, instituted the *Quarterly Journal of Veterinary Science in India*. This was in the infancy of the era of tropical research, at a time when Veterinary Surgeon Griffith Evans published his observations on the first known pathogenic trypanosoma, and Laveran made known the discovery of the parasite of malaria.

"One has only to glance over the scientific publications of the present day to appreciate the strides that have been made in the advancement of our knowledge of the Tropical diseases of man and animals, and to recognize how inseparable is one from the other; the further the research the more intimate becomes the union. Trypanosomiasis, spirillosis, piroplasmosis, ancylostomiasis, bilharziosis, filariasis and many others, are affections common to both, research into the nature of which is of importance to veterinarians and medical men alike.

"During the last two decades public attention has gradually, but none the less surely, been directed to this most important branch of social economy, until at the present time it has been found imperative for every Dependency and Colonial Possession to maintain a veterinary staff for the investigation of the indigenous stock diseases.

"This brings to our mind the question, is there in reality any disease of animals confined geographically to any one country in the world? What is more widespread than Texas fever,

or to be more exact bovine piroplasmosis? Every year the names of new countries have to be added to the already long list of those invaded. Perhaps we might make an exception in the case of South African horse sickness and a few diseases of a similar type, though it remains to be seen how many years will elapse before an identical condition, differing perhaps somewhat in virulence or receptivity, is diagnosed elsewhere. How many suspected the presence of dourine in this country five years ago? All knew that they were dealing with a serious disease, but few associated it with what was supposed to be confined almost entirely to Algeria. The same is true of others recently detected—hæmorrhagic septicæmia, white scour, etc. May it not be equally so of many other conditions which we are told do not exist in India? How are we to know? Those of us who make India the country for our life's work have but little opportunity of gaining a personal experience of the diseases most prevalent in other climes; we have to depend upon the word pictures given by our confrères beyond the seas, whose excellent and valuable reports for the most part remain hidden from our sight, are found embodied with a mass of statistical figures irrelevant to the subject at the conclusion of an Official Blue Book, or published in a language which may not be known to the ordinary worker, and only accessible to a very small majority of those veterinarians in other countries to whom the work would frequently be of inestimable value.

“This condition of affairs does not tend to widen our knowledge of the diseases of animals, and their geographical distribution, or to prepare those of us whom the exigencies of the Service may remove elsewhere, for the due appreciation of the pathological states prevailing in the new sphere.

“It is with the object of providing a means for the bringing about of that international interchange of ideas demanded by modern research, and of affording a medium for the publication of articles dealing with veterinary pathology and the allied sciences, as met with in all tropical and sub-tropical countries, that this journal is instituted. It is earnestly hoped that all interested in the subject will further this object by communicating the results of their inquiries to us for publication.”

The *Journal* is well gotten up, in arrangement and typographical excellence, and the contents of the first number are interesting and valuable. The leading articles are: “A New Species of *Trypanosoma* Found in the Blood of Rats, together

with a New Metrical Method of Standardizing the Measurements of Trypanosomata," by Prof. A. Lingard, Imperial Bacteriologist to the Government of India; "Observations on Bilharziosis Among Animals in India," by R. E. Montgomery, M. R. C. V. S., I. C. V. D.; "Some Observations on Normal and Rinderpest Blood," by Captain F. S. H. Baldrey, F. R. C. V. S., etc.; "Tibarsa Surra—Trypanosomiasis in the Camel," by H. T. Pease, Principal Punjab Veterinary College; "Through What Agency is the Trypanosoma Evansi Carried Over from One Surra Season to Another," by Prof. Lingard. These leading articles are well illustrated, some in colors, and constitute splendid contributions to our rapidly developing knowledge of tropical diseases. In "Notes and Extracts," which complete the number, we observe that two articles from the REVIEW of last July are given place, viz.: Dr. M. J. Myers' "Diseases Prevalent in the Philippine Archipelago," and Dr. Dalrymple's notes on "The Tick Theory."

To all who are interested in tropical diseases (and what veterinarian is not?) we cordially commend the *Journal of Tropical Veterinary Science*, subscriptions to which should be forwarded to Messrs. Thacker, Spink & Co., Calcutta (price 17s. 6d.), while communications for the editors should be addressed to them at the Punjab Veterinary College, Lahore, India.

MEAT INSPECTION FOR THE U. S. ARMY.

Dr. D. Arthur Hughes, who has made an enviable name for himself throughout the veterinary world by his numerous articles in the REVIEW during the past two years, demonstrating that for deep thinking and the perfect capacity to transcribe his thoughts to paper in a forceful manner, he has few equals, has been appointed and transferred from Meat Inspection of the Bureau of Animal Industry at East St. Louis, to the Commissary Department of the U. S. Army. Few of our readers know that there is such a service for the veterinary inspection of meats for the Army. There are at present four Veterinary Inspectors, who, with Army Commissary officers, look after the details of the

contracts of the great packing companies with the Commissary-General of the War Department for army supplies. These are Dr. Johnson, at the Union Stock Yards, Chicago, who has been in the work with the Commissary Purchasing Agent of the Army (a Major in regular standing) five years; Dr. McKinney, of Kansas City, who has been there about the same length of time, and now two others, — Dr. Lytle, of Chicago, who has been with the Bureau eight years; and Dr. Hughes. These latter two were appointed March 3, one of whom will remain in Chicago, to be associated with Dr. Johnson, while the other will be sent to Omaha, to take charge of Army contracts there.

We have asked Dr. Hughes to write an article for the REVIEW on the subject of "Meat Inspection for the Army" as soon as he familiarizes himself with his new work.

WHEN FARMERS DIAGNOSE ANIMAL DISEASES.—"Notice has been given Live Stock Commissioner Kittrell of the existence of several cases of glanders in Tipton County. This is the one cattle disease that keeps the State Live Stock Department in fear, it being less easily suppressed than any others. There is a possibility of the stricken cattle in Tipton County having to be slaughtered to avoid a cattle plague, but Mr. Kittrell hopes that this may be averted. Dr. Zack Biggs, Assistant Live Stock Commissioner, left Thursday for Tipton County to investigate the trouble."—(*Nashville American*, March 16.)

The Live Stock Commission of Tennessee, we believe, is composed of a farmer and his assistant, an M. D., and the above item is a fair sample of the great "benefits" which flow to the people through the ridiculous system of appointing boiler-makers to blow bugles. It would be more reasonable to place veterinarians in charge of the bureau having to deal exclusively with diseases of the human family, yet the howl that would arise from the throats of outraged medical manhood would make the welkin ring. While our dumb brutes cannot rebel against the ignorance of incompetents dealing with their afflictions, the above quotation is a fair exhibition of the asininity of the system in vogue in many States and municipalities.

ORIGINAL ARTICLES.

DIAGNOSIS AND TREATMENT OF VENTRAL HERNIAS
IN BOVINES.*

RÉSUMÉ OF CLINICAL LECTURES.

By CH. BESNOIT, Professor of Bovine Pathology at the Veterinary
School of Toulouse.

In veterinary surgery, under the name of ventral hernias, are designated the tumors formed externally, under the intact skin, by the organs contained in the abdomen, which have escaped from it through an accidental opening of the abdominal walls. Therefore, they include all abdominal hernias which occur in other parts than through the inguinal or umbilical orifices.

Most of those lesions have dimensions so large and communicate with the abdomen by an opening of such size that their cavity constitutes an important annex, a true prolongation of the abdominal cavity. They would then deserve better the name *eventrations*, under which they are so considered in human surgery. Unfortunately, custom has not allowed it, and wrongly the name of *eventrations* is reserved, in veterinary medicine, to designate the penetrating wounds of the abdomen, complicated with protrusion outside of the sound or injured viscera.

In bovines four principal varieties of ventral hernias are known, according to the organ displaced: hernia of the rumen, that of the intestine, of the abomasum, and of the uterus. This last, intimately connected with gestation, belongs to the domain of obstetrics, it has specific origin, mode of development, and characters, which justify us in ignoring it—at least, in the general part of the present work. The three other hernias have many common characters, but they have also some specific signs, which allow a positive diagnosis, and permit us to distinguish between them and other abdominal lesions of similar aspect.

The following considerations, drawn from many private

* Translated by A. Lioutard, M. D., V. M., from the *Revue Vétérinaire*.

observations and from the minute study of the classical descriptions and from the classical documents recorded in our professional journals, have for object to show the importance and the difficulties of the differential diagnoses of these various lesions, and to present as far as possible their essential elements.

COMMON SYMPTOMS.

Division.—Although identical to themselves in their general outlines, ventral hernias of bovines have, however, some differential characters, according to the causes which have produced them. To this point of view, they must be divided into traumatic and spontaneous.

The *traumatic* are due to the crushing action of blunt objects upon the stretched muscular abdominal walls, such as kicks, horn blows, falls, etc.; they are called *recent* or *acute* when they have existed but a few days, and *old* or *chronic* when of two or three weeks' standing, the local inflammatory symptoms of the first stage having subsided.

Spontaneous hernias develop by themselves, without external violence. According to some, they are due to excessive and long distension of the abdomen, as by repeated or gemellar pregnancies, by hydramnios, ascites, etc., among old and worn out animals; for others it is the exaggerated weight of the digestive organs in heavy feeders; and finally with others (Moussu) they must be attributed to atrophying nutritive troubles of the abdominal walls due to unknown causes. However this may be, under any of these influences, the abdominal muscles become distended, emaciated and thinned, the weak muscular fibres, pulled apart, separate, are torn, and a fissure is the result; this, little by little, enlarges, becomes a slit, and soon through it abdominal organs pass and locate under the skin.

Acute Ventral Hernia.—During the hours following the traumatism, the accident is indicated by the appearance, at any point of the abdomen, of a swelling, varying in size from a fist to a man's head. This swelling appears suddenly, immediately after the blow, and develops so rapidly that in a few hours it

has reached serious dimensions. On the spot the hairs are sometimes off, or there are marks of superficial excoriations, indications of the original cause. To the touch, the lesion seems slightly painful, not hot, somewhat fluctuating all over; it is soft and puffy, or again tense and rather elastic, according to the seat it occupies and the time of digestion. Taxis permits of a quick reduction of the protruding organ, and in the centre of the enlargement is then felt the tear in the abdominal wall, whose exact dimensions can be appreciated, through the skin, by the introduction of several fingers or of the entire hand.

After twenty-four hours the characters are changed; local and general phenomena of reaction occur. On a level with the lesion and at its periphery there appears a large œdema, which manifestly interferes with the exploring manipulations, and rapidly spreads in thickness and in superficies, principally downwards. This reaches its maximum of dimension towards the fourth or fifth day. At that time the thickness is such that attempts at reduction and exploration of the hernial opening are nearly impossible. At the same time, the appetite fails, the temperature rises, some tenths of a degree, indicating fever, which is often very slight and even sometimes missing.

After five or six days the symptoms diminish in severity. Gradually the œdema is reduced from upwards downwards, and has completely disappeared between the twelfth and fourteenth days, seldom later. The fever, when it exists, subsides, appetite returns as soon as the progression of the local symptoms has stopped. Then, free from the œdematous swelling which surrounded it, the lesion can be explored easily: it has all the characters of old or chronic hernias.

Chronic Ventral Hernia.—In this form the hernia is manifested by a soft, elastic, or semi-puffy tumor, fluctuating, indolent, without œdema on its surface or in its periphery. Reducible at first, it may remain so indefinitely. In other instances, the organs which form it contract adhesions with the internal face of the cutaneous sac, and then it becomes irreducible. The

hernial opening is easily felt, especially after the reduction. It is manifested by the presence through the abdominal walls of an indurated ring, thick, fibrous, resisting, which surrounds the base of the protruding mass. Besides, the tumor increases in size after meals; but, however, this sign may be concealed and overlooked when the hernial opening is of small size. Finally, the general condition is as satisfactory as possible; digestive functions, principally, are performed regularly.

The hernia grows more or less rapidly. After several months, it may have reached enormous proportions. Adenot has seen a ventral hernia measuring 0.70 centimetres in length and 1m.07 centimetres in width. I have myself often seen ventral hernias dropping down to the hocks, and which were more than 0.80 centimetres in length and in width. In those cases the hernial cavity, in free communication with the abdomen, contained a large portion of the abdominal organs; in them were found principally a large portion of the rumen, almost the entire intestinal mass, and even a gravid uterus in its entirety, when the female was pregnant. When developed in the neighborhood of the udder, these large hernias slip under it, and push it upwards. The organ is then displaced obliquely or vertically, and rests upon one of the lateral faces of the hernial tumor. (Fig. 3.)

When of little size, ventral hernias are compatible with life, and even permit of working or fattening of the animals; but when large, they, with time, give rise to digestive troubles which bring on loss of flesh and marasmus, prevent the animal from working, render it unfit for the butcher, and oblige the owner to send it to the knacker.

Spontaneous Ventral Hernia.—Under this form, ventral hernia takes from the start the characters of a chronic type, but its evolution is different.

Marks of traumatism, local and general phenomena of reaction, œdema and fever, all are missing.

Without appreciable cause, at a given time, there appears, on the inferior abdominal wall, a small swelling, soft and fluc-

tuating, elastic or puffy, more or less elongated and reducible, thanks to a hernial opening quite large and evenly elongated. First of little importance, the hernia enlarges, slowly, but gradually and regularly, especially during gestation, by pressure and the passage of the fœtus through the slit of the abdominal muscles. During that time the animal loses its appetite, and gradually becomes thin. After several months, in consequence of the excessive increase of the hernial opening, whose edges are no longer easily detected, the lesion has reached considerable size: there is almost no longer any separation between the abdominal and the hernial cavities, and the largest portion of the abdominal contents is directly lodged under the skin. At this advanced period, the general condition suffers. At first the animal becomes dull, has no appetite, no rumination, and the respiration is irregular; then diarrhœa sets in, rapid emaciation and marasm follow; finally, after a long period of permanent decubitus, the animal dies, or has to be killed by the knacker.

DIFFERENTIAL DIAGNOSIS.

The preceding description of the symptoms and mode of development are in general sufficient for a summary diagnosis. It is, however, proper to be able to be more precise: (1) to fix the characters which permit us to distinguish the different varieties of ventral hernias; (2) to look into the elements of the differential diagnosis in doubtful cases when confusion with other lesions of similar appearance might be possible.

A (1) Hernia of the Rumen.—This variety is not observed in very young animals, on account of the small size of the gastric reservoirs at that time of life. Its seat is almost exclusively on the left side, downwards or in the middle region, towards the hypochondria. Often, even after the disparition of the œdema of the first stage, it is not well defined in its periphery and remains poorly diffused. The alimentary mass that it contains renders it puffy to the touch. Reduction by taxis is possible, at least during the first weeks; but it is always difficult, and if

the hernia is a little large and heavy, it is often necessary to have the animal cast and placed in the right lateral or in the dorsal position. In this case also the rumen descends, leaves the superior part of the abdomen, and the hollow of the flank is much marked. Finally, percussion gives a dull sound and auscultation fails to reveal any abnormal sound.

(2) *Hernia of the Intestine.*—This hernia can be observed during youth; yet it is more frequent in adults. It is generally admitted that its seat is on the right side, but, as will be seen further on, this rule is subject to numerous exceptions. It is met with the same frequency in all regions of the abdominal walls; and even, exceptionally, on the thoracic wall, at the level of the hypochondria, by perforation of the intercostal muscles and of the diaphragm (Cadiot and Almy, and Guittard); indeed, it is known that in cattle this last muscle is very concave and inserted further than in the horse on the cartilaginous circle of the hypochondriac region, and that, besides, pushed forward by the large weight of the stomachs, it lays quite intimately on rather an extensive surface of the internal face of the thoracic walls. The tumor which is formed by the hernia is soft and elastic, with, sometimes, puffy or hard spots disseminated in its thickness, which are due to the presence of small alimentary masses. With rare exceptions, reduction is possible by simple taxis and without throwing the animal; it is easier to reduce it when it is located low than when it is high, but in these last instances the return of the trouble, once it is reduced, is less rapid. Percussion gives a more or less tympanitic resonance, and auscultation perceives borborygms or gurgling noises, which are more marked and often become very loud during and immediately after the manipulations of the reduction.

(3) *Hernia of the Abomasum.*—Hernia of this organ is rare. Firmly attached to the right sac of the rumen, it is displaced with difficulty. It appears more frequently in sucking calves than in adult animals. This is due to the enormous size of the abomasum and its more intimate contact with the abdominal walls during the first periods of life. However, it is not excep-

tional in adults, as it is proved by the numerous observations of Deguilhem, Serres, Dandrieux, Guittard, and Delsol. It is constantly located on the inferior part of the right flank, although Guittard has recorded one case where it was in the left flank. Considering the position and the normal relations of the abomasum, resting on the right sac of the rumen, it is difficult to understand the possibility of such location, unless by an anatomical abnormality. It develops ordinarily back of the hypochondria, a few centimetres from it; in adults, where the organ is less developed and lodged more deeply in the concavity of the diaphragm, it may also appear in one of the last intercostal spaces (Deguilhem). Always rather of small size, it has seldom more than 15 to 20 centimetres in diameter; when it is larger, it is because the hernia is mixed and that by a free tear in the flank the abomasum and some intestinal circumvolutions have escaped (Dandrieux). Then the intestine forms the essential part of the tumor, and the dominating symptoms are those of hernia of the intestine. It is almost always elongated and often piriform. To the touch it feels soft, fluctuating, and gives the sensation of syrupy or pulpy contents, due to the specific nature of the food in the abomasum, milk or chyme.

The hernial ring, elongated and sometimes elliptical, is hermetically closed by the protruding organ widely spread around it. Reduction is easy, but requires pressure of the whole mass, with both hands, on the whole extent of the tumor, from its summit to its base. Return of the trouble occurs rapidly and takes place as soon as the taxis ceases.

Percussion gives a dull sound; auscultation reveals no special noise.

(4) *Hernia of the Rumen on the Right Side.*—The rumen being located in the left flank, it is comprehensible that, as we have already said, hernia of this organ should ordinarily occur on that side. Exceptionally, however, it may develop on the right, but then it is necessary that: (1) the rumen be largely distended by the food the animal has just taken, so as to take intimate contact with the right abdominal wall, and (2) that the

hernial opening should have large dimensions. In those conditions the exit of numerous intestinal circumvolutions always accompany that of the rumen, and a mixed hernia is the result. This is always of very large size and by its characters remind one both of the hernia of the rumen and that of the intestine. It is diffuse, not well defined, still less than in case of left hernia, especially towards the upper part. It is soft, fluctuating, or elastic in the parts corresponding to the intestinal loops, harder and more puffy with the rumen. Reduction by taxis is difficult, if not impossible, and must always be attempted in the decubital position. The puffy regions do not give any noise on auscultation, while borborygms may be heard over the intestines.

(5) *Intestinal Hernia on the Left.*—The seat for intestinal hernia is on the right, where it may occupy any region of the abdominal wall, from the linea alba to the hollow of the flank. It may, however, although it is true much more rarely, be met with in the left flank; but then it exclusively occupies the lower regions, under the rumen, in the neighborhood of the udder or between this and the fold of the stifle.

It may be simple, alone, or associated with hernia of the rumen. In the first case, it is formed through an opening sufficiently large to allow the exit of the intestine, but too small to let the rumen pass; it then offers all the classical characters of the right intestinal hernia. In the second case, it is developed by the passage of the rumen and of the intestine through a hernial opening, primitively large or progressively enlarged by the pressure of the gastric reservoirs, the intestine passing under the rumen to become in relation with the left inferior abdominal wall. The characters of that hernia are those of the mixed hernia on the right.

I have observed several cases of intestinal hernia to the left, and figures 1 and 2 show two of them.

Cow No. 1 had a simple intestinal hernia, measuring 70 centimetres in length and 45 in width, about; it occupied the entire lower region of the abdomen, from the stifle and udder to the sternum. It had developed through a small opening situated



FIG. 1. INTESTINAL HERNIA.

immediately below the fold of the stifle, in which were engaged numerous circumvolutions of the small intestine and a few from the colon. The rumen was not displaced. The diagnosis was easy, the lesion presenting all the classical signs of intestinal hernia. Fig. 2 shows an intestinal hernia to the left, mistaken for an abscess. We will consider that case further on.



FIG. 2. LEFT INTESTINAL HERNIA AND ABSCESS.

(6) *Uterine Hernia*.—Also called *hysterocele*. It is frequent in old cows and develops, during gestation, at the postero-

inferior region of the abdomen, on either side, but oftener on the right than on the left. It is large, and presents all the aspects of big intestinal or mixed hernias. Inguinal, the diagnosis is easy, but sometimes is complicated with the presence in the hernial sac of numerous intestinal circumvolutions mixed with the gravid uterus.

Hysterocele is characterized by a regular and constant increase of the tumor, which often reaches fabulous proportions. Besides, methodical exploration reveals the presence of a fœtus in the hernial sac; by palpation some hard and movable parts are felt; auscultation discovers the cardiac sounds, if gestation is advanced, and careful watching may sometimes detect the motions of the fœtus. At any rate, the rather frequent presence of the intestine with the uterus in the hernial sac is indi-



FIG. 3. INTESTINAL AND UTERINE HERNIA—POST-PARTUM.

cated by greater fluctuation and by borborygms through auscultation. Fig. 3 represents a mixed hernia of the uterus and of the small intestine, on the left side, immediately after delivery. Fig. 4 is that also of a mixed hernia, but before delivery, in the eighth month of gestation: it is bilateral, more voluminous on the right than on the left side.

B (1) Abscess.—Two cases may occur that we will consider

successively : a ventral hernia may be taken for an abscess or *vice versa* an abscess of the abdominal walls may be taken for a ventral hernia.

(a) *Ventral Hernia Taken for an Abscess.*—The error is possible and even quite easy under some circumstances. First of all, the hernia at the start gives rise to the appearance of

local inflammatory phenomena similar to those of abscess; they may be sufficient to deceive. In the second part, the hernia may co-exist with an abscess. Whether it develops consecutively to the inflammation of the contents of the hernial sac (Bouley) or, on the contrary,



FIG. 4. INTESTINAL AND UTERINE HERNIA (ANTE-PARTUM).

has been primitive and has become complicated with hernia by the work of suppuration of the abdominal wall. In the first case, the error is possible but exceptional. It can occur only at the beginning of the trouble and cannot last beyond the time necessary for the resorption of the œdema and of the exudates—that is, more than five or six days. It is due to the detection of a swelling, which is hot, painful, œdematous, principally fluctuating, giving rise to slight febrile reaction. The fact that there is no increase in size after meals, that the tumor cannot be reduced, the absence of a hernial opening, and, above all, the progressive, quick, and relatively considerable increase of

the lesion will almost always insure a diagnosis. In the doubtful cases it will be sufficient to wait five or six days to see all the signs of local inflammation disappear. If, finally, one cannot wait, an exploring puncture and rectal exploration will give precious information. The puncture made with a fine sterilized trocar is without danger, and will reveal the nature of the contents of the hernial sac—pus or food. For the rectal exploration it will, if the seat of the lesion can be reached with the hand, reveal the presence of the perforation through the muscular structure of the abdomen.

An example of this error of diagnosis has been related by Deguilhem. It was a tumor formed on the level of one of the last intercostal spaces, about the size of a fist, hard on its borders, fluctuating in its centre, and irreducible. With such characters an exploring puncture was indicated, as it would have prevented the opening of this supposed abscess and the serious sequelæ which would occur from that unfortunate surgical interference.

In the second case, the diagnosis is more delicate. When the hernia is associated with an abscess, the characters belonging to this one are first mixed with those of the hernia, but after a few days they are more prominent than them; they conceal them. Error is then easy, not only at the beginning, but also beyond the period of local reaction of hernias, as even at that time the characters of the abscess are not clearly appreciable. Nevertheless, when an exploring puncture shall have revealed the presence of pus in a tumor of the abdominal walls, the possibility of a hernia co-existing with the abscess must always be admitted and prudent action indicated. Yet, in some cases, a slight increase in the size of the tumor after meals, a quick and important progress in the lesion and in the most fortunate circumstance, the constancy of the hernial opening, by taxis or rectal exploration, will render suspicion of the nature of the accident and finally insure the diagnosis.

Examples of mistakes of this nature are numerous. To mention only a few, I will relate briefly those of Ledoyen, of Dela-

marre and of Daprey. The cow observed by Ledoyen had on the flank, since the previous day, a swelling as big as two fists, and consecutive to a blow from the horn of another animal. First taken for an hæmatoma, the tumor soon changed in characters, progressively increased in size, became fluctuating in the centre, with thinning of the skin, and then was considered an abscess. Puncture gave escape to pus and to an intestinal loop. Surely the diagnosis was delicate; yet the rapid and enormous increase of the tumor, notwithstanding the well-marked signs of abscess, ought to have created suspicion of the co-existence of hernia with the abscess. . . . Delamarre has reported two cases of premammary intestinal hernia, one primitive, the other consecutive to an abscess of the same region, punctured and emptied six weeks before. Puffy and fluctuating, these tumors were taken for abscesses, and erroneously punctured. Their peculiar situation, immediately in front of the udder, and their clinical characters, are sufficient to explain the error of diagnosis. . . . Daprey has also mentioned five cases of intestinal hernia of the flank wrongly considered as return of abscesses opened and recovered for several weeks. These last observations show with what circumspection one must act before deciding in a case of apparent abscess of the abdominal walls, even and especially when the lesion is located about the udder.

Among several personal examples, I will again mention on this same subject the following case: A worn-out cow (Fig. 2) brought to the school for surgical exercises, had, on the lower part of the left flank, a tumor, rather elongated and about the size of a decalitre. It was hard, very adherent by its base to the abdominal walls, irreducible, and besides with detectable hernial opening. Above and back of it there was a fluctuating point which accidentally ulcerated, during one examination of the animal. Quite a large quantity of pus escaped. The cow was not in calf; the hollow of the left flank was not dropped and the tumor did not increase in a sensible manner after meals. We discarded at first the supposition of a hernia of the rumen or of the uterus, to admit simply that of a large abscess. Al-

though the irreducibility of the tumor and its hardness on one side, and on the other the rarity of intestinal hernia in the left flank, rendered the existence of this last lesion rather doubtful, we thought of the relative frequency of cases where the two accidents co-exist, and we decided to resort to an exploring puncture. This gave escape to an alimentary substance, and we came to the conclusion that both an intestinal hernia and an abscess co-existed. The post-mortem confirmed this diagnosis, and showed that the great hardness and the irreducibility were due to the fact that, instead of being lodged directly under the skin, the intestinal circumvolutions had slipped between the various muscular layers of the region, which thus contributed to a certain degree to the formation of the walls of the hernial pouch.

(b) *Abscess Taken for a Ventral Hernia.*— Abscess of the abdominal walls, especially if of rather old date, are sometimes manifested by local phenomena of reaction, badly marked, more or less attenuated, and whose precise meaning is not understood. In this case a hernia may be suspected. But if, in those conditions, error is easy and more frequent than in the preceding instances, it is also very much less serious. Indeed, either the diagnosis being doubtful, one will wait in expectation and the abscess will open of itself, or again a surgical section will be resorted to, which will be a fortunate one, as it will insure a hasty escape to the pus, and realize a more rapid recovery of a benignant accident. Exploring puncture, followed by free incision, with methodic and prudent exploration of the cavity of the abscess, constitute the most precious means of diagnosis.

As an example, I will recite the following personal observation: A cow (Fig. 5) has for several weeks had on the middle region of the left flank, immediately back of the hypochondria, a tumor, due to a traumatism. At first small, it has rapidly increased in size, little by little descending into the lower parts, so as to reach to the mammæ. The veterinarian who treated her, after a few days of observation, concluded that it was an incurable hernia of the rumen, and sent her to the school for the surgical class.

When I saw the animal I observed the presence, on the left infero-lateral part of the abdomen, from the cord of the flank to



FIG. 5.--ABSCESS OF THE FLANK.

the premammary region, of a large irregular tumor, bosselated at some points of its surface, more prominent towards the middle part of the flank and immediately in front of the udder. It is hard, except at the most prominent parts, which are fluctuating. It does not enlarge after meals; is irreducible and painful, especially at the fluctuating spots. All these characters make us throw

aside the idea of a ventral hernia (uterine or intestinal). There is no need to think of an abdominal cyst, as the characteristic and extensive fluctuation is not present. Notwithstanding the enormous dimensions of the tumor, we concluded that it was a large abscess, primitively developed on the flank, and having made its way towards the lower regions, to finally reach the premammary region, where a new purulent collection had formed. Exploring punctures made on the fluctuating spots confirmed the diagnosis immediately. The abscess was opened, freely incised in front of the udder, and seven or eight litres of pus escaped. In exploring the cavity with the finger first and then with a probe, a fistulous tract was traced which ran up the superior part of the flank, where a counter-opening was made. Drain tubes were put in place, and after six weeks, with antiseptic injections, cauterization of the fistulous tracts, etc., the cow was returned to her owner entirely recovered.

Omphalo-Phlebitis.—In calves hernia of the abomasum is not absolutely rare. We have seen it, located on the inferior abdominal wall, near the linea alba, between this and the inferior part of the hypochondria. Then it is situated not far from the

umbilicus, and can be, at the beginning, at the period of inflammatory reaction, mistaken for omphalo-phlebitis or for abscesses around the umbilicus from umbilical infection. In such cases, any surgical interference must be very cautiously resorted to. At any rate, the elements for the differential diagnosis are about identical with those that we have mentioned in cases of simple abscesses of the other regions of the abdominal walls. The increase in size after meals, reducibility of the lesion, the existence of more or less elongated hernial opening, and in doubtful cases the result obtained by an aseptic exploring puncture, will insure the diagnosis of the hernia.

(3) *Hæmatoma*.—Any violent contusion may give rise to the formation of an hæmatoma, a liquid tumor constituted by the escape of blood in the subcutaneous cellular tissue. The traumatism lacerates or destroys the connective tissue, while at the same time it produces numerous vascular ruptures, followed by bloody or sero-bloody important infiltration. Soon the escaping blood collects in the lacerated parts, separates, pushes away and raises the teguments, coagulates more or less completely, and the bloody tumor is formed.

Developed on the abdominal wall, this lesion may be taken for a ventral hernia, at a superficial examination, on account of its situation, its form, its size, which sometimes is enormous, or of the fluctuation which characterizes it, and the slightly indurated zone which soon surrounds it.

Yet it is quite easily differentiated from it, at least in the beginning, by the crepitation that it gives and which constitutes a pathognomonic sign. This crepitation gives a sensation somewhat analagous to that felt in squeezing a piece of lung tissue: it is due to the crushing under the pressure of the fingers of the clots of blood accumulated in the cavity of the hæmatoma. According to the importance of the coagulation within the cavity, the crepitation may be generalized to the entire tumor or only localized to the deep parts and associated with the fluctuation.

And, besides, the tumor is irreducible and does not increase

in size after meals. Moreover, it is soft, very depressible, and nothing is easier than to observe the absence of the hernial sac; the peripheric induration cannot be mistaken for it; and, at any rate, rectal examination would, in most cases, reveal the integrity of the abdominal walls. Finally, if some doubt still remains, an exploring puncture will settle the diagnosis by allowing the escape of pure blood or of bloody serosity.

Later the lesion disappears by slow resolution or undergoes cystic transformation, when it assumes all the characters of large serous collections.

Confusion between hæmatoma and ventral hernia is not exceptional. We have already mentioned the case of Ledoyen relating to a cow having a tumor on the flank, with wide base, quite well defined, hot, painful, and not depressible, taken at first for a bloody tumor, but in reality due to the association of an abscess with an intestinal hernia.

Fig. 6 represents an enormous hæmatoma of the middle region of the right flank in a cow brought to our clinic. The lesion was a little hard and tense, but uniformly fluctuating and slightly crepitating in its deep parts. On account of its large size and of its stretched condition, it was difficult to depress; attempts at reduction as well as researches for the hernial ring remained fruitless, and our students concluded it was an intestinal hernia. Puncture with a sterilized trocar gave escape to almost pure blood, and established the diagnosis.

(4) *Cyst.*—The large serous collections that are observed on the walls of the abdomen, due most commonly to the cystic formation of big hæmatomas, have more than one character of some ventral hernias, and princi-



FIG. 6.—HÆMATOMA ON THE FLANK.

pally of chronic intestinal hernias. Like these latter, they are soft, depressible, uniformly fluctuating, and without inflammatory manifestations. But, on the other side, they do not enlarge after meals, they are accompanied by dropping of the hollow of the flank, they are not reducible by taxis, and not the slightest mark of abdominal perforation can be detected ; besides these, auscultation fails to reveal any peculiar noise and exploring puncture gives escape to an abundant quantity of serous fluid.



FIG. 7 — ABDOMINAL CYST.

The elements of the differential diagnosis are not, however, so clearly marked. Some years ago I reported the clinical story of a cow affected with an enormous abdominal cyst (Fig. 7), in which they were most all missing. This animal presented a large swelling on the left infero-lateral side of the abdomen. It had made its appearance several days after the last parturition, and had regularly enlarged, spreading laterally, and finally running up towards the left flank. Little by little it had reached very large dimensions, spreading forward as far as the hypochondria and sternum, behind to the stifle and even along the median line as far as the perineum. At the same time the digestive functions became poor, diarrhœa had set in, and the animal lost considerable flesh.

This lesion presented well all the characters common to

cysts and chronic intestinal hernias ; softness, elasticity, fluctuation all over and uniform, absence of inflammatory symptoms, but the specific symptoms of cyst were almost all missing. To the touch and palpation the tumor seemed partially filled with puffy, thick matter, which could be supposed as being caused by accumulations of semi-solid fæcal matter in the intestinal circumvolutions ; it was simply due to partitions in the cyst and to the presence in these cavities of the cyst of numerous clots of fibrin. The diarrhœa, which had lasted a long time, had promoted a marked dropping of the right flank. The cyst, bound internally by the wall of the abdomen, pushed it back into the abdominal cavity and in such a manner that after each meal the digestive viscera, being full, pressed upon the abdominal wall, pushed it outwards, and, with the cyst, the tumor then seemed to increase in size after meals. Finally, even the mode of development of the tumor seemed to plead in favor of a diagnosis of hernia, as it had appeared almost immediately after parturition to gradually acquire proportions, which surpassed very much the ordinary dimensions of serous collections.

It is true that the attempts made to reduce it had failed, and that, with rectal exploration, the hernial opening could not be found ; yet this had no great importance, because the great size of the tumor made exploration difficult and even prevented the hand from feeling the abdominal wall. Under these conditions, exploring puncture was the indication ; made, it allowed the escape of five or six litres of citrine serous fluid, and decided the true nature of the tumor—an abdominal cyst.

One must not, however, believe that this last sign may be sufficient, by itself, and in every case, to establish the diagnosis of hernia. Indeed, I had often met with ventral hernias where the internal face of the hernial sac had degenerated into a secreting cystic membrane and where the intestinal circumvolutions were floating in a large quantity of serous liquid. In such case a hernia could be taken for a cyst, as the following case will prove :

The cow represented in Fig. 1 was suffering with a very large swelling of the lower portion of the left flank. It was intended to use her for the clinical examination of students. A few of them having heard of it, went to the owner's barn to examine her at ease. At first they thought it was an intestinal hernia, but hesitated a little on account of the situation of the lesion on the left flank, and also in having failed to reduce it. They then tried to insure their diagnosis by an exploring puncture.

As a rather large quantity of serous fluid escaped, they changed their first opinion, and soon the news spread among the students that the cow which was to be presented at the clinical examination was suffering with an abdominal cyst. It was an error, as the animal was affected with left intestinal hernia, complicated with a collection of several litres of serosity in the hernial sac.

A last example of error between a cyst and a hernia is the following: A veterinarian sent us to be operated a cow suffering, according to his diagnosis, with an *old* and *curable intestinal hernia*. Indeed, the animal had on the right flank a tumor extending from the fold of the stifle upwards. It was elongated, irregular, a little contracted in its middle, hard above, soft, fluctuating, and filled with liquid in the lower part. This lesion was never tense nor elastic; it was irreducible, and the most careful external and internal exploration failed to detect any opening in the abdominal walls. No borborygms were heard at auscultation. Under such conditions, I found that my colleague had made a mistake. Nevertheless, I decided to make an exploring puncture with a fine aseptic trocar. A serous, rosy liquid escaped.

The trouble was a biloculated cyst, the tumor being slightly contracted in its middle and having different characters above and below the contractions. The extirpation of the cyst was done immediately, followed by quick and complete recovery.

(To be continued in the May number.)

DISPENSARY HINTS.

BY PROF. GEORGE JUDISH, AMES, IOWA.

Presented to the Annual Meeting of the Iowa Veterinary Association at Ames,
January, 1906.

After five years of impatient waiting the Eighth Decennial Revision of the U. S. P. finally made its appearance in July and became the official standard September 1st, 1905. Whilst the volume made its appearance two years later than usual, yet we can well excuse the delay on account of the excellence of the work. Many drugs and preparations heretofore unofficial were deemed of sufficient importance to merit recognition. In looking over the text we find that the present official pharmacopœia recognizes 958 articles—the 1890 mentioned 994. One hundred and fifty-five articles were dismissed by the committee of revision and 121 added. The titles of a number of official substances were altered. Synonyms are rarely given and it is to be hoped that practitioners and pharmacists will cease using them as they lead to no inconsiderable confusion. Under the head of approximate measures we find that the following values should be used :

“ 4 cc = 1 fluid drachm = teaspoonful.

“ 8 cc = 2 fluid drachms = dessertspoonful.

“ 16 cc = 4 fluid drachms = tablespoonful.

“ The standard temperature for the solubility of substances in liquids, for taking specific gravity, and for volumetric operations, is 25° C. or 77° F.” In the former revision it was 15° C. or 59° F. This change was made because it would serve the convenience of the greatest number of pharmacists and laboratory operators. Laboratories and pharmacies will come nearer registering 77° F. the year around than 59° F. In September, 1902, a convention composed of delegates from nearly every civilized country, met at Brussels and was styled The International Conference for the Unification of Medical Formulas. The title explains the object of the conference. This body recommended the uniform strength of 10 per cent. for tinctures

of potent drugs, 1 per cent. for solutions of arsenic and that 1 c.c. of fluid extract represent one gramme of the drug. Our arsenical solutions and fluid extracts were of the strength recommended by this body, but it necessitated changing the strength of a number of the official tinctures. The most striking changes occur in the strength of tincture of aconite and tincture veratrum. Tincture of aconite formerly represented 35 per cent. of the root, veratrum 40 per cent.—they are now 10 per cent. tinctures. The tinctures of cantharides and strophanthus instead of representing 5 per cent. of drug, have been increased to 10 per cent. The tinctures of belladonna, digitalis, gelsemium and hyoscyamus were decreased 5 per cent. so as to conform to the international standard. The general rule is that tinctures of potent drugs contain or represent 10 per cent. of the article, the less potent 20 per cent. It is well to remember that all of the official preparations of opium contain or represent 10 per cent. of powdered opium, except the fluid extract and camphorated tincture. The latter contains $\frac{1}{10}$ of 1 per cent. Oleate of mercury is 5 per cent. stronger than formerly, containing at present 25 per cent. of yellow mercuric oxide. Syrup iodide of iron contains but 5 per cent. of ferrous iodide, formerly 10 per cent. This change was necessary in order to comply with the recommendations of the International Conference. Unguentum acidi carbolici is now official as unguentum phenolis, and contains about 3 per cent. of phenol instead of 5 per cent. One part of pancreatine U. S. P. 1900 must digest at least 25 parts of starch, whilst the standard was not fixed by the former pharmacopœia. Saccharated pepsin was very wisely dismissed by the Committee of Revision. Pepsin is employed by the veterinarian in treating gastric disturbances of dogs and the younger domesticated animals. A great variety of wines, elixirs, essences and solutions of this ferment have been placed on the market, each manufacturer claiming his article to be especially meritorious. In this connection let us remember that pepsin is only active in an acid solution and is destroyed by an alkali. The presence of 25 per cent. or more of alcohol renders it worthless and when

heated in acidulated solution to 212° F. it loses its powers. Pancreatine and pepsin in solution are incompatible. If the solution is alkaline, the pancreatine destroys the pepsin, if acid, the pepsin destroys the pancreatine. Pepsin is usually and very properly prescribed in an acid solution. Yet we should not forget that its proteolytic power is rapidly destroyed by the presence of more than $\frac{5}{10}$ of 1 per cent. of hydrochloric acid. It is incompatible with alcohol, alkalies, chloroform, ether, the salts of many metals, tannic and gallic acid. It is advisable to employ only the scale pepsin, avoiding the proprietary preparations so highly exploited by polished salesmen. Many, in fact most of the proprietaries may sacrifice efficiency for palatability and pharmaceutic elegance. The titles of the more important articles that were changed are as follows :

Acidum arsenosum	is now official as	arsenii trioxidum
Acidum carbolicum	“ “ “ “	phenol
Acidum chromicum	“ “ “ “	chromii trioxidum
Aloe barbadensis	“ “ “ “	aloe
Aloe socotrina	“ “ “ “	aloe
All hydrochlorates	“ “ “ “	hydrochlorides
Chloral	“ “ “ “	chloratum hydratum
Ext. digitalis fl.	“ “ “ “	fluid extractum dig.
Resorcium	“ “ “ “	resorcinol
Salol	“ “ “ “	phenylis salicylas
Sodii hyosulphis	“ “ “ “	sodii thiosulphas
Sodii sulphocarbolas	“ “ “ “	sodii phenolsulphonas
Tinctura veratri viridis	“ “ “ “	tinctura veratri
Zinci sulphocarbolas	“ “ “ “	zinci phenolsulphonas

A proprietary preparation, commercially known as Antiphlogistine, has been favorably received by both human and veterinary practitioners. A similar but more excellent preparation is now official under the title of cataplasma kaolini. It is prepared by heating 577 grammes of finely powdered kaolin in a suitable vessel for one hour at a temperature of 212° F. A water bath should be employed as higher temperatures may cause darkening of this material. After having heated the kaolin for

the prescribed time, mix it intimately with 45 grammes of boric acid and then incorporate the mixture with 375 grammes of glycerine. Then add $\frac{1}{2}$ gramme of thymol, previously dissolved in a mixture of 2 grammes of methyl salicylate and $\frac{1}{2}$ gramme of oil of peppermint. Mix thoroughly and keep in airtight containers. This product may be prepared with comparative ease and at considerable profit. Acetous fluid extracts are official for the first time. Those official are lobelia, sanquinaria and squills. Fluid extracts prepared with a menstruum of acetic acid are just as reliable and as permanent as those made with alcohol. Prejudice in favor of alcohol is the only thing that stands in the way of their general use. They should appeal strongly to the veterinarian as cost is greatly in their favor and nothing is lost in the way of permanence or therapeutic value. Acetic acid fluid extracts, however, should never be prescribed with the carbonates as effervescence will ensue. Should the prescriber desire to combine solution of arsenic with these fluid extracts the solution of arsenious acid should be used instead of solution of potassium arsenite. The latter will cause effervescence for reasons already stated.

Compound solution of cresol, official as liquor cresolis compositus, was made official to displace the proprietary preparation known as Pearson's creolin. It may be prepared by dissolving 80 grammes of potassium hydroxide in 50 grammes of water in a tared dish, then adding 350 grammes of linseed oil and mixing thoroughly. To this mixture add 500 grammes of cresol and stir until a clear solution is produced. Finally add sufficient water to make the final product weight 1,000 grammes. Ointments are frequently employed by veterinarians and are often prepared in a haphazard manner. Well do I remember of seeing a veterinarian mix his ointments on a wooden box that served the triple purpose of seat, shoe shining stand and ointment slab. Such indifference cannot be too strongly condemned. On account of the liability of many ointments to become rancid or decompose, they should be prepared only in such quantities as may be used within a reasonable time. Never re-

use an ointment pot or jar without first thoroughly cleaning it. Lard, a mixture of lard and wax, petrolatum and wool fat or lanoline are the bases generally used in their preparation. The best lard for pharmaceutic purposes is what is commercially known as leaf lard. This should be purified by washing and should be free from salt. The greatest disadvantage of this base is its proneness to become rancid. Heat and moisture favor the development of rancidity. To overcome this tendency the U. S. P. directs that it be heated with benzoin. But if the lard is incorporated with beeswax or resin the benzoinating process becomes unnecessary; these materials acting as preservatives, also rendering the lard more firm. This is very desirable, especially in the summer time. Many farmers treat the medicines intended for their live stock with indifference. After applying an ointment it is frequently placed on the window sill, to remain there, exposed to the sun, until it is again time to use it. Sometimes the box is deposited, lid down, and when again desired the ointment has melted and is spread on the boards. Lard, however, possesses the property of absorbing about 15 per cent. of water or aqueous liquids and is itself readily absorbed by the skin. Ointments prepared with this base, like all salves, should be kept in a cool, dry place, heat and moisture favoring decomposition. Petrolatum is the most unchangeable of ointment bases. Petrolatum of good quality should always be selected; the cheaper varieties are likely to contain some acid and are irritating. It is not absorbed as readily as lard and is well adapted for ointments where a slow, continuous action is desired. Some difficulty is experienced in incorporating fluids with this base. This may be overcome by adding yellow wax or mixing wool fat with it. Wool fat (*adeps lanæ*) is the purified fat of the wool of sheep. It should not contain more than 30 per cent. of water and is miscible with twice its weight of that liquid. The addition of not less than 25 per cent. of petrolatum produces a less sticky, stringy base and is manipulated with greater ease. Great caution should be exercised in the preparation of ointments intended for the eyes. Ointment

of yellow mercuric oxide is often prescribed, and as usually prepared is very gritty, thus acting as an irritant until the secretions break up the particles. This may be overcome and a perfectly smooth ointment prepared by first triturating the oxide with a small quantity of distilled water.

Where solids are to be mixed with an ointment base the better procedure is to reduce the substance to a very fine powder and mix it with a portion of the base to a uniform mixture, then adding the balance. This method insures a smooth ointment, the solid being uniformly distributed throughout the mass. When preparing an ointment of corrosive chloride of mercury I would advise dissolving it in alcohol by triturating in a mortar, then incorporating the solution with the selected base. *Ointments of solid extract.*—Use of mortar better than ointment slab. When prescribing or dispensing eye waters nothing but distilled water should be used. Always rinse the container with distilled water to remove any dust that may have found its way into the bottle. Eye waters should be perfectly free from any substance that might act mechanically. Therefore, collyria should always be filtered.

If the prescriber has ordered a salt to be dissolved in water and the salt is in excess, make a saturated solution and throw away the balance. Greater care should be exercised in the preparation of hypodermic solutions. Use sterile water and prepare them as wanted for use. Aqueous solutions, especially of alkaloidal salts, decompose rapidly and should not enter into the list of stock solutions. Never prescribe or dispense alkaloidal salts with alkalies and unless the mixture contains not less than 15 per cent. of alcohol and then the amount of alkaloid must be small. Alkalies precipitate alkaloidal salts as alkaloids and these are insoluble in water, but they are soluble in alcohol or hydroalcoholic liquids. Chloral hydrate in the presence of alcohol is decomposed, chloral alcoholate, a very irritating substance being formed. Chloral should always be dispensed in aqueous solutions. One of the best vehicles for the administration of this substance is acacia, in the form of syrup or mucilage.

Alcoholic liquids should never be combined with strong or saturated solutions of salts, as the liquids will not mix. We frequently meet with this incompatibility in diuretic mixtures. The physician will combine saturated solutions of potassium citrate or acetate with spirit of nitrous ether. When it is desirable to combine a tincture of a resin or one insoluble in water, the water should be quite cold and the tincture added to the water in a fine stream; never add the water to the tincture. By adding the tincture to the water, the precipitation takes place in minute particles and is readily reincorporated by shaking. The medical profession, and by this I mean all of the profession, has always denounced patent medicines in no uncertain terms. Medical men, it seems, have fallen into a common error with the laity by calling proprietary remedies patents and considering real patent medicines as perfectly legitimate.

A patent medicine is one for the manufacture of which a patent has been granted. Before granting the patent right the person or corporation seeking this privilege must give a very minute description of all the materials entering into the remedy, and the exact technique of its manufacture. Thus you see, after seventeen years, any one possessing the necessary ability and inclination, may prepare this same product. Not only may they make the product, but the public also falls heir to the trade name. Proprietary remedies are protected, as a rule, by our copyright laws. The composition of this class of remedies is known to the manufacturer only, and his right to both name and formula is perpetual. As a rule the proprietary preparations, used by practitioners of medicine, are sold at ridiculously high prices in order that the promoters may pay for the necessary advertising, and enrich themselves in a few short years.

We frequently find that these remedies were discovered by third rate doctors or bankrupt druggists. By using them the doctor gradually loses sight of his therapeutics and finally finds himself hopelessly entangled in the meshes of proprietaryism. The blame for the growing tendency to self medication may, in part, be traced to the practitioner's habit of employing ready

prepared, convenient, pleasing to the eye, proprietaries, or hoping to add dignity to the title ethpharmaceutical preparations. Compressed tablets or tablet triturates of tinctures, or fluid extracts, or of volatile drugs, are a delusion and should never be used. In conclusion, I will say that every veterinarian should do his best to write prescriptions correctly. The standing of a community or a profession depends upon the ability and character of its units. The practitioner's prescription is an index to his ability, at least such is the opinion of the laity. Having the best interests of your profession at heart, I urge you to write prescriptions carefully, correctly and neatly.

The use of paper bags, scraps of wrapping paper, etc., instead of prescription blanks should not be tolerated. It indicates carelessness and indifference and on the prescription file is a constant ad for the writer's slovenly methods. After many years of experience as a pharmacist, I can truthfully say that some of the worst and some of the best prescriptions that I have had the pleasure of filling were written by veterinary practitioners.

"Do you think the automobile will displace the horse?" asked the young woman. "It will," answered the farmer, as he gazed down the road, "if it hits him."

IN the grand floral parade of the Midwinter Fiesta in Honolulu, Hawaii, on Feb. 23, Master Marcus Monsarrat won first prize as a juvenile cowboy. The young equestrian is a son of Veterinarian W. T. Monsarrat, and will accompany his father to the meeting of the A.V.M.A., at New Haven, in August.

A STORY of affection for an animal is behind the following advertisement, which appeared in nearly all the New York dailies for a week in February last, while the advertiser, who had come on from Iowa, searched through many of the large stables of Gotham in quest of the subject of the advertisement: "FINE SORREL MARE SOLD IN IOWA; weight about 1,200; coming 5 years old; white face, left hind leg white nearly to knee, with slight wire scratch on same leg; I raised her and want to get her back; reasonable reward for information for right animal. MARE, Eagle office." The advertiser stated that his superintendent sold her during his absence to a New York dealer, and he has grieved over her loss ever since.

THE IMPERIAL GERMAN MEAT INSPECTION LAW: ITS APPLICATION AND EFFECTS.

THE GERMAN FOOD ANIMALS AND MEAT INSPECTION POLICY
COMPARED WITH THAT OF THE UNITED STATES.

BY D. ARTHUR HUGHES, PH. D., D.V.M., CORNELL UNIVERSITY.

The American system of inspection of food animals and meats, and the work of the Bureau of Animal Industry generally, have excited the admiration of such notables as Sir John McFadyean, the Principal of the Royal College of Veterinary Surgeons of London, and Professor Robert Ostertag of Berlin, the authority on inspection of animals and meats and editor of the *Zeitschrift für Fleisch und Milch-hygiene*—the most remarkable magazine of its kind in Europe. Sir John McFadyean is a conspicuous representative of the British people who are our largest purchasers of fresh and prepared meats; while Professor Dr. Robert Ostertag is a no less conspicuous representative of a country which has made the animals and meat trade with it difficult. The contrast between the attitudes of the two countries to the trade in this respect, is as striking as the contrast between the effects the policy of the German inspection is said to have had upon Germany, and the effects of the American system of inspection upon American interstate and foreign commerce. What then could be more enlightening to the American veterinarian than to mark the results of the apparant unwisdom in the one; and wisdom in the other?

I. THE IMPERIAL GERMAN LAW AND ITS APPLICATION.

In order to clear the way for a study of the effects of the law in Germany and a comparison of the German policy with the American policy, I shall speak of the provisions of the German law itself. The provisions that may concern us refer: 1, To the veterinarians to be chosen for the inspection; 2, the inspection districts; 3, the coöperation of revenue officers, inspectors and police for carrying out the law; 4, to what part of the trade the law is applied; 5, the main provisions referring to the

domestic trade; 6, the main provisions referring to the import trade; 7, the taxes.

1. The veterinarians to be chosen for the inspection.

There are two references in the law to the choice of inspectors. "As inspectors are to be appointed officially recognized veterinarians or other persons who have demonstrated a sufficient knowledge."*

"The Bundesrath is authorized to issue regulations determining whether persons possess sufficient knowledge to act as inspectors."†

Of a truth Germany and France are the leaders in veterinary education, in number and equipment of veterinary schools and in the magnificence with which they are supported. Twenty-two years ago the voice of Dr. Law protested that while in America there was not, at that time, a single veterinary college supported by the State or national governments, there were then in Europe no less than thirty-three State veterinary colleges. Even after the lapse of twenty-two years we can only count three or four well-organized State veterinary colleges, while the number in Europe has further increased and the intelligence they have shown in extending their influence and making their impress in the scientific work of the respective governments for the public health, for care of artillery and cavalry horses, and the treatment of flocks and herds, has been marvellous. Twenty-two years ago, according to Dr. Law's report on Education in Veterinary Medicine in Europe,‡ the learned men from these numerous State veterinary colleges, at the International Veterinary Congress of 1883, were seriously discussing the lengthening of the professional veterinary course to five solid years, that is including the summers—indeed in some of these colleges the course was already five years, and in many four. The congress voted "for admission to veterinary

* Artic. 5. § 3. The Imperial German Meat Inspection Law, June 3, 1900. Gesetz, betreffend die Schlachtvieh und Fleischbeschau, Vom. 3, June, 1900.

† Artic. 22, § 1.

‡ Annual report B. A. I. 1884 Pp 341-350.

studies one must be bachelor *ès lettres* or *ès sciences*, that is to say, he must have finished his studies in the secondary education." In other words, as early as 1884 the requirement for *entrance* to these colleges was equal to our bachelor's degree in arts; while the professional training continued onward four and five years beyond that.

So to-day the German and French veterinarians, beyond cavil, are among the best representatives of veterinary learning in the world. The men chosen to take charge of food animals and meats for the German government in the capacity of "inspector or deputy inspector" are all men fitted for their work in one of the veterinary colleges supported by the State. They always have had a stiff preliminary training and a professional training under men who devoted all their time to teaching, research or only such professional practice as appertained to the hospital work of the college. The inspectors are so thoroughly trained that they are proficient in all branches of the governmental inspection — chemical examination of preserved meats to test for unlawful preservatives, microscopic inspection for communicable parasitic diseases, ante-mortem inspection and post-mortem inspection as rigorously conducted under the German law. As is characteristic of German scholarship, the training is almost fearfully minute and detailed. We have nothing in our language to compare with Ostertag's work on meat inspection which is the standard throughout Germany; nor would a magazine like the *Zeitschrift für Fleisch und Milchhygiene*, which flourishes in Germany, perhaps be able at present to exist here. It is true, much of the inspection in Germany is done by "stock inspectors," which correspondent to "stock examiners" in the American service, whose duty is to detect and set aside unwholesome meats, without necessarily knowing to what the unwholesomeness is due, and thus save time for the regular inspector. But this saving of the time and expense for additional inspectors can hardly be avoided in any country; and no harm can come as long as all matters are referred to the veterinarian in charge.

2. *The inspection districts.*

“In order to accomplish the inspections,” says the law, “inspection districts shall be established; for each of such districts shall be appointed at least one inspector and one deputy inspector.”* The federated governmental authorities are to form the districts and appoint the inspectors.

It must be remembered that no quarter is exercised in Germany in the matter of supervision of the home and foreign meat trade. The whole of the home output as well as the foreign importations are alike subject to inspection. Germany, it must also not be forgotten, has not that power of the central authorities over the commerce between the States as is true of the federal government in America. Germany is a confederation and many of the States in the confederation have State rights peculiar to them and undisputed by Prussia.† Hence the appointive power of the individual States. The inspection of home products is therefore largely in the hands of the State authorities. However, the foreign importations are inspected under the supervision of the customs office. For this purpose, Germany, comparatively small a country as it is, is divided by law into no less than two hundred and fifty (250) foreign meat inspection offices scattered everywhere along the customs lines of her borders, and the seaboard, and within the country. There is therefore no possibility of animals or meats escaping the customs officers or the rigorous inspection.

3. *The coöperation of revenue officers, meat inspectors and police for carrying out the law.*

For the carrying out of the law the revenue officers, meat inspectors and police, work hand in hand. Any one who knows the number of police there are, the power they have in a martial nation like Germany, the espionage they exercise in all details assigned to them as part of their prerogative and the strictness with which they carry out the letter of the law, will understand

* Art. 5. § 1, 2.

† I refer here to the Zollverein or agreement between these States and Prussia, at the time of the formation of the confederation.

that its provisions are certainly carried out. When animals are turned aside as unsatisfactory to the inspectors, or when meats (carcasses or their parts, or prepared meats) are not up to the standard, the police immediately have them in charge, which is a guarantee in Germany that they will be satisfactorily disposed of. In the import trade animals and meats are first and last in charge of the revenue officers stationed along all customs lines and guarding entrance. The inspection stations are either at or near the customs offices; the inspection officers working with the revenue officers and each accountable to the other. Should the imported animals or meats be satisfactory, the revenue officers have them under seal for collectible duties; if not, they must be carried out of Germany by the agent of the importer under customs escort.

4. *To what part of the trade the law is applied.*

German meat and animals inspection, without any exception whatsoever, is extended to all animals and meats intended for food throughout every part of Germany and to all animals, fresh carcasses, their parts or prepared meats, desired by outsiders to be imported. The words of the law referring to the domestic trade are: "Neat cattle, swine, sheep, goats, horses, dogs, the meat of which is intended to be used as food for man, shall be subjected to an official inspection both before and after slaughter. By decision of the Federal Council (Bundesrath) the obligatory inspection may be extended to other food animals."* With regard to the import trade the words of the law refer specifically to both prepared and fresh meats. The prohibition of most preserved meats is definite and cannot be gotten around. "The importation past the customs line of meat in hermetically sealed cans, or in other similar vessels, of sausages and other mixtures made from chopped meats is prohibited."† The supervision of fresh carcasses or parts is strict. "Fresh meat may be imported past the customs line only in entire carcasses, but the carcasses of neat cattle (with the exception of calves) and of

* The Imperial Law, Art. 1, § 1.

† Art. 12, § 1.

swine may be cut into halves. The pleura and peritoneum, lungs, heart, kidneys, and, in case of cows, the udder also, must be attached to the carcass in natural connection.”*

Prepared meats, for the most part, therefore, are absolutely prohibited from entrance. Though frozen meat is included under fresh meat by a later proclamation, the difficulty of importation of fresh meat from across the seas in entire carcasses, with the parts named attached, can hardly be overcome. The Bundesrath in a further proclamation requires the neck, trachea, larynx and head to be attached in natural position. The blood of each animal is considered as a “part” under later regulations. The blood of each animal, without being salted, must accompany the carcass. All in all the restrictions are such that importation of fresh meats from beyond the seas is made almost impossible.†

5. *The main provisions referring to the domestic trade.*

The provisions for inspection of animals and meats in the domestic trade are as elaborate as German scientific erudition can make them; each regulation is definitely detailed; and each detail is fortified by penalties which will require its being carried out with certitude. The main points refer to ante-mortem inspection; the ordinary post-mortem inspection; the special post-mortem inspection of horses, asses, hinnies, mules and dogs; the chemical inspection or prohibitions; the trichinæ examinations.

An ante-mortem inspection must be made of all animals except those which may die from disease or injury before the post-mortem examination occurs; but the latter in no case can be put into traffic as fresh meat. If an animal is not killed within twenty-four hours after ante-mortem it must be reinspected before death. The post-mortem rules are more stringent. If an animal is found only partly fit for food it must be sterilized, not sold as fresh meat, and can only be sold at all by persons with a special license and in rooms with placards stating that

* Art. 12, §§ 1, 2.

† Proclamation of the Bundesrath, June 24, 1903.

this class of meat is there for sale. If an animal or carcass is condemned outright it passes into the hands of the police for destruction, usually by burning. Though we cannot here go into the minutæ of the law, we may say that every detail of the law on these two inspections is guarded by major and minor penalties. There is a penalty of 1,500 marks (about 350 dollars) for a person who knowingly acts in contravention of the law, traffics in forbidden meat or fraudulently affixes or alters the government marks.* While there is a minor penalty of 150 marks (about 35 dollars) for numerous small offences.

Solipeds and canines require a special inspection. After inspection they must be marked in German as such, sold under special license, the dealer must sell the flesh in a separate room, and place signs on the meat designating whether it is horse, mule or dog. For violations of these rules there are particularly heavy penalties.† In addition there are also special articles in the law touching the industrial preparation of any meats for traffic. "No materials or kinds of processes shall be used which are capable of imparting to the wares a condition injurious to health." The Bundesrath is to determine how far this rule is "applicable to special materials and kinds of processes which are apt to conceal an unwholesome or inferior quality of the wares."‡ The result of which has been that an imposing chemical examination of preserved meats has been set up in Germany. Not only this, the imperial German law has special provisions for inspection of pork for trichinæ, but this inspection is left to the will of the separate States.§

6. *The main provisions referring to the import trade.*

The provisions referring to the entrance of meats or carcasses into Germany, the prohibitions and restrictions, are elaborately detailed in two proclamations of the imperial senate and published by the chancellor as special supplements to the regular documents of the Imperial Health Office. They are called

* Art. 1, 2, 6, 7, 8, 10, 11, 26.

† Art. 18, § 1 to 5.

‡ Art. 21, § 1, 3.

§ Art. 24, § 1.

|| Veröffentlichungen des Kaiserlichen Gesundheitsamt.

the Meat Inspection Customs Ordinance of February 3, 1903, and "concerning the marking of inspected foreign meat" of February 10, 1903.

Of those things which are prohibited from importation into Germany we have already spoken of hermetically sealed meats and carcasses which are not entire and with the organs like the heart, lungs, etc., attached as required by law, so we need to note but two other provisions. First meats preserved with boric acid, formaldehyde, alkali and alkaline earth hydroxides and carbonates, sulphurous acid and its salts, hyposulphites, hydrofluoric acid and its salts, salicylic acid and its compounds, chlorates, are all prohibited from importation. Second, with the exception of hams, bacons and casings (cleaned and salted intestines), all pickled or salted meats of less than 8.8 lbs. weight are forbidden from entrance. As frozen or fresh meats not in entire carcasses, hermetically sealed meats, preserved meats and pickled meats are forbidden, this is tantamount to a blockade against foreign trade. *

For all animals and meats brought to the German borders there have been laid down a mass of specific administrative provisions binding the customs officers, meat inspectors and police, in a code of regulations which cover the surveillance of animals or animal products from the moment they approach the frontier to the time they are finally allowed to pass into the German traffic. The goods are received by the customs house, then turned over to the inspection office under customs seal or espionage. The inspector is put under oath for customs returns; while customs officers and inspectors keep check on one another's work in tedious detail. Even the complete minutæ of the book-keeping are provided for in the ordinance.

At the same time no mistake can be made, even by the most erring intellect, as to the customs fees, inspection fees, the disposition of condemned or refused meats by the police or customs officers. †

* Meat Inspection Customs Ordinance, Art. I, § I to 6.

† Meat Inspection Customs Ordinance. Art. 2 to 28.

7. *The taxes or fees.*

The imperial German meat inspection law, and the proclamations based upon it, have specific regulations on fees to be charged for inspections and other costs. These are chargeable both on all animals and meats produced in Germany, as well as all imported meats and meat products.

In the domestic trade the fees take the form of meat inspection expense charges, license fees required from vendors of second class meats sterilized by the inspectors, from dealers in soliped and canine meats, from dealers in meats which have been regularly passed. The chemical and trichinæ inspections are all paid for by special fees. Besides, the police department is not backward in securing major and minor penalty fees from breakers of the meat inspection law in the course of the inspection, or when the inspected meats pass into the trade.*

But when we consider the charges for inspection of imported meats and meat products, this part of the subject becomes more interesting to us. These were announced in a proclamation of the Imperial Senate March 4, 1903, and made effective at once.†

The fees include the customs charges, the meat inspection charges, and the compensations for faking and sending samples, reports, entering on inspection books, making out certificates, marking the meat, travel of experts.

The ordinary fees cover: first, fresh meat; second, dressed meat. For fresh meat: cattle per head, 59.5 cents; calf, per head, 17.8 cents; hog, per head, 17.8 cents; sheep or goat, per head, 14.2 cents; soliped, per head, 71.4 cents. For dressed meat: intestines per 2.2 lbs., 24 cents; bacon per 2.2 lbs., 47 cents; other dressed meat per 2.2 lbs., 9.5 cents. The fees at least, for intestines, must be 9.5 cents; for other dressed meat at least 11.9 cents. In case of appeal from a test, when the whole

* The meat inspection law, Art. 26-28. Art. 24-18, 21.

† The ordinance concerning fees for the inspection of meats imported past the customs line, Hamburg, March 4, 1903.

consignment must be examined, or in dissimilar consignments, the dressed beef fees are doubled. For the preparation of whole carcasses or fresh meats for inspection—cutting, hanging, laying out parts—an additional charge of 20 per cent. of the named fees is provided.

The special fees cover trichinæ and chemical inspection. For trichinæ inspection: entire hog, 23.8 cents. The common fee for detection of forbidden preservatives is 59.5 cents a consignment.* To show the rigor of the law we may say. First, 1,000 tubs of lard of 25 lbs. each would require for taking samples, examination for preservatives, examination for purity and sealing, about \$17.85. Second, 100 pieces of pork shoulders, each 6.6 lbs., would cost for general inspection, examination for preservatives and trichinæ, \$15.11. Third, 100 pork bellies, weighing net 992 lbs., would take for general inspection, chemical and trichinæ inspection, \$16.91.†

High as these inspection charges may be thought to be by some, to them must be added the German tariff duties. Under the new German tariff law of 1902, which went into effect March 1, 1906, the following are the rates for cattle, horses and hogs. If there is not settled a reduction by special treaty the rates are: cattle, \$4.28 a head; horses, \$21.42-85.68 a head; hogs, \$4.28 a head. If agreement by treaty is obtained: cattle, \$1.90 a head; horses \$7.14-28.56 a head; swine, \$2.14 a head.‡ According to associated press despatches of February 23, 1906, America has been given the reduced tariff rates until June 30, 1907.

II. THE ALLEGED EFFECTS OF THE IMPERIAL MEAT INSPECTION LAW IN GERMANY.

After several years of discussion and agitation the law passed, and received the imperial signature June 3, 1900. The

* Consular Reports No. 1424

Aug. 21, 1902. Pp. 4-5.

Meat Inspection fees ordinance. March 4,

1903. Art. 1 to 6.

† Consular Reports No. 1435. September 4, 1902. P. 4.

‡ Consular Reports No. 2252. May 8, 1905. P. 9.

part prohibiting meat in hermetically sealed cans went into effect October 1, 1902; the code of regulations became effective April 1, 1903. The whole law, including the meat inspections customs ordinance, and the ordinance concerning meat inspections fees, has, therefore, been operative about three years.*

During the last few years, under the new law, certain economic changes are alleged to have taken place in Germany. First, it is said, there has been a decline of the import trade, both from beyond the frontiers, and from beyond the seas; second, that prices of food stuffs have risen; third, that there has been some dissatisfaction with the law; fourth, that the poor have resorted to cheaper material for food.

1. Decline of the import trade.

Consul General Mason, of Berlin,† has supplied us with information on the decline of the import trade in fresh and cured meats into Germany since 1900. For the first three months of 1902 the receipts of fresh meats were 5,776 tons; January to March, 1903, 3,250 tons. The decline was noticed, particularly in fresh and salted pork and upon preserved meats: fresh pork and hams, tons, 19,120 to tons 4,905; slightly salted pork, tons 6,865 to tons 2,338; hams, cured, tons 2,522 to tons 975; bacon, cured, tons, 9,839 to tons 2,469; sausages, tons 105 to tons 82. The first figure, in each case, is the import for 1902; the second figure, for 1903. When it is remembered that the United States largely controlled this trade, we can see the effect on American commerce.

The prevailing opinion seems to be that, in order to increase the importation, the frontiers should be opened to a free passage of animals and fresh meats. A national mass meeting of 2,000 representative butchers and meat venders was held in Berlin in the summer of 1905. The gist of its declaration was: "German agriculture has repeatedly demonstrated that, in spite of

* Consular Reports, No. 1303, March 31, 1902. P. 1.

No. 1410, August 5, 1902. P. 1.

No. 1394, July 17, 1902. P. 1.

† Daily Consular Reports, No. 2246, May 1, 1905. Pp. 9-10.

contrary assertions, it is not capable of supplying Germany sufficiently with animals for butchering. 'The rules and regulations now existing with reference to the importation of such animals, through quarantine measures, have such a paralyzing effect that these rules and regulations are almost equivalent to a prohibition of imports.' The resolutions close with a most urgent appeal for opening of the frontier to the free importation of cattle and swine, with only such veterinary regulations as will give real protection to German flocks and herds from contamination, and preserve the public health.*

2. *Rise of the prices of food stuffs.*

We may see the rapid rise of prices between 1904 and 1905 on each hundredweight (110 lbs.) of the live animal by comparing the following two sets of figures, the first of which represents the price in 1904; the second that of 1905. †

Animal.	1904.	1905.
Calves	\$15.47 to \$19.04	\$16.66 to \$21.42
Cattle	14.28 to 15.47	17.85 to 20.23
Hogs.	13.00 to 14.28	15.47 to 16.66
Sheep	14.28 to 15.47	17.85 to 20.47

The retail prices are correspondingly increased. Fresh pork now sells by leading meat dealers in Berlin for 24 cents a lb., beef steaks at 35½ cents a lb., veal for 35 cents a lb., and mutton for 28½ cents a lb. These are prices entirely beyond the reach of working people. The dealers say that the prices are due to the limited supply of animals and to cost to them, due to the meat inspection law. ‡ The International Association of Hotel Owners of Berlin, in a petition to the Government for relief from the meat inspection law, says that geese cost 24

* Daily Consular and Trade Reports, No. 2381, Oct. 9, 1905. P. 3-4.

No. 2318. July 26, 1905. P. 4.

† Daily Cons. and Trade Reports, No. 2388, Oct. 17, 1905. P. 10.

‡ Daily Cons. and Trade Reports, No. 2381, Oct. 9, 1905. P. 2.

cents and chickens 7 cents more than last year (1904)—due to the general rise of prices resulting from scarcity of food products.*

What is true of Berlin is true of the other cities of Germany, prices have been rising rapidly. In Baden the increase in price for the best class of beef is $1\frac{1}{5}$ cents for 2.20 lbs.; for second class beef $1\frac{1}{8}$ cents for 2.20 lbs.; for veal $1\frac{1}{8}$ cents for 2.20 lbs.; for mutton 1 cent for each 2.20 lbs.; for pork $2\frac{1}{3}$ cents each 220 lbs. Trier and Breslau pay 43 cents for 2.20 lbs. of pork; Coblenz and Neuss 45 cents; Hanau 47 cents; and Aachen 50 cents.†

The capital reflects the general condition in Germany, and in Berlin, during the last five years, the prices paid for beef and pork far exceeded the average paid in the surrounding capitals except St. Petersburg.

3. *The alleged dissatisfaction with the law.*

During the last twelve months there has been apparently some dissatisfaction at what is supposed to have been the effect of the law. In the autumn of 1903 the national German association of hotel and restaurant keepers met, and addressed to the imperial chancellor a protest against the law in which they asserted that meats are rapidly becoming more scarce in Germany.‡ The magistracy of Upper Silesia recite to the imperial ministry the conditions in that part of Germany and make a similar appeal. Brunswick demanded the removal of the duty on cattle and hogs. While similar demands it appears have been sent in to the ministry by Munich and Leipzig. In Northern Schleswig twenty-nine communities protested against the scarcity of meat. The public, in mass meeting, or the city councils of Dortmund, Darmstadt, Nürnberg, Stuttgart and Cologne have it is said done the same thing. The import city of Hamburg has followed her sister cities and the capital, Ber-

* Daily Cons. and Trade Reports, No. 2388, Oct. 17, 1905. P. 12.

† Daily Cons. and Trade Reports, No. 2397. Oct. 27, 1905. P. 3.

‡ Daily Consular and Trade Reports, No. 2381, October 9, 1905. P. 2.

lin, charging the scarcity of meat to the meat inspection law.*

4. *The poor obtain cheaper food.*

Since horse meat retails in Berlin at 8 to 10 cents a pound, as compared with beef which retails at present at 35½ cents a pound, the poor have, during the last few years, resorted largely to its use in that city. Consequently, up to 1905, the sales of horse flesh in the city enormously increased. In 1895 the number of horses consumed was 7,267; in 1900 10,815; in 1904 13,000. The last figure represents 3,990,000 lbs. of horse flesh eaten in Berlin in 1904. The proportion of horse flesh used in Breslau in 1904 was greater than in Berlin. In Southern Germany the consumption of horse flesh is still greater with a constant increase.†

Unfortunately even the price of horse flesh is rising rapidly. This being so, and as dog flesh is no longer obtainable, numbers of municipalities it is reported, buy carloads of fish at the seaport towns and sell them at cost to the citizens. This has been done in Solingen, in towns in Westphalia, Posen and Bavaria.‡

III. THE OBJECTIONS TO THE IMPERIAL GERMAN MEAT INSPECTION LAW.

At the heart of the alleged failure of Germany to supply sufficient animal food for the populace at reasonable prices is the fact that Germany is one of the European countries which, for hundreds of years, has been compelled to import, and will in the future be compelled so to do. She is one of the overcrowded nations of Europe which must import foreign flesh foods because of the scarcity of her home supplies. Russia in Europe has only 24,000,000 head of cattle and 35,000,000 sheep for her 90,000,000 people. Neither Germany nor France have as many animals though both have as many people. Germany and France, like Great Britain and Ireland, which have only 11,000-

* Daily Consular and Trade Reports, No. 2388, Oct. 17, 1903. P. 10-11.

No. 2335, Aug. 15, 1905. P. 5.

† Daily Consular Reports No. 2246; May 1, 1905. Pp. 10-11.

‡ Daily Consular Reports, No. 2388, Oct. 17, 1905. P. 12.

000 cattle, 6,000,000 hogs and 34,000,000 sheep for 40,000,000 people, must each import flesh foods.

The United States, Argentina, Australia and Canada are the four countries which have the surplus of animals for the teeming millions of people of the European continent. The two factors of success in the trade are distance and amount of live stock. The United States is nearest to Europe, while she has 60,000,000 head of cattle, 62,000,000 hogs, 46,000,000 sheep for her 83,000,000 people.

Australia is farthest from Europe. Argentine is far distant with 27,000,000 cattle and 110,000,000 sheep for her 6,000,000 people. Yankee celerity should carry us soonest to Europe with our surplus.*

As Germany cannot supply her own demands she must look beyond the frontiers or over the seas for supplies. But the meat obtainable from the surrounding countries is not sufficient in quantity to meet her needs; nor have those countries sufficient quantities to meet their own demands. Germany has therefore in the past been a large importer from the United States. Very large as the trade of America is with Germany it is not nearly as large as the needs of the country indicate; besides, during the last few years, it has been declining. Our imports to Germany of meat, meat products and dairy products, was second only in size to our trade with Great Britain. Witness the difference though between 1,221,900 lbs.—our importation to Germany, and 35,398,244 lbs.—our importation to Great Britain.†

IV. THE GERMAN FOOD ANIMALS AND MEAT INSPECTION POLICY COMPARED WITH THAT OF THE UNITED STATES.

Nothing could be more striking than the contrast between the United States and Germany in the origin, application and effects of their food animals and meat inspection law.

* See Daily Cons. and Trade Reports, No. 2307, Oct. 27, 1905, Pp. 3-4.

† 21st Annual Report B. A. I. 1904. P. 489.

In agricultural productiveness the contrast between the two countries is striking. Germany is forced to import to keep even within reasonable bounds of the demand for meats. The United States production of animals and meats is enormously in excess of American needs. There must be an outlet for this excess in farm production. The American animals and meat inspection was developed for the furtherance of two things: the interstate and foreign trade.

How was this done? In the main, as follows. The endeavor has been, first of all, to prevent disease among animals coming into this country. For this purpose there is an inspection at foreign ports, by inspectors of the Bureau of Animal Industry, of all animals to be sent here; further, there is a quarantine on the American seaboard of animals coming into our country. The endeavor has been, secondly, to prevent diseases among live animals being carried from one part of the country to another, or from this country abroad. This is done by the inspection by the Bureau of Animal Industry, at our seaboard, of all live animals for export; and by the quarantines, within the country, against our animal plagues. Thirdly, the endeavor has been the prevention of disease among dead animals (carcasses or their parts), being hurtful to consumers at home or abroad. This has been done by the meat inspection service of the Bureau of Animal Industry, which has an oversight of all meats which are to pass into the interstate or foreign trade. The animals and meats inspection service of this most important Bureau of the Department of Agriculture, now covers the ante-mortem inspection of animals, and the post-mortem inspection of carcasses at 151 establishments in 51 cities, or the bulk of live animals, carcasses or parts in the interstate or foreign trade. Of cattle, sheep, calves and hogs, there were inspected ante-mortem 64,613,383; of cattle, sheep, calves and hogs there were inspected, post-mortem, 39,500,370, all during the fiscal year closing 1904. Of these 89,175 whole carcasses, and 132,602 parts of carcasses, were condemned and tanked.*

* 21st Annual Report. B. A. I., 1904. P. 12.

We have in mind in this work the forestallment of the difficulty of having our meats or animals challenged as hurtful to man or animals, in order that our domestic and foreign trade should be stimulated to its highest activity. We wished to find a sale for our millions of tons of meats and meat products and our countless number of animals with the government assurance that neither, because of disease, would be hurtful to man or beast. Our success in this matter is borne out in the British trade. At no time have our meats, which passed American inspection, been found to be unwholesome in Great Britain. Our live animals are not challenged; nor our canned goods; nor our frozen (fresh) meats.

The contrast between the German and American food animals and meat inspection laws is brought out strongly when we consider the cost of the inspections to the respective countries. In Germany every step in the inspection is marked by fees, which, heavy enough as they are for the German owners, are heavier to the importer. There are fees for ordinary inspection, for chemical inspection and for trichinæ inspection. In America practically no inspection fees are charged, though recently it has been decided to charge the owners for labels and stamps placed on passed meats or receptacles containing them. For the many millions of stamps and labels used it is estimated that the total cost will be only seventy thousand dollars a year. There is no charge for the quarantine at seaports, for ante-mortem or post-mortem inspection at official stations, for the animals quarantines in the country at large, for trichinæ or chemical work, for the work of stamping or labelling or sealing cars. All of this is paid for by appropriations from Congress and when the money appropriated is divided up it is found to amount to the insignificant sum of a particle of a cent for each inspection.*

The contrast is also great between the dissatisfaction and unpopularity which the German law is alleged to have caused in

* See the official reports of the B. A. I., in which this statement is verified.

Germany and the satisfaction and popularity of the American law in America. The unpopularity of the German law in Germany is apparently based : first, on the fact that it shuts out importation of canned goods and sausages and there is little output of these products in that country ; secondly, it greatly decreases the imports of fresh meats and limits the supply. The satisfaction and popularity of the American law in America is shown : first in the demand for increase of inspection privileges and the extension of the inspection to all abattoirs ; second, in the warm support the work of the Bureau of Animal Industry has always had from the veterinary and agricultural press throughout the land ; third, in the pride shared by the people and its scientific leaders and expressed always in warm praise of the efforts of the Bureau of Animal Industry in behalf of the public health and commercial success.

The American food animals and meat inspection system, as it has been developed during the last fifteen years, that is since 1891, is true to the American idea of how any great system, industrial or governmental, should be developed. Germany platted out a law perfect in every detail, as far as law making goes, and put all parts into operation, in 1903, fire-new from the law maker's miuds, and many parts evidently novel and untried before. On the contrary the American system was built up gradually in keeping with the scientific and commercial needs of the country. There is practical good sense in the development of a system such as that over which the Bureau of Animal Industry is administrator, the various parts evolved as experience with questions of public or animal health warranted or as commercial conditions or needs demanded. The American food animals and meat inspection regulations, developed on authority resting in the fundamental law of 1884, which founded the Bureau of Animal Industry, and that of 1891, which set into operation the meat inspection service, have been a success. The German food animals and meat inspection law of 1900, if we can judge by conditions said to prevail in Germany, has, so far, in some respects, apparently been a failure.

EVERY-DAY EXPERIENCES.

By E. H. SHEPARD, V. S., Cleveland, Ohio.

Read at Meeting of Ohio State Veterinary Medical Association, January, 1906.

I come before you to day with only a few thoughts on the practical side of our every-day work, with a note or two on cases that some of us see only perhaps once in a life-time. There is no one so bright, no one with such a long and extended practice, who cannot meet nearly every week with something new, some condition to him unknown, some phenomenon whose cause and effect differs from any he has yet seen or read of as recorded.

Just stop for a moment and think, that among the millions of people who inhabit this earth, there are no two alike, either in looks, thought or deed; no two the same. And as I look back over my records of cases treated, take the disease pneumonia, for an instance; of all I have treated in an active practice of nearly 18 years, there are no two alike, no two whose pulse, temperature or lung affection, whose strength, appetite, and nervous symptoms, *or any one* condition the same. Take the common misfortune, nail prick; there are never two alike, as to size, depth, location, parts injured, nervous conditions, lameness, length of time of recovery, or death.

Here are two interesting samples which came under my observation: One picked up a small nail on the road, the puncture being near the point of the frog; the horse became so lame it could hardly walk; a horseshoer removed the nail, thinned the surrounding horn, poured in some of his "dope" (a sure cure) and sent the man and his beast on his way, the man congratulating himself that the accident occurred near a shoeing shop and was treated at no expense; but the horse growing lamer at each step, becoming more excited at each rod, could soon go no further, and dropped to the ground in the road. He was rolled onto the grass in the ditch and I was ordered to come and see what was best to do. You can well imagine my surprise when after hearing the above related circumstances,

and reaching my patient, I found him just dying, in what I could only term as "tetanic convulsions"; every muscle seemed tense to its very utmost, the jaws set as in the worst case or tetanus, the limbs stiff and rigid, each muscle feeling like wood, with head and tail elevated and as tense as the rest of the body.

Post-mortem revealed a badly fractured os pedis and all surrounding parts terribly congested.

The second case occurred in a heavy work horse, who gathered in a No. 20 spike; it entered about the centre of the frog, passed upward directly posterior to the navicular bone and flexor perforans tendon to about the lower third of the os suffraginus, where it broke through to the outside, and when I raised the foot both extremities of the spike were exposed. Upon application of a forcep to withdraw it the animal struggled, with the result that it was torn out directly to the rear, leaving a large, gaping, bleeding wound. Treatment was given, this being at about 11 o'clock A. M. The next morning the horse being *not lame*, he was put into the harness and hitched to his usual load of stone, weighing from four to five tons, and never missed a day or a load, the wound healing very rapidly.

Now, while these two cases—one of them especially—did not admit of treatment, the other making its quick recovery, are only odd and interesting, I have mentioned them to illustrate one point in particular, and that is the great difference in the nervous organism of different animals, and, because of that fact, we as practitioners should never neglect to consult the nervous economy of the animal in hand. Many an appearing hopeless case may be turned towards recovery by steadying that balance wheel of the animal economy.

In a lively, hurried practice we are liable to become heedless and careless, and oftentimes as we look back over the treatment given some case which did not turn out to our satisfaction, we think of many common sense things which could have done no harm, and quite probably might have aided to a much better result. There are many things about our every-day work which

are exceedingly easy to some of us, and aggravatingly hard to others. The things which are hard for us to do we do as little as possible.

Just now, for one instance, how many graduated veterinary surgeons I have seen who could not examine a horse's mouth to even their half satisfaction.

Whenever you put a speculum in a horse's mouth, even one of the most approved pattern, he will fight it to a greater or lesser extent, and it is always in the way of the hand and arm, and especially so if instruments are used.

The art of examining the mouth by the eye, even when a strong light is used, is far, *far* from satisfactory. The only way to my mind to thoroughly examine the mouth and its contents is by the hand, with, so to speak, an eye in the end of each finger; and, further, you can only examine thoroughly one side of the mouth with the one hand and the other hand should be just as skillful in the other side of the mouth.

I find trouble in the mouth of different kinds too numerous to mention. Decayed teeth, broken teeth, snags, foreign bodies (as needles, pins, pieces of wire, cobs, roots, pieces of wood, and abscesses, cuts, tears, etc.) are the principal things found. Never yet but twice have I found a mouth that I could not search carefully and thoroughly and be able to state the exact condition of such a mouth. In my practice I have only found two horses that would not allow me to examine and put my hand in their mouths. One of them tried to shake hands with me, and missing my hand tore open my vest from top to bottom. To him I said "you are welcome," and if the mouth must be searched I will lay you down before again attempting it.

The older members here will remember that years ago I brought to this our annual meeting the skull of a mare containing a seventh molar, which had opened a way through the basilar process of the superior maxillary, making an opening into the throat and doing much damage. For years I have been looking for seventh molars in a live horse, and this last fall I found two, one on either side of the lower jaw, and ex-

tending upward, just enough to begin to cause trouble. I operated on them, cutting off the exposed points, and smoothing the stubs down nicely with the float.

There are many ways of examining the mouth with the hand and I differ from the majority, but will demonstrate my way in the clinic if called upon. And there is not one of us who cannot easily learn to do a simple thing in the right way. In the dressing of teeth, which to some of us is almost an every-day occurrence, I do not believe any man can do a first-class job, so to speak, unless he works always with one hand in the mouth. That one hand is his guide; it carries the working parts of his instrument right where the work is needed and tells you instantly when you have done enough and when your work is finished. The other hand going into the mouth on the other side does likewise, thereby resting each hand or arm in turn. And your dressing of each side is done straight in the line of the teeth and there is no awkward cross work to be done, neither do you dress one side more than the other, because both sides are easy and alike to do, and again, not one-half of the veterinary dentists have their files placed in their floats in the, to my mind, proper manner. I do not believe any work upon the teeth should be done with the *push stroke*. It can be done just as well with the *draw stroke*, and with a hundred times less danger of frightening or, what is worse, injuring the animal. Now in this connection, as I am talking of the manipulation of the horse's mouth, I wish to give you an example of a case which came to my office several years ago.

As I was standing in the door of my infirmary talking to a friend one day, I saw a man driving a team towards me, and I remarked to my friend, "Here comes a man with a sick horse." The off one could scarcely walk; its head hung low and its every effort showed exhaustion. As he stopped before me he asked in a gruff voice, "Is the Doctor here?" to which I answered, "Right here." "Well," said he, "there is a sick mare and I have driven her all the way from Kirtland (which was over 20 miles); she has been ailing nearly two weeks. Two

doctors with their papers have seen her, and all the quacks in my country have tried to save her; but she can't eat, and if she isn't cured soon I'll never *git* her home again." My eyes had been busy, and I said, "Does she *try to eat*?" "My, yes!" he answered, "but she can't swallow anything but water and thin gruel."

I unbuckled one cheek piece to the bit and slipped the bit from her mouth, raised the head and slipped one hand back into her mouth—clear back between the upper sixth molars. I found something, and slipping a finger around it gave a quick pull and brought out a crooked gnarled piece of wild cherry root, resembling the letter Y, and that was all; but which, the mare or the man, was more pleased, no one could say. The grass I gave the mare she swallowed before it was half masticated and kept begging for more; the man danced and laughed and pounded me on the shoulder till I began to think he meant something. He told me she had been treated for sore throat and he did not know what all, while the outside of her throat was blistered. So, you can see that the ability to examine the mouth is a help at all times, and the more dexterous and smooth you are the better impression you give, and your success is correspondingly greater.

Now, as I remarked before, new things will continually come to us, and many times they are a decided help in more ways than one. I wish to cite you a case which I treated the past fall, as it has a distinct feature to it which was a surprise to me. I was called one morning to come in haste, and found a fine looking mare sweating, trembling and breathing hard. I inquired into the history of the case, and found she had been coughing a little for some days, but eating well and feeling good, and, as the day was Friday, and the owner wished to make a long drive on Saturday, he had called in a friend to advise him whether it was best and safe to drive her. The friend said he thought so, but he could give her a dose which would make her all right; so the owner told him to go ahead. He told the owner to get him a full pint of lamp oil, which he

poured into a long-neck bottle, and getting up on the manger, threw her halter strap over a beam, pulled up her head and poured it down her, never wasting a drop, as he expressed it. I gave a laugh and said: "Did you give this mare a pint of lamp oil?" "Yes," said he, "and he gave it to her through the nose." "Well," said I, "he has killed your mare; she will die. A part of it, at least, has gone down her wind pipe into her lungs, and you now have a good case of mechanical bronchitis." I took her pulse and temperature. Found the pulse 72, and temperature 104. This at 11 o'clock, A. M. I gave immediately raw linseed oil, and a mild stimulant, and left more to be given. I returned at 2 P. M., and the pulse registered 84; the temperature, to my surprise, was so high that I took it three times to be sure that I made no mistake; each time it stood at $109\frac{2}{3}^{\circ}$; at 5 P. M., the pulse was 106, and the temperature $108\frac{2}{3}^{\circ}$. At 8 P. M. the pulse had dropped to 84, but the temperature still stood at $108\frac{2}{3}^{\circ}$.

The next morning the pulse had dropped still lower and was 72, the temperature $105\frac{2}{3}$ and so on for the next eleven days, her pulse fluctuating; at no time lower than 52, while her temperature varied also, never lower than 103° nor higher than 105° . The bronchial conditions continued with considerable pneumonia, and she wasted and lost flesh, going on steadily towards the inevitable end, death, which occurred on the twelfth day. This was the highest temperature I have ever taken and I quote it simply for that fact, and also to show you how smart some of our Cleveland quacks are.

Cases *will* come to us whose condition and symptoms are such as we have never been taught, read or recorded, or seen before, nor even dreamed of. There may be cases that might be caused or brought about in several different ways, or perhaps no man can give a reasonable cause for. But we get them just the same. Again, we get cases which, search and examine as we may, quizz and cross examine the owner and driver, and rack our throbbing brains as we will, we *cannot* name the trouble and here with these mystifying cases is where each one of us can add

to or take away from our reputations. Each one of us may be good as veterinary surgeons, and each one have his specialty, yet there is some part of our work that each one can do better and with more success than he can do the rest.

I predict that in a few years in all large cities we will have specialists in the different parts of the work. The good work has already begun and specialists in the one branch of lameness are quite common. But that man to make a success must have not only theoretical but practical ideas on the mechanism of the foot in all its parts, as well as a thorough knowledge of all the muscles which make up the locomotory apparatus of the horse.

In dentistry, you all know the specialists are innumerable, and the majority are nothing more nor less than "fakirs," especially the "traveling gentry."

We will have the abdominal specialists and the respiratory specialists, and in some places, not in the cities, there will probably be obstetrical specialists, for good men in that line are hard to find.

The men who make surgery a specialty will also have a place. But when that time comes no one will be able to confine himself *entirely* to his specialty. There will be room and work for all, and I believe as the years roll by and our people become more and more educated up to the value of the veterinary surgeon, in like ratio will his calling rise in their estimation and his life work will be a financial success.

"I FIND THE REVIEW a source of great profit in my work, besides being of much interest and pleasure." — (*John Oliver, V.S., Columbus, Miss.*)

IN the ten years' existence of the State Board of Veterinary Examiners of Pennsylvania, it has issued 180 licenses to practice veterinary medicine and surgery in that State. Under the old registration law, when any one who had ever seen a horse was allowed to register, 1,975 names were recorded. Under the new law, compelling a registration with the Examiners, about 800 will be the result. In a review of the reregistration, Dr. Hoskins, the secretary, gives some interesting figures, which we hope to publish in the near future.

PATHOLOGY AND TREATMENT OF FEVER.

BY PROF. W. A. STUHR, AMES, IOWA.

Presented to the Annual Meeting of the Iowa Veterinary Association, at Ames,
January, 1906.

In no branch of the science of medicine, perhaps, can there be observed more notable changes than have taken place in therapeutics in the last few years.

In fever, for example, the most important phases of the treatment are almost diametrically opposed to those of but a few years hence. The successful physician has come to a full realization of the powers of nature and recognizes in her his greatest aid in his fight against disease.

This has stimulated many careful and painstaking investigations of all phases of disease and as a result the many serums, vaccines, and toxins have been discovered and brought to light.

These products include almost all of the specifics known to therapeutics to-day, and all are produced as a result of the body's own activity.

The thought is therefore very strongly impressed that the body itself is the origin of the real antidotes and that it behooves us to study its methods.

It has only been of recent years that the therapist has realized, that in order to logically select his means of relief, he must be thoroughly familiar with the needs of the system. That is, he must understand the changes of structure and of function which take place in the diseased body, as well as the protective mechanisms of the body, which have been developed during the course of its evolution.

Thus, if the body naturally endeavors to protect itself against the ravages of disease by increasing its number of leucocytes, whose purpose it is to destroy, or, by their secretory activity, to manufacture a substance which will neutralize the products of the invading germs; or by elaborating an antitoxin through its own cellular activity; or by increasing the functions of the elimination, etc., it should be the purpose of the therapist to

resort to all justifiable means of increasing the number of leucocytes ; to employ, if possible, a specific antitoxin, or to aid in the functions of elimination in every consistent manner.

This transference of the practice of therapeutics from an unreliable to a logically sound basis has succeeded in elevating it from the level of an empiricism to the dignity of an applied science.

Let us therefore apply the idea just expressed to the subject of fever and ascertain, if possible, the reason for the present form of treatment.

Fever may be described as representing that pathologic state characterized by such phenomena as elevation of temperature, and altered metabolism, associated with increased activity of the circulatory and respiratory systems, and functional and structural changes in the tissue of the body.

Although the high temperature, or pyrexia, is a prominent symptom of fever, it is by no means always present.

Thus, in some forms of septicæmia, all the other symptoms of fever may be present, while there is no elevation of temperature.

Indeed it is believed that the bacteria, or their products, are responsible for the tissue changes and that the pyrexia may be only in certain instances.

The causes of fever have been grouped as traumatic and infectious. Although traumatic fever is not at all uncommon, by far the greater number of cases of fever are due to specific causes.

We have, therefore, to deal with the effects produced by living organisms and their products.

Pyrexia is regarded as being the result of toxic disturbances of the nerve centres concerned in heat regulation, the degree of elevation of temperature depending upon the affinity of the toxic product for the heat centres.

Since the toxic products are elaborated by bacteria, it may be considered that the elevation of temperature is an index of the intensity of the infection.

Therefore, since the temperature in most instances varies

directly with the intensity of the infection, most authorities contend that the febrile reaction is of a defensive nature and is to be looked upon with favor.

From a bacteriological standpoint, this seems to be true. For instance, most pathogenic bacteria grow best at the temperature of the body, or 37°C . In fever, the temperature may rise to 40°C ., or higher, at which point the activities of some bacteria are much inhibited. The high temperature does not lead to serious results unless excessive or prolonged.

The altered bodily functions are dependent upon disturbance of metabolism.

The accelerated pulse in fever, however, as Brunton and Liebermeister have proven, is due to the action of heat upon the heart.

It has been experimentally demonstrated that their injection of bacterial products will cause a marked loss of body weight, which may be progressive and lead to death.

Tissue changes produced by bacteria include almost all those known to pathology. They may, however, be grouped under two headings, namely: those of a degenerative or necrotic character and which are the direct result of damage, and those of a reactive or defensive character.

The former depend upon the virulence of the organisms and their ability to establish themselves in the tissue. These are the cause of the symptoms of disease.

The latter represent the defensive resources which have been developed by the body.

The structures most concerned in the protection of the body are the leucocytes and the fixed cells of the tissues.

It is a well-known fact that, in the various bacterial diseases, certain changes occur in the organs and tissues which are due to the action of bacterial products in circulation in the blood. This is observed in the degenerative changes in the cord and peripheral nerves following the injection of the products of the diphtheria bacillus.

Cloudy swelling, fatty degeneration and coagulation necrosis

are the lesions commonly presented. These degenerative changes, in such important organs as the liver, heart, kidneys, muscles, etc., interfere with their functions, and not unfrequently are the direct cause of death.

Hence the great importance of increasing the power of resistance of the body, and thus inhibiting the production of bacterial toxins.

Since we believe in the parasitic theory of disease, we cannot assume that recovery has entirely taken place until all of the organisms which cause the disease have been destroyed or otherwise gotten rid of.

That numerous bacteria are eliminated from the body in the various secretions and excretions can be seen from the fact that these, in many instances, are highly infectious and are capable of spreading the disease to other animals.

This, however, does not account for the complete disappearance of the organisms in those instances where recovery takes place.

Some other protective resource is chiefly responsible.

If, for example, germs are introduced into the tissues, setting up a local infection, there is called forth a reaction, characterized by a series of interesting phenomena which we designate inflammation.

If such an area were examined under the microscope, it would be seen that the most important and the most apparent of these phenomena would be the vast accumulation of leucocytes. What is true of such local infections is likewise true of acute general infection.

Thus the entire field of acute infectious diseases has been studied and, as a result, the statement is made that, with only few exceptions, in every case there is a leucocytosis, the extent of which varies with the severity of the infection.

An interesting classification of diseases derived from a study of the leucocytes reveals the fact that those diseases which manifest an initial leukopenia which is maintained throughout their duration almost invariably run an asthenic and fatal course. On

the other hand those diseases which show a marked increase in leucocytes are characterized by more favorable termination.

We are informed by good authority that cases of pneumonia in which leucocytosis is absent, or but slightly marked, are invariably fatal.

It appears, therefore, that leucocytosis is a decidedly favorable symptom and that the leucocytes are intimately concerned in the protection of the body.

Admitting this to be true, it remains to explain how they accomplish such favorable results.

The exhaustive experiments of the celebrated Metschnikoff have done much to explain the phenomenon. To sum up the results reported, we may say that the leucocytes, which accumulate in the area of infection, undergo a process of disintegration by which they liberate a substance that is disseminated throughout the body and which has the power, not only to neutralize the bacterial products, but also to attenuate the bacteria themselves, so that they may be taken up and destroyed by the leucocytes. This being true, it is reasonable to suppose that the greater the number of leucocytes present, the more powerful will be the resistance of the body.

In addition to the protection offered by the leucocytes, against the bacteria themselves, the body is further protected against the products of bacterial growth by the organs of elimination, such as the kidneys, skin, bowels, etc., which excrete the poisons and thus by preventing accumulation, often overcome fatal poisoning.

Further the tissues themselves, as Ehrlich has so aptly explained, in response to the action of the toxins, elaborate substances which react with the toxins producing non-toxic combinations. These products of cellular activity are the so-called antitoxins.

Artificial leucocytosis may be either physiologic or therapeutic. Physiologic leucocytosis follows digestion of foods rich in proteids, exercise, massage, cold, etc. Of these, cold properly used and frequent feeding of small amounts of proteids, are the

most practical in veterinary practice. Cold, in addition to increasing the number of leucocytes, exerts a most favorable antipyretic influence without any of the depressing effects of the majority of the ordinary fever remedies. It acts as a general tonic and stimulant and by its abstraction of heat serves to relieve nervous and circulatory excitement.

Further, the introduction of cold water into the system either by ingestion or in the form of enemas will, by its diuretic effect, maintain the action of the kidneys and assist very materially in the elimination of the effete products of metabolism and of bacterial growth, which are responsible for the depression manifested.

Cold as an antipyretic is employed, practically, in form of enemas, cold drinks, or sponging of the surface of the body conjoined with brisk rubbing with coarse cloths. As for the first method several gallons of cold water may be introduced high up in the posterior bowel and allowed to remain until the temperature drops to within about two degrees of normal. This procedure should be repeated whenever the temperature shows a tendency to rise. A bucket containing cold water should always be placed conveniently about, as a drink of this kind is always helpful.

Cold may be applied externally in the form of sponge baths. Cold applied by means of coarse cloths or dashed on and followed by brisk rubbing until dry. This latter is absolutely necessary in treatment of fever. The patient should then be covered with a blanket.

This may be repeated at frequent intervals to get the effect of stimulation or as often as the temperature begins to rise, to control pyrexia.

Therapeutic leucocytosis.—Numerous medicinal agents have the power of increasing the number of leucocytes.

Among the most important may be mentioned nuclein, nucleinic acid, peptone, pepsin, camphor, etc., administered subcutaneously or intravenously. Tonics, stomachics, notably gentian, also increase the number of leucocytes.

Certain gland extracts, as of the spleen, thymus and bone marrow exert a marked effect. Nuclein especially seems to be a reliable agent and numerous reports from the medical profession indicate that it is not only absolutely safe, but has been used successfully for several years.

Blood counts show that it will double the number of leucocytes in a short time and some reports show an average increase of 75 per cent. in the number.

Being an albumin, nuclein is digested by the gastric juice and therefore must be given intravenously or subcutaneously. In conclusion, therefore, since experimental and practical observations have all shown without question that hyperleucocytosis is a decidedly favorable symptom in those diseases characterized by increase in the number of leucocytes, it seems that we should aid nature in her struggle against disease by artificially increasing the number of leucocytes in every justifiable manner.

The more familiar we become with the manifestations of disease, the farther we drift from the old practice of therapeutics, which indeed is largely empirical.

Thus many of the antipyretic remedies which have been so extensively employed in the past are being dropped from use because they are too depressant.

In fact they produce, in some instances, change in the tissues similar to those resulting from the bacterial poisons themselves.

This is notably true of those organic and inorganic compounds which interfere with the ozonizing power of hæmoglobin and of which the coal tar derivatives, such as acetanilid and its class, are examples.

I trust that this brief review of the subject of fever will serve to illustrate the dependency of therapeutics upon pathology and also to stimulate a closer study of the workings of the body in disease in order that we may be prepared to deal with it more rationally.

HAVE you written to your Senators and Congressmen, in behalf of the Army Veterinary Bill? Do it now.

DISINFECTION.

BY PROF. R. R. DYKSTRA, AMES, IOWA.

Presented to the Annual Meeting of the Iowa Veterinary Association, at Ames,
January, 1906.

My object in presenting this paper to you this evening is not for the purpose of announcing any new or startling discoveries, but more to bring back to your minds afresh the thoughts which were instilled in them during our college days, and if I can accomplish this purpose, I will feel more than amply repaid for my efforts in this matter.

Before proceeding with my paper, allow me to offer a definition of a disinfectant, of an antiseptic and of a deodorant, terms which are often confused.

Disinfectants or germicides are agents which destroy the microorganisms causing infectious and contagious diseases, fermentation and putrefaction.

Antiseptics are agents which prevent the growth and development of microorganisms, occasioning fermentation, putrefaction and disease; more especially the micrococci producing suppuration.

Deodorizers or deodorants are agents which destroy or counteract a foul odor. They are not necessarily antiseptics or disinfectants.

Considerable confusion exists in relation to the terms disinfectant and antiseptic, because the latter is often described as an agent which inhibits the growth or destroys the life of the microorganisms of fermentation, putrefaction and disease. This definition makes antiseptic synonymous with disinfectant. The distinction exists, however, according to common usage, that while disinfectants may, in dilution, act as antiseptics, antiseptics are not often disinfectants, and in the nature of things are not strong enough to kill germs, although they may hinder their growth. Antiseptics may then be regarded as a subdivision of disinfectants. The two terms are unnecessary and misleading, as either might embrace both interference with the

growth and destruction of microorganisms. Disinfection may fall short of sterilization ; *i. e.*, death of all germs.

Boiling a fluid containing microorganisms wholly destroys them ; but while disinfectants may destroy the germs of disease, they often fail to kill more resistant and harmless organisms, as the *Bacillus subtilis*. The scope of antisepsis has been extended by some authors to include agents which destroy the toxic products of bacteria and prevent their absorption.

A discrimination between disinfectants and antiseptics may be made in relation to their connections with the body. Those agents employed to kill germs, in matter distinct from the living body, are disinfectants, while those agents applied on the surface, or introduced within the body, may be classed as antiseptics, since they can rarely be used in such strength as to kill all microorganisms without injuring or killing their host.

Let us pass from these definitions to the knowledge which a disinfectant should possess.

The success of the disinfectant lies in personal attention to the minutest details. He must know the best method of disinfecting or purifying rooms, barns, sheds, pens, cars, or any place where many animals are assembled and where latent or unrecognized cases are constantly suspected or are actually occurring to contaminate the surroundings. Germs are little things and it is the little things that count in this kind of work. The disinfectant who is satisfied to leave the process in the hands of an inexperienced person, with a few words of instruction, cannot expect to obtain trustworthy results. In no other work is the watchword that "vigilance is the price of success" truer. The disinfectant must give personal surveillance to the whole process, the materials, the strength of solutions, modes of application, and must be present to guide and direct every step of the operation with the same conscientiousness and thoroughness with which the surgeon assures himself of every detail of asepsis in his operating room.

It is true that the means and methods employed to rid a stall of infection closely resemble those used in the operating room,

but it stands to reason that in the former case they can rarely be carried out with the same exactness and certainty as in the latter, where everything is arranged and constructed with this end in view. In the surgical clinic nothing short of sterilization is safe, while in the great majority of disinfection done to prevent the spread of epizootic diseases, measures that fall far short of sterilization will suffice.

A great deal may be learned by a thorough inspection. To be sure we cannot see the germs with our unaided vision, but we can see the dirt and moisture and other conditions that present a favorable medium for the growth and multiplication of the pathogenic microorganisms. While the old idea that filth and unsanitary conditions *breed* disease, is wrong, it is nevertheless true that these conditions keep the infectious principles alive and favor their propagation. It is therefore plainly the duty of the disinfector not only to destroy the actual infection, but also to eradicate all the conditions that would act as breeding places and disseminators of infection.

The disinfection of barns, sheds, pens, cars, ships, and all objects that have been exposed to infection, must of necessity be greatly in excess of the actual requirements. This is one of the difficulties met with in attacking an invisible foe. A barn might readily be disinfected and rendered safe by applying a few gills of one of the germicidal solutions to a small spot or limited area; but as we cannot see the germs, it is necessary to apply our disinfecting agents to every inch of surface of the barn and all its contents, in order not to miss that particular infected spot. As our knowledge of infection becomes more exact, our processes of disinfection become more precise. At first disinfection was directed by a shot gun process, in a general sort of blunderbuss way, against everything, but now that we know the habits and habitat of each one of the particular microorganisms, we can concentrate our efforts with more exactness upon the particular object of media liable to infection, with every assurance of eradicating the danger.

In other words, it is quite as important to know what to dis-

infect as how to disinfect, and a very thorough knowledge of the subject of the causes and modes of transmission of the communicable diseases is the most useful weapon the disinfector has in his fight against the spread of infection.

It has been laid down by Parkes that, in order to apply the process in disinfection in a scientific manner, we should know, 1st, the nature of the contagion or disease-producing agent; 2d, the means by which this is spread; 3d, the effect produced on it by the action of the disinfectant used for its destruction.

In the present light of our knowledge we must regard the contagia as consisting of particles of living matter; this will hold good whether the disease in question be glanders or scabies. It is unnecessary here to enter into the subject of disease germs, and the arguments in favor of or against their specific power. They are undoubted and exist in all diseases capable of producing their like by inoculation, and though the poisons of rabies and some other diseases have not yet actually been seen, it must be held that they are as undoubted as the poisons of anthrax or tuberculosis.

The means by which disease poisons are spread, are through direct contact with the diseased fluids of sick animals; by water or food, soiled by their body fluid; by air containing particles given off from their skins and lungs, or carried up by the process of evaporation from the infected ground on which they stand; by contact between healthy animals and men who have been attending on the affected ones; by the sale and conveyance about the country of hides, horns, flesh, offal, bones, tallow, excrement, etc., of affected animals; by the superficial burial of carcasses and the bringing to the surface, through animal agency, of the particulate poisons of the dead; and through placing healthy animals in sheds, stables, railway cars, wagons, ships, etc., which have been occupied by diseased ones. Such are the principal modes by which specific diseases are conveyed, of which we have had many practical examples in the country, the cattle plague being the most notorious.

The sanitary measures which have, therefore, to be enforced

to prevent the spread of disease are obvious. The public declaration of the infected area; the drawing of a sanitary cordon around it for a distance, which must be governed by the infectious nature of the poison; the absolute cessation of communication between the infected area and the outside world, and the immediate destruction of affected animals, are the first measures to place in force. The difficulties of a thorough carrying out of these principles may be readily appreciated; they can only be enforced by a veterinary sanitary police powerfully supported by the law.

The foregoing measures can, if properly applied, be absolutely certain of limiting the disease to the infected area. In this we have enormous advantages over the human hygienist, who is allowed much less control over public liberty, and moreover cannot carry out that golden principle of limiting the spread of a contagious disease by the immediate destruction of the diseased patient.

The stress of modern activities demands disinfecting processes that are instantaneous in their action, all-pervading in their effect, cheap, harmless and free from any unpleasant odors, though the latter is not an essential. Such perfect disinfectants are not known. It requires time, money and the expenditure of well-directed and intelligent energy to accomplish satisfactory disinfection.

GENERAL USE OF DISINFECTANTS.

Air, sunlight, heat and water are naturally the best disinfectants. Air scatters and dilutes microorganisms, making them pathologically inactive. There is no more effective way to disinfect a stable, in which animals are living, than by free ventilation with pure air. It is well known that animals are less liable to contract infectious diseases in the comparatively pure air of the country than in the closely crowded and ill ventilated city buildings. Likewise the contagious diseases of children mostly occur in winter, when they are herded together in schools and in poorly ventilated dwellings. To attempt to disinfect the air surrounding a patient is the height of absurdity. The gen-

eration of chlorine and sulphurous acid gases for this purpose, although recommended in some text-books, is futile, and by irritating the respiratory mucous membrane, accomplishes more harm than good, since a congested surface offers a more suitable field for bacterial growth. Air, on the other hand, may be a medium of infection when contaminated with dust containing pathogenic bacteria. Sunlight is prejudicial to the vitality of bacteria, whereas, the bacterium of tuberculosis will live almost indefinitely in damp, dark places, but quickly succumb to sunlight and dry air. Sunlight and pure air are, then, imperative for both the immediate and preventive treatment of germ diseases. Heat is the most powerful agency for disinfection at our command. Dry heat, to be efficacious, must be applied at a temperature of 284° F. for three hours to kill all bacteria and spores; but this degree of heat scorches most fabrics and destroys many materials. Boiling water quickly kills all non-spore bearing pathogenic bacteria, and these include most of the organisms causing the common contagious and infectious diseases (tuberculosis and anthrax excepted). Two hours of continuous boiling will not destroy the most resistant of microorganisms—the spores of the hay bacillus—but moist or saturated steam, at 230° F. will infallibly kill any spores whatsoever within a few minutes.

Fire is the most complete disinfectant, because it not only destroys germs, but their food and products. Water, like air, dilutes germs and aids oxidation and destruction of organic matter; but again, like air, drinking water may be the source of infection when sufficiently contaminated.

The disinfection of a stable requires a very thorough application of all the resources at the hand of the disinfectant. The conditions met with in a stable render the disinfection doubly hard, not only on account of the accumulation of organic filth, which has worked into the many crevices and saturated the woodwork, but on account of the high resistance of the anthrax and tetanus spores, for which stables are sometimes disinfected. In addition to these diseases, stables require disinfection on ac-

count of tuberculosis, glanders and pleuro-pneumonia, and various diseases of man, as well as those of domestic animals. It is advisable to give the stable a preliminary fumigation, preferably with sulphur, in order to destroy surface infection and the vermin which always infect these places. The preliminary disinfection is especially important in the case of plague, glanders, tuberculosis, or any of the exanthematous diseases, not only to prevent the spread of infection, but as a safeguard for the disinfection. Then remove all small articles that need disinfection. The blankets should be wrapped in moist bichloride sheets and boiled, steamed or burned. Buckets, currycombs, brushes, stall tools and other equipment that has been in contact with sick animals or with infectious materials, should be mechanically cleaned with hot carbolic solutions in which they may be allowed to soak over night. Metallic or wooden objects or utensils should be given a thorough preliminary cleansing with a stiff brush and hot water and soap and then boiled or immersed in a hot 5 solution of carbolic acid or a 2% solution of trikresol for several hours. Leather articles, as harness or equipment, should receive a similar preliminary cleansing and be scrubbed with either a strong solution of bichlorid of mercury or carbolic acid. All hay and grain should be removed from the racks and mangers, and all bedding from the floors. After its careful collection at some designated point the refuse should be saturated with petroleum and destroyed by fire.

The stable must now be soaked with a strong antiseptic solution applied with a hose, or splashed on all surfaces by means of mops. The floors, corners and stalls must be saturated with the solution. On account of the presence of so much albuminous matter—phenol or one of its derivatives is preferred for this purpose to sublimate solutions. Now scrape out the debris from all cracks in the floors and walls; collect it for burning, then clean the woodwork with hot lye or a strong alkaline soap solution, and follow with another general hosing with the antiseptic liquid.

After several days exposure to air and sunshine the interior

of the stable should receive a fresh coat of whitewash, applied thickly, and prepared from lime, freshly burned shortly before the time of use.

The watering troughs are very apt to be infected, especially in dealing with glanders. In all instances, not only the troughs and watering buckets should be disinfected, but the water remaining in them, for often there is no drain or sewer, and this water poured on the ground may be a source of subsequent infection. The water may first be disinfected by the addition of a suitable amount of any of the ordinary soluble germicides. The troughs are then to be mechanically cleaned, thoroughly removing all organic matter, and then applying a strong germicidal solution to both the inside and the outside. For metal lined troughs the use of bichlorid of mercury is, of course, inapplicable, and for such carbolic acid, trikresol, formalin or potassium permanganate is recommended. Most antiseptics are poisonous and must, therefore, be finally washed out of the trough or buckets by flushing with fresh water and then airing in the sunlight before they are again used. Strong carbolic solution or formalin should be poured down all pipes or drains.

Sometimes the ground in the immediate vicinity of the stable will need some attention; lime will generally be found most useful for this purpose. Carcasses and excreta are to be disinfected and disposed of according to the nature of the disease with which they are affected and this we will now consider.

We know that with most of the specific diseases, special parts are affected from which the poison is discharged from the system; thus the diarrhoea of cattle plague, the nasal discharge in glanders and influenza, the desquamation in variola, the subcutaneous serum in anthrax, the saliva in foot-and-mouth disease, the aerial particles in pleuro-pneumonia and tuberculosis, etc., are all means by which the water, air, food, soil and buildings are infected, and capable of reproducing the disease unless disinfected.

It is clear that the discharges from the body should be de-

stroyed by fire, the fæces and litter burned, the soil on which the patient has stood disinfected by litter being burned on it, and the ground to the depth of six or twelve inches dug up and buried with the carcass.

It is evident that the extent to which disinfection has to be carried must depend upon the character of the disease we are trying to eradicate. Glanders and cattle plague would certainly require to be dealt with on the above lines, but when we come to such diseases as influenza, or scabies, our methods of disinfection may undergo modification to the extent considered necessary by the peculiar nature of the disease.

Our measures would not be complete unless the persons in attendance on the sick animals are disinfected. Their clothing should be boiled or baked, preferably the latter, and their bodies thoroughly washed, particularly the hands, which should be perfectly disinfected; attention should be paid to the nails of these persons; they should be cut short and thoroughly cleaned.

The disinfection of hides, flesh, horns, hoofs, bones, tallow, etc., is recommended, because when we are dealing with diseases where these may convey the poison, nothing less than entire destruction by fire or chemical processes should be carried out. The flesh is an important economic consideration, but we cannot conceive that the flesh of diseased animals can be fit for human consumption.

During the progress of an epizootic, dogs or other small animals should be prevented entering the infected area, and if found should be destroyed.

SURGICAL ANTISEPSIS AND ASEPSIS.

It may be fitting, and not out of place to briefly outline here the rise of antiseptics and asepsis in veterinary surgery. Since the days when Lister introduced antiseptics, surgery has advanced in a manner which appears, however, like retrogression. It is now conceded that asepsis can be attained more satisfactorily and safely without the general use of antiseptics, for antiseptics, as has been noted, inflict a certain amount of damage upon the

denuded surface, and, in so far, lessen the resistance of the body to the inroads of bacteria. Modern surgery attempts to secure a comparative asepsis by mechanical cleanliness, which is more efficient, simpler, and harmless to the body. Antiseptics are indicated to assist asepsis in the toilet of the unbroken skin, and when sepsis has already occurred or is unavoidable. The gross neglect of aseptic precautions, often seen in the operations of veterinary surgery, would be considered criminal practice in human surgery.

Asepsis is nevertheless very difficult to secure in the lower animals living among filthy surroundings and lying on fæcal discharges. In addition to these disadvantages, the trouble of controlling animal movements during operation, and of keeping dressings in place, make the attainment of asepsis embarrassing and frequently impossible. The more common administration of anæsthetics would facilitate asepsis by preventing movements of the patient and contact of the operative field with dirt.

But there are all degrees of infection, and while, with the best methods of securing cleanliness at our command, it is impossible to completely sterilize normal skin and tissues, yet the surgical result may be perfect. Therefore, in surgical operations, we should endeavor to secure as small an amount of infection or dosage of microorganisms as possible, consistent with existing environment and conditions.

The following aseptic technique is especially applicable in the case of any surgical operation undertaken upon a non-infected part. If it is possible to carry out all the details and the result is successful, healing should take place without suppuration.

Operations upon suppurating and infected areas should be conducted with cleanliness, and antiseptics are more desirable, particularly H_2O_2 and corrosive sublimate 1-1000.

To prepare the surface of the body for operations, the hair is first clipped and shaved, the skin is thoroughly scrubbed with a brush, green soap and water for five minutes and then with cor-

rosive sublimate 1-1000. After the skin is incised, there is no further necessity for antiseptics, unless the wound is already infected, or becomes so by exposure to air, or contact with dirt. The hands of the operator, including the finger nails, should be brushed until clean with green soap and water and then with Hy Cl_2 1-1000 solution. Instruments are thoroughly scrubbed with soap and H_2O and boiled for ten minutes in an aqueous solution of sodium bicarbonate (1 teaspoonful to one quart) and then placed in a 20 per cent. solution of boric acid, or removed to a sterile towel.

Pledgets of sterile cotton or gauze only should be used to soak up the blood in order to clear the field of operation.

If irrigation is desirable, normal salt solution, 1 heaping teaspoonful to the quart of sterile water, is appropriate. Nothing else but this is allowable within the non-infected abdominal cavity. Sutures of silk and needles are prepared by boiling in water for 30 minutes. The area about the operative field is to be surrounded with cloths or towels, which have been boiled or baked, and the instruments may be laid on these.

Dressings may consist of gauze which has been exposed for three hours to dry heat at 140°C . or 2840°F ., or placed in an oven of an ordinary cooking stove, in closed tin cans, until it becomes scorched and slightly brown. The same gauze may be used for sponges. Unsterilized articles are not to be suffered to come in contact with the operation.

Wound infection from exposure to the air and other media is prevented by immediate dressing and bandaging or by colloidion application.

THE PENNSYLVANIA STATE V. M. ASSOCIATION will hereafter have a three-day meeting, with one full day devoted to a surgical clinic. This Association fought hard against the introduction of clinics as a part of its programme, but the great interest and value which they have for the membership forced them in, and the REVIEW predicts for this organization fuller attendance and a larger enrollment of the qualified members of the State.

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 BROKEN CATHETER—A PIECE REMAINS—HORSE WORKS.

By E. C. THURSTON, D. V. S., Sydney, N. Y.

The following report is presented on account of its being somewhat out of the ordinary cases met with.

The patient, a bay draft gelding, was brought to my infirmary during my temporary absence from the city, his ailment being a simple colic. A teamster (one of the kind who knows it all) happened to be present and gave his diagnosis as "water-colic," saying that if he had one of those tubes (meaning a catheter) he would soon relieve him. Finding a catheter in the office, and without either softening or oiling the instrument, he proceeded to catheterize the animal, the consequence being that by forcing it, the catheter buckled on itself; there was a slight flow of urine, tinged with blood, after which the clever gentleman commenced to withdraw the catheter, it stuck; so, in order to release it, he gave a sharp pull, breaking off about four inches, which remained in the animal's body.

When I arrived, about half an hour after, the patient was standing and straining from the irritation. On examination, I could feel about two inches of the broken portion of the catheter extending backwards over the brim of the pubis. After carefully manipulating at intervals for upwards of six hours, I was unable to trace the remainder. I then decided that the only plan was to make an incision in the perineal region and remove the obstruction. This was done with the hope that the innermost portion might be grasped with forceps or that the spiral wire in the catheter would assist in withdrawing it. Such, however, was not the case, as the removal of the portion grasped in the forceps brought only the wire, the linen portion remaining. Realizing the impossibility of removing the latter, the incision was sutured and the patient catheterized. This occurred some four months ago. The animal has worked every day since, remains in good health, except that occasionally the penis will hang pendulus. At such times, micturition is intermittent and more or less difficult.

Will any REVIEW reader favor me with any suggestion or description of any other mode of operation which might have

been more successful. Though the patient does his work, and does not seem to suffer to any extent, I cannot but feel that perhaps something further might have been done.

FREAKS OF WIRE—FRACTURE OF INFERIOR MAXILLA—INDIGESTION—ERGOTISM. *

By DR. R. C. HILL, West Alexandria, Ohio.

I have here a few cases to report—not that they were difficult cases, or took an extra amount of skill; but peculiar in a way, as all three cases originated from the same cause, afflicted different parts, and misleading at first sight as to their diagnosis.

Fracture of the Inferior Maxilla.—The horse was driven to hospital with a running sore on inferior maxilla. Opened it up, could apparently feel bone; gave an injection to be used once a day. I met the owner several months later, and he said place was still running. I insisted that he drive him in so I could give him a more thorough examination, which he did. I opened wound so as to admit finger and found supposed loose piece of bone. Took a small pair of forceps to remove it and, to my surprise, pulled out a wire that was five inches long.

Indigestion.—Owner stated his cow was "off her feed," and "lost her cud," and I gave him some medicine such as a cathartic and stomachics. He came in next day and said cow was no better and wanted me to come and see her. I found cow standing; did not care to move. On examining condition of stomach found out she could move, as she handed me one of those "good mornings" peculiar to the cow. After farther examination, found very sore spot in left flank, on the order of a small abscess. Opened it and found wire about eight inches long, that had penetrated stomach.

Ergotism.—I was called to the country to see steer with supposed broken leg; owner stated he had been lame for a week or ten days and was getting worse every day, and that he could feel the bone. On arrival patient was down. We got him on his feet, and, to my surprise (while I had never seen a case), thought I had a typical case of ergotism (such as is shown in the Government book on cattle). After inquiring if he had been feeding rye, said he had not; so I had to make farther examination. I cleaned parts nicely and could apparently feel the bone in front of leg and at the sides and also at back part. So I began to look for the severed tendons, but could not find any. After a little farther manipulation I found a rough place,

*Read at Meeting Ohio State V. M. A., January, 1906.

and the cause was apparent. Took a small pair of forceps, untwisted the wire and removed it, which laid fully three quarters of an inch in from outside of leg. The patient being relieved at once, the owner, greatly surprised, but still very much bored that he had not been able to discover the wire a week ago before leg had swollen. The steer made a nice recovery.

ACCIDENTAL SURGERY.*

By WALTER SHAW, V. S., Dayton, Ohio.

Since I became a member of this Association, I remember of but one or two cases of accidental surgery being reported. One of those was the accidental removal of the uterus of a cow in which the result was disastrous. Judging from this, it would seem that accidents in surgery are of very rare occurrence, or are considered of little or no importance to veterinary surgery. Still it seems to me that if all accidents were reported and carefully studied, it would be of benefit to some of us.

The case I wish to direct your attention to is one of accidental cystotomy. Some months ago I had an opportunity to witness a veterinary surgeon perform laparotomy on a female puppy several months old. The animal had been left at the doctor's office thirty-six hours before, and had been put in a stall two feet square. It was given plenty of water but nothing to eat, and left there to become in condition for the operation.

Thirty minutes before the patient was put on the operating table, it was given hypodermically three-eighths of a grain of morphine. After the field had been prepared for the operation, the surgeon carefully made an incision through the skin and abdominal muscles. He then took up the peritoneum with a pair of forceps, but the bladder being greatly distended, had extended into the abdominal cavity, and was taken up with the peritoneum, and with the first stroke of the scalpel, to the surgeon's surprise, he had performed cystotomy. The urine escaped freely through the incision. The operator did not lose his nerve, but held to the forceps and elevated the viscus in such a way as to allow the urine to escape outside of the abdominal cavity. When the bladder was emptied, the incision was closed with cat-gut sutures; the edges were turned in, and the sutures inserted through the external coats only, the peritoneum from either side being brought together in apposition.

The abdominal operation was then completed, and the incision was closed in the usual way. As it would have been a dif-

* Presented to Ohio State V. M. A., January, 1906.

ficult matter repeatedly to pass a catheter, and as the doctor did not have a suitable one at hand, it was considered best to put the patient back in the small stall without food or water for twenty-four hours. This was done to lessen the secretion of urine. At this juncture the patient had shown no constitutional nor local disturbance, and had urinated twice. She was then given two tablespoonfuls of warm milk night and morning for the next three days. The milk was then increased to three ounces twice a day for four days. When she was discharged, the abdominal wound was healed, and the animal was in good condition.

DENTIGEROUS CYST.

By W. S. DE HAY, D. V. S., Mt Pleasant, S. C.

In making a report on surgery, it has been the custom to relate some of the more recent operations, but as the majority of the members of the profession are subscribers to some of the veterinary journals, I will not discuss matters already familiar, but will present a case that I regard peculiar as well as interesting.

A black horse, nine years old, was brought to me January 10, 1906, for treatment of a fistulous opening at the antero-external part of the base of the right ear. This condition had existed for five years. The animal had been treated by several quacks, who had tried to "eat out the pipe" until the horse was of a sensitive disposition. He had changed owners several times because the trouble appeared incurable.

I cast the patient and removed a lot of dried exudate, and inserted a probe into the fistulous opening, which was on a level and one inch in front of the inferior point of the aperture of the concha. The tract passed downward toward the squamosal bone. The probe came in contact with a hard substance, which could be detected by manipulation. An incision was made two inches in length, beginning at the fistulous opening, toward the eye. Upon inserting the finger what seemed to be the crown of a huge molar tooth could be made out.

By inserting the molar extractors I removed the tooth with difficulty, it being necessary to get assistance until it was loosened.

It approached cuboidal in form, and measured on an average of $2\frac{1}{4}$ inches in each direction.* It weighed three ounces.

I treated the case afterwards as I would an ordinary wound, and got an uneventful recovery.

*To confirm this statement, Dr. De Hay forwarded the tooth to the REVIEW office, and it is now in our possession.

ARMY VETERINARY DEPARTMENT.

THE BRITISH AND AMERICAN ARMY VETERINARIAN.

Dr. Edmund Burke, Assistant Principal of the Bengal Veterinary College, Calcutta, India, paid a pleasant visit to the office of the REVIEW on March 21. Dr. Burke was on his way home, having been taking a post-graduate course at the Grand Rapids Veterinary College during the winter. He has been on a year's leave of absence, and expects to arrive in Calcutta about May 3. The Doctor is a native of England, and is a brother of Veterinarian Burke, of the British Army Veterinary Department, retired. He has lived in India for twenty-four years, and has been in his present position for over twelve years. He gave an interesting account of educational matters in India, and his recital brought to our mind the irony of justice to the veterinary profession, for while the British Government maintains five veterinary colleges in the Indian country, it has held aloof from its home schools with inexplicable consistency, save in the instance of the recently endowed Dublin College, although we have been told that Camden Town has or is soon to receive a sop from the hand that does so much for schools in far-away India. In the Bengal College there are 150 students, while Lahore has larger classes—all free. Most of the graduates go into the service of the Government, but they are free to follow their inclinations, and may enter private practice, if they prefer. Although five schools are turning out graduates in goodly numbers yearly, and, notwithstanding that the great majority enter the Government service, the demand for veterinarians by the Crown exceeds the supply. We recite these facts not in criticism, but in contrast to the absolute disregard of our own War Department for the needs of the military arm of the government in a veterinary service which will attract men of education and character, rather than causing those brave men who entered the service for the avowed purpose of improving it, to hang their heads in shame in the presence of *military veterinary of-*

ficers of high rank in the armies of all civilized countries in the world. However, our service is young, and it is only in the past few years that any considerable number of men of the best type have joined the veterinary branch, and from all we hear they are making a deep impression as to their worth upon the military authorities, and their reward is certain to arrive in the shape of recognition and grade, which will cause a blush of pride instead of shame when they meet their veterinary *confrères* of the armies of other lands. England has a splendid and honorable veterinary department in her army, but it did not come in a day, nor a year, nor a decade, but it was meted out slowly and in little lifts until the beginning of the reign of King Edward, when the reorganization placed it upon its present high and satisfactory basis. Our own President Roosevelt, with his fine sense of justice, and his oft-quoted slogan of "a square deal," having an intimate personal knowledge of the needs of the military service, would not permit this condition of affairs to exist if it was brought forcibly to his notice; but in the multiplicity of the demands upon his time, and most of them of vital importance to the welfare of the nation, he has not the opportunity to give this subject sufficient attention to see the opera bouffe that is being played in the army. Indeed, the parties responsible for this condition are the military authorities, not the executive; but, when these blind men cannot be made to see, the keener eye of a higher authority should be turned in that direction. What friend of the veterinarian will call President Roosevelt's interest into operation in behalf of this important branch of the military service of our country?

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THE SCHOOL OF APPLICATION FOR CAVALRY AND FIELD ARTILLERY, U. S. A.

TRAINING SCHOOL FOR FARRIERS.

Object :—To train enlisted men in the art of horse-shoeing and in the care of sick and injured horses owned by and used in the U. S. Army.

This school was established several years ago, at no little

expense, at Fort Riley, Kas., the approximate centre of the United States.

The officers are as follows :

Commandant—Colonel of Cavalry.

Secretary—Captain of Artillery.

Director—Captain of Cavalry.

Instructors—Two Cavalry Veterinarians ; one Artillery Veterinarian ; one Civilian Veterinarian (this latter veterinarian being a civil service appointee, instructor for the School of Shoeing).

Practical instruction is conducted by the different veterinarians at the large new hospital recently erected, which by the way is one valuable adjunct to this Military Post ; more of them are contemplated being built at large posts in the different States.

Several hours daily are devoted to the stable care and management of both healthy and sick animals. Recitations in commodious lecture rooms are conducted one hour daily to each class of fifteen or more men.

Theoretical Training.—A simple, plain but thorough text is followed, one which can be easily learned and committed by the average soldier. Anatomy, physiology, first aid and treatment of the ordinary diseases, accidents and injuries are fully taught.

Conformation of horses suitable for military purposes, is another subject that is carefully gone into. Strict adherence to technical terms is not followed, common terms being applied when practicable ; however, it has been found that the average man entering this course is capable of learning intelligently and applying technical terms quite readily.

Several subjects are dissected during each session, which extends over a period of four months, so giving each member of the different classes an opportunity to familiarize himself with the anatomical parts of the cadaver.

Medicines.—During the short course given, time will not allow a careful or even a preliminary study of chemistry ; even therapeutics can only be glanced at. We do, however, teach the principles of "first aid" and render many men competent to treat ordinary cases under emergency. A man thus qualified, upon examination of a Battery or Troop of horses, can usually detect the early symptoms of disease, by virtue of his physiological and anatomical knowledge of the subject.

The Character and Material of our Men.—Men of several

years service, men of good character only, those recommended by their organization commanders and those having shown previous mental ability, are desired and chosen for this work.

Men from all mounted organizations in the States are chosen twice a year, this with the object of keeping in the service a constant supply of trained and useful assistants. Discipline in the school applies to all as in the regular service and is under the supervision of the Director, who is a staunch friend to the veterinarian. The military student, however, makes an attentive and "eager-to learn" pupil for several reasons; he feels that he is receiving useful knowledge, it relieves the routine of drill and other military work, he feels better satisfied with his pay and it brings him in closer relation with his charge, the horse.

L. E. WILLYOUNG,
Veterinarian Artillery Corps.

* * *

PERSONAL.

WALTER R. PICK, veterinarian 1st Cavalry, writes from Fort Sam Houston, Texas, under date of March 14: "I take this opportunity of informing you of a very pleasant two hours spent by Dr. Power, of the A. C., and myself with Veterinary Director-General Rutherford, of Canada, who remained a few hours in San Antonio on his homeward trip from Old Mexico. The Doctor is looking well and states that the Southern climate has improved his health."

COLLEGE COMMENCEMENTS.

SAN FRANCISCO VETERINARY COLLEGE.—The following were graduated from this college at the 1906 examinations, receiving the degree of D. V. S.: Isaac E. Newson, Fort Collins, Col.; A. G. Fisk, Reno, Nev.; J. E. Knauss, Logansport, Ind.; Alvie McDaniels, Biggs, Cal.; A. B. Byles, M. C. P., Victoria, B. C.; G. A. Rosenberger, Ph.G., Selma, Cal.; Robert Waddell, Concord, Cal.; Joseph Tognotti, San Francisco, Cal.; Harry Rosenberry, Auburn, Cal.; F. T. Notz, Corning, Cal.; John Iverson, Chualar, Cal.; Wm. F. Reardon, Hollister, Cal.; Chas. Price, Santa Ana, Cal.; George Taylor, Redding, Cal.; and Arch. Asbill, Middletown, Cal.

EXTRACTS FROM EXCHANGES.

HUNGARIAN AND GERMAN REVIEW.

By ADOLPH EICHHORN, D. V. S., Bureau of Animal Industry, Great Bend, Kansas.

THE TRANSIBILITY OF THE GASTRO-INTESTINAL CANAL OF NEWLY-BORN ANIMALS FOR BACTERIA AND GENUINE ALBUMINOIDS [*A. Uffenheimer*].—The author found through feeding experiments that the gastro-intestinal canal of the newly-born guinea-pig will not transit the *Micrococcus tetragenus*, the anthrax bacillus and the *Bacillus prodigiosus*. On the other hand, the transibility was observed in the newly-born guinea-pig (also old) of *Tubercle bacilli*, which made the animals tuberculous, even after one feeding of a small quantity of culture material; the tubercular infection ensued either from the buccal cavity or from the gastro-intestinal canal, and in most cases without causing lesions in the mucous membranes. Feeding experiments with a specific hæmolytic serum with cow's milk casein and white of an egg, proved no resorption, and consequently no formation of antibodies, while diphtheria and tetanus antitoxins passed in small quantities into the blood of newly-born guinea-pigs. From these experiments the author concludes, that in the newly-born guinea-pig in general, neither bacteria nor genuine albuminoids are taken up by the gastro-intestinal canal, with the exception of *Tubercle bacilli* and antitoxins.—(*Muench. Med. Wochenschr.*)

TO THE QUESTION OF THE SO-CALLED GERMINATIVE TUBERCULOSIS IN ANIMALS [*J. Karlinski*].—From three bucks in which testicular tuberculosis was produced by direct injection of *Tubercle bacilli* into the testicles, K. received offsprings with tubercular changes, while the mother animals proved on autopsy perfectly healthy. From these the author concludes, that the transmission of tuberculosis from the paternal organism to the egg through the semen is quite possible and does not occur as seldom as it is generally believed. Therefore, a careful selection of breeders and their testing with tuberculin appears very essential.—(*Zeitsch. f. Thiermed.*)

AN AMPUTATION OF THE UTERUS IN A COW [*R. Mayer*].—The author was called to attend to a cow which calved three hours previously, and in which soon after the expulsion

of the foetus, the uterus prolapsed. The owner replaced partly the uterus, and to prevent a further prolapse he applied a checking bandage. On arrival of the author the cow laid on the ground straining severely; the uterus was considerably prolapsed on both sides of the bandage; its color was blackish red, and at the places where pressed by the bandage it was œdematous. M. cleansed the uterus from the remains of the placenta, bathed the same in a cold boracic acid solution and applied massage to the organ. As the replacing was fruitless after one hour of hard work, and the cow could not be induced to stand, and also as the elevation of the hind part proved unsuccessful, M. holding the uterus quite high, so as to prevent the intestines from slipping between, ligated it, and attached to the string two pieces of wood, having two assistants to draw on them every two—three minutes, thereby tightening the ligature. Following this he severed the uterus about five cm. behind the ligature; he ligated a profusely bleeding vessel and replaced the stub into the abdominal cavity after pouring pure creolin on the same. On the following day the animal refused to eat, but on the third day she got up, eating well; after 14 days the string dropped off, and after six weeks only very slight discharge was present. The secretion of milk remained continually plentiful. —(*Wochenschr. f. Thierh. u. Viehz.*)

TRUE PRIMARY PEARLY DISEASE OF THE PERITONEUM IN A CHILD [*Dr. A. Uffenheimer*].—Tuberculosis in the form of pearly disease is of very rare occurrence in human beings. Up to date only four such cases are recorded in the literature. Another such case was observed by the author, which also is remarkable, as it apparently represented a primary infection through the intestinal canal. This case occurred in a one-year-old boy, who died after a prolonged illness. At the autopsy it was found that the serous membrane covering the intestines contained numerous flat, round nodules, of grayish-red color, in sizes from a millet seed to a pea. At several places, the nodules confluated up to a size of a ten-cent piece. Some were surrounded by marked infection of the bloodvessels. Similar nodules were found on the mesentery. Some of the new formations were attached with thin fibres to the intestines; some again were suspended in the abdominal cavity. Most of the nodules were located on the small intestines; however, the large intestines were also affected to some extent. Further, there was found tuberculosis of the liver, spleen, lungs and brain. According to the author, this case can be considered as a tubercular

infection through the intestines. The lung affection can only be traced back to a hæmatogenic origin, as the corresponding lymph glands were normal. Considering the source of the infection the author believes that an infection of bovine origin can be excluded, as the child always received the milk boiled or pasteurized. On the other hand, it appeared very likely that the father infected the child, in whom tuberculosis was proven. —(*Muench. Med. Wochenschr.*)

REDUCTION OF THE DEATH RATE FROM TUBERCULOSIS. —Robert Koch in a speech on the occasion when receiving the Nobel prize at Stockholm, remarked besides other things that in Prussia since 1886, from year to year a reduction in the death rate from tuberculosis is recorded; in spite of the fact that the populace is increasing. At the present 20,000 less people die from that cause than 20 years ago. The reduction in this time amounts to 30%. Also considerable improvement is noticed in this respect in England and Sweden, while in Austria-Hungary the death-rate is the same to-day as it was at the time of the discovery of the *Tubercle bacilli*.

GERMAN REVIEW.

By J. P. O'LEARY, D. V. S., Bureau of Animal Industry, Buffalo, N. Y.

VARIATIONS OF THE AGGLUTININE AND PRECIPITINE CONTENTS OF THE BLOOD DURING GLANDERS INFECTION [*Dr. Benome*].—B. has selected the following main points from his investigations: (1) That the blood serum of the horse and the ass shows a considerable increase of the agglutinine contents during the experimental glanders infection as well as during the artificial immunizing against the glanders bacillus. This increase has no relation to the severity of the infection and seems to appear more rapidly if the inoculation of the glanders bacilli takes place through the abraded nasal mucous membrane than if it had happened through the normal digestive tract. (2) The agglutinating power of the blood of the glandered horse is raised during the mallein reaction. This rise, which can reach a very high degree, is nevertheless transitory, it bears no relation to the intensity of the thermic reaction caused by the malleinization; it is, however, always of organic reaction and accompanied by an œdematous swelling at the point of inoculation. (3) In horses that have ceased to react to mallein and in which a more or less marked organic reaction takes place, there

appears during the malleinization a considerable increase in the agglutinating power of the blood serum. This increase of the agglutinative properties has considerable value in the diagnosis of certain suspicious forms of glanders. (4) The behavior of the blood serum with regard to its agglutinative properties toward the glanders bacillus shows many analogies with the behavior of the whole body toward mallein poisoning. As in this, the agglutinine contents may show considerable variations and even become weakened to the normal degree, although the horse remains glandered. This diminution of the agglutinative properties of the blood serum of doubtful glandered horses can be explained by the formation of other kinds of antibodies outside; that is, through the anti-complements, which by neutralizing the normal complements hinders the phenomena of agglutination. This assertion is founded on the result of the successful reacting experiments which took place through the addition of the sera of healthy horses, cats and men. (5) Warming for an hour at 52 to 56 C. the serum of glandered animals (horses, cats, and guinea-pigs) does not destroy the agglutinative power entirely, and that warming for one hour at 62 to 65 C. destroys it completely. The agglutinative power returns if normal sera from other animals is added in the proportion of 1 to 2 or 1 to 3 to serum which is made ineffective through heating. The complement of the normal feline serum reacts much better than that of normal human serum on the agglutinative power of heated horse serum. The complements in the case of guinea-pigs is about the same as that of human. (6) The agglutinines are always found in larger quantities than precipitines in the serum of glandered horses, cats and guinea-pigs. The filtrate of bouillon cultures of glanders contain no substances precipitable by serum whatever, or in quantities scarcely perceptible. Larger quantities of precipitable substances on the other hand are found in the plasma taken from fresh organs (spleen) of glandered cats and the aqueous glycerine extract from fresh or dried agar cultures of glanders. This difference is explained by the assumption that the filtrate of bouillon cultures of glanders bacilli contains the soluble toxins of the glanders bacilli only and not the proteins, which on the contrary are found in larger quantities in the aqueous glycerine extract of the glanders cultures triturated with powdered glass.—(*Centralblatt für Bak. Parasit. und Inf. Krank.*)

CONTRIBUTION TO OUR KNOWLEDGE OF THE STUTTGART CANINE EPIZOOTIC [*Dr. Jacob Wohlsmuth*].—The author next

speaks of the symptoms of what on account of the locality in which it first appeared was called the Stuttgart infectious disease of dogs, which as we know are those of a severe gastro-enteritis with ulcerative processes in the oral cavity and intestinal tract, which make their appearance rapidly and usually terminate fatally. After recounting the results of 49 post-mortems W. speaks of therapeutic measures. He advises, if possible, early in the disease, the frequent flushing of the stomach and intestines with warm, thoroughly diluted liquid disinfectant solutions (creolin, lysol, bacillol, etc.) the body being kept warmly clothed (wrapped up). To combat the debility the hourly administration of a tablespoonful of pure, strong warm black coffee, and to prevent vomiting 15 drops of ethereal tinct. of valerian, three times daily. When the appetite returns two to four doses daily of bismuth subsalicylate and sodium bi-carbonate $\bar{a}\bar{a}$ O. 5.—(*Tier. Centralblatt*, 1905, No. 8.)

CONCERNING THE POSSIBILITY OF THE DISSEMINATION OF TUBERCULOSIS THROUGH THE USE OF SALTED MEATS [*Towzig*].—Towzig alludes to the fact that the meat of tuberculous animals from which the diseased parts have been removed, is declared free, notwithstanding there can be present sufficient infected material in the lymph spaces and in the muscular interstices. That salting and smoking does not destroy the spores. In a series of experiments Towzig has attempted to demonstrate in the Hygienic Institute at Padua by inoculation upon guinea-pigs the danger of infection from Salami sausage made from the meat of tuberculous animals. (Towzig's experiments must be viewed in the light of scepticism, since many other careful investigations long since proved the untenability of the results of his investigations.)—(*Munchener Med. Wochenschrift*, No. 29.)

BLOODY MILK.—Tierarzt Horst reports the case of a newly-bought cow in the advanced stage of pregnancy which in testing for milking qualities gave a dark red milk from all four teats and which in consistency and fluidity resembled milk. Examination of the udder proved an absence of mammitis. Microscopical examination revealed the presence of innumerable red blood corpuscles; the *Bacillus prodigiosus* was not found. He advised the owner to wait until the cow calved; this event occurred in due time. The red milk disappeared the first days after calving and the animal is now the best milch cow on the premises.—(*Berliner Tier. Wochenschrift*, No. 24.)

ENGLISH REVIEW.

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

A CASE OF ABDOMINAL STRANGLES [*H. D. Jones, M. R. C. V. S.*].—Recently bought, this Irish gelding, six years old, has not been well since purchased. Lays down often, appetite capricious, yet in fair condition; mucous membranes pale, pulse small, temperature 101 F. He was placed under observation, as he presented nothing definite for a diagnosis. His condition remained about the same, as related by the owner. He had no abdominal pain, appetite very poor, fæces very small and dry, and he constantly laid down. His temperature registered once 102.6. By rectal examination a huge mass could be detected, on the right side, a little back of the kidney. It was fairly hard and felt heart-shaped, with the apex toward the anus. It was slightly movable. As the case seemed to be hopeless, no special treatment was prescribed, and the animal was turned loose in a small paddock and watched. After two months he died, and at the post-mortem the large mass, which weighed 18 pounds, proved to be an abscess, to which the small intestine was adherent. Streptococci of strangles were found in the pus. The case was evidently the abdominal form of that disease.—(*Veterinary Record, Oct. 14, 1905.*)

CURIOUS FOREIGN BODY IN THE LUNG [*James Smith, M. R. C. V. S.*].—Record of the post-mortem of a three-year-old bullock, which was suffering with pneumonia, and as he was getting worse, was slaughtered. At the dressing of the carcass an abscess was found under the pleura, near the apex of the right lung, containing about four ounces of very fetid pus. In it was found the end of a briar, which on being traced up was seen entering from a small to a larger bronchial tube and terminating at the bifurcation of the trachea. It measured a foot and a half in length, and had 15 thorns and two dead leaves on it.—(*Veterinary Record, Oct. 14, 1905.*)

A STRANGE ABNORMALITY IN A TWO-YEAR-OLD RIDGLING [*R. Mason, M. R. C. V. S.*].—At the time of the operation a large mass was found on the right side, to all appearances too large to pass through the inguinal ring. There were adhesions, which had to be broken up, so as to free the mass. By gentle and steady traction it was then brought down into the scrotum easily, and proved to be an abnormally large testicle, having on

its side, attached to it, a smaller soft testicle. Each of the organs had its own well-developed spermatic cord. The testicles were united by a thick round cord about three inches long, Siamese-twin fashion. The colt made a good recovery, and the operation was a success in modifying the disposition of the colt. The author asks if a similar condition had ever been observed by others.—(*Veterinary Record*, Oct. 21, 1905.)

UNUSUAL CASE OF MILK FEVER [*J. H. Parker, M. R. C. V. S.*].—A five-year-old pure-bred Jersey cow calved May 3, and on the 4th is found down unable to rise. Seen that morning by the author, she is quite comatose, and, looked at casually, appeared as if she was dead. The udder is injected with air filtered through cotton wool containing a little iodoform, and the spine is stimulated. In the evening at 6 o'clock she is up and feeding. The next morning, 5th, she is found down again, comatose, and in as bad condition as the day before. Air is injected every two hours. In the evening she is improved, resting on her sternum, and the next morning is up and appears all right. She is down again on the 7th, comatose. Same treatment is renewed, and she slowly recovers; it took her a week. She showed during that time partial loss of power—now it seems in the fore part of the body and again in the hind quarters. The right hind leg is swollen, and pits on pressure. On the 17th she has sloughing of the skin on the back of the fetlock, followed on the 24th by that of the inside claw. A leather boot was made, into which the toe was dressed, allowing of the formation of a brittle kind of horn. Finally the cow got entirely well, and has fattened two calves during the summer.—(*Veterinary Record*, Nov. 4, 1905.)

PAPILLOMATOUS GROWTHS IN THE ŒSOPHAGUS OF A HEIFER [*R. J. Hickes*].—For the past few months this animal, which is two years old, has had repeated attacks of choking, and lately these have become so frequent that the œsophagus shows marked distension after feeding. For a while the diet has been entirely milk, thick gruel of oatmeal, and linseed; but after a month of this regime the animal has lost flesh rapidly. The œsophagus then from the angle of the jaw to the entrance to the chest is distended and nearly the thickness of a man's arm. Supposing the presence of a jabot within the thoracic cavity, slaughtering is recommended. When the œsophagus is removed and opened the mucous membrane in its whole length is found covered with warty growths. Some of these are of the thickness of a finger and an inch and a half long, not differing

much in appearance from the papillomatous growths so frequently found growing on the skin of young cattle.—(*Veterinary Record*, Nov. 11, 1905.)

CYSTIC TESTICLE IN A CRYPTORCHID HORSE [*R. J. Hickes*].—This is the record of an operation performed on a three-year-old coaching stallion, which had not been castrated earlier because of the absence of one testicle—that of the right side. The steps of the operation were well performed, and the hand introduced in the abdomen. On tracing the spermatic cord, instead of finding the testicle, a large object was discovered, giving the impression of a largely distended urinary bladder. This object was adherent to the floor of the abdomen, from which it was detached with some difficulty. Finding it too large to pass through the opening and to be withdrawn from the abdomen, it was punctured with an exploring needle and drained of its contents until sufficiently reduced to be brought out to light, when the operation was concluded with the ecraseur. The cyst was afterwards refilled at the water tap to its previous state of distension, as far as it was possible to judge, and its contents measured nearly 39 fluid ounces. No portion of the normal gland tissue of the testicle could be found in connection with the cyst, and the condition of the epididymis was normal.—(*Veterinary Record*, Nov. 11, 1905.)

HYDRONEPHROSIS IN A COW [*A. Spreull, F. R. C. V. S.*].—This is the record of the case of a cow in which an accurate diagnosis of her ailment had not been made, as, although apparently very sick, she had not presented any special symptoms, beyond intestinal disturbances, manifested by a very profuse fœtid diarrhœa, and an unhealthy, itching coat. Tonic treatment and nutritious regime was prescribed, which seemed to improve her for a while, but one morning she was found by her owner in a dying condition, and she was killed at once. Her carcass was found well nourished, fairly fat, and free from any kind of disease, except toward the kidneys. These on being removed were found to weigh respectively ten and sixty-three pounds. The large kidney was one of hydronephrosis, probably due to obstruction of the ureter. Almost the entire substance of the organ had disappeared under the pressure of the accumulating urinary secretion, and the organ was represented by a series of thin-walled cavities, containing a yellowish-white, turbid but not putrid liquid. The smaller kidney, although weighing ten pounds, was not cystic, and its enlargement appeared to be due to hypertrophy.—(*Jour. of Comp. Pathology and Therapeutics*.)

PERINEAL HERNIA IN A DOG [*Geoffrey Livesey, M. R. C. V. S.*].—Suffering from rectal impaction, an Irish terrier, about ten years old, was brought to the author. The rectum was enormously distended and it took considerable time and trouble to remove the fecal collection. Since then a swelling appeared and gradually increased until it assumed large proportions. The dog grew worse, had other impactions, and, although repeated enemias were given, became a sad sight. Another impaction had been removed, but the swelling was always there disfiguring the animal, situated as it was on the right side of the tail and anus, pushing the anus over to the left. The skin over the tumor was easily compressible with the fingers, and felt like the inflated walls of a cavity. Rectal examination gave no clue to the nature of the swelling. The prostate was enlarged and painful. Although the swelling was slightly influenced by the position of the dog, it could never disappear entirely. An operation was decided upon. The swelling was incised, a cavity exposed, from which escaped a large piece of omentum. The diagnosis was evident. The omentum was replaced, kept in the abdomen, and stitches applied. This part of the operation was more difficult than anticipated. "The skin and fascia forming the roof of the growth offered a good hold. Four good deep stitches were inserted between the roof and floor of the sac, thus obliterating the cavity without injuring or interfering with the rectum. A strip of skin was slipped from the edges of the outer wound and a row of closely placed interrupted sutures of silk worm gut inserted, the surface washed with perchloride, dried and covered with the preparation 'new skin' (?) over cyanide gauze." The dog did well and the hernia never recurred.—(*Veterinary Journal, Nov., 1905.*)

THE New York State Board of Health has burned the barns on the Scarsdale Estate (formerly the country home of the late merchant-prince A. T. Stewart), as they were declared to be a breeding place for glanders. Seven horses found on the premises suffering from glanders were shot.

VACCINATING THE SOIL is greatly encouraged by the U. S. Department of Agriculture. This department is sending out packages of bacteria for the purpose of fertilizing the soil. These microbes have the power of taking nitrogen from the air and storing it in the soil, and thereby greatly increasing the yield of peas, beans, etc.

CORRESPONDENCE.

THE ETIOLOGY OF AZOTURIA.

LOS ANGELES, CAL., February 20, 1906.

Editors American Veterinary Review :

DEAR SIRS :—I have just finished reading Dr. Pressler's paper on azoturia, and, while I think his ground is absolutely untenable, it shows what a diversity of opinions men may have on the same subject.

Azoturia is one of the most frequent diseases we have in California. I have seen many hundreds of cases; some died in two hours, others lived for six weeks; some got well that I did not think had a ghost of a chance, and others died that I thought had no right to.

We have it at any season, after enforced idleness, regardless of temperature: more common in winter, as that is the season when rains interfere with work; not because it is cold, as there is hardly a day in the year that the thermometer will not go up to 60°. Have seen it after one day's rest, and in one instance where the horse had not been out of a small corral for a month.

I cannot see that sex makes any difference, or that one attack increases the fatality or violence of a subsequent one; have known horses to have a light attack five or six times, that would be partially due to increased knowledge of the driver, who would immediately stop at the first symptoms.

I don't believe there can be any doubt about the disease being caused by an over-accumulation of albumen in the system, but what the pathology is and what chemical change takes place will take a different shaped head than mine to find out.

In this State, 99 out of 100 horses are fed barley grain and some form of grain hay, either wheat, oats or barley, mostly the latter, all very rich in albumen. When I lived in Kansas twenty years ago, where the prevailing feed was corn and prairie hay, the disease was almost unknown, and when it did occur it was in an oat-fed horse.

I am told that in the Southern States where corn is fed, veterinarians never see a case. Of course they work mostly mules, and I have never seen or heard of a mule having it. The most of the cases here are light attacks that pass off with a few hours' nursing and treatment, but of those that go down the mortality is very great.

Now, I want to ask a few questions through the REVIEW,

and I hope it will receive a hearty response from every State in the Union; so that when published it will give us a mass of data that will be valuable:

Is azoturia common in your locality?

Is it very fatal?

Have you ever seen it in mules?

What kind of hay and grain is fed in your State mostly?

What season of the year is it most prevalent?

A concise and early answer to the above, sent to the AMERICAN VETERINARY REVIEW, will confer a great benefit to all veterinarians.

Don't think there will be so many that yours will not be needed.

R. T. WHITTLESEY.

THE INJURIOUS EFFECTS OF MALVA PLANT.

SANTA BARBARA, CAL., Feb. 15, 1906.

Editors American Veterinary Review:

DEAR SIRs:—Is the common malva plant (*Malva Borealis*), which grows so extensively upon the cultivated and pasture lands of the Pacific Coast, ever injurious to stock?

Scientific botanists say no, it cannot be, for it belongs to a harmless natural order of plants.

The Department at Washington, in reply to my query, stated that the only previous intimation of such a suspicion that had been reported to them had been from a veterinarian in Arizona.

The majority of stockmen will look at you in amazement when such a question is proposed, because they know that stock of all kinds eat it readily and seem to thrive upon it when other green feed is scarce. But some of the more observing stockmen, and especially butchers, while admitting that stock will thrive upon it, claim that if stock which has been feeding upon it for some time are called upon for any unusual amount of exercise, symptoms of a sort of nervous collapse are liable to develop suddenly, and, if the affected animals are still urged on, they are liable to go down and probably never get up.

During our drouth of a few years ago pastures were dried up, feed of all kind was scarce and high priced. When the rains came malva was the first vegetation to spring up, and soon furnished almost the exclusive food for a large portion of our stock. When the time came to put the horses to work the alarm was

sounded that some new disease was prevailing among the horses of this locality, from the effects of which a number had died. Horses that seemed alright when harnessed in the morning would give out and go down while at work. Colts that were being transferred from one pasture to another a few miles distant went down on the road. Investigation showed that the same symptoms developed in cattle when called upon for unusual exercise.

My first experience was for a patron who owned a number of horses and was depending upon the green feed, which was almost exclusively malva, to support them. He had caught up four head and brought a moderate sized load to town, a distance of about three miles. On arrival, noticing that one horse was sick, he drove at once to my place. When I went out the animal was standing in a team with head down, legs braced, muscles all quivering, the respirations quick and shallow. In fact, presented a case that might easily have been mistaken for acute indigestion. We had to go about four blocks to the stable. I was fearful that she would go down before we could get there. Imagine my surprise on seeing her grab a mouthful of hay as she staggered past the manger into a box-stall, where she dropped down, heaved a big sigh, just as a person will do when exhausted, and began munching away at the hay. I gave a dose of eserine and pilocarpine. She soon seemed to be getting easier, and I left, returning in about one hour and a half. I found her standing at the rack eating hay, the medicine having operated. This same patron had a similar case a few days later. I was out when he called; the horse was left at the stable without any treatment, with orders for me to attend to it as soon as I arrived. It was about one hour and a half later when I returned and found the horse standing at the rack eating hay apparently as well as the one I had treated. I made up my mind that I had something new to deal with, so set about investigating it.

This same owner had other horses affected later, and found that if they were allowed to stop and rest as soon as the first symptoms appeared, they would soon recuperate, while one or two that were taken on the road home, and that he urged on, endeavoring to get home, went down and took several days to recover.

From what I could learn in all cases where death occurred, the animal had been urged on until it collapsed and went down.

Since that time I have been always on the alert for information concerning the effects of feeding malva. I have met a

number of stockmen who have noticed the same effects that I have mentioned, and I have met with several cases that I diagnosed as malva poisoning, and investigation proved that in each case the animal had been subsisting largely upon malva for sometime.

With a complete change of feed, it requires sometime before the animals cease to show the effects of the malva when called upon for unusual exertion.

Have any of the readers of the REVIEW noticed any ill effects from the use of malva, and can any one explain the nature of the disease? Respectfully yours,

JAMES H. HESTER, V. S.

IN RECOGNITION OF THE DISCOVERER OF THE SCHMIDT TREATMENT.

WEeping WATER, NEBR., March 17, 1906.

Editors American Veterinary Review:

DEAR SIRs:—I take pleasure in sending a translation from a Danish newspaper, which I am sure will be of interest to the veterinary profession in America.

“Last October it was unanimously decided by the Royal Danish Agricultural Society to present Veterinarian I. I. Schmidt, of Kolding, Denmark, the Gammeleje Honor Prize, the first time it is to be presented. The Society individually has also honored Mr. Schmidt by presenting him a large silver loving cup, accompanied by a diploma with the following inscription: ‘The Royal Danish Agricultural Society has herewith the honor to present you the Society’s largest Silver Cup, which we beg of you to accept as an evidence of the admiration and gratefulness that the Danish Agriculturist cherishes towards you for the valuable discovery of successfully treating Parturient Paresis.’”

Would it not behoove us as veterinarians of the United States, who have reaped such a great benefit from this discovery, to in some way show Mr. Schmidt an evidence of our appreciation? Respectfully yours, H. JENSEN.

THE ITALIAN EXPERIMENTS WITH BOVOVACCINÈ.

NEW YORK, Feb. 26th, 1906.

Editors American Veterinary Review:

DEAR SIRs:—Again referring to the correspondence entitled “The Present Status of Vaccinations against Tuberculosis in Cattle,” appearing in your January number of the pres-

ent year, we beg to say that we have recently received information in regard to the experiments with von Behring's bovovaccine by the Italian Commission, of which the article referred to speaks. From the information received (which came in the form of a private communication from Prof. Belfanti, of Milan, to Prof. von Behring), it would appear that the experiments are as yet not finished.

Prof. Belfanti, in referring to the two vaccinated calves, which had subsequently been subjected to a test-inoculation with tubercular virus, of bovine origin, and which upon slaughter were found to be slightly affected with localized tubercular lesions, writes the following:

"We have received the impression that a resistance against the injected virus had actually been established, and that the lesions of tuberculosis as found had probably developed during the period between the first and second vaccinations, owing to the fact that in the region where these experiments were being conducted, tuberculosis was especially prevalent."

Inasmuch as these experiments were begun with 15 animals, only four of which have so far been reported upon, it is evident that we must await the final report, which is due to appear very soon, before any conclusions can be drawn.

Very respectfully,

C. BISCHOFF & Co.

It is not the amount of knowledge a man has that makes him a good physician; it is the amount he uses.—(*Exchange*).

"THE MARCH REVIEW was a whopper and no mistake. The Chicago inspectors have repeatedly expressed their admiration for the work which the REVIEW is doing.—(*D. Arthur Hughes, Vet. Ins., Commissary Dept., U. S. Army, Chicago.*)

TOTAL VALUE OF ANIMALS on farms \$3,600,000,000! This in a word is the showing in *New England Homestead's* annual inquiry into the numbers and values of animals on the farm at an early January date. The sum named, difficult to grasp in its vastness, is nearly \$300,000,000 more than the total value of live stock on the farms a year ago. Every branch of animal husbandry shows gratifying gains, nowhere so marked as in horses. The figures indicate that the general price tendency is upward, the possible exception being beef cattle, which show an average price very much as a year ago. Compared with the low point of some years ago, when everything was very much depressed, prices in some instances have more than doubled.

BIBLIOGRAPHY.

THE PATHOLOGY AND DIFFERENTIAL DIAGNOSIS OF INFECTIOUS DISEASES OF ANIMALS. By Veranus Alva Moore, B.S., M.D., Professor of Comparative Pathology, Bacteriology and Meat Inspection, New York State Veterinary College. Second Edition, revised and enlarged. Illustrated. Ithaca, N. Y.: Taylor & Carpenter, 1906.

This important text-book was first issued about three years ago, and it was received by the profession with that confidence which the great reputation of its author justified, being regarded as an exposition of the subject by one who is not only a very hard student in his chosen field, but one with vast experience and exceptional opportunities, as well as natural adaptability. In the second edition Dr. Moore (who gracefully and gratefully dedicates his work to the man who has done so much for comparative pathology, Dr. D. E. Salmon), has taken advantage of the advances that have been made in the study of the various infections of animals, and the work in its present form, while condensed into the fewest words commensurate with a clear statement of all the accepted knowledge upon the nature of infectious diseases, may be regarded as a complete presentation of the pathology and differential diagnosis of the various infections.

The classification of infectious diseases according to their etiological factors is undoubtedly the most rational and best method, and the author adheres to a system of description which omits nothing that is essential in their study. For instance: The successive sub-headings in the study of an individual disease include the name and its synonyms, characterization, history, geographical distribution, etiology, symptoms, morbid anatomy, and differential diagnosis, together with an extensive bibliographic reference.

The book is divided into fourteen chapters, and the following gross *résumé* of their subjects will give an idea of the extent of the field covered: Chapter I., general consideration of etiology, infection and specific infectious diseases; Chap. II., diseases attributed to wound infection; Chap. III., diseases caused by bacteria—genus, streptococcus; Chap. IV., diseases caused by bacteria—genus micrococcus; Chap. V., diseases caused by bacteria—genus bacterium; Chap. VI., diseases caused by bacteria—genus bacillus; Chap. VII., diseases caused by bacteria—family spirilliaceæ; Chap. VIII., diseases caused by fungi; Chap. IX., diseases caused by protozoa—genus piroplasma; Chap. X., diseases caused by protozoa—genus ameba; Chap. XI., diseases caused by protozoa—genus trypanosoma; Chap. XII.,

infectious diseases for which the specific cause is not yet determined; Chap. XIII., immunity and protective inoculation; Chap. XIV., disinfection.

The REVIEW commends most heartily this splendid product of the great energy of probably the most capable author in this country upon a subject which is his life-work. The publishers have done full justice to the work in the matter of typography and general excellence of the materials used. It is safe to say that every library which aspires to possess the best works on all veterinary subjects must have in a prominent place Dr. Moore's book, or else abandon its title to completeness.

DISEASES OF THE HORSE'S FOOT. By H. Caulton Reeks, F. R. C. V. S., author of "The Common Colics of the Horse." Chicago: Alex. Eger, 1906.

The virtual *furor* created among veterinary practitioners by the work on "Colics" by Mr. Reeks, resulted in his undertaking the preparation of the present volume on that other seat of practical problems for the practicing veterinarian, the horse's foot. He has gone about the subject in that energetic and decisive manner that characterized his maiden effort, with the result that he now offers to his *confrères* a complete treatise upon the diseases of the intricate structures of the essential organ of locomotion. We have carefully examined this volume, and nothing appears to be omitted which was best in other textbooks, while much is offered which is new and original with its original author. He goes at the subject in a systematic manner, taking first the regional anatomy, then general physiological and anatomical observations, methods of examining the foot, general remarks on operations on the foot, faulty conformation, diseases arising from faulty conformation, wounds of the keratogenous membrane, inflammatory affections of the keratogenous apparatus, diseases of the lateral cartilages, diseases of the bones, and diseases of the joints. Under the above classification nothing is overlooked, while throughout the whole range of the subjects the individual judgment of a close and intelligent observer stand out boldly, giving the work a much greater value than is possessed by those which simply codify from the writings of others.

Alex. Eger, of Chicago, places the work on the American market, in a manner worthy of its valuable contents. All who have read the "Common Colics of the Horse," will readily become owners of this work on the foot, besides a vast number who find that specialization on lameness necessitates the ownership of every good addition to the literature of the diseases of the feet.

SOCIETY MEETINGS.

VETERINARY ASSOCIATION OF MANITOBA.

The annual meeting of this Association was held in the City Hall, Winnipeg, on Tuesday, Feb. 13th, 1906, at 9.30 A. M., the President, Hon. D. H. McFadden, in the chair. The following were present: — Drs. Bradshaw, of Portage la Prairie; Cook, Virden; Cruikshank, Deloraine; Dunbar, Winnipeg; Harrison, Glenboro; Hayter, Birtle; King, Souris; Irwin, Stonewall; C. Little, Winnipeg; M. Little, Pilot Mound; Leslie, Melita; Mack, Neepawa; Martin, Winnipeg; Milloy, Morris; McFadden, Emerson; McArthur, Hartney; McGilvray, Winnipeg; Ovens, Swan River; Rowcroft, Birtle; Rombough, Morden; Scurfield, Crystal City; Stevenson, Carman; Simpson, Yorkton; Swenerton, Carberry; W. Thomson, Minnedosa; Torrance, Winnipeg; Whaley, Glenboro; Welch, Roland; Williamson, Winnipeg; Woods, Winnipeg; and Young, Rapid City.

The minutes of the previous meeting having been read and adopted, the auditors presented the following auditor's report;

"This is to certify that we have this day examined the books of the Manitoba Veterinary Association and find them correct.

A. E. Williamson.

"Chas. Little."

On motion of Drs. Stevenson and McGilvray, the report was adopted.

REPORT OF THE SECRETARY-TREASURER AND REGISTRAR.

The Secretary-Treasurer and Registrar then presented the following report:

"The past year seems to have been a prosperous one for the veterinary profession, the high price of horses and the prevalence of disease combining to make veterinary practice profitable.

"Unfortunately it does not seem to have rendered our members any more prompt than usual in the payment of their dues, and I am sorry to report that sixteen are in arrears. It is to be hoped that these will pay up promptly in the new year.

"Our Association has lost two members during the past year, one, Dr. A. R. Douglas, having left the province; the other, Dr. Walter Hurt, of Whitewater, died at the Winnipeg General Hospital, January 18th, last. Walter Norman James Hurt

was the son of Lieut. Hurt, a naval officer, and a member of an old Derbyshire family. He was born in 1875 and came to America about fourteen years ago, and after living in Colorado a short time, came to Canada, entered the Ontario Veterinary College, and graduated in 1896. After practicing in Ontario for some time he came to Manitoba and registered in July, 1898, practicing at Belmont and afterwards at Whitewater. His fatal illness arose from a slight injury received while on horseback, the horse stumbling and throwing him against the pommel of the saddle. Microbic invasion followed the injury, his leg became immensely swollen, and despite all that medical science could do he passed away after a long illness. He was greatly respected in his district and will be a loss to the community in which he lived. He was buried in St. John's Cemetery, several members of this Association attending the funeral.

"As Registrar I beg to report the following new members registered after passing the required examination: D. A. McArthur, Hartney, McKillip, '05; Wm. Thomson, Minnedosa, McKillip, '05; M. B. Stiver, Elgin, Ont., '95; T. Z. Woods, Winnipeg, McKillip, '05; H. Bradshaw, Portage la Prairie, Ont., '89; M. S. Kennedy, Elm Creek, McKillip, '05; L. H. McQueen, Selkirk, M.R.C.V.S., '06; Hugh Ovens, Swan River, Ont., '81. The total membership of the Association is now 86.

"As Treasurer I beg to submit the following financial statement:

"*Receipts*.—Annual fees, \$128.00; examination fees, \$200.00; interest, \$77.8—\$335.78; Balance 1905, \$249.44. Total, \$585.22.

"*Expenditures*.—Printing and advertising, \$95.70; grants and prizes, \$11.55; expenses of meetings, \$19.10; stamps and stationery, \$30.90; Secretary's salary, \$45.35—\$202.60; balance, 1906, \$382.62. F. Torrance, *Secretary-Treasurer*."

Upon motion of Drs. Dunbar and Little, the report was adopted.

PRESIDENT'S ADDRESS.

The President then addressed the meeting, expressing his pleasure at seeing the large gathering of veterinarians from all parts of the province.

He was glad to hear from the reports of the Secretary-Treasurer that the Association was in such a prosperous condition. It had now passed its period of weakness and was a strong, vigorous organization, and could point with pride to the best Veterinary Act on the statute books of any country. During

the past year he had looked into the standing of the veterinary profession in various countries, especially with regard to education, and had reached the conclusion that Canada was very much behind the rest of the civilized world in this respect. In European countries the average period of tuition was six or seven terms of six months each. In England four years was required, in America three years is the minimum with the exception of two private institutions, the Grand Rapids Veterinary College and the Ontario Veterinary College. He was glad to know that the profession in Ontario was alive to the necessity of better veterinary education, and was moving for the establishment of an up-to-date veterinary college, and from personal knowledge on the matter he believed the Government of Ontario was going to take the matter up and establish a veterinary college in connection either with Toronto University or the Ontario Agricultural College. He thought it would be wise for this Association to take steps to make known to our brethren in Ontario that we sympathize with the efforts they are making to elevate the standard of the profession.

In conclusion he thanked the members for their attendance and hoped they would find it a pleasant as well as a profitable meeting and assured them that, whether in active practice or not, he would do all in his power to advance the interests of the profession. (Applause).

The election of officers resulted in the following :—

President—Hon. D. H. McFadden.

Vice-President—W. E. Martin.

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

Other Members of Council—W. A. Dunbar, Winnipeg; J. A. Stevenson, Carman; R. D. Scurfield, Crystal City, and C. D. McGilvray, Winnipeg. Examiners—Drs. Martin, Stevenson and Torrance.

The annual fee was fixed at two dollars.

Dr. Dunbar read a paper on a case of "Tumor of the Mammary Gland of a Mare" successfully removed, and exhibited the specimen weighing 11 lbs.*

The meeting then adjourned till evening.

On re-assembling at 7.30 P. M. Dr. Mack, of Neepawa, read a paper on "Puerperal Apoplexy," which was well discussed.

Dr. McGilvray then read the following paper upon "Glanders":

* Dr. Dunbar's paper and the discussion thereon will appear in the May REVIEW.

GLANDERS.*

By C. D. MCGILVRAY, V. S., Winnipeg, Manitoba.

"In dealing with this subject it is my intention to do so chiefly with the end in view of placing before this Association what I might term as the, at least to me, 'enlightened practical experiences' gained during the past year whilst engaged in control work, dealing with outbreaks of glanders.

"*Prevalence.*—Outbreaks have been numerous during the past year, and the number of animals which it has been necessary to slaughter on account of being affected with glanders has been largely in excess of any previous recorded year in Manitoba, as shown by departmental reports. (In Health of Animals reports issued by Manitoba Department of Agriculture for years 1902, 1903 and 1904 and report for year 1905 of the Health of Animals branch, Dominion Department of Agriculture, which shows an increase in prevalency.)

"The increase in prevalency has no doubt been due largely to the lack heretofore, prior to Feb. 1st, 1905, of an adequate and effective policy of dealing with outbreaks.

"*Past Methods of Dealing with Outbreaks.*—Prior to February, 1905, at which time Manitoba was brought under the Federal Animal Contagious Diseases Act, in many of the outbreaks of glanders the clinically affected animals were the only ones dealt with and destroyed, the remaining contact animals on the premises being entirely overlooked and no definite steps taken at the time of inspection to ascertain their actual freedom from the disease, except by quarantining for a short period, at the end of which, if they did not develop any visible clinical symptoms, they were released as being healthy! *Non sequitur.*

"As you are no doubt aware, quarantining in the case of contact-infected animals to be of any avail would require to be an extended one of months and years, as an animal can be affected with an occult, latent or concealed pulmonary glanders and may remain so even for years, appearing to all outward appearances healthy, but nevertheless diseased.

"Again, when the necessary steps were taken to ascertain the actual condition of the contact animals on the premises as to health by the use of mallein, and where these contact ani-

*In a private letter Secretary Torrance says: "I commend to your especial notice Dr. McGilvray's essay on glanders. He has had a wide experience during the past year, having devoted his whole time to the suppression of glanders in this Province, and his paper is original in the best sense of the word."

mals did react to the test, slaughter was not in all cases enforced owing to the lack of an adequate compensation policy (as no provision was made as to the compensation for animals slaughtered, except wherein provided for by the rural municipalities). The non-enforcement of slaughter of these contact-infected animals which had reacted to the mallein test may be excusable, as these animals, although diseased and dangerous, still possessed a certain value to their owners, as their usefulness for work was not impaired.

“ However, on the other hand, no valid reason can be given as to why these animals were allowed to be retained indefinitely by their owners without any definite restrictions and limitations being placed upon them. Under the then existing conditions what could and no doubt did occur in some instances, was twofold. Firstly, the owners now being in possession of an information and knowledge leading them to suspect these contact animals as a result of the mallein test (an information and knowledge to which they had no moral right and under existing conditions never should have had), and, secondly, on the other hand, being given to understand that these contact animals were healthy, without any definite steps having been taken to ascertain such by the use of mallein, they were very often thus, both knowingly and unknowingly, disposed of by their owners to some unsuspecting purchaser, thus giving rise to what might be termed a migration of contact-infected animals from one part of the province to another, constituting new areas of infection and giving rise sooner or later to outbreaks of glanders in what had hitherto been a healthy district. This has also occurred from the importation of the same class of contact-infected animals from the western ranges and the United States.

“ Whilst glanders has been considered for ‘ages past’ both by professional men and intelligent horsemen as a disease which on account of its nature should be controlled and eradicated if possible, still the *bete noir* has apparently been what measures to adopt and enforce as a means of effectually controlling and eradicating outbreaks.

“ The methods adopted by those engaged in this control work, not only here but elsewhere, have been varied, showing a wide divergence of opinion and method on the part of those engaged in such work, exhibiting in some instances not only a lack of knowledge as to the true nature of glanders, but a total unfitness for such work. This probably can be accounted for

in part by the unsound teachings which many of us have obtained in certain veterinary institutions at the feet of far more mysterious than otherwise enlightened teachers; also from certain text books which have taught that glanders was not a very contagious disease, and that it was easily recognizable, as it was characterized by an inodorous unilateral discharge from the left nostril, which was associated with a visible ulceration of the nasal mucosæ under aë, enlargement and induration of the sub-maxillary glands which became adherent to the bone; or by the presence of farcy buds or ulcers on the limbs or body, and that a horse affected with glanders will show either one or more of these classical symptoms. All such text books, teachers and teachings, should, if not already there, be relegated to the category of 'derelicts and ancient historians,' as the true and unvarnished fact is that the majority of horses are not affected with clinical glanders showing plainly visible symptoms, but are affected with an occult, latent glanders (concealed pulmonary) without presenting any of the classical train of plainly discernible symptoms. Let us look with impartial eyes at the list of classical symptoms which many of us have had thus instilled into our minds and see how they compare with the actual symptoms presented.

"*Discharge from the Nostrils.*—The discharge is usually from one nostril, but can and does very frequently take place from both, especially in advanced cases. It is not limited to the left nostril, but can and does take place from either right or left. (The left probably a little more frequently than the right, which no doubt has given rise to the erroneous impression that the left only was diagnostic.)

"The discharge, no matter from which nostril, is invariably of an adhesive (starchy) nature, which varies in color and consistency (in early stages it is quite thin), usually appearing gradually as a leaden, greyish or greenish-yellow color, sometimes tinged with blood (as when the ulceration has affected vessel walls.) is very often not only slightly odorous, and in many cases distinctly so. The discharge very often ceases from time to time, appearing periodically.

"Very often there is present a slight but persistent adhesive muco-purulent discharge from the inner canthus of either eye.

"*Ulceration of Nasal Mucosæ.*—When the disease is accompanied by a more or less profuse nasal discharge there are usually present erosions and ulceration of the mucosæ of the upper air passage, but only in a very small percentage of the

clinical cases which have come under my observation has the ulceration been situated under the alæ and visible, its situation being far more frequently located higher up, either in the nasal chambers, sinuses, larynx or trachea and thus invisible to the unaided eye. In the absence of visible ulceration of the nasal mucosæ we should therefore not exclude the possibility of glanders being present, as a visible ulceration under the alæ is the exception and not the rule the more frequent visible condition being a roughness and slight discoloration of the nasal mucosæ.

“Ulcerations of the mucous membrane quite often heal and leave a cicatrix.

“*Enlargement and Induration of Sub-maxillary Glands.*—This condition is characteristic of the large majority of clinical cases and may be present even in the absence at that particular period of observation of any visible nasal discharge.

“This enlargement is due to and results from irritation of the mucosæ of nasal cavities and absorption of poisonous products.

“However, while we find an indurative bosselated condition of the sub-maxillary glands very frequently in glanders, still only in a very few, indeed, do we find that these glands have become adherent to the bone, although quite often adhering to the skin and tissues covering them. Where slight enlargement and chronic induration of the sub-maxillary glands is present which, for want of a better term I call ‘woodiness,’ even in the absence of any visible nasal discharge, we should always be suspicious of that individual animal as being possibly glandered (this has been proved by the large number of these which will react typically to mallein). The sub-maxillary glands affected in glanders of horses seldom suppurate, although I have noticed in several cases a purulent focus and typical farcy bud in the skin over the gland.

“Enlargement and induration of the glands is not such a frequent accompaniment of glanders affecting mules as in horses. The swelling of the glands may subside from time to time and resume almost normal condition, hence we should not be misled by such occurrences.

“*Farcy Buds and Ulcers.*—Very often the first indication is the presence of a chronic cellulitis and lymphangitis affecting one or both hind limbs, which is usually persistent, and finally breaks out in little ‘blebs’ on any part from the fetlock up to the perineum, exuding at first a tenacious amber-like fluid, and later forming ulcers.

“In some cases boils and typical farcy ulcers will affect the fore limbs (frequently around fore-arm) and the hind limbs be perfectly normal. Nodules and boils may appear on any part of the body quite suddenly and sometimes disappear again, but more frequently break out and discharge.

“It has been made painfully apparent to me during the past year, in spite of the assertions made by some supposed authorities, to the effect that glanders was not a very contagious disease, that it is a very contagious disease to contact horses, and also a great deal more treacherous and insidious in its nature than ordinarily credited. Further I am convinced these supposed authorities who maintain that glanders is not a very contagious disease, have not had any extended practical experience with glanders, and it also shows the superficial nature of their observations, which have not likely extended further than dealing with an affected animal, and its stable companion.

Present Methods of Dealing with Outbreaks.—Through the efforts of Dr. J. G. Rutherford, Veterinary Director-General, this province was brought for the first time (during Feb., 1905,) under the Federal Contagious Diseases Act, which provides for the compensation of owners, for animals destroyed for glanders, by authorized inspectors. The supervision and control of this work having thus been assumed by the Veterinary Director-General, the policy embodied in the regulations relating to glanders drafted by him, was adopted as a means if possible of effectively dealing with and eradicating outbreaks. This policy in brief is that all animals affected with or suspected of being affected with glanders, shall be submitted to the mallein test, and all which react to the test shall be forthwith slaughtered. Compensation being paid to owners, for animals slaughtered, as wherein provided for by the Federal Contagious Diseases Act at the rate of two-thirds the animal's value, with the maximum valuation of \$150 for one animal. Any animals, which on account of a typical or doubtful reaction, are not slaughtered at time of first test, but are ordered to be kept in quarantine, subject to retest at expiration of 40 days, at the end of which time if they fail to react, are released. If on the other hand they react, they are forthwith slaughtered, and owners compensated as wherein provided for. In the event of any owner objecting to the slaughter of any animals (not showing any clinical symptoms) which have given a typical reaction to a first mallein test, these animals are placed under close quarantine restrictions and must not be allowed to be stabled with other healthy

horses, and are to be fed and watered in separate utensils.

“Owners in such cases forfeit any right which they otherwise may have had to compensation, and these animals are re-tested at the end of 40 days from time of first test, and again at end of 60 days from the second test. If they again react typically to these subsequent tests, slaughter is enforced; if on the other hand they fail to react and show no clinical evidence of glanders, they are classed as ceased reactors. They are then allowed to be retained as ceased reactors by their owners, under the following restrictions, contained in a departmental form duly served on owners, viz.:—That these animals are not to be sold or otherwise disposed of, and are to be kept available for inspection at any time, by a duly authorized veterinary inspector, and as a means of identification, these animals are branded E.R. on right hoof, and in the event of an animal dying in the interim between visits of inspection, the owner must produce the branded hoof in verification thereof. It will thus be seen that any animal to which, to say the least, ‘suspicion must attach’ are not allowed to be lost sight of. In view of the foregoing, and with our present knowledge of glanders, it is apparent that these methods are commendable and will bear close scrutiny, and should tend towards eradicating outbreaks, and that with the least material sacrifice.

“The chief aim and object in control work in dealing with glanders must be to restrict all traffic and migrations of reactors, and contact-infected animals as ‘invariably where you find an outbreak of glanders in what has hitherto been a healthy stud, that such outbreaks have originated from, and been caused by the introduction on to the premises of an animal affected with occult glanders, and which was not at the time of its introduction showing any of the well marked discernible clinical symptoms, but was to all outward appearances apparently healthy, though nevertheless diseased.’ The idea is prevalent and maintained by some that a glandered horse is only capable of transmitting infection when clinically affected, either with a visible nasal discharge or farcy ulcers. Such, however, is erroneous and a fallacy, as while no doubt the animal with the profuse nasal discharge is certainly a more dangerous one than the occult affected animal, still nevertheless the latter must also be considered dangerous if only from the fact that they may develop clinically at any time.

“Even, however, in the absence of any well marked clinical symptoms, if we just consider that an animal can be affected

with a primary pulmonary glanders, involving a considerable area of lung tissue, with suppurating foci, discharging bacilli-laden discharges into bronchi and which are in turn expelled with the normal expiratory movements, still not showing any well marked manifestation of disease, then all doubt should at once be removed as to the dangerous nature and infectiveness of a large number of these occult cases.

“*Modes of Infection.*—Some writers and authorities have claimed and asserted that the watering troughs are the chief if not the only methods by which infection is conveyed from one animal to another. Others again are equally confident and assert the respiratory tract is the chief channel of infection, while others claimed to have proved by all sorts of experiments (?) that it only takes place by direct transmission from animal to animal, by means of the nasal discharge (borne out by their actions in only dealing with affected animal, and its stable companion). Such quibblings are, however, of little significance, as undoubtedly infection can and does take place by either of these modes and channels, as well as by other methods, viz.:—

“a. Cohabitation:—This is the chief factor in an outbreak, where animals are kept housed closely together, under poor hygienic conditions, we always find the disease in a more virulent form, with a consequent larger percentage of infected animals.

“b. Intermediary and mechanical means of infection:—This includes infections by means of infected utensils and articles in use; feed, litter, watering troughs, etc., reinfections from infected premises, attendants, etc.

“c. Direct transmission from animal to animal:—This frequently occurs where animals are stable companions.

“d. Aerial infections:—This would occur from bacilli-laden atmosphere where diseased animals are kept housed closely together, finely divided discharges could be suspended in the atmosphere, on particles of dust or moisture, and thus be carried to and infect horses remotely situated in the same stable.

“e. By inoculation:—This could occur through abrasions or wounds either accidentally or experimentally.

“f. Hereditary transmission:—I have seen foals showing unmistakable evidence of glanders, soon after birth, from a glanderous dam; of course conclusive proof as to congenital disease could only be adduced, while fetus was *in utero*, or at birth by microscopical and bacteriological examinations; still, nevertheless, I am of the opinion that foals may in some

cases inherit the disease, *in utero*, from a glanderous dam.

"*Malleinization.*—In spite of all writings and contentions to the contrary, I am convinced that mallein in the hands of competent veterinarians possessed of sufficient professional acumen to discriminate between atypical reactions, which may be obtained in horses suffering from conditions other than glanders, and those typical reactions obtained in testing in actual outbreaks of the disease, is a reliable (not infallible) diagnostic agent, and should be used as an aid to the diagnosis of doubtful cases, and as a means of testing contact animals to detect occult cases, and in such where the reactions are typical, that the correctness of mallein can be verified in at least 95 per cent. of the cases. It is frequently asserted that mallein is unreliable because horses suffering from some other condition and febrile diseases than glanders will react. To this my answer is that this is a wrong application, and that any one who is not possessed of sufficient discernment and acumen to differentiate and eliminate these atypical reactions (usually trifling thermic increases) had better transfer his labors to other channels, and not deprecate and bring into disrepute a reliable diagnostic agent as a result of lack of knowledge, incompetency and wrong application.

"At the outset I may say that no hard and fast rule can be laid down as to what does and does not constitute a reaction, and the possibility of determining a uniform reaction to the mallein test, which could be applied classically to all animals submitted to the test, diseased or otherwise, appears to me at present as chimerical and ambiguous, as I fail to see how it can be done by any set 'rule of two,' as a great deal must, and does depend on existing conditions, as well as on the 'Man Behind the Gun.'

"In submitting horses to the mallein test the following factors should always be kept in view, and if followed would reduce mistakes to the minimum :

"(1.) *Testing in Actual Outbreaks of Glanders.*—Where one or more animals on the premises are showing unmistakable clinical symptoms of glanders we must consider all of the contact animals on the premises as being possibly infected, and their condition as regards freedom from the disease can only be ascertained by the use of mallein.

"Under these existing conditions any reactions obtained as results of mallein inoculation must be ascribed to glanders infection. Even slight reactions obtained under such conditions

must not be overlooked or ignored, as the degree of thermal reaction is not an infallible criterion of the degree of infection, and in any cases of doubtful reaction the animal should not be given the benefit and classed as healthy, but should be classed as at least suspicious until satisfied otherwise by retest, after a period of from ten to twenty days has elapsed. The overlooking, or ignoring slight reactions obtained in contact-infected animals is the stumbling block of the novice and spells failure in control work, as he who does so will be confronted later by a large number of secondary outbreaks and re-infections.

“Where the thermal reaction recorded and taken at intervals of two hours from the eighth to the eighteenth hour after injection reaches 1.5° F., but does not exceed 2.5° F., over a normal initial temperature, taken prior to injection, and is unaccompanied by any typical local infiltration at point of inoculation or any constitutional disturbance (loss of appetite, increased respirations, etc.,) we should consider such as an atypical or doubtful reaction, considering animal as suspicious and hold for retest. When the same degree of thermal reaction is obtained and is accompanied by either a typical local infiltration at seat of inoculation or constitutional disturbance, animal should be considered as diseased.

“When the thermal reaction recorded and taken as above reaches and exceeds 2.5° F. over a normal initial temperature taken prior to injection and presents a mallein curve (consisting of two summits or peaks and a plateau) or a gradual sustained rise of temperature we should, even in the absence of any organic reaction, consider animal as diseased.

“When we have a typical local infusion or infiltration at seat of inoculation and constitutional disturbance present, even in the absence of any marked thermal reaction, we should consider animal as diseased. High initial temperatures recorded prior to injection in contact animals in actual outbreaks should always be considered as due to incubative glanders infection, and should be classed as diseased, until satisfied otherwise by retest, no matter how they act under the mallein inoculation, as sometimes the high initial temperature will decline (a drop or decline reaction) while in other cases the same or slightly increased temperature will be steadily maintained.

“In the event of those recorded with high initial temperatures giving a typical local infiltration at point of inoculation and constitutional disturbance they should be classed as diseased irrespective of thermic variations.

"(2.) *Testing Animals Suspected of Infection.*—When we are in possession of authentic knowledge and a previous history of animals having been in close contact with other clinically diseased animals for any lengthened period, even in the absence of any clinical symptoms amongst the individuals under control, we should consider them as being contact-infected, and classification of reactions obtained should be based similar to testing in actual outbreaks.

"(3.) *Testing Animals where Symptoms Presented are Indicative of Conditions other than Glanders.*—Very frequently where an owner has a considerable number of horses which have become affected with any of the various infectious respiratory catarrhal conditions, and has been unfortunate enough as to incur the loss of several animals, he becomes imbued with the idea that his stud may be affected with glanders. Or, as sometimes occurs, the attending veterinarian is not quite sure of his diagnosis, or has been unsuccessful in his treatment he may 'hedge,' and as a means of 'cover' suggests to the owner the possibility of it being glanders, thus putting the 'onus of decision' upon the control veterinarian.

"Under all such conditions and circumstances it is well to keep in view the fact that we are dealing with a skeptical laity; hence it may be expedient and incumbent upon the control veterinarian to submit such animals to the mallein test. Before submitting such animals to the test (especially where a number of animals are under control and observation) it is advisable to make a thorough physical examination of each and arrive at a rational diagnosis. It will be found when a number of under control are to be tested, that many of them will prior to injection exhibit high initial temperature, and under mallein inoculation, when the temperature is recorded at intervals of two hours taken from the eighth to the eighteenth hour after injection, that the same temperature is only slightly increased or decreased (does not show a decided drop or decline reaction and is steadily maintained, presenting no mallein curve or peak) and that the typical local infiltration is absent. It will also be found that where the initial temperature was normal prior to injection, that the temperature recorded after injection will only be but slightly increased, seldom if ever reaching 104°F., and unaccompanied by any constitutional disturbance or typical local infusion, hence are atypical reactions. Contrast results of testing such animals with those obtained in testing animals in actual outbreaks of glanders, and it will be found in the lat-

ter that there will be decided increases of temperature after injection reaching sometimes 105°F. and 106°F. , also presenting very often a mallein curve, and accompanied in many instances with the typical local infusion and more or less constitutional disturbance.

Testing of Healthy Animals.—In submitting horses to the mallein test without any previous authentic source of infection it will be found that a characteristic reaction is seldom obtained and the temperatures recorded after injection seldom exceed 2.2°F. over a normal initial temperature, and is unaccompanied by a typical local infiltration or constitutional disturbance. When the thermic reaction recorded, however, after injection in presumably healthy horses exceeds 2.5°F. over a normal initial temperature taken prior to injection and presents a mallein curve, or a gradual rise of temperature which is sustained for some time and is accompanied by a typical local infusion or constitutional disturbance, even in the absence of any authentic previous history of exposure to infection, we should consider it as a characteristic reaction indicating glanders, and either destroy animal or place in quarantine for retest.

Conditions and Influences which may Affect Temperature of Animals Submitted to Mallein Inoculation.—In speaking of a normal initial temperature taken prior to injection it would appear that in Manitoba during the greater part of the year that a normal initial temperature must be considered as one which does not exceed 101.8°F. (the average normal temperature of horses in Manitoba from April to December is apparently 101.2°F.)

In submitting horses to the mallein test they should in all cases be placed under normal conditions, fed and watered as usual. During hot weather stables should be kept well ventilated and cool as a physiological increase of temperature can be induced in horses during extremely hot weather if kept in close ill-ventilated stables.

During cold weather animals submitted to the test should be prevented from taking a sudden chill, kept away from undue cold draughts; if necessary body should be blanketed. Horses submitted to the test should not be exercised until after period of recording temperatures has elapsed. All animals submitted to the test should be properly restrained and controlled, so that temperatures can be taken without undue resistance or excitability.

Local Reaction or Swelling at Point of Inoculation.—In

judging of a typical local infusion it depends not so much on its actual size as measured in inches across its surface as on its nature, re-shape and size, situation, tenseness, presence of heat and pain. The typical reactionary swelling is nearly circular in outline and has the tendency of increasing its area from the eighth hour after inoculation, and at the same time extends to and involves the deeper seated underlying muscular tissues, to which the skin becomes closely adherent; to the touch it is tense, hot and extremely painful. Cord-like swellings may extend (from central swelling) towards point of shoulder, causing pain and difficulty of shoulder movement when exercised; when the infiltration assumes such a nature as outlined it should be considered as a typical local infusion irrespective of its surface measurements.

“Where a circular infiltration is atypical it rarely exceeds a diameter of three inches across its surface and will be found to be non-painful, soft and moveable, and does not extend to, nor affect the underlying muscular tissues, but remains localized to the skin; does not perceptibly increase its area after the eighth hour, and has the tendency to become absorbed and disappear before the twenty-sixth hour has elapsed and does not extend towards shoulder joints nor causes stiffness.

“Oblong infiltrations should be carefully noted, as even when of large size they are frequently atypical as a dependent œdema may result from the manner in which the skin has been held, causing a loose oblong fold of skin which may become inflated (where a large sized syringe has been used) at injection. These oblong atypical œdematous infiltrations become rapidly absorbed after the eighth hour and should be differentiated from the cord-like swelling, extending from typical circular reaction, any swelling. They do not extend to or involve shoulder joint, are soft to the touch and not painful, are localized to the superficial tissues and do not extend to nor affect the muscular tissues.

“*Mallein as a Possible Curative Agent.*—During the past four years mallein has been lauded by some as a curative agent; however, I am satisfied that the usefulness of mallein in the control of glanders lies not in any supposed curative effects which it may possess, but in its sensitive diagnostic properties, and should be used as a means of eradication instead of a ‘possible curability.’

“At the outset as a possible curative agent at best it could only have an arresting influence during incubative periods, or early stages of infection, as during later stages it certainly has

no arresting nor curative influences, but instead accelerates the course of the disease.

"The recoveries attributed to mallein treatment have been based largely on the assumption that because a number of horses will cease to react when treated at intervals with mallein that they are cured. To this I must take exception, as the fact of a horse having ceased to react is not an infallible criterion of a permanent recovery (proved by ceased reactors becoming clinically affected subsequently).

"No doubt a number of horses undergo recovery from a glanders infection, and it is more reasonable to suppose that these are natural recoveries as a result of phagocytic influences and bactericidal resistance of the animal economy than as a result of a mallein treatment *per se*.

"A number of these so-called recoveries are more apparent than real; some animals recover from primary lesions of the nasal passages, the ulcerations heal, leaving a cicatrix, the discharge ceases, and glands become normal, but very often while the primary lesions affecting the head have disappeared, a secondary infection of the lungs has resulted, constituting an occult, latent or concealed pulmonary glanders, in which state some animals may continue indefinitely without presenting any outward symptoms of disease."

DISCUSSION.

Dr. Simpson:—"I would like to ask Dr. McGilvray if he has ever had a clinical case that did not react? Also do abscesses ever follow the injection?"

Dr. McGilvray:—"Yes, clinical cases quite frequently do not react, but as a rule these have a high initial temperature and are very advanced cases, and reaction is usually an organic and not a thermal one. These cases have a high temperature from absorption of toxic products of the disease and are not always sensitive to the mallein injection. The absence of thermic reaction in these cases is counterbalanced by the organic reaction and this, taken with the clinical symptoms, enables a positive diagnosis to be made. As to abscesses after injection—it is absurd to talk of aseptic injections. We can clip off the hair and wash the site selected with an antiseptic solution, but everyone knows that is not sufficient to sterilize the skin, yet abscesses are extremely rare, and when one does form the horse has usually reacted and the abscess develops into a typical farcy ulcer."

Dr. Dunbar:—"Dr. McGilvray made use of an expression

which I confess I hardly understand as it seems to involve a contradiction in terms. He said the mallein test was a 'perfectly reliable but not an infallible one.' I would like him to explain."

Dr. McGilvray :—"I don't think there is anything contradictory in the expression. What I meant to express was that mallein should be used for testing glanders outbreaks, and not on horses suffering from influenza or other febrile complaints. Such a horse might have his temperature run up after a mallein injection from the natural course of the disease he was suffering from, and this might be wrongly taken for a mallein reaction. Again, repeated mallein injections will induce a tolerance in horses so that after a time they may fail to react although still diseased."

Dr. Torrance :—"I am sure I voice the sentiments of the members present when I say that we have seldom had the pleasure of listening to such an interesting and able paper as that presented by Dr. McGilvray. It is a valuable addition to the literature of the subject, and the Association is to be congratulated upon having it read before them. It deals so fully with the subject that it leaves little to be said, but I would like to ask Dr. McGilvray as to the infectiousness of pulmonary or latent glanders. Has he seen outbreaks of glanders that could be traced to a latent case showing no clinical symptoms? I would also ask what proportion he finds between the clinical cases destroyed and those that simply react without other evidence of disease?"

Dr. McGilvray :—"I might cite the Rathwell outbreak of glanders as illustrating the infectiousness of a non-clinical case. Thirteen horses on the premises were tested and eleven reacted typically and were destroyed. A mare had been disposed of some months previous to Inspector Molloy's visit, and on tracing her up it was found that she had infected various premises at widely separated points, and outbreaks of glanders occurred at Stockton, Wawanesa, Rounthwaite and Lipton, which could be distinctly ascribed to her presence among the horses for periods of from one to three months. In each of these outbreaks one or more clinical cases developed, yet the owners declared that the mare which brought the infection had never shown any visible nasal discharge or other symptoms of disease. She was finally shipped to Lipton, Sask., infected horses in the car with her, developed clinical symptoms herself, and was destroyed. There is also the Boissevain outbreak. In this the owner purchased a team of apparently healthy horses from a

stud where clinical cases of glanders had been destroyed. The team was separated and mated differently some two months before the premises were inspected. On testing, one of the original team and its new mate reacted typically to mallein, and showed after injection slight clinical symptoms (muco-purulent discharge from inner canthus of eye, and tenderness and slight swelling of the submaxillary gland). They were destroyed. Neither had shown any symptoms previous to injection, there had been no glanders in this particular district, and there appeared to be no possible source of contagion other than this contact-infected team. As to the proportion between clinical cases and reactors, I may say that I have tested about 1,000 horses during the past year, and for every clinical case of glanders I find two or three reactors."

Dr. Molloy:—"I have destroyed 209 cases of glanders, and 83 of these were clinical."

Dr. McFadden:—"In the early days in this province we had to deal with glanders without the advantage of the mallein test. The Mennonite Reserve was badly infected during the period between '85 and '90, but in two or three years it was practically stamped out. I recollect one outbreak occurring among the horses of a large firm of contractors. 328 head of horses went into winter quarters and only 91 came out; it was with these 91 I had to do. Every horse of these 91 was roped and carefully examined, and 16 were condemned and shot. The remainder came out all right. Dr. McGilvray's paper is an excellent one, and meets my views on glanders better than anything I have read. No doubt it will be printed and widely read, and there is just one criticism I would like to make. The opening remarks might be construed into a slur upon the veterinarians who had preceded him in the work. Now, these gentlemen are members of this Association, and I don't think Dr. McGilvray has any intention of putting an affront upon them."

Dr. McGilvray:—"It was not the individuals I was criticizing, but their system. I have no wish to cast a slur on anyone, but there is no excuse for a man visiting and revisiting a farm at intervals of six weeks and at each visit destroying one or more animals for glanders."

Dr. Dunbar:—"It has been stated that glanders has not hitherto been considered as contagious a disease as it really is. Some facts seem to support the old view. I know a man who drove a team for years. One of these contracted glanders, and discharged from the nose for a year at least before he

was destroyed. His mate worked with him all this time yet did not catch the disease, and I had frequent opportunities of seeing him for a year afterwards."

Dr. McGilvray:—"Such cases may be explained on the theory of natural immunity, but a year is not a sufficient period to keep an animal under observation, as the disease may remain in an occult state for longer than that."

Dr. McFadden:—"I can cite a case similar to Dr. Dunbar's, that seems to prove that sometimes glanders is not very contagious. A livery man had a fine mare, which was especially valuable for livery. Glanders broke out in his stable, and several horses had to be destroyed; the remainder, being quarantined for 30 days, were then released as healthy. This was before the days of mallein. The mare passed into the hands of a man named Vance, and although I wished to get her I was afraid to do so until two months later. I bought her and had her for two months more, working every day in the livery and apparently healthy. One day I happened to notice her as she drove up to the stable after a long drive, showing a slight discharge from one nostril, and enlargement of one gland. I had her put into a shed apart from the other horses. She developed glanders, but not one of the eighteen livery horses that she had been with for eighteen months took the disease."

Dr. McGilvray:—"Dr. McFadden's case simply bears out my contention that quarantining for a period of 30 days is of no avail as to deciding freedom from disease."

Dr. McArthur then presented a paper on "Tinea Sycosis."*

The President:—"The next order of business is to award the prize for the best essay presented at this meeting. As the conditions limit the competition to those who have never previously contributed, the question is to decide between Dr. Mack and Dr. McArthur. A ballot will be taken and the same scrutineers are invited to act."

The ballot resulted in awarding the prize, on a close vote, to Dr. Mack.

Dr. Whaley:—"I have recently had a case of what I think was tuberculosis in a horse. I have been told that horses cannot have tuberculosis and I would like to know if any member present has had a case."

Dr. Martin:—"I reported a case of tuberculosis in a horse at one of the previous meetings of this Association. Tubercu-

*Will be published in a later number of the REVIEW.

losis is rare in the horse, yet we do come across a case once in a while."

The President : — "Gentlemen, this is one of the best meetings we have had, and yet we must, if we would progress, aim at something still better. I would suggest that your executive have your instructions so that the next meeting should not be crowded into one day. The members who are going to read papers should let the Secretary know some time before the meeting so that a programme could be issued and the members would come prepared to discuss those papers."

Dr. Martin : — "I would suggest a banquet for next year, and perhaps it might be possible to arrange a trip to the new agricultural college."

The President : — "Another matter that we should take up is veterinary education. I think our Secretary has some remarks to offer."

Dr. Torrance : — "You are well aware of the efforts which the veterinary profession is making towards improving the status of the profession by raising the standard of veterinary education in Ontario. A deputation of leading veterinarians recently waited on the Minister of Agriculture, the Hon. N. Monteith, with a petition from the veterinary profession requesting the Government of Ontario to take up the matter of establishing an up-to-date veterinary college for Ontario. The reply of the minister, while, of course, non-committal, was encouraging, and leads us to hope that something definite is about to be done. I have also a private letter from Dr. Rutherford, which confirms the idea that the Ontario Government may establish, or aid materially in the establishment, of a new veterinary college, either in connection with the Ontario Agricultural College, or as a faculty of Toronto University. What seems to be most essential at the present juncture is a united effort on the part of all the members of the veterinary profession to push the matter through. It would be presumptuous for this Association to petition the government of another province, but we can at least strengthen the hands of our brethren in Ontario by expressing our sympathy with their efforts, and I would therefore beg to move the following resolution : —

"WHEREAS, The veterinary surgeons of Ontario are endeavoring to elevate the standard of the profession by the establishment, under government auspices, of a veterinary college with a standard adapted to modern requirements; and

"WHEREAS, Under the proposed arrangements, the interests of Prof. Andrew Smith are to be fully recognized ;

"*Resolved*, That this, the Veterinary Association of Manitoba, desire to express their sympathy with the efforts of the profession in Ontario, and their earnest desire to see the establishment of a veterinary college having a curriculum of not less than three terms of six months each ; and that copies of this resolution be sent to the Secretary of the Committee and the Secretaries of the various Associations in Ontario."

The motion was seconded by Dr. Whaley and carried unanimously.

The following resolutions were then adopted :—

"That 300 copies of the proceedings be printed and distributed."

"That the semi-annual meeting be held in the city of Winnipeg."

"That Drs. C. Little and C. D. McGilvray be the auditors for the ensuing year."

"That a hearty vote of thanks be tendered the City Council for the use of the committee room."

"That a hearty vote of thanks be tendered the essayists."

The Secretary announced that essays had been promised for the next meeting by Drs. Martin and King.

The meeting then adjourned.

F. TORRANCE, *Secretary*.

NEBRASKA VETERINARY MEDICAL ASSOCIATION.

The meeting was called to order Monday, January 5, at 2 p. m., in room 305, Agricultural Hall, at the State Farm, Lincoln, Neb., by the President, Dr. C. A. McKim, the following members being present : J. S. Anderson, John A. Berg, M. T. Bernard, J. J. Drasky, H. L. Feistner, J. H. Gain, H. N. Hall, J. L. Hoylman, H. Jensen, C. A. McKim, A. T. Peters, V. Schaefer, R. Ebbitt, P. Simonsen, J. D. Sprague, Geo. Sprenger, E. F. Stewart, Geo. P. Tucker, and W. A. Thomas.

Minutes of last meeting were read and approved.

The following gentlemen were elected to membership of Association : W. H. Cole, G. A. Meixel, W. H. Tuck, W. A. Walther, A. A. Munn, J. C. Myers, J. A. Royce, M. D. Strong, A. W. Carmichael, G. Baxter, T. H. M. Knaak, A. H. Krull, R. A. Huntley, I. W. McEachran.

This additional membership has brought the Nebraska As-

sociation into the ranks of the thriving and pushing associations of America, and is the direct result of the law passed to regulate the practice. The law looks very innocent, but the results are very satisfactory.

Dr. A. A. Munn, of Kearney, presented a paper on "Azoturia." It was thoroughly discussed by Drs. Schaefer, Huntley, Jensen, Strong, Hoylman, McEachran, Bernard, and Anderson. Dr. Anderson reports good results from intravenous injections of normal salt solutions, twice in 24 hours. Dr. Hoylman recommended the internal administration of turpentine.

Dr. Drasky reported an outbreak of rabies near Crete, Nebraska, with a great loss of horses, cattle and sheep. The State Veterinarian, Dr. C. A. McKim, reported several outbreaks throughout the State.

Dr. Carmichael read a paper entitled "The So-called Corn-Stalk Disease," recommending the use of sodii hyposulphite and quinine.

Dr. A. T. Peters gave a very interesting account of the work done by the Experiment Station along the line of mould poison; it develops that there are as many different kinds of mould as there are diseases, each producing different symptoms, and requiring different treatment. Dr. Peters has promised us a full report of his work in the near future.

The meeting was then adjourned to meet at 8 P. M. at the Lincoln Hotel for a banquet.

Shortly after 8 o'clock 33 of the happiest looking veterinarians in the State of Nebraska were seated around the banquet table in the club room of the Lincoln Hotel. Dr. M. H. Reynolds, of Minnesota, was the guest of honor. After the elegant eight-course *menu* was disposed of, and while inhaling the fragrant fumes of the havanas, our versatile friend, Dr. A. T. Peters, acting as toastmaster, called upon the following gentlemen, who, in well chosen language, responded to the following toasts: "The Veterinarians in the Philippines," J. J. Drasky; "Our Veterinary Law," R. A. Huntley; "The Younger Members of the Nebraska Veterinary Medical Association," J. C. Meyers; "The Association in '94 and Now," J. S. Anderson; "The Veterinarian in Nebraska in the Early Seventies and To-Day," W. A. Thomas; "Cement," H. Jensen; "The Globe-Trotter," R. Ebbitt; "The Future of the Nebraska Veterinarian," P. Simonsen; "State Boards and Sanitary Laws," M. H. Reynolds. This was the first time in the history of the Nebraska Association that its members had gathered around the

banquet table, and so well pleased were the members present with this our first banquet that it was decided to make this feature a permanent one.

Tuesday, January 16, at 10 A. M., the members of the Association assembled in the new Stock-Judging Pavilion on the State Farm for a surgical clinic, and several interesting operations were skilfully performed. This feature of our meetings will be improved upon, and in the future be held in private.

At 2 P. M. the meeting was called to order in the new Agricultural Hall, by Dr. G. R. Young, of Omaha, the President, Dr. McKim, being temporarily absent.

Under the head of "Reports of Cases," Dr. Hoylman reported great losses of horses and cattle in the western part of the State from what the doctor thought to be corn-stalk disease. The symptoms presented were first coma, delirium and death. The usual symptoms, as most of the practitioners in the State had observed it, is first delirium, then coma and death. A thorough discussion of the subject decided that the cause of the trouble was due to some form of poisoning by moulds, as some of the animals had not been near a corn field. Treatment suggested: One-half ounce doses of potassium iodide every six hours, preceded by $1\frac{1}{2}$ pounds of magnesium sulphate.

Dr. Reynolds spoke of the great similarity of symptoms between corn-stalk disease and what they in Minnesota call hæmorrhagic septicæmia; he considers these two diseases very closely allied.

Dr. J. S. Anderson gave a very interesting report on his operations for roaring. The doctor gave a detailed description of his method, which had resulted satisfactorily in most cases; one failure was reported, and the entire structure exhibited; the animal, whenever it attempted to swallow, would choke, and eventually died from traumatic pneumonia. Dr. Anderson's surgical skill is recognized all over this Western country.

The Association unanimously endorsed the Army Bill.

H. JENSEN, *Secretary*.

NORTH DAKOTA STATE VETERINARY ASSOCIATION.

The annual meeting was called to order at Fargo, Jan. 17, 1906, at 10 30 A. M., with President Treacy in the chair. Roll-call revealed the presence of the following members: Drs. Anderson, Chisholm, Cosford, Crewe, Davidson, Dunham,

Fisher, Fisher, Martin, Robinson, Taylor, Treacy, Van Es, Walker, Winsloe.

The minutes of the preceding meeting were read, and, upon motion, were duly approved.

The Committee on Legislation, through its Chairman, Dr. Treacy, made report on its work and the desired changes secured during the last legislation. Report adopted.

The Finance Committee reports a balance of \$47.75 in the treasury. Report adopted.

The application for membership of Dr. Thos. Sims, of Botineau, N. D., was received. Dr. Sims was elected to membership under suspension of the rules, as otherwise his application would have to be laid over until the following annual meeting.

The election of officers for the ensuing year resulted in the election of the following:

President — E. J. Davidson, Grand Forks.

Vice-President — A. A. Walker, Casselton.

Treasurer — B. C. Taylor, Hillsboro.

Secretary — J. A. Winsloe, Cooperstown.

It was moved by Dr. D. E. Fisher, and seconded by Dr. Martin, that a Committee on Resolutions be appointed by the Chair. Motion carried. The following members were appointed: Van Es, Crewe and Cosford.

It was also moved and seconded that Drs. Fisher, Martin and Taylor act as a committee to formulate plans for the better enforcement of the laws covering veterinary practice and to interview the local members of the Examining Board with a view to securing a statement in regard to the number of permits and certificates issued, fees, etc.

The following members were appointed as the Committee on Legislation: Drs. Robinson, Crewe and Treacy.

The meeting then adjourned until 2.30 P. M.

At the appointed hour the meeting was called to order, with Vice-President Robinson in the chair.

No business being brought up for discussion, the reading of papers was now taken up. The first paper was read by Dr. L. Van Es and was entitled "Clinical Phases of Influenza."* The paper was discussed by all members present.

The following paper was read by Dr. J. W. Robinson, and was entitled, "The Spaying of the Heifer."* The paper was discussed by Drs. Ramsay, Treacy, Cosford, Davidson and Foster.

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

The next paper was read by Dr. B. C. Taylor and dealt with "The Treatment of Hernia with Nitric Acid."* This paper was thoroughly discussed by Drs. Robinson, Winsloe and Ramsay.

Some time being yet available, Dr. Van Es volunteered a report on a case of "Carcinoma of the Maxillary Sinus,"† and submitted photographs, drawings, and wet specimens of the case.

It was moved and seconded that the Secretary be instructed to furnish the AMERICAN VETERINARY REVIEW with copies of the papers read and of the proceedings of the meeting.

On motion of Dr. Van Es, and seconded by Dr. Treacy, the Chairman was instructed to appoint a Committee on Programme: Appointed Drs. L. Van Es, Chairman; J. W. Dunham and D. Fisher.

After some remarks on the value of a good live stock association and a better understanding among the various members of the profession by Drs. Ramsay and Foster, the meeting adjourned until the following day, which, according to resolutions passed during the previous meeting, was to be devoted to clinical work.

On January 18 the members met at the Stock Judging Hall of the Agricultural College, where the following cases were presented:

Sequestrotomy of the lower jaw and expulsion of molar, by Drs. Davidson and Taylor.

Removal of carcinoma of orbit by Drs. Martin and Cosford.

Cunean tenotomy and cautery for spavin, by Dr. Foster.

Cautery for spavin, by Dr. Sims.

Cautery of spavin, by Dr. Chisholm.

Operation for papillomatosis of oral mucosa, by Dr. Walker.

Cautery of spavin, by Dr. Dunham.

Spaying of heifer, by Drs. Cosford and Robinson.

Extraction of molar, by Dr. Hinebauch.

Expulsion of molar, by Drs. Fisher and Burton.

Besides the cases operated on, the following were exhibited: Bursatti; synovitis and peri-arthritis of hock-joint; obstruction of upper air passage; lymphangitis of hind leg.

The following veterinarians were in attendance during the meeting and the clinics: Drs. O. F. Anderson, Christine; J. Burton, Wheaton, Minn.; J. P. Chisholm, Lisbon; S. E. Cosford, Jamestown; W. F. Crewe, Devil's Lake; E. J. Davidson,

* Published in "News and Items," this number REVIEW.

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

Grand Forks ; J. W. Dunham, Fargo ; D. Fisher, Grandin ; G. D. Fisher, Hope ; J. P. Foster, Huron ; F. J. Glynn, Aberdeen ; T. D. Hinebauch, Tower City ; M. Holcomb, Fargo ; J. A. Kierman, Aberdeen, S. D. ; R. G. Lawton, Watertown, S. D. ; L. A. Nutting, Great Falls, Montana ; C. H. Martin, Valley City, N. D. ; R. A. Ramsay, Denver, Colo. ; J. W. Robinson, Coal Harbor, N. D. ; Thos. Sims, Bottineau ; B. C. Taylor, Hillsboro, N. D. ; R. H. Treacy, Fargo ; L. Van Es, Agricultural College ; A. A. Walker, Casselton ; J. A. Winsloe, Cooperstown.

C. H. MARTIN, *Acting Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular monthly meeting was called to order January 3, 1906, at 8.30 P. M., Dr. Roscoe R. Bell, the President, in the chair. Roll-call was dispensed with. Minutes of the previous meeting were adopted as read.

Members present : Drs. T. A. Keller, C. W. Shaw, R. Dickson, E. B. Ackerman, J. L. Robertson, C. Schroder, Roscoe R. Bell, C. E. Clayton, F. C. Grenside, J. E. Ryder, R. W. Ellis, R. W. McCully, R. S. Mackeller, and D. J. Mangan.

Visitors : Drs. W. Reid Blair, Leonard Pearson, J. V. Laddey, C. S. Atchison, Morris, Castor, Hendren, Hayes, Kingston and Clarence J. Marshall. Also, students of the New York-American Veterinary College.

Dr. Leonard Pearson delivered an address on the "VIII. International Veterinary Congress." The Doctor told of the origin of the Congress, its methods, purposes and its prosperity. Incidentally he spoke about the fine veterinary school in Budapest.

Dr. W. Reid Blair, of the New York Zoölogical Park, read a paper on "Actinomycosis of a Salivary Gland in a Grizzly Bear.*" Dr. Blair exhibited some specimens of this condition.

Dr. J. V. Laddey spoke of his experiences in the Philippine Islands.

The Secretary read all the names that were on the veterinary registers of New York, Kings and Queens Counties.

The President said he would have them printed in proof form, for the next meeting.

Dr. Charles Lamensdorf was elected member of the Association.

* Published in March REVIEW.

The By-laws were suspended and Dr. Leonard Pearson was unanimously elected an honorary member of the Association.

Drs. W. Reid Blair and J. V. Laddey each received a vote of thanks for their efforts towards the evening's entertainment.

The meeting was then adjourned.

D. J. MANGAN, *Secretary*.

* * *

The regular monthly meeting was called to order by the President, Dr. Roscoe R. Bell, on February 7, at 8.30 P. M. The roll was dispensed with. Minutes of previous meeting were adopted as read.

Members present: Drs. R. S. Mackeller, A. O'Shea, C. E. Clayton, R. W. Ellis, W. C. Bretherton, C. W. Shaw, F. C. Grenside, T. A. Keller, Wilfred Lellmann, D. J. Mangan, Roscoe R. Bell, J. L. Robertson, and C. Schroder.

Visitors: Drs. Blair, Schreiber, Assing, Childs, Brotheridge, and S. Strauss, M. D. Also, students of the New York-American Veterinary College and others.

Dr. Bell read a letter, which he received from Dr. Williams, the President of the State Society, regarding the practicing of veterinary medicine in New York State without a license.

Members and visitors suggested various methods to be employed in getting evidence against violators of the veterinary law.

Dr. Bell had copies of the Greater New York Veterinary Registers, which were distributed among the members.

Discussions on azoturia, iodi, kali and influenza, which were taken up separately, brought out some valuable information.

Dr. S. Strauss asked the members if they came across any carcinomatous tumors he would be glad to receive them and pay for same. This request was followed by a discussion on malignant tumors.

The following gentlemen were proposed for membership: Drs. R. Schreiber, H. J. Brotheridge and J. E. Assing.

Owing to the fact that there were few of the Board of Censors present it was decided to act on the propositions without their endorsement. The applicants were therefore duly elected members of the Association.

Dr. Clayton moved and it was regularly seconded, that the Association have its Treasurer pay John Brooks, the janitor, \$2.00 per month for services rendered on meeting nights.

Meeting adjourned.

D. J. MANGAN, *Secretary*.

WASHINGTON VETERINARY MEDICAL ASSOCIATION.

The United States College of Veterinary Surgeons held its twelfth annual banquet Saturday evening, February 24th, 1906, which celebrated its twelfth birthday. The college is young but healthy and prosperous for its age.

The banquet was held at Freund's, where all similar functions are held, and the dining hall was beautifully decorated with flowers and flags; the tables were covered with college colors,—black and orange, and the students as well as their guests were all clad in evening dress.

The toastmaster, Mr. R. H. Duenner, class of '06, with a kind word of welcome, bade the guests and students to be seated. A very well arranged and tempting *menu* was placed before them, and after every one had done justice to the eatables, cigars were lighted, and the evening turned into one of toast and stories.

Dr. Lamb, M. D., a guest, responded to "Reversions". He told how he had watched the growth of the institution and how it had struggled in its younger days, but now success was coming and the horizon was clear and prosperity was the only possible thing.

Dr. C. Barnwell Robinson, V. S., Dean, spoke on the "Duties of the Practitioner." He pointed out the methods in which a practitioner should shield his profession. He said the field was calling for men, and that the men would always have plenty to do. He outlined work for the men and told how they should protect themselves, protect the animal, and protect the client. His remarks received much attention and were generously applauded.

Prof. G. A. Prevost, LL.B., one of the trustees of the college, spoke of the great meaning of the college motto, "Vestigia Nulla Retrorsum." He said one's footsteps should never turn backwards, but keep up the steady, forward movement; if we ever found ourselves slipping backward faster than we were going forward, simply turn around, and our progress in the forward direction would be gained.

Dr. C. M. Emmons, M.D., gave an interesting talk on "Students vs. Professor." He told how a student looked from a professor's standpoint—the schoolroom platform, how he saw the wise thoughts of the students through the examination paper. This talk received much attention from the students and they applauded heartily.

C. C. Weeks, representing the graduating class, delivered a clever talk, telling the juniors and freshmen how it felt to hold the dignified position of a senior.

G. H. Grapp, '07, returned thanks for the kind words of '06, and H. S. Gamble, '08, represented the freshmen.

The banquet was under the careful supervision of a committee of E. P. Yeager, '06, chairman; Dr. H. Bosley, '03, treasurer; G. H. Grapp, '07, secretary; M. P. Smith, '06; C. B. Shoemaker, '08; R. C. Talty, '07; I. A. Phinney, '08.

The guests of the evening were: Dr. F. B. Gage, U. S. A., Dr. S. B. Lamb, and J. P. McDonough. Others present were the faculty and classes as follows: Prof. G. A. Prevost, Dr. Frazier, Dr. C. B. Robinson, Dr. H. Bosley, Dr. C. M. Emmons, Dr. C. C. Walker, Dr. M. H. Walmer, Dr. E. S. Walmer, Dr. Drake, Dr. J. C. Heide, Dr. W. W. Alleger, R. H. Duenner, O. H. Gratz, E. Hartley, J. P. Keifer, C. J. Fry, W. S. Pollard, E. P. Yeager, M. P. Smith, W. F. Davis, C. C. Weeks, R. W. Wolf, J. H. Bakelaar, R. C. Talty, F. Meisenheimer, A. C. Stever, H. F. Hungleford, A. A. Pearson, E. L. Thornton, R. E. Ferneyhough, C. M. Mansfield, R. B. Blume, E. H. Drake, R. M. Corey, G. H. Grapp, R. J. Cooley, A. Monk, H. S. Gamble, C. B. Shoemaker, L. Prevost, I. A. Phinney, C. F. Sapp, T. A. Metcalf, J. H. Donahue, H. H. Adair, and J. L. Vega.

C. M. MANSFIELD, *Chairman Pub. Comm.*,

Wash. Vet. Med. Asso.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting was held Wednesday evening, January 24th, at 8 P. M. There were fifteen members present. In addition to the regular business, it was voted the President be instructed to have the Secretary call a special meeting before the hearing at the State House on the bill for compensation to owners of glandered horses.

Dr. Rogers reported an interesting case of an Irish terrier dog. First noticed that he would not follow, later showed pain, cried out, got up, turned around and laid down again. Vomited one day only, bowels loose, appetite good, assumed position of acute gastritis and would continually lap inside of hind leg. X-ray showed nothing.

Operation.—Found intussusception of about four inches of intestine with adhesions of outer walls with fibrous bands. Dog recovered. Meeting adjourned at 10.45 P. M.

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EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, March 15, 1906.

ANIMAL DISEASES IN THE TROPICS.—At this time, when the subject of tropical diseases is about to receive, and, indeed, is already receiving in some colleges the attention it deserves, I have been reading over the reports presented on the subject at the Congress in Budapest—those of Piot Bey, of Egypt; of Prof. Ligni eres, of Buenos Ayres; and of Dr. A. Theiler, of Pretoria. As this last one covers better and in a more general way the consideration of these diseases in relation to domestic animals, I think a brief *r esum e* of his report, as it appears in the work of the Congress, may be of interest.

* * *

The term "*tropical diseases*" is used mainly to include those which occur in warm countries. It has, therefore, a specific etiological signification, which characterizes diseases of warm climates, where, however, there frequently exist a certain number of zoonoses, but, nevertheless, not specific to tropical countries. Anthrax fever and symptomatic anthrax cannot be considered as true tropical diseases. On the other hand, diseases are found in temperate countries which, generally, are more

frequently observed in warm climates, and which present the typical character of tropical affections. These are especially the piroplasmoses, caused by endoglobular parasites. Further than that, at various intervals diseases have been described in warm countries which were found later also in temperate climates; thus the propriety of considering them as exclusively tropical may be questioned. Among these are actinobacillosis, bursattee, farcy of cattle, and epizoötic lymphangitis. Actually some diseases, like dourine and sheep variola, which were in other times met in cold countries, exist in warm zones. Contagious diseases, as rinderpest, contagious pleuro pneumonia, and glanders are widely distributed in the tropical regions of the Old World; some of them have been known there for centuries, and it may be said that these countries are their real home. It would be wrong to apply the name of tropical to these affections, since they do not possess any of the characteristics of tropical diseases. Certainly there are specific causes which are favorable for the existence of the diseases mentioned, but these must be looked for in the primitive civilization of the native population and the common religious conceptions of epidemics. On that point an improvement is noticeable in South Africa, where the most fatal diseases have been successfully treated by inoculation.

* * *

Epizoötics observed only in warm climates by Dr. Theiler are classified as follows:

- (1) Those due to vegetal organisms;
- (2) Those due to extravisible organisms;
- (3) Those due to protozoic organisms.

Among the diseases of the first group, hæmorrhagic septicæmia of sheep and the disease of Argentine called "entequi," are the only ones considered as exotics. The other hæmorrhagic septicæmias, such as anthrax fever and symptomatic anthrax, are, in general, observed more in warm than in cold countries; but heat and dampness cannot be held responsible for their appearance, as is often done. The real cause for their

existence is to be found in the want of knowledge of the cattle breeder regarding their true nature. Blood diseases due to spirillæ are not considered by the author as belonging to this class, because they are transmitted by intermediate hosts, especially the ticks, and because they present consequently the typical character of a tropical protozoic disease. This applies to the Brazilian fowl disease and the South African spirillosis of cattle.

* * *

In the consideration of the diseases of the second class, contagious diseases are excluded, as they are found all over the world. There remain three South African diseases, the horse-pest, the catarrhal fever of sheep, and the heart-water of cattle, sheep and goats. The first two have some common peculiarities, but they are not identical, as they can be inoculated only on animals of respective species. All the observations and deductions based on experiments show that these diseases are propagated by the bites of night insects. The author tells of a process of inoculation which has been worked out and consists in the simultaneous injection of serum and of virus, which give an attenuated disease. Heart-water is an inoculable disease, transmitted under natural conditions by the tick *Amblyomma hebraicum*. The nymphæ and the adults transmit the disease. The three diseases just mentioned have this in common, viz.: that the immunized animal does not hold the virus in its blood, as is the case with some piroplasmoses.

* * *

The third group includes the diseases due to protozoa. The piroplasmoses are first described and classified in two secondary groups. In the first are found redwater or Texas fever, the piroplasmose of the horse, of the dog, and probably also that of sheep, characterized by a typical and big piroplasma. This group differs distinctly from the second, which has a small piroplasma as the pathogenous agent and to which belongs the tropical piroplasmosis of cattle. (The piroplasmoses of the first group are inoculable to animals of the same species with blood

from sick and from immune animals, which is not the case with the tropical piroplasmose.

* * *

The various diseases met in warm countries are considered as identical, as South African experience has proved that the immunity acquired in foreign lands, holds good, with but few exceptions, against redwater of South Africa; besides which the ticks that act as hosts for the same parasites belong to the same genus or are only varieties of the same species. European hæmoglobinuria is transmitted by a different species of tick, hence it is possible that there are different varieties of *Piroplasma bigeminum*. Dr. Theiler draws attention to the fact that the *Piroplasma bigeminum* is not met with in the immune ox under its usual shape, but in a form similar to that of tropical piroplasmoses. In the report the disadvantages of inoculation with immune blood are well discussed, and attention is called to the danger resulting from the simultaneous inoculation against bovine pest in regions where Texas fever is epidemic. To this day there are no experimental researches to show by what tick the equine piroplasmose is transmitted.

* * *

It is, however, about certain that the disease is communicated by ticks, an opinion which is corroborated by daily observations. The tick which propagates canine piroplasmosis is, on the contrary, well known; it is the *Hemophysalis leachi*. Experience shows this peculiarity, that the infection passes through the egg, the larva, and the nymph only to be communicated by the sexual adults. The author has prepared a serum against this disease, and confirms the fact that the blood of the immunized animal from which serum is derived remains infected.

Tropical piroplasmose differs in every way from Texas fever. The immunity which is acquired against the last disease does not protect from the former. In addition to this, quite a different species of tick transmits the disease, viz., *Rhipicephalus appendiculatus*. The infection does not go through the egg:

it is taken up by the larvæ and the nymphæ, and is communicated exclusively by these and by the adults.

* * *

Tropical piroplasmosis is of paramount importance to South Africa. It threatens to ruin the cattle industry. Inoculation of Koch is a failure. Strict legislation is essential and eradication possible; since it has been proven that an infected area purifies itself provided all susceptible stock is removed for at least fourteen months. Fencing of all infected farms is to-day ordered. Other prophylactic measures are also suggested, dipping among them. But dipping with various parasitical remedies is useless in regions already infected, unless the infected herd is removed to clean ground. Periodic dipping may prevent the disease, as it may kill all the ticks.

* * *

In a second part of the report, Dr. Theiler treats of the diseases caused by protozoa, studying them all, except dourine, because of their great importance to South Africa, and calling especial attention to the fact that some tropical tripanosomiasis are propagated by biting flies and that the same probably applies to all of them. In conclusion, the author says: Typical tropical diseases are blood diseases propagated by extoparasites, whose development is much favored by the conditions of warm climates. Among the various causes responsible for the introduction of tropical diseases in South Africa are: colonizing of these countries, trading of cattle, development of mining industry, and war. Finally, the appointment of veterinarians possessing bacteriologic knowledge imposes itself as collaborators on the administrative staff of all and any new country where tropical and other diseases annually decimate the live stock.

* * *

BELGIAN EXPERIMENTS WITH BOVOVACCINE.—In the *Annales de Bruxelles* for February there is among the original articles the report of the Committee appointed by the Secretary of Agriculture of Belgium to estimate the value of the method of von Behring, the anti-tuberculous vaccination. It seems as

if all that had been claimed for it had not been demonstrated again and again. At any rate, the Belgian Committee was composed of Director Dégive, Mr. Stubbe and Mr. Mullie, veterinary inspectors, and Prof. Lienaus. The experiments were conducted upon eight animals, which were divided into three groups, to be submitted to three different modes of infection—by inoculation, by injection of the virus, and by cohabitation. In the first group were 3 animals and 2 controls, in the second 2 animals and 2 controls, in the third 3 animals and 3 controls.

Without entering into the minutiae of the experiments, I may resume briefly the results of the post-mortems. In the first series, two inoculated by subcutaneous injection, when killed presented "quite a number of small chalky nodules in the lungs --- four chalky nodules in a pharyngeal lymphatic gland," otherwise nothing abnormal. In the other, "all the organs were healthy except two mesenteric lymphatic glands, where a caseous nodule was found." The witness had generalized tuberculosis. The third animal of that series, inoculated by intravenous injection, when killed was in a cachectic condition; nothing else. In the series of animals infected by ingestion, one presented when killed no lesion whatever; the other had a retropharyngeal gland suppurating, but no bacilli in the pus; all the other organs sound. The two witnesses were more or less extensively diseased. Finally, in the test by cohabitation, one had five softened pulmonary deposits, some nodules in the bronchial, mediastinal and mesenteric glands. The other two animals had no lesions. The three controls had all lesions, which varied more or less in the lungs and lymphatic glands.

* * *

By a careful reading of the entire experiment there may be found some points which will seem obscure and difficult to make agree with the conclusions of the report. At any rate, here they are: (1) The insertion of the virus-vaccine of Behring has not given rise to tuberculosis. That which it gives is an attenuated form of the disease, not progressive and spontaneously retroceding. (2) Vaccinated animals generally resist

natural contamination. (3) The resistance of the vaccinated can be overcome by the inoculation of large doses of active virus. (4) In practice, it will be necessary to keep, as much as possible, vaccinated animals away from infected localities during the whole time that they will be under the influence of the virus-vaccine. (5) It will be prudent to postpone the vaccination of calves in stables where broncho-pneumonia prevails.

* * *

ITALIAN EXPERIMENTS WITH BOVOVACCINE.—In my notices of the experiments that have been carried out on the Continent to test the value of the bovovaccine of Behring, I have not made any remarks upon those that took place in Italy at Mortara, whose results were said to have raised an unbounded enthusiasm and were to be celebrated by a great feast. The reasons for my apparent neglect were that I feared the experiments had not been carried out in the very best manner, and I did not want to express an opinion before all was well known. It is not yet, but the journals of Milan are now and then coming out with partial results of the experiments. Four vaccinated bovines were slaughtered on January 18. One of them had tuberculous lesions of the mediastinal lymphatic glands and a caseo-calcareous nodule in the lung. One paper publishes an article which shows that "the vaccination of Behring promotes actively the infection among vaccinated which are placed in a contaminated centre. The vaccinated are hypersensitive during the time necessary for the impregnation of immunity, and it is to that error of experiment that the partial failure of the results is due."

In the *Giornale della R. Societa*, Prof. Mazzini, who was the director of the experiment, answers that it was precisely to test this point that the experiment was held, viz. : if the method of Behring, acknowledged as theoretically correct, could enter into practice in Italy, and principally in regions where tuberculosis is prevalent.

The slaughtering of the vaccinated will go on.

THE PRESENT STATUS OF IMMUNITY AGAINST TUBERCULOSIS.—This experiment of Brussels comes to substantiate once more a fact which has been made evident, viz. : that it is possible to immunize with a certain activity bovines by introducing into their organisms varieties of bacilli of a different specific origin, and principally those of human origin, and if a new confirmation was necessary, as remarks Leclainche, in the *Revue Générale* of February, that confirmation has been given since 1902 by the conscientious researches of Thomassen and of Pearson.

But, as we have said before, there is a great distance to travel between the immunization of laboratory to practical vaccine. And, indeed, as Leclainche adds: "The recent experiments of Budapest, of Mortara, of Melun, of Brussels, have shown us that the method of Behring has many inconveniences. We already know that it is dangerous for animals that have some pulmonary lesion. We know that it is also dangerous in infected centres, promoting actively the development of latent infections among the vaccinated. And we are only at the beginning. The objections of Marks and Casper to the vaccination were perfectly just, and we appreciate the significant reserve of German veterinary journals and of the practitioners."

Can we from the cool consideration of all those critics and facts come to the conclusion that antituberculous vaccination will not be realized at a future time? No. New methods are studied in every direction, new experiments are made, and have already given satisfactory results. We know that even their value is tested outside of the laboratory, but on farms, and from all that it is possible to say that under some special conditions and with a *proper* vaccine the operation can give positive results without all the objections that exist at present.

Let us wait!

* * *

FEEDING OF ARMY HORSES WITH THE RESIDUE FROM THE KITCHEN.—The *Revue Générale* gives a concise account of an experiment which has been published in the

Zeitschrift für Veterinarkunde in relation to this subject.

The ration of artillery horses is so small in the German Army that experiments have to be made to substitute different food from that which is generally used, but which proves so insufficient. A curious experiment has been made which consisted in the utilization of the remains from the kitchen, which are sold at very low price to fatten pigs. The horses belonging to a battery of campaign artillery were the subjects of the experiment. They received a varied *menu* consisting of the following: Meat of beef, pig, smoked meat, lard, sausage, fish and fish-balls, beans, potatoes, rice and milk, onions, carrots, dried vegetables, soups of various kinds, coffee, cocoa, tea, dried fruits, etc., etc. These various foods were given diluted in water, so as to form a kind of mush, which was thrown over the food that formed the ordinary ration. A kind of selection was made of the fortunate animals which would be allowed to partake of the treat, and these embraced those in bad condition, reduced in flesh, having a capricious appetite. They all took it with avidity. The experiment lasted two months, and after that length of time the horses of the battery were the fattest among all those of the regiment, and the number of colics, which had been previously quite large, had diminished in noticeable proportion.

For an herbivora, feeding on sugar and molasses, to drop to a common omnivorous diety, like us weak mortals, is a change indeed. I wonder if some swill dealer is not at the bottom of this?

* * *

BIBLIOGRAPHY. —To-day my bibliographic notes will be on foreign works.

First, a glance at a German pamphlet, by Prof. Dr. Ostertag, of the Imperial Veterinary School of Berlin. Prof. Ostertag is already well known in America—personally, as some of his graduates are there; professionally by the numerous works he has published, and principally by his "Hand-book of Meat Inspection," which through the translation of Dr. E. V. Wilcox has become

the classical work of America. The Professor has visited the United States, and has published his impressions under the title of "Das Veterinarwesen der Vereinigten Staaten von Nord Amerika," in a little work of 150 pages with 17 illustrations. As my knowledge of German is very limited [it is wonderful how little a fellow knows], I cannot enjoy all the good things the Professor has said of America; yet I have been able to understand the greater part of what he says of our schools, which, either private or branches of universities, he has visited in New York, Philadelphia, Chicago, Kansas City, San Francisco, Ames, Ithaca, etc. His remarks on most of them are very correct—indulgent in some, severe for others, and complimentary for a few. In reading that portion of the book, I recognized the names of many of my old friends, who certainly can but feel proud of the deserved recognition they receive in the writings of Dr. Ostertag. Besides the part where veterinary institutions are spoken of, and which I confess was the most attractive for me, there are descriptions of a few American diseases which he observed, and, above all, the consideration of the inspection of meat, which is of peculiar interest to the author. The work of the Bureau of Animal Industry and all that concerns the sanitary work done by it, is most interesting. I am quite sure the work will be read in America with great pleasure (at least, by those who are not as ignorant as I). The publisher is Richard Schoetz, Luisenstrasse, No. 36, Berlin.

* * *

The second work I have on my table is from St. Petersburg. A Russian work always finds me at home, especially if it is printed in French, as is the case with the "Archives des Sciences Bibliogiques," published by the Imperial Institute of Experimental Medicine. There! I am in the presence of different material; indeed, this book contains an article on "The Regeneration of the Superrenal Capsulæ," by Mr. Labzine; "A Case of Infection of Pest in Laboratory," by Dr. Zabolotny; a study "On the Elastic Tissue of the Ventricles of the Heart in the Normal and Pathological State," by Dr. Pojariski; a work

on "The Anatomic-Pathologic Alterations of the Suprarenal Capsulæ During an Infection by Streptococci," by Mr. Labzine; and then contributions to the study of infection through the air, to the study of lipasis, etc. The work is handsomely illustrated with colored and photographic plates.

* * *

I have, besides, to acknowledge the receipt of the *Chicago Veterinary College Quarterly Bulletin* No. 2; the announcement of the annual meeting of the Pennsylvania State Veterinary Medical Association; the Constitution and By-Laws of the Ohio State Veterinary Medical Association; and the Appendix of the Board of Veterinary Examiners for the State of Maine, wherein an alphabetical list of all persons who have a legal right to practice veterinary medicine, surgery and dentistry is published. I find that of a total of 95 there are 36 graduates and 59 non-graduates, 8 of whom are licensed to practice dentistry only.

A. L.

EDUCATIONAL PROGRESS (?) IN NEW YORK STATE.

When the veterinary schools in New York State were by law placed under the control of the Board of Regents the requirements imposed upon matriculants were raised from a simple elementary examination conducted by the head of each school to ascertain if the applicant was capable of understanding what would be taught him, to 24 academic counts, which are the equivalent of a two-year high school certificate. The effect upon the classes by this sudden lifting of the requirements for entrance was to greatly diminish them; but the quality of the students accepted was vastly improved, and it was felt that the ends secured justified the sacrifice of quantity. The schools which depended upon the revenue obtained from student fees were content, and were willing to bear their burden in consideration of the evident uplift of veterinary education thereby. This standard was considerably higher than that of any other State in the Union where a veterinary school was located, and some of the most careful students of the educational problem

thought that the Empire State, leading the van by a wide margin, was fulfilling her mission of "excelsior." But the law demanded that she must go still higher, in company with the schools of human medicine, seemingly unmindful of the fact that veterinary education in this country is in its infancy, and that we had just made a great stride from the merest rudiments of any basic requirements to quite a high degree of classical knowledge. The Regents demanded 48 counts for veterinary matriculants, or the equivalent of a four-year high school course. The effect of this tremendous bound was immediate and decisive: it was a flood-gate placed in front of the doors of the colleges, for not a student matriculated in the two New York City schools, which had hitherto had, under the old system, large attendances, and under the 24-count requirement fairly large classes. Even the Regents were appalled at the destruction wrought, and they soon recanted, reducing the requirements temporarily to the former standard of 24 academic counts. At this point it remained until January, 1905, when it was again boosted, not by slow degrees, but suddenly, to the four-year high school equivalent again. Under the lesser requirement students were permitted to enter upon their studies even though they had but a small percentage of academic counts, providing the lacking ones were secured as they progressed with their technical training. But when the student was called upon to fulfill the higher demand he was required to be in possession of 36 points upon entering, the remaining twelve to be made up before beginning his second term. As a result of the return to 48 counts, one of the schools of the State, which had been going rapidly forward numerically, had its freshman class cut down from fifty in 1904-5 to about twelve in 1905-6. The effect upon the other school—there were now only two schools in the State, the two old city colleges having amalgamated—was not so marked in diminution of numbers, since its former classes were not large, but the new conditions imposed put an effectual barrier against its progress. We are informed by the Dean of this school that forty young men were refused admittance, although they were

prepared to qualify under the 24-count system, and these young men, better educated by far than is demanded by most other colleges of the country, were forced to go to lower-grade schools elsewhere or else abandon the study of veterinary medicine altogether.

Not content with virtually stifling veterinary education in the State of New York, the Regents announce that, beginning with June, 1906, the standard will be further raised to 60 counts, although it is claimed that this is only an apparent elevation, and that it is really an adjustment of the values of the various component elements, and is included in the four-year course. The statement accompanying their announcement is not lucid, and to the ordinary lay mind is clumsily set forth. A gentleman who has had considerable experience in deciphering Regents' enigmas places 54 counts as the total of the new order.

Whatever be the correct interpretation, the fact is very plain to those who are willing to see that veterinary educational progress in the Empire State has received an effectual estoppel that is almost a crime against reason on the part of those responsible for the condition.

Meantime in the colleges of other States the enrollment of students was never so great as at present, and the list of graduates in any one of several of such schools at the recent commencement exercises outnumber all three classes of both the colleges of New York. This statement is not intended to estimate the quality of the students; but to make the point that the ranks of the profession of the country are being filled almost totally without the aid of New York, and how can the latter be contributing to veterinary progress when it fails to attract a sufficient number of students to make it worth while taking her into serious account in the great body of new recruits.

We do not imagine that any one who has read this publication for any length of time will accuse it of a lack of regard for veterinary progress, for it has steadfastly advocated a reasonable, regular advance in entrance requirements wherever the science is taught, as well as a lengthening of the terms and a

strengthening of the curricula whenever conditions will permit; it does not defend, but strongly condemns, those institutions which refuse or fail to press forward with the educational advancement of the age. It has uniformly advocated in its pages the lifting of the latter class of schools higher and higher until the American veterinary diploma shall mean something definite. It believes that New York should lead in this upward movement, keeping well in front, demonstrating to its sister States the feasibility of the advancement, by securing plenty of students of the best class. But when New York commits educational suicide by putting the bars so high as to prove to the rest of the country that the effort is a failure, she excites derision and retards progress by discouraging other States in making efforts to raise their standards. The studentless colleges of New York are a menace to advancement in veterinary science in other sections, and they are not contributing enough practitioners at home to supply the death list in the ranks of the profession. What the result of this will eventually be on legislation may profitably be taken into consideration, and the sooner the Regents return to a safe and sane policy the better it will be for the cause of veterinary education in this country. Full classes of well-educated students are better collateral than rooms full of empty benches in colleges which pride themselves on unreasonably high standards.

THE NEW HAVEN MEETING OF THE A. V. M. A.

Elsewhere in this number of the REVIEW will be found a vigorous letter from Secretary John J. Repp addressed to the members of the national organization in relation to the forty-third annual meeting, which will be held at New Haven, Conn., August 21, 22, 23, and 24. It is less than four months off, and the membership should be actively preparing to signal their return to New England by making the 1906 convention a more glorious factor in professional progress than Cleveland, St. Louis, Ottawa, Minneapolis, or any of the red-letter gatherings since the new century began. The association spirit is

stronger to-day than ever, and the national association should be its highest exemplar, for it should set the standard in all that is best in the body professional. The idea is well appreciated by its officers, but few of the members tarry to consider the great anxiety and responsibility borne by those who are chosen to guard its interests by looking after all the details of the annual gathering. The Secretary's task is beset by innumerable difficulties, and, strange to say, the preparation of his literary program is largely a matter of personal solicitation rather than voluntary. Even the latter few break in upon him at the eleventh hour, after he has worried for weeks over their failure to respond to his oft-repeated invitation. It is unfair to treat a faithful officer thus, and all who intend to contribute papers or other material should in justice to Secretary Repp notify him at once, thus permitting him to arrange his program and see the weak links in the chain.

President Lowe early in his administration called for one thousand recruits to the membership, using his personal efforts to have every member bring in at least two new ones. Stupendous task though it is, it is not impossible if each one will do his part well. Resident Secretary White, of Tennessee, in a letter printed elsewhere, pledges every eligible veterinarian in his State! Secretary DeVine, of New York, is writing in all directions in behalf of the idea, and others are working along the line President Lowe has indicated. It must be remembered that increased membership cannot be obtained at the time of the meeting, for by a new rule, adopted at St. Louis, the application must be in the Secretary's hands thirty days before the convention. There are usually many visitors to the sessions, and stimulated by the association spirit applications were formerly poured in at every seating of the Executive Committee; but now all such opportunity to swell the roll is lost, and the recruits must be deliberate seekers after fraternal recognition. This arrangement imposes greater responsibility on the members to do missionary work in behalf of the organization, for many men feel that they must have a personal invitation—nay,

a personal appeal—to do a thing which is for their everlasting benefit and a thing which is their plain duty.

New England and the entire East are put upon their sectional pride this year, for, having nursed the Association in its infancy, it returns a vigorous adult, strong in numbers and influence, with a standard of excellence set at a high mark by the West and the North. Little Connecticut may be relied upon to have perfect arrangements for a successful meeting, but Massachusetts, and New York, and Pennsylvania, and New Jersey, and all their sister States must be prepared to attend in full complement and to see that a programme of surpassing excellence is provided. This, of course, is difficult of concerted accomplishment; but every member must do his individual duty, and out of it all the result cannot be in doubt. While pride will prompt the East to neglect nothing, the membership everywhere should feel it a privilege to contribute to the program and to lay aside the arduous duties of their careers in the heat of August, and, with their families to make it more enjoyable, journey to the land of the nutmeg and partake of the good things now being arranged by the loyal sons of Connecticut.

Get ready for New Haven!

THE SAN FRANCISCO DISASTER.

The unprecedented disaster on the Pacific Coast has awakened throughout the world a greater confidence in the nobility of human nature and the brotherhood of man. Such sympathy and succor were never recorded in the history of the world, and the sad event has its redeeming lesson in bringing man to a closer reliance upon the Great Creator.

While no definite news has reached us of the fate of our brother veterinarians, it seems impossible that all could have escaped without at least great financial loss, not only individually, but in the destruction of the property of those whom they served. Veterinarians everywhere will extend to them not only sincere sympathy, but will doubtlessly contribute materially to their relief from their great distress.

ORIGINAL ARTICLES.

DIAGNOSIS AND TREATMENT OF VENTRAL HERNIAS
IN BOVINES.*

RÉSUMÉ OF CLINICAL LECTURES.

By CH. BESNOIT, Professor of Bovine Pathology at the Veterinary
School of Toulouse.*(Continued from Page 36. April Review.)*

(5) *Tumor*.—It is scarcely possible to make a mistake between hernias and tumors; the suddenness of their apparition and the relative rapidity of their development are sufficient, besides their other peculiar characters, to avoid the error. There are cases, however, where hesitation is allowed; that is when the walls of the hernial sac are very hard or have undergone fibrous or bony degeneration.

I have already spoken of a hernia in which the intestinal circumvolutions, instead of being placed under the skin, had slipped between the various muscular layers of the abdomen; the walls of the hernial sac being formed by the skin and by parts of the muscular layers of the region, had become very hard, and made exploration very difficult. It can be understood that under such conditions, especially when the lesion is well circumscribed, and of small size, a tumor might be suspected. The error is so much easier when, sometimes, the various layers forming the walls of the hernial pouch are submitted to a low kind of irritation which brings on progressive induration and increases their hardness. In these cases exploring puncture and rectal exploration will give information on the contents of the sac and on the presence of an abdominal opening: they constitute the best elements of the differential diagnosis.

Hamoir and Masson have recorded an interesting observation of the ossification of the sac of one voluminous ventral hernia in a cow, which, without information on its origin and de-

* Translated by A. Liautard, M. D., V. M., from the *Revue Vétérinaire*.

velopment, one might easily have taken for a true neoplasm on the road to calcareous transformation or partially ossified. The animal had carried for a year, on the inferior part of the left flank, immediately inside of the fold of the stifle, a well circumscribed hernia, hemispherical, as big as a man's head, which little by little had become densified on its surface, and finally was very hard.

The cow was killed and the autopsy showed that the walls of the hernial pouch were composed, in almost their whole extent, of bony plates of several millimeters in thickness, and united by densified fibrous tissue. The contents consisted of only a few loops of the small intestine, adherent together and to the fibrous parts of the sac.

This transformation of the walls of the hernial pouch rendered the hernia almost inexplorable, and no doubt that if positive information on its development had been obtained, the diagnosis would have been difficult. In such cases rectal exploration, and principally exploring puncture made on spots in the wall not ossified, seem to form the best means of investigation; and yet I am convinced that they would not be sufficient to avoid errors in cases where a true tumor was undergoing calcification or ossification.

(6) *Abdominal Distension*.—Of all the lesions which we have so far studied the differential diagnosis of, there is none which comes nearer to hernias and whose positive diagnosis is more delicate than pseudo-ventral hernias by distension of the abdominal walls.

Those distensions are frequent in bovines, much more so than would be supposed in the presence of the silence of authors on this subject; as up to this day they have scarcely been mentioned except by Mr. Detroye. It is true that Prof. Moussu seems to allude to them; but he mixes them with spontaneous ventral hernias, for which he claims a pathogenic theory, which can evidently be applied only to simple abdominal distensions.

There exists, indeed, a fundamental difference between these last lesions and spontaneous hernias. These occur, like the

former, by themselves, without external violence, under the simple influence of an exaggerated weight applied upon the inferior abdominal walls, more or less reduced in resistance, the muscles stretch, become thinner, and then give away, allowing the ectopia of the abdominal organs, which then come and lodge themselves under the skin. On the contrary, the others are not accompanied by abdominal laceration; the various layers constituting the abdominal walls, muscles and aponeurosis, are not submitted to any appreciable alteration except a certain amount of reduction in their thickness; they simply allow an excessive distension under the pressure of the viscera, and consequently a hernial opening is never present.

The pathogeny of these distensions is established easily. For Prof. Moussu they result from the progressive sclerosis of the abdominal walls. Following "troubles in the nutrition of the wall, whose cause it is difficult to perceive, the elastic layer gets atrophied and does not fulfill its function of an automatic surcingle; the muscular layer progressively becomes sclerotic from the linea alba towards the lateral parts, and, the elasticity being there no longer, it gets thin and allows its distension." The absence of any muscular lesion in my personal observations, as well as in those of Mr. Detroye, does not agree with this theory; if, then, the mode of development admitted by Prof. Moussu is possible, it does not seem to take place in the majority of cases.

Mr. Detroye believes that a "sudden pressure from inside the abdomen, made upon the abdominal walls, during a jump or a fall, produces a partial rupture of the aponeurotic fibres; that the weight of the gastric mass promotes afterwards the progressive elongation of the fibrillæ, that have remained intact, but insufficient to preserve to the abdominal surcingle its normal passive resistance." It would seem to me rational to admit also the possibility of a slow and gradual distension by the simple action of the weight of the abdominal organs worn out by old age, chronic diseases, or repeated gestations. Indeed, the disease is observed only exceptionally in youth; my observations were all in aged or more or less worn-out cows.

Pseudo-Hernias by Abdominal Distension is met either on the right or left side; in the latter case it resembles hernia of the rumen; in the former, the intestinal or the mixed hernia. They may be classified under two distinct clinical types: (1) circumscribed and well-defined tumefaction; (2) diffused tumefaction or dropping belly. Both forms occur indifferently either to the right or left side.

The *first type* (Figs. 8 and 9) is characterized by a clinical aspect absolutely similar to that of hernias; the swelling is well circumscribed, the outlines well marked. The exact diagnosis is delicate, as the distension, occurring slowly, is overlooked at the beginning. We are called only when the lesion is old and large in size, presenting all the characters of chronic hernia, of the rumen on the left side, or of the intestine or uterus on the right. The only element of differential diagnosis rests on the absence of the hernial opening; but on one side, one has to deal with a heavy mass, at times enormous, which renders all attempts at reduction very difficult; and on the other, the very dependent situation of the portion of the distended wall, with the presence in its interior of abdominal organs, and principally the rumen, very often render the internal exploration per rectum almost impossible.

This form of distension occupies exclusively the most dependent part of the flank, a little below the fold of the stifle. It corresponds anatomically to the aponeurotic triangle formed between the muscular portions of the great and small oblique and the transverse of the abdomen; on this level the wall is composed entirely of superposed layers of aponeurosis; it is there that it offers its minimum of resistance.

The *second type* (Figs. 10, 11, 12, and 13) constitutes in general a lesion much more voluminous than the preceding; but it is diffused, badly defined, with irregular outlines, gradually losing themselves with the remainder of the abdominal wall; the belly is, so to speak, dropping and pushed on one side of the abdomen, to the right or to the left. At the beginning, when the lesion is not yet well marked, there can be no possi-

ble error as to its nature; but later, when the distension has assumed great proportions, it often resembles those large ventral hernias with hernial openings measuring sixty or seventy centimeters in size, through which the greater part of the abdominal viscera (rumen on the left side, intestine, uterus, and even part of the rumen on the right side) were out of the belly and lodged in an enormous subcutaneous pouch. The diagnosis may then present real difficulties. It can be established only after a positive assurance of the absence of any tear in the abdominal walls; but, considering the large size of the distension and the enormous mass of organs that it contains, this exploration will always necessitate the decubital position of the animal, and demand long and difficult manipulations for the reduction.

In many instances our advanced students called to examine quite a number of cases of abdominal distension have always almost unanimously made a diagnosis of ventral hernia—evident proof of the difficulty that exists in the differential diagnosis of these two kinds of lesions.

Two observations of the first type have been recorded by Mr. Detroye—one to the left, one to the right.

In the first case, it was a small cow brought to the abattoir to be slaughtered because of a very large and incurable hernia. A puffy tumor, two or three times as big as a man's head, was situated on the lower region of the left flank; exploration indicated on that level an evident displacement of the rumen, but did not allow the detection of any tear in the abdominal wall. After death, the minutest dissection of the various musculo-aponeurotic layers of the region was made. It showed that the abdominal wall was perfectly intact in every layer; there was only a simple pushing outwards of the intercrossed aponeurosis of the great and small oblique and of the transversalis muscles; the fleshy portions of these muscles had resisted, and, bounded above, forward and behind the basis of the pseudo-hernia, which downwards was limited by the external border of the rectus abdominis and the tunica abdominalis. Every one of these muscles were normal; the stretched

aponeurosis alone was slightly thinner and had its fibres spread apart.

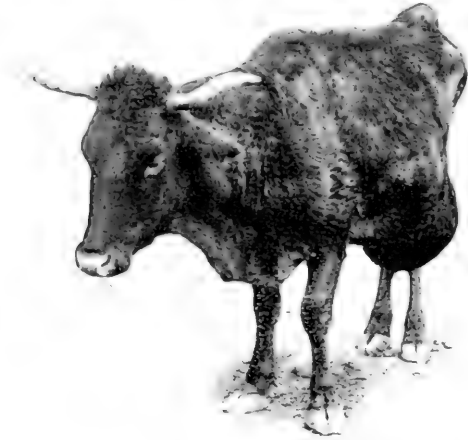


FIG. 8. LEFT ABDOMINAL DISTENSION—CIRCUMSCRIBED TYPE.

The second observation related to a pseudo-hernia, a little smaller, and developed in the same region of the right flank of a cow in her eighth month of pregnancy. The anatomical peculiarities of the lesion were exactly the same as in the preceding case, but the distended region was

occupied by the uterus.

I have myself observed several cases of abdominal distension with the two types described above. Here I will record a few of the most prominent characteristics.

Circumscribed Type.—1. A very old cow (Fig. 8), bought for surgical exercises, had on the lower part of the left flank, immediately in front of the stifle, a large puffy swelling, regularly round, well defined and about 40 centimetres in diameter. With the animal kept in standing position, the exploration made in every direction, was difficult, and no hernial opening could be found. Still the regular contractions of the rumen could be well felt under the skin. I believed it was a hernia of the rumen, but reserved my diagnosis on account of the failure of the manipulations for reduction and the non-existence of appreciable muscular tear.

The lesion being incurable, the animal was slaughtered. At the autopsy the careful dissection of the abdominal wall revealed that this was intact and that the rumen was entirely lodged in the abdomen. The tumor occupied the triangular space

of the lower part of the flank, bounded inside by the external border of the rectus abdominis, behind by a small portion of the crural arch and the interior border of the fleshy portion of the small oblique, forward and outside by the posterior border of the fleshy portion of the transverse abdominis. It was due to a distension of the superposed aponeurotic layers of the region and constituted by a simple diverticulum of the abdominal cavity in which was received a rather large portion of the rumen. In the composition of the wall of this diverticulum entered successively from inwards outwards: the peritoneum, the aponeurosis of the transverse, small and great oblique muscles of the abdomen, the tunica abdominalis, a thin band of the panniculus, and the skin. All these structures were considerably thinned, but were intact, except the aponeurosis of the small oblique. Thinner than the others, there were in its central por-



FIG. 9. LEFT ABDOMINAL DISTENSION—CIRCUMSCRIBED TYPE.



FIG. 10. LEFT ABDOMINAL DISTENSION—DIFFUSED TYPE.

tion and in the direction of the muscular fibres, two elongated openings, parallel, one 20 centimetres long, the other 10, separated by a hard fibrous cord, 2 centimetres around, resulting from the pushing outwards, by eccentric pressure, of the fibres of the border of those openings. These two openings cer-

tainly had nothing to do in the etiology of the lesion; they were simply due to the rupture of a few fibrillæ of the muscles promoted by the excessive thinness of the aponeurosis, and the wide separation of their constituting fibres.

2. The cow represented in Fig. 9 had on the left flank a tumor similar in all points to that of the preceding cow: it occupied the same situation, had nearly the same size, and presented the same anatomical peculiarities, even the tearings. The aponeuroses were distended and their fasciculi thinner and wide apart; but there was no rupture, and the surrounding fleshy parts had no appreciable lesion.

The diagnosis was particularly difficult, although the preceding case made me suspect the exact nature of the second.

Diffused Type.—1. Figs. 10 and 11 relate to a very old cow, in which during the gestation that preceded her last pregnancy a small tumor had developed in the left flank. Already in the first months of her last gestation this tumor had increased in size, and became larger than a man's head. Seven months gone in her condition, she was brought to me; then the lesion was very large, as can be seen in Fig. 11.



FIG. 11.—LEFT ABDOMINAL DISTENSION
—DIFFUSED TYPE.

The whole left inferior part of the abdomen was involved in a diffuse swelling, without marked outlines, spreading gradually over the outer surface of the abdomen. The belly was dropping, pendulous, pushed to the left and downwards, so to speak, while the right side, on the contrary, seemed normal. Manipulation with the hand revealed in this tumor the presence of an enormous puffy mass; evidently it was the rumen, whose contractions could be seen through the skin. Finally all attempts at reduction re-

mained fruitless, even while the animal was lying down in dorsal decubitus; an opening could be detected in the musculo-aponeuritic walls of the abdomen. Rectal examination was impossible, as the rumen occupied the entire diseased region.

On account of the great extent of the lesion, of its diffuse aspect, and especially of the absence of any hernial opening, the supposition of hernia of the rumen was laid aside, although it was thought of at first, and a diagnosis was made of a simple unilateral abdominal distension. The autopsy confirmed the diagnosis in showing the integrity of the abdominal walls, which were only very thin on the left side, especially towards the aponeurotic region of the flank, by the pressure exercised by the rumen packed with food to such an extent that its own walls were thinned and distended.

2. A cow (Figs. 12 and 13), about ten years old, in good fleshy condition, is brought to the clinic for a voluminous swelling of the right side of the abdomen. This swelling is generalized and diffused, but more marked towards the inferior regions of the flank; the belly is dropping and on the right side arrives

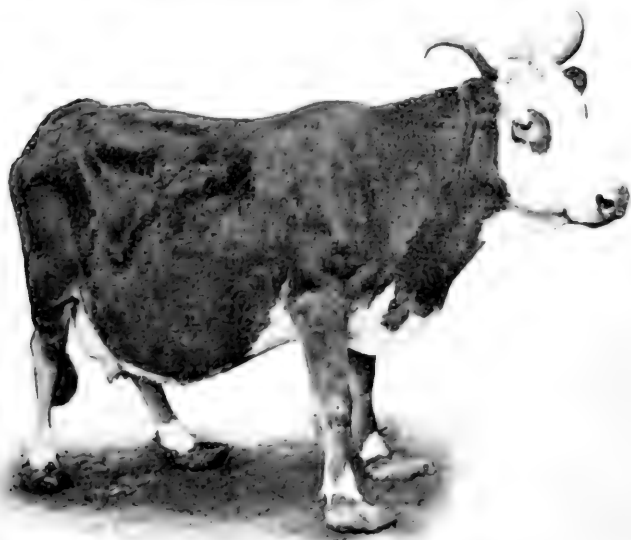


FIG. 12. RIGHT ABDOMINAL DISTENSION--DIFFUSED TYPE.

to the level of the hock. The perfect integrity of the abdominal wall is immediately made out by external palpation as well as by rectal examination. It only seemed distended, a condition which is also indicated by the large size of the foramen of the right mammary vein, which is twice as big as that of the opposite side. On the left side the abdomen presents nothing abnormal.

Finally, the right hip of the animal (Fig. 13) is much lower than the left, result of an old fracture of the external angle of the ilium. Evidently the case was one of unilateral abdominal distension of the right side and not a ventral hernia.

Without being difficult, the diagnosis, however, demands a close examination of the animal; a comparison between Figs. 12 and 14, which represents a mixed ventral hernia of the gravid uterus and of the intestines, will show how the aspect of a simple distension may at first glance be mistaken for a true hernia. It is probable that repeated gestations with heavy and large products may have reduced the resistance of the musculo-aponeurotic zone of the right flank, the fœtus being always, in cows, pushed to the right by the rumen. Then under the regular and constant pressure from the digestive organs, this same zone has gradually given away and the belly has dropped. The fracture of the ilium has besides somewhat contributed to accentuate this dropping in, giving rise to a lowering of the small oblique abdominalis and a relaxation of its aponeurotic fibres.

The condition of the animal is considered incurable, and she is slaughtered. The post-mortem confirmed the diagnosis, and showed that, notwithstanding the fact that the disten-



FIG. 13. RIGHT ABDOMINAL DISTENSION—DIFFUSED TYPE.

sion was localized to the right flank, it was due, as in the preceding case, to the pressure from the rumen, which in its enormous proportions came in contact with the right abdominal wall and pushed it outwards.

3. This last observation relates to an old, thin, worn-out cow, without any commercial value, which was brought to our surgical exercise. Her photograph was not taken, but the lesion that she presented had the same general aspect as those exhibited in Figs. 12 and 13.



FIG. 14. INTESTINAL AND UTERINE HERNIA (ANTE-PARTUM).

Five or six days before she was brought to our clinic, the cow had presented on the right flank a small diffuse tumefaction, in which, according to the owner, a sucking noise told of the presence of liquid. The days following the swelling had disappeared, and, always according to the owner, the abdomen had suddenly dropped.

When I saw the cow the abdomen dropped on the right, simulating at first glance a ventral hernia. Error was so possible that

the external exploration of the abdomen revealed the presence on the right side of a kind of subcutaneous slit, 10 or 12 centimeters long, with borders slightly thickened, and situated at the middle part of the flank, in an almost vertical direction, yet slightly oblique from upwards downwards and from backwards forwards. But a more careful examination revealed that this opening was incomplete and did not go through the entire abdominal wall nor allowed entrance into the abdominal cavity. Besides that, the wall of the abdomen could be felt all over under the skin, and rectal exploration showed, even better than external manipulation, that the abdominal wall was not perforated.

Consequently it was a case of simple unilateral abdominal distension of the right side, complicated with a partial giving away of the aponeurotic region of the flank. Taking into consideration its situation and direction, in all probability this giving away as involved in Case 1, circumscribed type, the aponeurotic fasciculi of the small oblique muscle.

As to the etiology, it seems to me it rests on the basis advanced by Mr. Detroye: In this thin and worn-out cow, the right abdominal wall has little by little been stretched, worn out, and reduced in thickness by numerous gestations; at a given moment a violent blow has been followed by a partial aponeurotic giving away, manifested by the œdematous swelling at the beginning: 'The abdominal surcingle being less resisting and insufficient to support the weight of the viscera, has become overstretched and the abdomen has suddenly dropped.

The post-mortem, followed by the dissection of the right abdominal wall, confirmed the diagnosis. There existed in the aponeurosis of the small oblique, near the fleshy portion, a slit, 12 centimetres long, with thick borders, congested, infiltrated, and covered with clots of blood, indicating its recent formation. The other musculo-aponeurotic layers were thinned out, but free from any lesion.

TREATMENT OF VENTRAL HERNIAS.

All the methods preconized in the treatment of umbilical hernia in the horse, have by turns been recommended and re-

sorted to against ventral hernias of bovines, yet they are far from having the same value, and, besides, the best among them answer to very different indications. On this last point of view, it is proper to successively study the treatment of recent, that of old, and that of spontaneous hernias.

RECENT OR ACUTE HERNIAS.

The method with *bandages* has, in all times, been employed by preference in the treatment of recent ventral hernias. Its object is to keep the hernia reduced during the time necessary for the complete cicatrization of the accidental opening of the musculo-aponeurotic wall of the abdomen. It cannot be efficacious except at the very beginning of the accident. Later, the borders of the hernia sac have separately cicatrized, and even long reduction of the hernia is powerless to allow them to unite again.

Bandages with pads, analagous to those that some practitioners employ against umbilical hernia of colts, and made on the same principle as those used by human surgeons to relieve crural and inguinal hernias, have been recommended by Serres.

In reality, they are most frequently inefficacious, at least with adults. On account of the ovoid form of the abdomen, they are easily displaced, slipping forwards or backwards of the point where they have been applied. As recovery requires that the pressure upon the hernia be constant and lasting, these bandages, then, demand an incessant watching, and on that account are so inconvenient that to-day they are ignored by almost the totality of practitioners. With young calves the general form of the abdomen, rather regularly cylindrical, lends itself better to their application and they give better results in them. With this method Serres has obtained in three weeks the recovery of a hernia of the abomasum in a three-months-old calf; in twenty days, that of another of the same kind in a steer six or seven months old; and in fifteen days, that of a large intestinal hernia of the left side in a five-year-old cow.

Simple retaining bandages, with cloth or linen, have the same inconveniences as the preceding, except, however, when

by some means they are made to adhere to the skin of the animal. One of the best of these kind is the one described by Bouley, consisting in applying over the hernia, after reduction, a thick coat of chopped oakum, glued with a mixture of black pitch and turpentine melted together.

The reduction of the hernia is not always easy while the animal stands up. However, if it is quiet, and when the lesion, not too large, is situated sufficiently far back to be reached through the rectum, one may be assisted in his manipulations of taxis, if, with one hand introduced through the anus and placed over the hernial orifice, the exit of the abdominal organs is prevented while the retaining bandage is completed. In all other cases it is better to cast the animal; although decubitis is not so favorable for the application of the bandage, but it facilitates considerably the manipulations of reduction. Once the hernia is reduced, with the animal cast or standing, a coat of agglutinative mixture is spread rapidly over the skin, on the spot occupied by the hernial swelling, and on a surface extending much beyond its boundaries; while this coat is still warm a pad of chopped oakum is laid on; then another coat of pitch, and over this a piece of pasteboard, soft but solid, is placed, and also coated with the agglutinative preparation. Finally a linen band, 12 or 15 metres long, and 10 centimetres wide, also covered now and then with the sticking mixture, is rolled carefully around the body of the animal, thus forming an immovable bandage, having great rigidity and being firmly fixed.

If the bandage is applied close to the sheath, it is necessary to place on each side of it small hard rolls of oakum to avoid pressure on the urethra. (Serres.)

Although this contentive bandage is easy to apply, and is excellent in its effects, it is not perfect. It can evidently be better fixed than the bandage with pads, held only by a surcingle, but in summer the adhesive mixture may get soft, and the bandage be displaced by sliding off. To prevent this the pitch mixture can be replaced by hard gelatine glue melted. I have

had recourse to it often and derived good results from it. A plate of pasteboard of a size slightly larger than that of the hernia is glued directly over the skin with several rolls of bandage firmly tight and glued on to the pasteboard, on the skin and in between the layers of bandage. The animal is watched for a while until the glue is cold, and after an hour or two, when it is dried, the bandage is hard and firmly secured.

During the whole treatment the animal shall be kept at rest, to avoid the chances of displacement of the apparatus, and a proper diet to avoid overloading of the digestive apparatus should be recommended.

Applied at the very beginning of the trouble, this method of *fixed bandages of contention* may give good results. They constitute a solid pressure, which holds the hernia reduced during the time necessary for complete cicatrization of the abdominal opening, say one month, six weeks, or two months, according to the case. Yet they do not give the same results in all cases of recent hernia. Very efficacious when it is small, easily reduced, and situated in the superior regions of the flank, and having a small opening, all of which are unfavorable conditions for the return of the hernia, after being reduced—but they will most ordinarily fail, on the contrary, with a large and heavy hernial mass, situated low down, with very large hernial ring, which after reduction are most favorable for another exit of the intestinal loops, which may slip under the bandage, be pressed upon and injured.

In such a case the contentive bandage may, at best and under most favorable conditions, bring on improvement, but it is powerless in promoting final recovery. It is in this way that in case of an enormous hernia of the rumen in a cow seven months pregnant, Larrony was able to have her reach the time for normal delivery, and to obtain a great reduction of the size of the lesion, by the application to the end of gestation of a pitch bandage; it is true that afterwards the hernia still existed, but it was sufficiently reduced to allow a second gestation to go on under conditions entirely normal.

Experience shows also that the recovery of ventral hernias with bandages is much more easy to contain in youth than in adult life. Indeed, in the first periods of life, besides the general form of the abdomen, more favorable, as we have said, to the application of bandages and their final fixidity, the work of cicatrization is much more active and more rapid. The result is that the chances of recovery from ventral hernia by this mode of treatment, quite good in young bovines, rapidly diminish later, and are nearly all gone in advanced years.

Treatment with bandages is then only indicated when the animal is young, carries a recent hernia, of small size, with reduced opening situated on the upper part of the abdomen. In the other cases, failure will be almost certain, and then it is much better to resort at once to the treatment by *operation*, of little danger in bovines, relatively easy to carry out, and much more certain in its efficacy.

At any rate, I consider the *operation* as the method of choice in all cases of hernia, recent or old, and I will never hesitate to operate on all ventral hernias of medium size that come before me. Of course, the owner has to be taken into consideration; if, frightened by the idea of a bloody interference, he hesitates, in cases where the age of the patient, the size and situation of the hernia, and so forth . . . one may try the fixed contentive bandage. But, taking into account the number of failures, much hope cannot be given, and if, after a few weeks, no appreciable improvement is noticed, the operation must be resorted to.

As to the other curative treatments of hernia (irritating frictions, caustics, pressure upon the sac, ligature, etc.) they may have been used only exceptionally, and that in the treatment of acute ventral hernia. However, Delsol has obtained in a cow, in the space of a month, recovery of a right intestinal hernia, existing for four days and as big as a melon, by using friction with 30 grammes of nitric acid, made for five minutes. Marlot, Jr., has also recorded two observations relating to a cow and to a calf affected with right intestinal hernia of recent formation

and œdematous, which he treated by the process of suture applied with the Marlot pincer. These cases are exceptional, and in reality these modes of treatment are only attempted with chronic hernias.

OLD OR CHRONIC HERNIAS.

As long as the origin of a ventral hernia goes back more than three weeks, bandages are useless. "The edges of the hernial opening are covered with a fibrous border, with little vascularity, and unable to form an obturator covering." (Cadiot and Almy). "In those conditions," as Serres wrote, "nothing can be expected from the use of contentive bandages, and it is in vain that in many instances we have employed them." They can only act as palliatives, by preventing the escape of abdominal organs from their normal relations and also in allowing the use of the animal for a variable length of time.

Nevertheless, old ventral hernias may be submitted to a useful treatment and it is wrong to accept in an absolute manner the idea of the incurability of chronic hernia. "To have some chances of success with such lesion," Bouley has said, "the intestine must not have had time to accustom itself to remain outside of the abdomen, and the borders of the opening through the ventral walls time to cicatrize. . . . When some days have already elapsed and the edges of the opening have cicatrized apart from each other, the chances of success are very limited, even when by the application of a bandage, the intestines are prevented from passing through it. . . . Once established, ventral hernia becomes rebellious to treatment, and it is best to leave the animal live with the infirmity rather than to resort to risky operations."

This opinion was too absolute, as in reality it is possible to obtain the recovery of some chronic hernias by a certain number of methods of various efficacy. Irritating or caustic frictions, irritating injections into the hernial sac, suture, ligature, compression with the clamp, etc., are methods which are constantly used in the treatment of chronic ventral hernias in horses. They can also be applied to bovines, and if their use is

much more limited, say even exceptional, it is because the owners consent rarely to have their animals treated, and prefer sending them to the slaughter-house for butchery.

Irritating or blistering frictions (sinapism, ointment of antimony, or the neutral chlorate of potassium) have for object to promote the formation of an œdematous swelling, which reduces the hernia by pressing the organs back into the abdomen, and then forms itself into a closing cicatricial tissue. Employed sometimes with success, in exomphalus of colts, these frictions have given poor results against ventral hernia of bovines, almost all on account of the large size of those lesions and also from the difficulty in promoting the formation of a fibrous pad, obturating and sufficiently wide and resisting.

The same can be said of the *perihernial irritating injections*. First recommended in human medicine, this method consisted at first in the injection of saturated solution of salt between the neck of the hernial sac and the surrounding tissues, with the object of developing a plastic inflammation with fibrous neoformations, with retraction of the tissues, hence obtaining contraction or obliteration of the hernial opening. Later the salt solution was replaced successively by diluted alcohol, decoction of oak bark, artificial serum, and recently by chloride of zinc to the tenth. Tested in veterinary medicine, these injections have given good results only in exomphalus of small size. Ventral hernias in bovines could never be benefited by them, only in the exceptional cases, where the lesion would be of very small dimensions.

Caustic frictions (nitric and sulphuric acids), recommended first by Dayol in the treatment of exomphalus of colts, act in the same way. They have often been employed with success against ventral hernia of all species of animals. In bovines, where old hernias are ordinarily large, the number of complete recoveries by this method is rather limited, always on account of the difficulty presented in cases with wide hernial opening. Gouze has recorded a final recovery obtained in three weeks

with a left ventral hernia treated with one friction of 16 grammes of nitric acid.

Besides, this method is dangerous, and requires close watching every instant. There is danger of premature and accidental sloughing of the eschar, and also serious accidents, such as eventration, formation of artificial anus, peritonitis, etc., accidents which are so much more to be feared when the hernia is large, requiring more energetic interference. The method cannot be recommended.

Compression with clamp, ligature, or suture of the hernial sac, after reduction of the hernia, have for effect to promote a rapid mortification of the sac while on the opening a closing fibrous pad is organizing. Numerous *modus operandi* pertain to this surgical method. They have all been frequently employed, with more or less satisfactory results, in the treatment of most varieties of hernias in horses, especially in cases of omphalocele. Against ventral hernia of cattle they have, on the contrary, been seldom used, on account of the ordinary large size of the lesion, they have proven as unsatisfactory as the preceding methods, and on that account are not to be recommended. I will not speak of them, but merely mention the principal ones.

Ligature is the simplest method of all. It consists in running through the sac, after reduction of the hernia, two metallic pins, disposed cross-like, and applying above them a loop of cord, tightened sufficiently strong to promote a slow mortification of the sac.

Suture is made, after reduction, by using the plate of Mangot, the nippers of Benard or of Marlot, so as to make it more regular. With this method Marlot, Jr., has obtained the radical and rapid cure of ventral hernias in several bovines; he has also observed that in these varieties of hernia reduction was easier to obtain and the application of the suture made with much less difficulty when the animal was kept standing instead of being cast.

Compression of the sac, always after complete reduction,

can be made with straight or curved clamps or with special nippers. Degive has recently described a new *modus operandi* in which to the compression is added the suture of the hernial ring. The hernial sack being opened with all necessary care, the protruding organ being reduced, one or two metallic needles are passed through the skin and the edges of the hernial opening; above that a hernial nippers is applied, the needles are withdrawn, and the nippers kept in place by horse-shoe nails implanted under them, through the skin and the edges of the hernial ring; two cords secured together on the back of the animal support the weight of the nippers. For Degive this method is superior to any in cases of large ventral hernia with wide hernial ring. It can be resorted to in all domestic animals.

(*To be concluded in the June REVIEW.*)

THE CHICAGO VETERINARY COLLEGE has 308 matriculants for the session of 1905-06, and graduated 98 at the March examinations. The Kansas City Veterinary College had 302 students enrolled, with 78 graduates.

A BILL framed to abolish the sale of broken-down horses has been passed by the Massachusetts legislature and signed by the Governor. Particulars are not at hand stating who is to be authorized to say when a horse is broken down or what is to be done with horses so declared.

THE ANTI-DOCKING BILL has passed the New York Assembly and advanced to a third reading in the Senate. It seems that this year no protests have been filed at Albany either by the dealers or private owners. In all its provisions it is substantially a copy of the Colorado law, which has been in force since 1899. It provides for the registration of all docked horses in the State within one year, and makes the mere possession of an unregistered docked horse after the expiration of that time a misdemeanor punishable by fine or imprisonment, or both. By many horsemen it is deemed to be impossible of enforcement, and by some lawyers it is said to be unconstitutional. That its enactment into law would be a serious blow to the trade in fine carriage horses of the fashionable type is believed by nearly all dealers. In other years the mere introduction of the bill, says the New York *Herald*, has been the signal for a mild panic in the horse market, but for some reason it has not occasioned a ripple of excitement this season.

ACTINOMYCOSIS MISTAKEN FOR TUBERCULOSIS AT POST-MORTEM FOLLOWING THE TUBERCULIN TEST.

BY VERANUS A. MOORE, NEW YORK STATE VETERINARY COLLEGE,
ITHACA, N. Y.

The long and successful use of tuberculin in the diagnosis of tuberculosis has shown that it is one of the most accurate diagnostic agents known to veterinary science. There are, however, those who still feel that it is not to be trusted. The recognized exceptions, such as cases far advanced in the disease and those where there is an arrest in the disease process with a tendency to encapsulate the lesions, are used as arguments against the efficiency of tuberculin as a diagnostic agent. Again, to prove that tuberculin is not as reliable as it is generally accepted to be, its opponents cite cases where it is alleged to have failed to produce a reaction and yet the animal was suffering with active tuberculosis. A number of such cases have come to my notice and in every instance the error has been in the diagnosis of the disease and not in the action of the tuberculin. Recently a case of this kind was investigated in which an actinomycotic growth was mistaken for a tuberculous one. The possible confusion in the differential diagnosis between these two diseases, when the lesions are restricted to the lungs, renders this case worthy of note.

A herd of cattle consisting of about 100 cows was officially tested by a representative of the State Department of Agriculture. Five animals gave a decided reaction and upon post-mortem examination they were found to be tuberculous.

Shortly after the test was made, one of the old cows that did *not* react to the tuberculin was slaughtered because she was not "doing well." Upon examination it was found that one of her lungs was badly diseased. It was promptly reported that the tuberculin test had failed, because the disease was not sufficiently advanced to attribute the failure to the existence of extensive lesions. It happened to be my good fortune to examine this case before the affected lung was destroyed.

The lesions were located in the anterior part of the principal lobe of the right lung. They consisted of one large mass of dark (pigmented), spongy-like tissue about eight inches in diameter, surrounded by a sharply defined fibrous wall (Fig. 1). There were several smaller masses, from one to two inches in diameter, of a similar growth in the adjacent lung tissue. A close examination showed the tissue to be that of *Actinomycosis*. In one side of the larger actinomycotic growth, there were two or three small pockets containing pus. In a thin layer on the blade

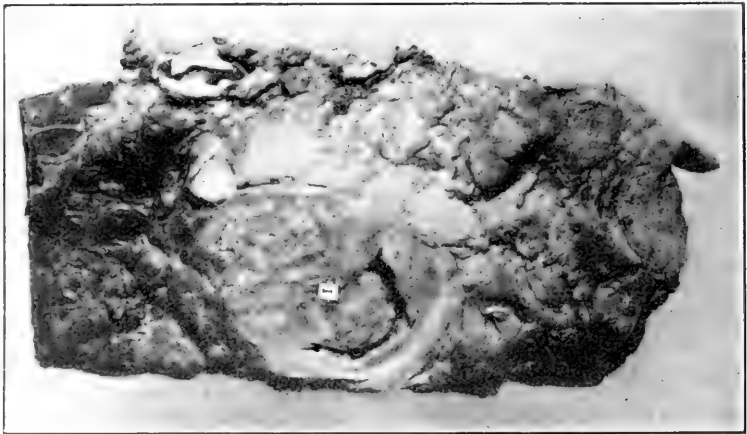


FIG. 1. A photograph of a section of the lung through a small actinomycotic area. (1) Actinomycotic tissue, (2) the wall of fibrous tissue separating the diseased focus from the normal lung tissue.

of a knife, the pus exhibited minute yellowish clumps that could be seen with the unaided eye and with a hand lens their character could be determined. The tissue itself was thickly studded with the clumps of the ray fungus. Sections of the new growth contained areas thickly sprinkled with the fungus as shown in Fig. 2. A higher magnification of one of these masses shows the fungus growth with surrounding giant cells.

The fact that actinomycosis is not a very common cause of lesions in the lungs may warrant a somewhat detailed description of actinomycosis, more especially in the lungs of cattle.

Actinomycosis may attack any organ of the body. It is

more commonly found about the head, tongue or jaw, but not infrequently it occurs in the lungs, liver, spleen, intestine and uterus. In fact, all organs and tissues seem to be susceptible, and, like tuberculosis, actinomycosis may become generalized. Assmann considers generalized actinomycosis to be more common than is generally supposed. He gives a description of eleven such cases. Thus we see that "lumpy jaw" and "wooden tongue" do not circumscribe the range of activities of the ray fungus.

In actinomycosis of the lung the infected tissue presents, in its early stages, a very characteristic appearance. The lesions do not consist of necrotic lung tissue, as in tuberculosis, so much

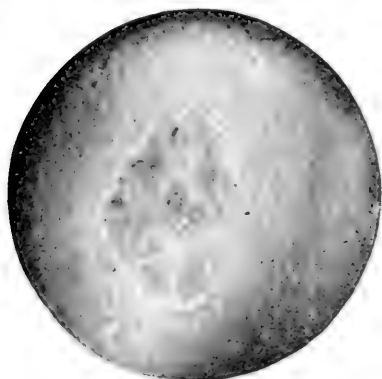


FIG. 2. A photograph of a section of the actinomycotic tissue showing several clumps of the ray fungus.

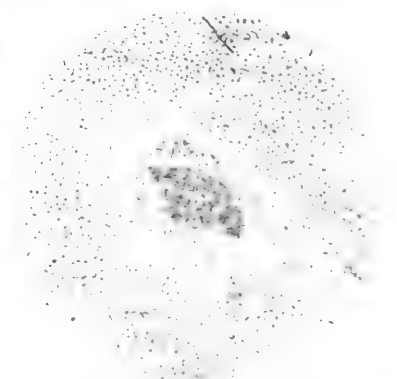


FIG. 3.—A photograph under higher magnification of one of the clumps of the ray fungus. It shows the fungus mass with a few of the club ends radiating from it, the giant cells surrounding it and the new formed tissue farther from the fungus.

as a mass of tissue composed of clumps of the ray fungus surrounded by tissue composed for the greater part of epithelioid and spindle-shaped connective tissue cells, among which giant cells may appear. This replaces the lung tissue. The ray fungus is very frequently surrounded by a zone of giant cells. As the new formed cells increase in number, they press against the tissue surrounding them. The new formed actinomycotic tissue has ordinarily a glistening appearance. It is often covered with a gray muco-purulent substance which gives it the

appearance of dead tissue. To the touch, when one attempts to pick it out, it gives the sensation of a wet, rubber sponge. It is not removable except by tearing or cutting it away. There is usually a firm and quite thick fibrous capsule surrounding it. Miliary actinomycoses have been described. This is quite rare and consists of minute yellowish nodules that often become calcareous. Occasionally the actinomycotic tissue becomes firm, resembling the fibrous tissue of scirrhus cord. In these cases the diagnosis is made by finding the ray fungus in little pockets filled with the characteristic actinomycotic new growth. In the usual form, the muco-purulent substance contains small yellowish granules that are readily detected, in thin layers, with the unaided eye. In the growing actinomycotic tissue they are readily found as illustrated in the case described. If these few facts relative to this disease will be kept in mind, unfortunate errors in the differential diagnosis will be avoided.

DR. D. F. LUCKEY, State Veterinarian of Missouri, is having a number of the best herds of the State carefully examined for tuberculosis. These examinations are made upon solicitation of the owners, who are realizing the importance of freeing their herds from this disease.

AN AMERICAN ELEPHANT RANCH.—*Pasadena, Cal., April 16.*—An elephant ranch in South Pasadena is to be established soon. The purpose of several capitalists is to breed the animals for circuses and shows. [How large an acreage will it require to feed the animals and how many female elephants will it require to make this enterprise profitable, with such slow results? —(L. E. WILLYOUNG.)]

THE American Saddle-Horse Breeders' Association has tendered to the National Horse-Show Association a special prize of \$500 for an exhibition of registered saddle-bred horses at Madison Square Garden next fall. One of the conditions is that the judge must be an American saddle-horse expert. The imported English dealer judge, who has held exclusive sway at the national show for three or four years, is becoming very unpopular with American breeders, since the type of horse that has been most esteemed in this country is unrecognized by him, if the English type is in the class, however poor a specimen the latter may be.

EMPYEMA OF THE FACIAL SINUSES OF THE HORSE.

By W. L. WILLIAMS, PROFESSOR OF SURGERY, NEW YORK STATE VETERINARY COLLEGE, ITHACA, N. Y.

A Paper presented to the New York State Veterinary Medical Society, September, 1905.

Under the title of empyema of the facial sinuses we desire to include all collections of pus in the frontal, maxillary and turbinated cavities because of their community of origin and symptoms.

In general, empyema of the sinuses expresses itself by a fetid nasal discharge from the affected side or sides, bulging of the face over the affected region, dullness upon percussion over the area filled with pus and dyspnoea in such cases as cause a displacement of the turbinated bones towards the septum nasi. These symptoms are subject to various modifications according to location, cause and extent of the empyema.

The causes are exceedingly varied but such a vast majority of them fall within two great classes, dental affections and malignant tumors, that we are generally warranted in suspecting one of these two unless there are data to indicate otherwise. Among 23 cases of empyema selected from our clinic, 16 were traced to pathologic conditions of the teeth, 5 to malignant tumors and the cause of 2 was undetermined.

Aside from these two most common causes, empyema may result from fractures of the bony walls of the sinuses with chronic infection and necrosis of tissues, or from the entrance into the sinuses of foreign bodies either from the nostril through the normal communication shown opposite N in Figs. 1 and 2, Plate I, or otherwise. It is further alleged, without direct proof so far as we have been able to learn, that catarrhal inflammations of the nasal mucosa extend by continuity, through the normal avenue of communication, into the sinuses and there intensify to such a degree as to cause the formation of an amount of pus which can neither be absorbed nor escape through the communicating passage into the nostril. It has been claimed that glanders has thus extended into the sinuses and caused

empyema of them, but the claim apparently dates back prior to our knowledge of the bacillus malleus or of mallein as a diagnostic agent. It is highly probable that most cases of empyema of the sinuses attributed to glanders are errors in diagnosis. It is quite common to meet with cases of empyema of the sinuses in colts of one to three years in which the owner alleges that it has followed strangles, but with an extensive opportunity for investigating the question in a practice where this class of cases were very common it was found that the allegation of strangles was based upon the occurrence of extreme dyspnoea prior to the nasal discharge, but there had been no formation of abscesses in the lymphatic glands and no history of strangles at the time among non-immune associates. Such a history was wholly in harmony with the ordinary course of simple follicular odontomes undergoing purulent destruction. We have had no reason to believe that strangles ever results in empyema of the sinuses.

The allegation that other forms of catarrhal inflammation of the nasal passages extend by continuity into the sinuses and cause empyema apparently rest upon equally vague data.

The passage of food particles into the sinuses during vomiting, or in the return of food through the nostrils as a result of pharyngeal paralysis or other serious disturbance to deglutition has been clearly verified by finding the food therein upon post-mortem examination, and similar cases have occurred where a horse in being strangled in muddy water, has, during forced respiration, driven sand and mud into the sinuses.

The proportion of cases referable to dental affections and to malignant growths will vary with the age of the animals. Our clinic draws its cases largely from a region in which very little horse breeding is done and a vast majority of cases entering are adult or aged. In a breeding district the ratio of dental disease to malignant new growths is very much greater. Most cases of empyema of the sinuses occur while the animal is young, but some varieties of dental affections occur only in the very aged; malignant tumors are almost constantly confined to the aged.

Of the 16 of our cases traced to dental disease, 13 were due to aberrations of, or defects in their development, so that the foundation for the empyema was laid prior to the eruption of the offending organ. While in some of these cases the development of the empyema was deferred till adult age, by far the greater number occurred during early life, from the second to the fifth year.

The diagnosis of empyema of the facial sinuses usually offers little difficulty but the differential diagnosis as based upon the varying causes, and to serve as a basis for prognosis and method of handling may call for much higher skill.

The nasal discharge of empyema of the sinuses is almost always very fœtid but in some cases due to undetermined causes the fœtor may be very slight or unrecognizable. So far as our observations have gone empyema due to dental disease or malignant new growths is always quite fœtid. In cases of dental origin there is a characteristic odor due to the infection having proceeded from the mouth and increases in intensity and repugnance as the amount of food in the sinuses. It is virtually the odor of decaying food particles, in a suppurating mass, largely gaining its infection from the oral cavity.

The fœtor from empyema due to a malignant tumor may be quite as great but usually differs in character, resembling more the odor of animal tissues which are rapidly breaking down.

The nasal discharge is usually unilateral but in one of our 23 cases the discharge was bilateral and symmetrical due to simultaneous disease of the first molar in each superior arcade.

The quantity of nasal discharge varies greatly in different cases and at different times in the same case. It is almost always constant but in some instances is remittent. It varies also in consistency, is frequently quite thin, partly attributable to the fact that the solid constituents tend to become precipitated and remain in the cavities as inspissated pus. The discharge is more or less viscid and adheres somewhat to the nostrils. It is frequently flocculent in character, and varies greatly in color, at times being tinted by the coloring matter or particles of food.

Facial bulging is strongly suggestive of empyema but not conclusive. It is usually more marked in young animals with soft bones, while in aged horses it may be almost wholly absent. In malignant tumors the bulging is usually very marked as soon as the tumor is well advanced. The bulging is partly dependent upon the inter-sinusal pressure but very largely due to the inflammatory processes at work in the bones themselves. The pressure of pus within the sinuses can not be very great usually because it promptly breaks its way through the inner wall of the various sinuses, constituted of the thin, semi-cartilaginous turbinated bones, and thereby escapes into the nasal passage. The avenue of escape of the pus from the sinuses into the nasal passage is by some supposed to be through the normal communication between these cavities as shown beyond the dotted lines from N in Figs. 1 and 2 in Plate I, but a study of these figures will show clearly that a filling of the sinuses with any substance will close the communication firmly, its borders acting as valves and preventing exit. If we examine Plate II, we note a food mass, F, in the maxillary sinus which extends upwards into the frontal sinus at F' where it breaks through the superior turbinated bone into the nasal passage. A similar condition is noted at B, in Plate III, where pus and food find an exit into the nasal passages from the inferior maxillary sinus through the internal wall of the inferior turbine. Such exits naturally prevent great bulging from pressure from within so long as the contents are of a character that may thus escape, but in cases of malignant growths as shown in Plate V. where the sinuses are mainly occupied by the neoplasm and contain but a small quantity of pus the pressure from within may have a very important influence in determining the amount of facial bulging.

The principal causes of facial bulging other than empyema are cystic and other odontomes, cystic lachrymal duct, osseous and other benign neoplasms and osteoporosis. The lachrymal cysts are largely in the region of the lachrymal bone, the cystic odontomes may vary in location; but they are each differentiated from pus and solid neoplasms by the fact that they

PLATE I.

Fig. 1. Transverse section of the right half of the face of an adult horse just behind the last molar, viewed from the front.

F, frontal sinus; N, nasal sinus opposite its communication with the superior maxillary sinus, SM; IM, the posterior wall of the lateral chamber of the inferior maxillary sinus; IM', median portion of the inferior maxillary sinus; NF, conduit of the super-maxillary portion of the trifacial nerve; M³, a small segment of the posterior fang of the third molar.

Fig. 2. Transverse section of the left half of the face of the same animal between the second and third molars. S, sound in the lachrymal duct. Between S and N are seen the communications between the frontal and inferior maxillary sinuses and the nasal cavity. SM, antero-inferior wall of the superior maxillary sinus. Other lettering same as Fig. 1.

PLATE I.

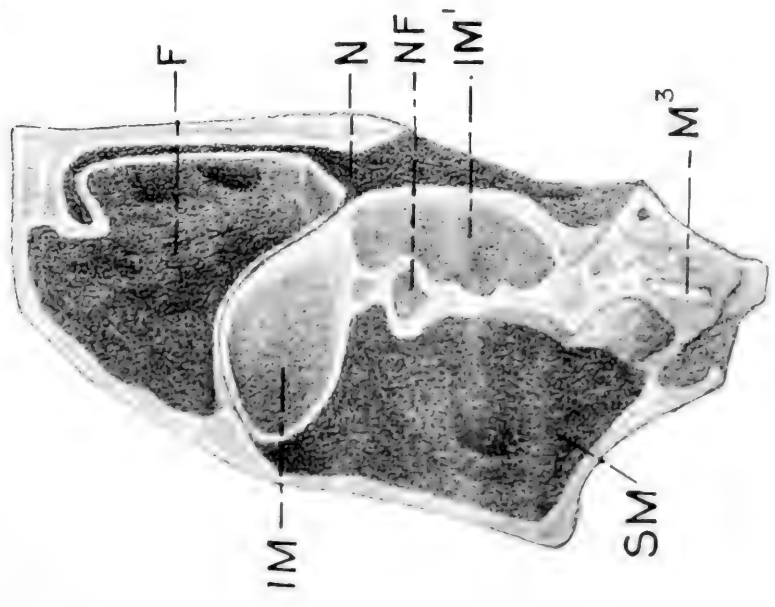


FIG. I

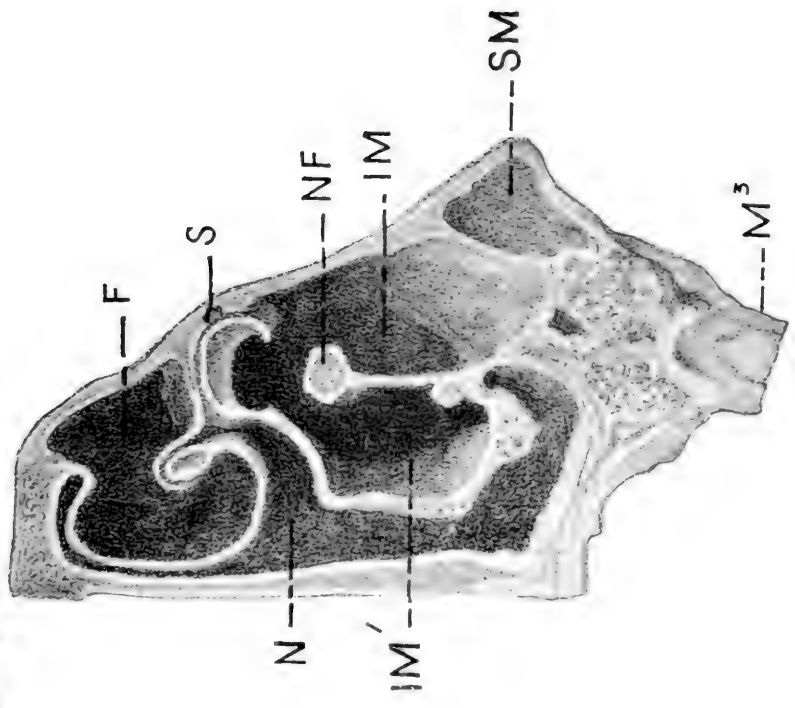


FIG. II



1. The first part of the paper discusses the importance of the study of the history of the English language. It is argued that a knowledge of the history of the language is essential for a full understanding of the language as it is used today. The paper then goes on to discuss the various factors which have influenced the development of the English language over the centuries, including the influence of Old English, Middle English, and Modern English. It also discusses the influence of other languages, such as Latin, French, and Greek, on the English language.

PLATE II.

Cross section of aged horse in front of 2d molar showing food masses in sinuses. The other portion of this specimen is shown in Fig. 1 of Plate IV.

ST, superior turbinated bone, forming the median wall of the frontal sinus, impacted with food masses, F', and showing an opening through which the food masses escaped into the nasal sinuses; S . . . S, sound passing from the food mass, F, in the superior maxillary sinus through its communication with the frontal to the smaller food mass, F'; NT, trifacial nerve; IT, inferior turbinated bone; M2, second molar.

PLATE II.

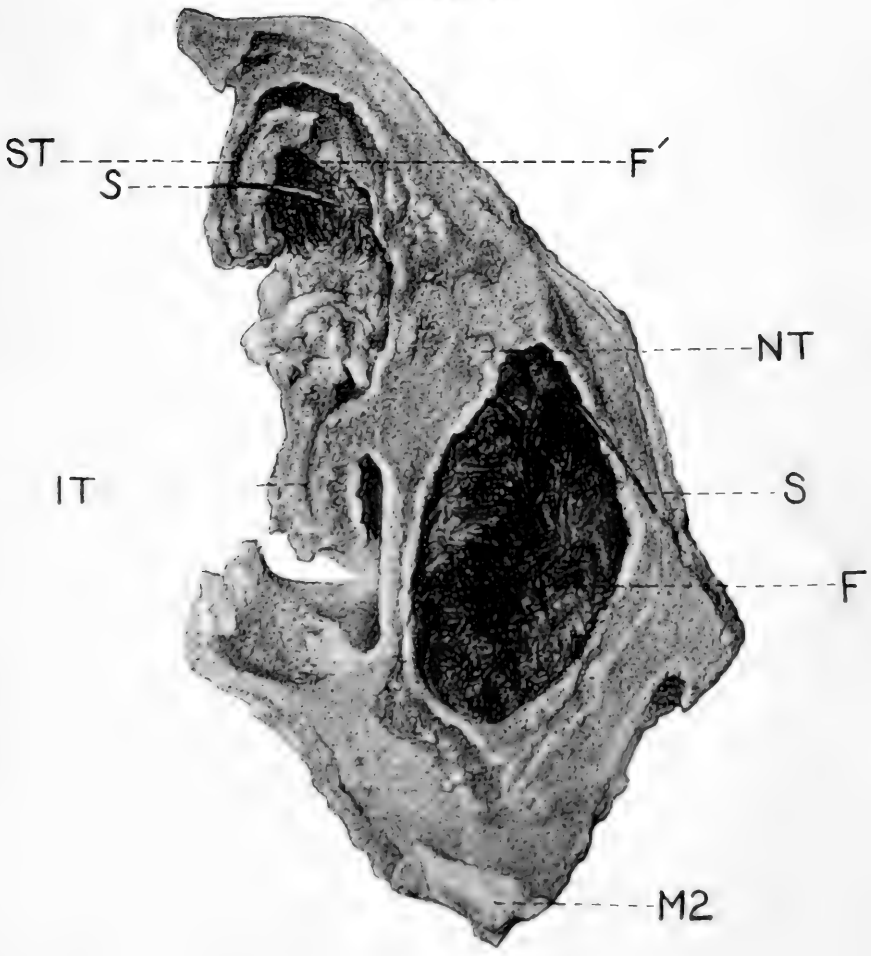


PLATE III.

Left half of the anterior portion of the superior maxilla of an aged horse showing inter-dental alveolar periostitis with fistula extending from the alveolus of the second molar into the maxillary sinus, causing empyema with eventual discharge of pus into the nasal chamber through the inferior turbinated bone.

Fig. 1. A, necrotic cavities resulting from impaction of food between the teeth; a larger excavation is seen just in front of the third molar, M³; S, sound passing through alveolar fistula from the alveolus of the second molar, removed, into the maxillary sinus; B, pathologic communication between the inferior maxillary sinus and nasal cavity after traversing the superior compartment of the turbine and its median wall. The opening is nasalwards from the antero-inferior wall of the inferior maxillary sinus.

Fig. 2. The palatine surface of the same specimen looking directly upon the grinding surface of the teeth. The second molar has been removed to expose the fistula from the alveolus into the sinus, through which a sound, S, is inserted. The spaces between the second and third premolars and between the third premolar and the first molar are visible. The teeth themselves are free from disease, the pulp cavities obliterated by age.

PLATE III.

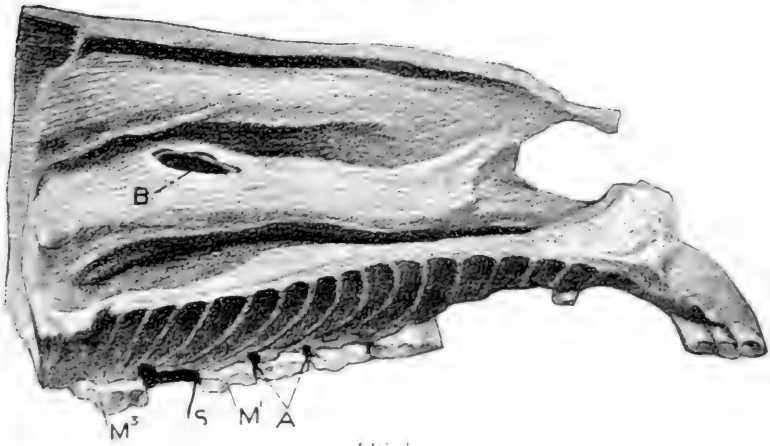


FIG. I

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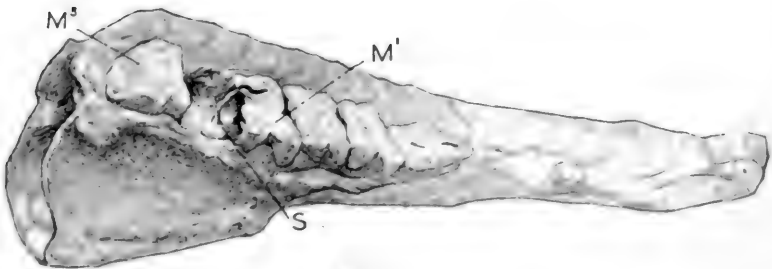


FIG. II

PLATE IV.

Fig. 1. Portion of same specimen as Plate II, looking directly upon the grinding surface of the teeth. S . . . S, sound passing through the first molar, M₁, into the maxillary sinus, leading to enormous impactions of food masses at F, and F'. Other letters correspond to Plate II.

Fig. 2. Sagittal section through two grinders, showing mechanical arrangement to prevent the impaction of food between them, viewed from the lateral side. S, sinus; PP, pulp cavity; C, external cement; C', infundibular cement; Er, erosion extending from the defective C' towards the pulp cavity; E'', contiguous enamel plates standing above the dentine in a manner to deflect food particles from the line of division between the two members and prevent its impaction between them. The two organs approach each other at their crowns, forming a truncated cone of movable sections, or an arch in two sections, which close tightly at the apex when pressure is applied in the process of closing the jaws.

Fig. 3. Transverse section through the long axis of the first superior premolar showing failure of the infundibular cement.

C, external cement; C', infundibular cement area devoid of cement substance and lined directly by the infundibular enamel E', and showing an extensive erosion at Er, caused by decomposing food particles and finally opening into the adjacent turbinated cavity through Er'.

Fig. 4. Transverse section of an equine grinder. C, external cement layer; C', infundibular cement layer; E, external enamel; E' infundibular enamel; P, pulp cavity.

Fig. 5. Table surface of Fig. 3 with corresponding lettering.

PLATE IV.

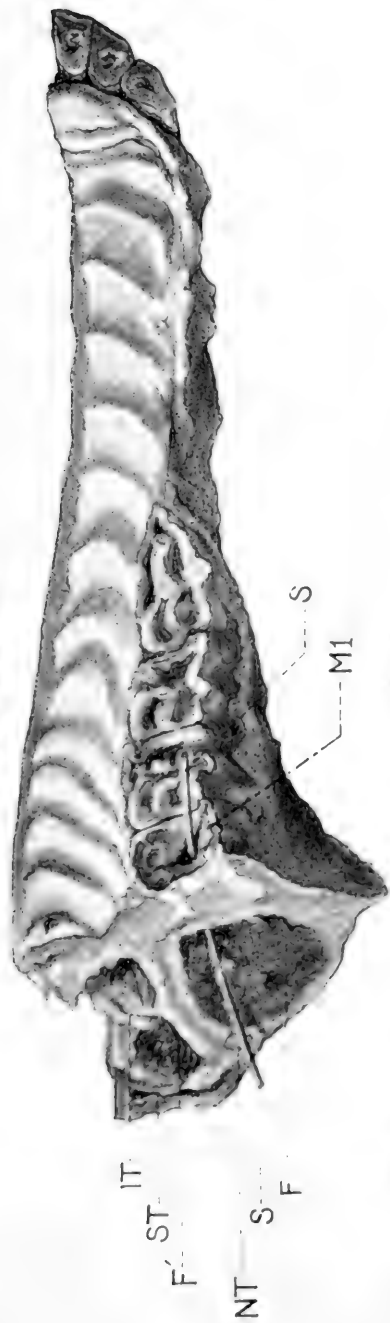


FIG. I.

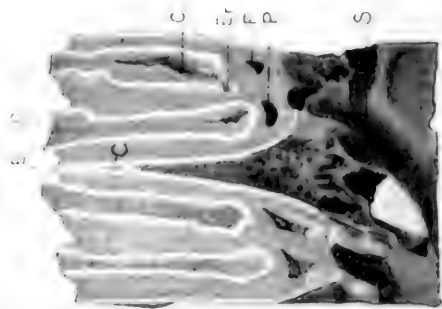


FIG. II.

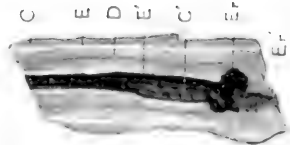


FIG. III.



FIG. IV.

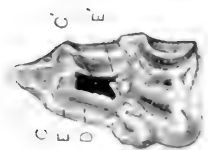


FIG. V.





PLATE V.

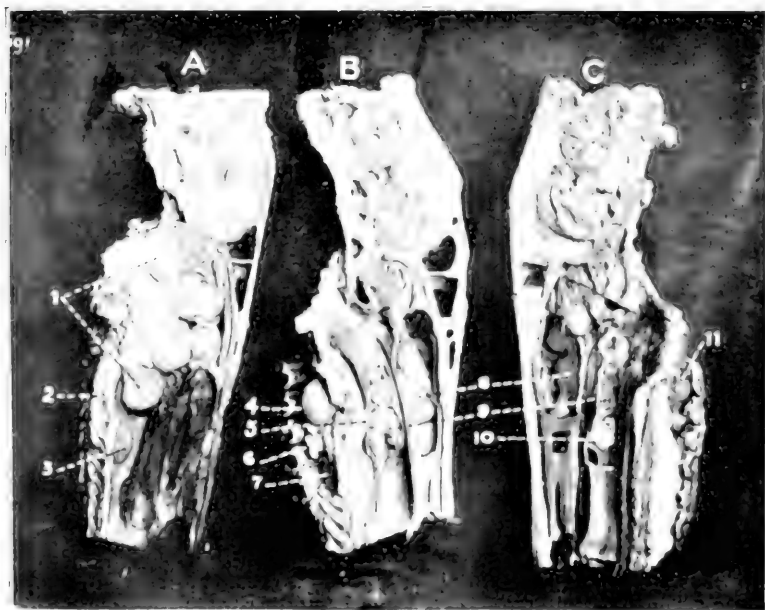
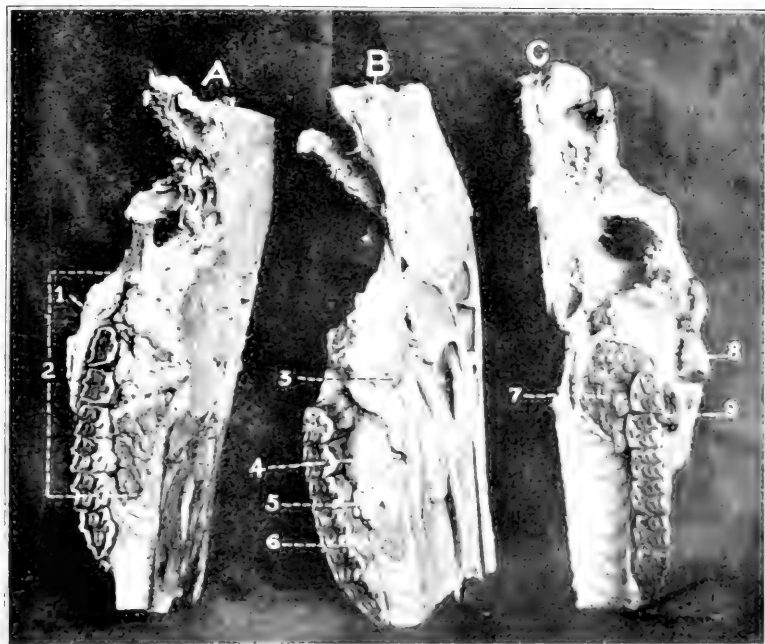
Malignant tumors involving the facial sinuses and causing empyema.

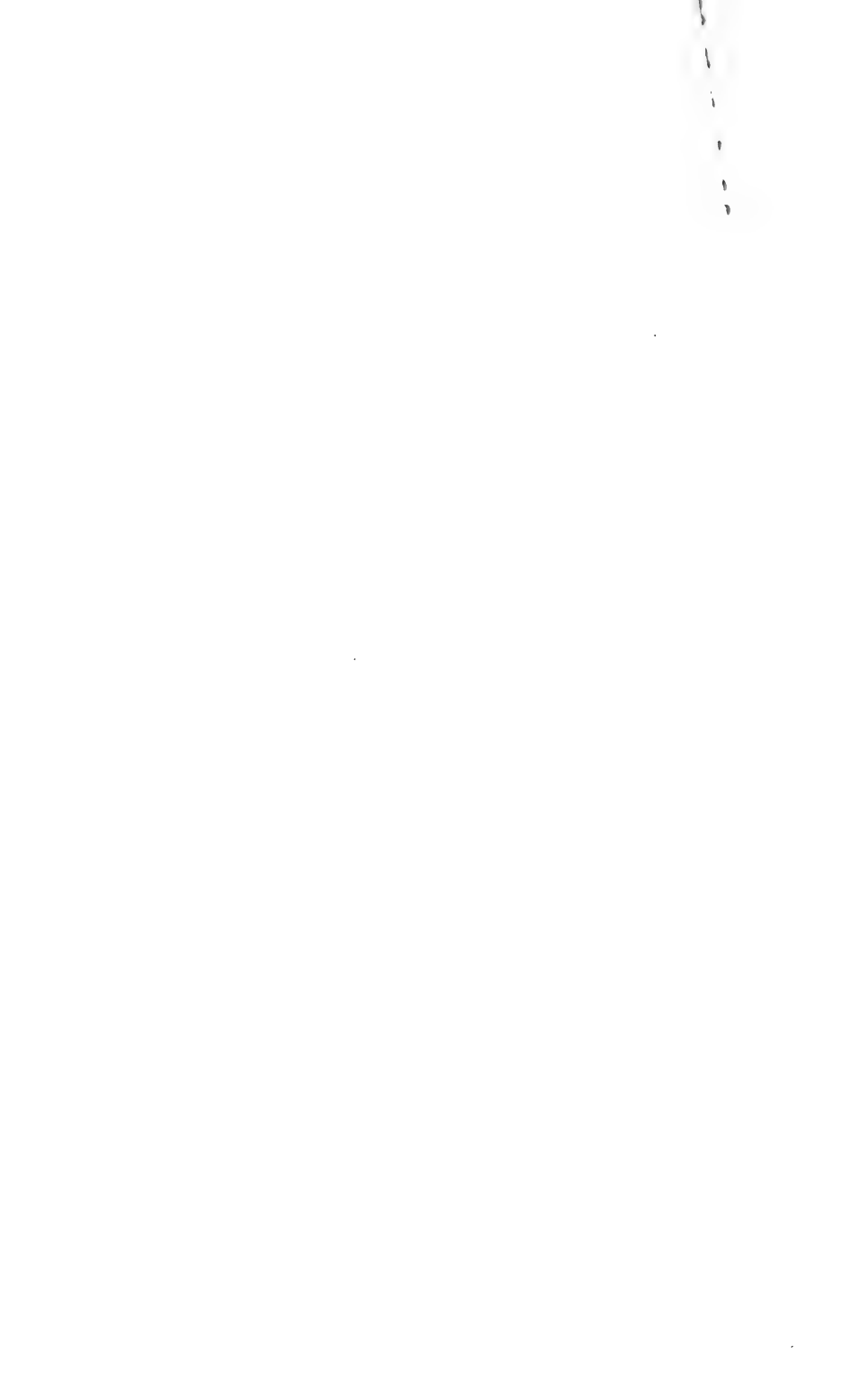
Fig. 1. Palatine view of three cases of malignant neoplasm. A. 1, portion of tumor on lateral side of dental arcade; 2, extent of tumor on the median or palatine side of the arcade. B. 3, a small pedunculated portion of the tumor projecting into the nasal cavity; 4, a necrotic cavity in the palate containing food particles which had been forced in between the teeth and tumor and pushed up to this point; the dotted line of 4 passes over a prominent, spheroidal enlargement of the tumor; 5, an area over which the buccal mucosa remains intact to be succeeded by another denuded area, 6. C. 7, tumor on the median side of the dental arcade; 8, tumor showing through the zygoma; 9, portion of tumor on lateral side of dental arcade.

Fig. 2. Sagittal view of the specimens shown in Fig. 1. A. 1, outline of body of tumor filling the posterior nares and nasal cavity; 2, palatine portion; 3, portion of tumor extending along the superior surface of the bony palate; 4, spheroidal tumor; 5, adhesion between the palate and inferior turbine; 6, intact buccal mucosa, below which is shown another denuded area 7; 8, 9, tumors invading respectively the superior and inferior turbinated cavities in E and C.

C. 10, mass of inspissated pus in inferior turbine; 11, tumor on median side of dental arcade.

PLATE V.





cause *increased* resonance. The bulging of osteo-porosis offers little difficulty in differentiation, from the fact that it is usually symmetrical and supported by other symptoms while empyema is almost always unilateral. While in osteo-porosis and cystic odontomes there may be nasal discharge it differs from that of empyema in being essentially a mucoid excretion resulting from forced respiration through a narrowed air passage. It consequently resembles much in appearance the nasal discharge of heaves. It is not fœtid.

Percussion over the sinus affected with empyema reveals dullness over the entire area occupied by pus. Soft tissues, like in malignant tumors, produce a like dullness, as does also any solid or semi-solid body. Dullness over the sinuses is likewise caused by any marked thickening of the soft tissues covering the bone. Dullness is a relative term and the technic of percussion needs be carefully applied. We determine the question of dullness largely by a comparative percussion of the sound and healthy sides, or by percussing the sinuses of a diseased animal and comparing with a healthy one. This cannot be very safely done in the stall, since if one side of the face bears a different relation to a resonant wall from the opposite one, there will occur a confusing variation in resonance between two normal sinuses. This may be largely overcome by changing the position of the head, in relation to the surrounding walls, repeatedly during our examination.

We recognize three grades of resonance in percussing the sinuses: increased, normal and decreased. Writers on surgery generally mention but two conditions: normal and decreased resonance, but our clinical records show three cases of distinct increase, while in previous experience among large numbers of colts this condition was not at all rare. Whenever a cyst, distended with lymph or serum, occupies one of the facial sinuses it becomes increasingly resonant. They almost always are of dental origin and consist usually of simple follicular cysts or compound follicular odontomes. In one case we met with a bulging over the area of the lachrymal bone in an aged horse

which we diagnosed as a cystic dilation of the lachrymal duct. Possibly other cases of inter-sinusal cysts are of a like character, but in all cases the cyst, filled with lymph or tears, is to be constantly differentiated from empyema by *increased* resonance. In our first case of follicular cyst, in comparing the two sides of the face, we trephined the *less resonant*, in spite of the bulging on the other side, found a *normal* sinus and later trephined the opposite side and removed a large cyst. Curiously enough, after an extended experience with these cases the last one to enter our clinic was sent us by a practitioner with the remark that we would need trephine upon the *comparatively dull* but *really normal* side. In percussing the sinuses we consequently need select a sound sinus as a basis for comparison. Assured of a normally resonant sinus as a basis for comparison, a dull area indicates the occupation of a part or all of the sinus by pus or other non-resonant substance, or of an important thickening of the soft tissues covering the bone or a thickening of the bony walls themselves.

Tenderness over the empyemic sinus is sometimes very evident, the patient showing signs of pain upon percussion over the affected area. The determination of the cause of a case of empyema is more important and difficult than the diagnosis of its presence, since upon the correct interpretation of its etiology must be based our prognosis and handling.

Empyema of the sinuses of dental origin in colts from a few months to two and rarely three years of age is quite generally due to the purulent breaking down of a follicular cyst or of a compound follicular odontome, or they arise from the projection into the sinuses of large masses of solid dental tissues which by their volume and position cause pressure necrosis of the soft parts. The simple follicular cyst is responsible for a large majority of the cases of empyema in one and two year old colts, usually following a period of severe dyspnoea, loosely referred to as strangles by the owner.

This class of cases are largely attributable to accessory tooth germs, which develop in the sinuses only and do not show them-

selves by any abnormality discoverable in the oral cavity. This want of evidence in the mouth heightens the tendency to falsely attribute them to strangles.

Another important class of cases of empyema of dental origin are referable to an arrest of development of teeth normally located in the alveoli and which were apparently normal or approximately so in their early stages of development. These have their foundation prior to the eruption of the tooth and usually develop their symptoms when the animal is from three to six years old, though they may be delayed until a later date in life. The arrest in development usually occurs at one of two points; either there is a defect in the central infundibulum of cement or the two contiguous dentinal plates fail to fuse. This is illustrated in Figs. 2, 3, 4 and 5 of Plate IV.

In Fig. 2 at C' is shown the central cement tract, which is defective, and in the one at the right there is a large, eroded cavity, from which the necrosis has extended at Er into the dentine and nearly into the pulp cavity. In Fig. 3 there has apparently never been any infundibular cement, C', but simply a cavity instead into which food particles with bacteria entered and finally produced a large erosion cavity, Er, which extended in every direction, through enamel and dentine and eventually at Er' into the pulp cavity, inducing purulent pulpitis, the pus from which, moving in the direction of the least resistance, would in a molar most likely escape into the sinus and produce empyema.

In the other form, an examination of Fig. 4 will show that the two dentinal plates bounding the pulp cavity, P, on either side, are normally fused at the tooth crown, but when an arrest in fusion occurs, as is not infrequent, then the prolongation of the pulp cavity, P, is opened by wear and infection of the pulp follows.

These two processes are essentially different in character. In the former the infection of the pulp occurs through an erosion which destroys and penetrates layers of enamel and dentine, is a slow process which may require years for its accomplish-

ment: the other is unassociated with disease of the dentinal tissues and consists in an exposure and suppuration of the pulp as the result of attrition. Naturally the latter occurs generally in younger animals than the former.

Once purulent pulpitis is established the pus finds exit in the direction of least resistance. The infection having entered through the long axis of the tooth with the opening at the table surface impacted with food particles, the pus can not usually find exit in this direction. It may find its way through the alveolus alongside the tooth into the mouth; if a molar it will probably escape into the sinuses, causing empyema; in the premolars it may escape upon the face externally, into the nasal chamber direct, or into the turbinates and later into the nasal passages. The changes in the tooth crowns in these cases are not uniformly of a detectable character while still in their position in the alveoli. The small opening at E' of Fig. 5, Plate IV, may be seen in a premolar, as in this illustration, but this is an unusually large orifice and even it could not well be detected in a molar. When the infection of the pulp is due to non-fusion of the dentinal plates the opening on the table of the tooth is usually far more minute than in the former and consists generally of an almost invisible slit through which it is difficult to pass a wire as large as a horsehair.

Two conditions frequently help in our diagnosis of these cases. If in a case of empyema we can find alongside of a tooth, whose fangs project into the sinus, a separation of the gums from the side of the tooth we may feel assured that we have found the offending tooth. In other cases we find the molar split in two or more pieces, which also indicates that the empyema is dental in origin and that the split molar is the offending member. The splitting is antero-posteriorly and occurs either through the central cement area, E' in Figs. 2, 3, 4 and 5 of Plate IV, or between the two dentinal plates at D. Some authors assert that teeth become fractured by biting upon hard substances, such as pebbles, but I have not been able to see a case of splitting except as a result of diminished resistance be-

cause of the arrest in development in the dentinal plates or infundibular cement areas.

Other conditions may be present which will indicate that the empyema is of dental genesis. In some cases the tooth has become loosened in its alveolus, dropped out and left behind a communication into the sinus through which food passes, in others we have found the tooth, along with food masses, pushed up into the sinuses.

It is not always possible to promptly identify the offending tooth nor to verify our opinion that the case is of dental origin. This is well illustrated by No. 4418 of our clinic, wherein a four-year-old mare was presented with empyema of the inferior maxillary sinus on February 6, 1900. A diagnosis of dental origin was made, but the identification of the affected tooth could not be made by examination of the tooth crowns, nor could any definite information be gleaned after trephining and removing the accumulated pus.

She was reëntered on October 9, of the same year, trephined, the diseased tooth not identified, the discharge largely ceased, the factor continued to some extent, there was no facial bulging.

She was entered a third time on March 2, 1903, with marked bulging of the face, very fetid nasal discharge, emaciation, quidding of food, first superior molar on the affected side split into numerous fragments. The offending tooth having been identified, complete and permanent recovery promptly followed our handling.

In many of these cases when the examination of the tooth crowns fails to determine the cause of the empyema or to identify the offending tooth, we may obtain definite evidence after trephining by digital exploration of the sinus, and identifying therein the naked, necrotic tooth fang. In those cases where the lateral fangs are affected this is comparatively easy as a rule, but when the necrosis is of the median fangs it is difficult to reach, as the communication between the tooth and sinus is on the median side of the nerve conduit, in the median compartment of the sinus, IM', Figs. 1 and 2, Plate I. If the ne-

crisis involves the median fang of a premolar the escape of pus being through the turbine or directly into the nasal cavity, it is very difficult to discover the naked, necrotic portion.

The grinders do not all suffer from purulent pulpitis with like frequency, hence a study of the tendency of a certain tooth in the arcade to become affected may aid us in our search by permitting a concentration of our efforts. In our cases with 16 traceable to dental origin, 13 were due to an arrest in the development of the tooth tissues, and among these were 8 cases of the first molar, 2 of the second molar and 3 of the premolars. The 3 premolars caused empyema in the turbines while the first and second molars affected the maxillary sinuses.

A third, and somewhat numerous, class of empyema due to dental origin is found in aged animals when the teeth are worn out. As the crowns of the teeth are worn away by attrition the fangs are gradually pushed out of the alveoli, the pulp cavity becomes obliterated, the central infundibulum disappears, the enamel becomes exhausted, the tooth remnant decreases in its antero-posterior diameter and is narrower at the gums than upon the wearing surface, permitting and inviting the lodgement and decomposition of food between them, leading ultimately to an alveolar periostitis, which, following along between the tooth and alveolar wall, finally pierces the adjacent sinus, admits food into it and establishes empyema.

Authors loosely state that even in young horses, alveolar periostitis arises from such lodgement of food between the teeth and its decay, or by food being pushed into the alveolus alongside the tooth, ultimately reaching the pulp, inducing pulpitis and finally causing empyema by escaping into the sinuses. There are no data known to the writer to support this contention, and in all our cases, and all specimens we have been able to examine, pulpitis is uniformly a result of an infection which has reached the pulp through the tooth crown, traversing either the unsealed fissure between the two dentinal plates or through the central cement area. There is scant opportunity for food particles to insinuate themselves between the gums and shaft of the

tooth, and if they did so and bore ordinary germs of wound infection, an early suppuration would probably throw off the foreign body or even did it extend deeply into the alveolus it would not likely invade the highly vascular tooth pulp, but be deflected into less active tissues. In cattle we find an infection invading the alveolus from the buccal cavity in the one affection of actinomycosis, but here the dental pulp rarely, if ever, suffers, though the teeth become loosened in their alveoli.

If we examine Fig. 2, Plate IV, we will observe that the contiguous teeth are divergent at their fangs and convergent at their crowns. This arrangement pervades the entire arcade and converts it into a truncated cone of six movable sections with the fangs as a base. When the jaws are forcibly closed, the same pressure forces the crowns against each other so firmly as to preclude the possibility of food particles being impacted between them. In addition to this provision it will be noted at E'', that no cement exists between the two grinding surfaces at the top, the enamel being in immediate contact, and on the table surface these plates stand up, cone-like, above the adjacent dentine, dividing the food as a knife would and forcing the particles aside. Taking these two factors, in conjunction with the practically uniform absence of food particles between the teeth in young horses, makes it exceedingly improbable that alveolar periostitis so arises until the animal is quite aged. Comparing Plate III, from an aged horse, we see at A in Fig. 1, interdental cavities in the alveoli which have resulted from the decomposition of impacted food; further back, a yet larger cavity is noted on the palatine border of the alveolus of the second molar, which has been removed. As a result of this decomposition of food particles the erosion has made its way alongside the tooth fang into the inferior maxillary sinus as indicated by the sound in both figures. This form of empyema is not rare in the aged. Probably far more rare is the allied form of empyema as illustrated in Plate II and in Plate IV, Fig. 1. In this case the first molar is worn away except a mere vestige, in the centre of which occurs an opening, possibly suggesting an

originally defective cement area; through this food has become impacted, the tissues have eroded away, the food entered the inferior maxillary sinus, destroyed the partition between it and the superior, escaped upwards into the frontal at F' and destroying its median wall escaped into the nasal sinus.

The age of the animal, the worn-out teeth, the impacted food between them, perhaps the discharge of the food particles or its coloring matter with the pus from the nostrils usually serve well to diagnose the origin of this form of empyema without trephining into the food-impacted sinuses.

The 5 cases of empyema of the sinuses due to the presence of malignant neoplasms in the sinuses, which we have included in our statistics, all originated in the dental alveoli. The teeth are normal but loosened in their alveoli, separated from each other so that food may impact between them, the neoplasm involves the tissues along the lateral side of the arcade as well as the median side and the palate, the gums are detached from the teeth, tumefied, bleed easily; the teeth can be readily pushed from side to side with the fingers. The facial bulging is generally marked, the filling of the sinuses leads to dyspnoea, or still more marked difficulty of respiration may be provoked by the extension of the tumor into the fauces. These characters are well shown in Plate V.

The differentiation between the empyema of dental origin from that of malignant neoplasm prior to trephining is not always practicable, but is generally comparatively easy. The separation between the gums and teeth usually differ widely in character in the two groups. In the cases of dental origin, if the separation be present, it is almost always limited to a single tooth or to a small area on one side, generally the median, of one tooth, the separated border of the gums is not swollen, is regular and sharp in outline, and presents for identification a mere fissure between the tooth and gums.

In the malignant neoplasms, as shown in Fig. 1, Plate V, the antero-posterior area of the tumor, in A, is indicated by the dotted line, 2, and includes the second and third premolars and

all the molars, in B the extent of the tumor is essentially the same, while in C the new growth only involves the alveoli of the molars. In each case there was a distinct tumor involving the palate, the gums were widely separated from the teeth, the neoplasms denuded of epithelium and bled easily on touch. In neither case was there clinical evidence of cancer cachexia.

In order to complete our differentiation it is frequently essential to make exploratory trephine openings. Some have suggested, and practiced, the making of numerous holes with a small gimlet or drill in preference to the trephine. Good reason for this does not appear.

A competent clinician can determine by percussion the area of unnatural resonance. Wholly unnecessary doubt has been thrown upon this point by Malkmus when he asserts in his "Clinical Diagnosis" that when a sinus is only partly filled with pus the change in resonance is unimportant or unrecognizable. If we examine Plate I, we may understand how a small collection of pus or other non-resonant matter might be lodged in IM' without markedly changing the resonance of the sinuses, but such a condition is exceedingly rare and if present in this minor degree it is highly improbable that it can be discovered by the small borings. If in the compartments marked IM and SM, we have constantly found that so small an amount as one fluid ounce is detectable by percussion. A $\frac{3}{4}$ or $\frac{7}{8}$ inch trephine opening will heal without blemish in a few weeks and is less dangerous than a gimlet hole. If the latter is used, some of the borings may drop into a healthy sinus and induce empyema, while an ample trephine opening affords efficient exit.

If a sinus is not diseased there is no warrant for a gimlet hole; if it is diseased there is no valid objection to making an opening through which the character and extent of the disease may be determined and remedial measures applied.

The location of the trephine opening may vary greatly. If the cause of the empyema has been determined prior to the trephining it should be made with special reference to convenience in dealing with it. If a given tooth is suspected of being

the cause the trephine opening should be in close proximity to its fang. When the cause is quite undetermined the trephine opening should be near the lower part of the affected sinus, in a position to most likely afford ample drainage, or it may be made at any part of the bulged or dull area.

Great variations will be noted in the bony walls of the sinuses. In some cases, whether the result of dental affections or of malignant tumors, the walls are very thin and soft so that the trephine drops through almost at once; some are so thin and soft that a trephine is superfluous and the opening can be made with a strong scalpel. In other cases the walls are sclerotic, almost as hard as the shaft of a long bone, and greatly increased in thickness, making the trephining very tedious and difficult.

After making the opening the contents and mucous lining are to be carefully examined. Malignant tumors usually reveal themselves as soft, friable and highly vascular masses more or less completely filling the sinuses, the surrounding spaces being filled with pus.

In cases of interdental, palatine or other fistulæ leading from the oral cavity into the sinuses, food particles are very likely to be found in varying amounts. Tumors of dental origin are readily identified by experienced operators by their physical characters. As already observed, when empyema in young horses is due to defective cement or dentine areas, if not already diagnosed by examination of the mouth, are largely identifiable by discovering the roughened, exposed, necrotic area on the tooth fang.

The presence of food in the sinuses indicates a communication with the mouth, but food may rarely be forced from the nostril through the normal communication into the sinuses. A disk of bone from a prior trephining has been found floating in the sinus, and in one case a large piece of cheese cloth, lost by the attendant, while caring for the wounds after a prior operation was found in the affected cavity.

Broken-down odontomes leave all varieties of tooth tissues,

cement masses, ivory, irregular masses of tooth tissues of varying sizes.

In obscure cases the search should be thorough and repeated. The number of trephine openings is not material and enough should be made, if necessary, to permit thorough examination of all available parts. Reflected light aids much in some cases, at times the metal probe is very useful, but wherever it is possible the surgeon's finger is the best exploratory sound.

When we have fully determined the cause we are in a position to make a reliable prognosis. In case of such malignant neoplasms as we have illustrated, there is no hope for recovery or benefit by any known method of handling.

In the extremely aged animals with worn-out teeth and with fistulæ from the mouth to the sinuses, permitting food particles to pass from the mouth into them, it is rarely worth while attempting to handle it, the possibility of effecting a cure is remote, the condition is likely to reappear in connection with another tooth, and, at the best, the teeth are probably all practically worn out and the animal virtually useless. The only hope for recovery is by removing the tooth or teeth which occupy the alveoli through which the fistula passes, denuding the surface of the fistula and hoping thereby to secure closure of the passage. Or we may plug the fistula in some cases with gutta percha.

In cases of empyema due to odontomes which can be surgically removed without extreme mutilation of the face, and it is exceedingly rare to meet inoperable cases, their removal, with ample provision for drainage and disinfection offers an excellent prognosis.

In cases dependent upon defective cement or dentine areas, leading to purulent inflammation of the tooth pulp with escape of the pus into the sinuses, the removal of the tooth with ample provision for drainage and disinfection offers a highly favorable prognosis, the recovery being prompt and permanent. If possible, the tooth should be drawn with forceps, otherwise it must be repulsed after trephining. In repelling such teeth we

greatly prefer the complete removal of the skin, subcutem and periosteum over the disc of bone to be removed by the trephine, in order that there shall be no damaged soft tissues to obstruct the exit of pus or to become infected by the flow of discharges over them. After trephining and definitely locating the fang of the affected tooth we prefer to cut away the external alveolar plate from the lower border of the trephine opening down into the mouth, laying bare the lateral surface of the tooth throughout its extent. The tooth may then be repulsed with punch and mallet, or comminuted with the aid of the bone chisel and the fragments carefully removed.

Great precision need be exercised in removing all fragments of dental tissue, since otherwise the part cannot heal. It is also essential to prompt recovery that ample drainage be provided for each portion of the affected sinus. In case of the maxillary sinuses we need provide drainage for the lateral and median compartments, indicated by IM and IM' in Fig. 2, Plate I. For IM we secure good drainage by making our trephine opening close against the zygomatic ridge and at the most anterior part of the cavity. In order to secure ample drainage for IM' we need make an opening through the inferior turbine into the nostril below the dotted line, IM'. This nasal opening should be large and kept quite open for 24 to 48 hours by drawing through it, and retaining there, a strip of cheese cloth or other suitable material. In order to make this opening with facility we need make a second trephine opening near the tear duct, S, Fig. 2, Plate I, through which the operator can pass a finger against the turbine, then with the other hand pass an instrument of sufficient rigidity and length and slightly curved at the end, up the nostril until it is felt by the finger within the sinus; at the proper point force the instrument through the turbine into the sinus, enlarge the opening sufficiently and draw the strip of cheese cloth in through the trephine opening, out through the nostril and tie the two ends together on the side of the face so that it may not become dislodged. A metal mare catheter, a Eustachian catheter, or a long, curved pair of human uterine

dressing forceps will answer for the purpose of making the opening in the turbinated bone. In rare cases nature has provided proper drainage, but usually it is not complete. In Plate III, Fig. 1, at B, the opening is not direct through the turbine into the nostril, but through the floor of the inferior maxillary sinus into the upper compartment of the turbine and from this it opens into the nostril in such a way as to afford imperfect drainage for the maxillary sinus and adds to the difficulty by involving the first compartment of the inferior turbinated bone. In order to have been perfect, this opening needed to be nearer to the palate and farther towards the ethmoid along the direction of the dotted line passing to B.

An even more defective exit for the contents of the sinus is seen in Plate II, where the food mass, F, must be forced upwards along the direction of the sound, S, to escape through the damaged superior turbine, instead of escaping directly into the nostril on a level of the dotted line, F.

Drainage having been provided its efficiency should be maintained by keeping the exits free. The empty alveolus should be kept plugged for the double purpose of keeping food from passing into the sinus, and air from entering the mouth through the trephine opening when the animal attempts to drink. Water starvation occurs to some extent unless this precaution is taken. The trephine wound should be left wholly open from the first, affording immediate exit for pus and freely admitting air and light into the cavity. As soon as the permanency of the opening through the turbine is assured, it too is to be left wholly free, the cheese cloth strip being omitted. It is erroneous to regard the lining of the sinuses as a wound which needs be closed against air and light, but it needs be looked upon as a suppurating mucous membrane which is normally in comparatively free communication with the air passages.

The after treatment consists of daily irrigations with warm antiseptics. If the cause has been detected and removed and ample drainage secured, the suppuration should at once cease and the discharge thereafter be unimportant. If the discharge

is considerable after the first 24 hours, either the original cause still exists or the drainage is inefficient and the operation should be amended accordingly. $\frac{E}{\square}$

In those cases of empyema from undetermined causes we can only give ample drainage and disinfect. If our search has been sufficient to exclude the continued existence of the original cause we may expect satisfactory results.

As soon as the case is convalescent, when the discharge from the sinuses has virtually ceased, which may be as early as 48 hours after operating, if the patient is otherwise robust and healthy, it may be returned to work, if the surroundings are such as to not make the appearance of the wound a serious obstacle. The animal is quite as well off, so far as the affected parts are concerned, at work as at rest.

OUT of fourteen candidates, the Indianapolis Veterinary College graduated ten at the March examinations.

THREE HUNDRED AND FIFTY covers were laid for the Kansas City Veterinary College annual dinner served at the Coates House, March 6th, 1906. These dinners continue to prove more and more popular with the alumni and students of the institution.

THE STATE VETERINARY EXAMINING BOARD OF MISSOURI has issued 450 certificates to practice in that State—267 were to non-graduates, 4 only of whom were registered under the examination clause; 183 certificates were issued to graduates, 23 of whom passed the Board examination, the others being registered previous to the time limit stipulated in the Missouri law. Of those holding State certificates only 9 reside outside of the State.

DR. COZIER (C. V. C.), of Bellingham, Washington, conducts an extensive hospital to accommodate his large practice. The building was erected last year, and is 48 feet wide, 84 feet deep, and two stories high. There are ten double stalls, four of which are box stalls, and both large and small kennels for dogs and cats. There are also on this floor the office, store rooms, laboratory, and operating room, the latter being equipped with operating tables for horses and dogs, while the laboratory has most of the modern paraphernalia. The upper floor is devoted to sleeping rooms, feed room, toilet and elevator.

THE EDUCATION OF THE VETERINARIAN AND HIS RELATION TO THE COMMONWEALTH.

By L. H. PAMMEL, PH. D., PROF. OF BOTANY, IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Presented to the Annual Meeting of the Iowa Veterinary Association at Ames, January, 1906.

On more than one occasion I have discussed the importance of the veterinarian to the community. I speak to you not as a veterinarian, but from the standpoint of the layman. I have been deeply interested along the lines of work of the veterinarian. The day has happily gone by when the veterinarian is looked upon as a mere horse doctor, or that such epithets should be applied to him. The veterinarian is really one of the most important persons in every community. He should occupy a commanding position.

Nothing has done so much to retard the progress of veterinary medicine in this country as the quack and the subject of quackery. He has elusively persuaded the average man in the community that he knows all about the treatment of animals. The science of veterinary medicine in all parts of the country should unload itself as rapidly as possible from these impositions.

It is my opinion that the veterinarian should be most thoroughly trained in the biological, physical and chemical sciences. In addition he must be a thoroughly trained veterinarian. He should have general chemistry, qualitative and quantitative; physiological chemistry; zoölogy, vertebrate and invertebrate; comparative anatomy, and botany, especially morphology, physiological and some general systematic botany. I would especially emphasize among botanical lines, poisonous plants and bacteriology and general morphology. There are certain zoölogical studies, it seems to the speaker, that properly belong to the more technical part of the teaching of veterinary science and are as important as materia medica, pharmacy, etc. But under the head of chemistry the subject of physiological chemistry is important,

as it embraces a thorough knowledge of the subject of feeds and feeding. There should be a combined course in which chemistry, botany and zoölogy are important adjuncts to each other.

In my judgment the veterinarian should occupy a very important place in every community, for sanitary reasons. The veterinarian needs above all a thorough scientific training in all the sciences that underlie his profession. We owe to the veterinarian much along the line of comparative pathology and comparative anatomy. We also need in the veterinary profession more research men, men who would dignify their calling by papers of great importance. Much has been done by such men as Dr. Bang, who has stamped his individuality on the laws that exist in Denmark on the subject of tuberculosis and general inspection. To the Frenchman Nocard, whose profound researches on tuberculosis are the admiration of the scientific world. Dr. Salmon, who was long head of the Bureau of Animal Industry, did much not only to encourage purely research work of the Bureau of Animal Husbandry of the National Department of Agriculture, but greatly influenced present opinions on various contagious diseases, particularly tuberculosis. He stood in defense of his position like a stone wall where many people looked askance at his position. I say all honor to a man who had the courage of his convictions and expressed them in spite of opposition. Kitt, Ostertag and Drs. Kerhoff have placed the whole subject of meat and sanitary inspection on a high plane in Germany. These men had not only an excellent training in their chosen work, but the whole range of sciences. The profession owes much to Englishmen like Williams.

I think we are all agreed that a course in veterinary science should be strong in these branches that pertain to the profession. On these I shall expand a little later.

The earliest establishment of a veterinary school was in Lyons, France, in 1762; the second one was Charenton, France, in 1763, and the third at Toulouse, France. Veterinary medical education is comparatively young in the United States, although

the celebrated Dr. Benjamin Rush made an attempt to establish a veterinary school in 1806 in the University of Pennsylvania. Another attempt was made to establish a veterinary school in the fifties, by Dr. George Dadd, in Boston. In 1857, an act for the incorporation of the New York College of Veterinary Surgeons was signed at Albany, but nothing came of this effort. The New York College of Veterinary Surgeons was opened on November 23, 1864, with Dr. Liautard as the first professor of anatomy, operative surgery and clinics. The progress of work in connection with veterinary education in this country is known to most of you, as it is comparatively recent.

When this the first school in the United States was established, there was little demand for work of this kind. The only use for graduates was to treat fancy bred stock in our larger cities. Gradually, however, the country practice increased, but not as it should, because too many stock-breeders and farmers consulted quacks. The inspection of meat for export called for an increased lot of men in the profession. The demand for this class of trained men has been greater than that for professional work in country and city.

An important matter connected with every branch of this profession is the training required of the person desiring to enter the profession; this means that the entrance requirements to the veterinary school or college must be made more rigid. In most of our colleges little attention has been paid to the entrance requirements; in fact many of the students who are at the present day pursuing the course of veterinary medicine cannot even claim to have graduated from a high school. The two- and three-year courses in the veterinary schools and colleges are so crowded with strictly technical work that the students do not have time to give any attention to English, Latin or any of the so-called cultural studies. If the veterinarian is to take his place among the other professional lines of work, more attention should be paid to these cultural studies. I take it the veterinarian should be a leader in his community, and to do this he should be a broadly educated man. He should be

able to write a good paper in English. He should be able to read one or two modern languages because a great deal of good literature is published in foreign languages; for instance, he should be able to consult the late periodicals in French and German, to say nothing of the excellent literature which is found in Danish. I most heartily commend an article by Dr. D. Arthur Hughes, who is not only a Ph. D., but a Doctor of Veterinary Medicine, on the importance of the thorough, trained scholar. The broadest and best training possible is needed by the veterinarian if he is to occupy the commanding position he is to take in the future. He not only would include in the curricula French, German and a great deal of science, but let this science be of the best kind. Let it not be of the superficial, the pseudo-science or veneer. In the well chosen words of Dr. Arthur Hughes, — "Yet, strangely enough, many of them have not been placed in strong light before young men of natural aptitude for the work. Still less, never if I mistake not, has there been a complete presentation of the demands for the highest success in the various branches of the profession. Men have been too apt to allow their minds to dwell upon evils about them — the amusingly ignorant quack and his quackery — and the minds thus clouded, to forget the other side of the picture."

The day is at hand for highly trained veterinarians, the opportunities are great. Dr. Hughes says, and I want to quote at length,— "The stigma upon this profession, if there is a stigma, is caused by a too low standard of education. That is a false notion, and ludicrous, because it is so false, that men whose lives are given to studies in comparative medicine are of necessity inferior in mind. We might as well apply the axe to the root of the tree and say that this groundless opinion is based upon the observation of the public that the veterinarian in this country has not had the amplitude of knowledge demanded of him by his science, that thoroughness of training expected of a professional man, that positive familiarity with the many branches and recent advances in comparative medicine and bi-

ology which it is accustomed to expect of a scientist. A change will come in public opinion when ignorance, always the butt of the satirist, is displaced by knowledge; when the standard of education for admission of members to the profession is raised to cover the advances in modern medicine; when the graduates have a familiarity with, not a few, but all the branches of veterinary science in a degree at least equal to that required in Europe. French, English, and more particularly German standards of education have remodelled the universities in this country during the last twenty-five years and made them the pride of the nation. When a similar change comes over the veterinary colleges in America we will have a training suited to American conditions, at least as valuable to us as that of Alfort is to France; Giessen, Dresden and Berlin are to Germany, and the Royal College of Veterinary Surgeons is to the British world. When such a change comes, our graduates will be those of a long and thorough training, proved knowledge and scientific efficiency. It is time that the veterinary profession should be undecided in some things. Plain speaking is likely to bring out the truth. The ungarnished truth is that in our training we are lapping far behind Europe. There are not and cannot be any short cuts to a thorough knowledge of veterinary medicine as it is taught and practiced in the old world. If we bemoan the state of things in the profession, the fault is entirely in ourselves. We need a fuller equipment for our work. We need to go over in our preparation every branch of the many branches of the science, conscientiously and faithfully. We must of needs be masters in observation and the record of observations, skilled in the theory of medicine and practiced in clinical medicine, abreast of the times in pathology and bacteriology, adepts in posology and not mere amateurish dabblers in drugs. We must be sterner and more intense students, wider in our reading. We must in our preparation for the study of medicine have a knowledge at least equal to that required in human medicine and in our medical training we must cover the whole field earnestly and consistently. In this age, which is

tingling with intellectual activity, when advances in science occur hourly, when there is such zest in research—who are we that we should be so foolish as not to know what is required of us? The standard of our training must be raised. The time required for our training must of needs be longer. The times require it, and the state of the profession demands it.” Those who have had some work as instructors in the classroom can appreciate fully the importance of a longer time for training. Therefore I want to make a plea for higher entrance requirements for the veterinary course to our schools and colleges.

In looking over the work in the University of Pennsylvania, which may be looked upon as ranking high among colleges, I find the entrance requirements to the veterinary course as follows:

Candidates who have received a collegiate degree, or who have passed the matriculate examination of a recognized college, or who hold a certificate covering the requirements stated below, from a recognized normal or high school, are admitted without examination. Other candidates for admission are required: (1) to write an essay of about three hundred words, as a test of orthography and grammar; (2) to pass an examination in elementary physics (as in Gage's Introduction to Physical Science). Graduates of recognized veterinary schools requiring three years' attendance may enter the third year without examination. Students who have attended one or more sessions in a recognized veterinary school will be allowed credit for time, but must pass an examination upon entrance. Graduates of recognized colleges of pharmacy are admitted to the first year without an entrance examination; and, on passing examinations in general chemistry, materia medica and pharmacy, are excused from attending lectures in those branches, and from performing the corresponding practical work in the chemical and pharmaceutical laboratories.

The entrance requirements to the New York State Veterinary College, Cornell, are as follows: Candidates for admission to the State Veterinary College, except those specified below,

must pass satisfactory examinations in the following subjects :
 1. English. 2. American history and civil government. 3. Plane geometry. 4. Algebra, as much as is contained in the larger American and English text-books, and any three of the following: 5. Elementary French. 6. Elementary German. 7. Latin grammar and Cæsar. 8. Virgil, Cicero, and Latin composition. 9. Entrance Greek. 10. An amount of any group of the following, making the equivalent of two years of high school work: physics, botany, geology, vertebrate zoölogy, invertebrate zoölogy, advanced French, advanced German. Students are admitted without further examination on the Regents' Veterinary Student Certificate. The New York law requires a four year course of successful high school work equivalent to 48 academic counts.

Efforts are being made to raise the standards of entrance requirements to the veterinary course in the Iowa State College, in order to allow of a better training.

The following comparative table shows the required work for the degree of Doctor of Veterinary Medicine in the New York Veterinary College, the University of Pennsylvania and the Iowa State College; the numbers given here are university or college counts. The usual time for a clinic being from 2-3 hours.

	U. of Penn. No. Counts.	Cornell. No. Counts.	Iowa. No. Counts.
Anatomy	15	23	24
Animal Husbandry		3	21
Botany	5	0	5
Bacteriology	5	6	3
Conformation and soundness			2
Chemistry and urinary analysis	9	8½	11
Hippology			2
Horseshoeing	2	0	2
Infectious Diseases	5	10	6
Meat and Milk Inspection, Parasitism and Sanitary Science			
Jurisprudence	2	4	1
Materia Medica and Pharmacology	3	6	6

Medicines, Theory and Practice.	19	12	12
Microscopy, Histology and } Embryology }	3	8	7
Obstetrics and Zoötechnics	6	4	2
Physiology.	14	8	6
Pathology	5	6	10
Surgery	17	8 ² / ₃	12
Surgical and Medical clinics	36	18	24
Diagnosis and Therapeutics	6	2	2
Thesis and Research	0	6	0
Zoölogy	3	See Parasitism	8
Total	155	132 ¹ / ₃	165

It will be seen from the above outline of the courses given in the three institutions that the veterinary department of the Iowa State College lays considerable stress on the subject of animal husbandry work, Cornell giving three hours, while our institution gives twenty-one hours. This is perhaps more than is actually needed. The subject of animal husbandry is certainly of great importance to the veterinarian. The veterinarian above all should be familiar with every branch of the live-stock industry. He should be familiar not only with the proper aspects of breeding, but the fundamental laws in zoölogy, taking up such problems as heredity and environment. As factors in development of an animal, Cornell University lays some emphasis on the subject of research. This, too, is eminently proper, because the veterinarian should not only be a well-informed man, but he should be familiar with the research methods. Hippology should be given an adequate space in the veterinary curriculum. The veterinarian engaging in the military service will find abundant opportunities for his skill. Some stress, it seems to me, should be laid on forage plants and the chemistry of feeding.

From what I have said it is very evident that the requirements in the future for a veterinarian shall be much more drastic than they have been. Laws should be enacted in various States which would give us not only a better trained profession

but a better system of local and State inspection. The problems are certainly sufficiently important to warrant it and to demand prompt action. Let us take up a few of the problems: Our attention naturally turns first to the subject of milk and milk supplies. We know that fresh milk practically contains no organisms except as they come in through the fore milk. While it is not possible to obtain by ordinary practice sterilized milk, yet the number of organisms may be very materially reduced by the proper care of milk. As to the number of organisms found in milk the following figures will give us some idea. Con, in his *Agricultural Bacteriology*, reports as follows:—

Number of Bacteria per CC.

In fore milk, 55,000 At close of milking, 00

In fore milk, 97,000 At close of milking, 500

Now city milk contains a very large supply of organisms, chiefly because it is transported a long distance, allowed to stand, probably also with the accumulation of some dirt.

It is believed by bacteriologists that the number of organisms present in milk is a pretty good indication of the sanitary condition of the same, at least this method of investigation is relied upon in several of the Eastern cities and some of the Western. For instance, the town of Montclair, N. J., having a population of 13,962, the health inspector, Mr. M. O. Leighton, has carried on a bacteriological examination of milk delivered in the city. His investigations extended over a period of two or three years and proved to his satisfaction that the sanitary condition of dairies can be safely judged by the number of bacteria in the product. All the samples of milk which he examined in this connection had been bottled at the dairies, and so far as possible they were taken from the evening milking, their age, when examined.

The inspection of dairies by the veterinarian, as the investigations of Mr. Leighton show, is, therefore, an important piece of work. It is a part of the veterinarian's business to see that the stables are so constructed where good drainage can at all times be secured. There should be ample provision for light

and ventilation and the manure troughs should be built in such a way as to facilitate the cleaning. Mr. Leighton states with reference to the examinations of milk from good clean dairies,—

“The cattle in these stables are carefully groomed, fed upon wholesome food, and regularly attended by a veterinarian. The attendants employed are kept personally clean, and are provided with every facility for maintaining their cleanly condition throughout the milking period. Of highest importance are the dairy houses in connection with these first three establishments. In them are provided tight steam chests, in which all utensils necessary in the preparation of the product for the market are exposed to steam under pressure and thoroughly sterilized. The other principal features in connection with the dairy houses are the coolers over which the milk flows as soon as it is drawn from the cows, from whence it goes to the bottler and is bottled immediately.”

One might think that it would be next to impossible to have clean dairies and surroundings, only in the finer equipped establishments, but Mr. Leighton found that in one of the old-fashioned stables, where great care was used, in spite of the rough projections, innumerable cracks and all the disadvantages common in country stables, there are evidences of care and attention everywhere. The explanation to him of the first high results noted at the beginning of the record brought about all the alterations suggested. The owner is an ideal dairyman in spite of his poverty.

The demand for inspection is not only required where milk is delivered in the cities, but for those who are using milk in dairies and creameries.

Mr. Wilbur J. Fraser, of the University of Illinois, states the case as follows: “There are, and doubtless always will be, certain men producing milk who, from the slovenly methods they practice, are a disgrace to the dairy business. Such laws should be enacted, and such a system instituted, as will compel these men to be decent in their practices in handling milk or quit the business. It is time the dairymen moved in this mat-

ter and asked for inspection. If they do not, the public will soon do so, and when such matters are taken in hand by those who do not have the necessary technical information on the subject, the business may be injured and injustice done to honest dairy-men who are putting out a good grade of milk."

There are many dairies in the State of Iowa that supply milk to city patrons that should not be permitted to operate. We have before us the deplorable condition of certain dairies not very far distant from the college here at Ames. I have been upon farms in this State during the past few seasons where the dairy cattle waded in mud up to their ankles and these places are sometimes pointed out as being model farms in all that pertains to the management of that institution.

Now, you may ask why should the veterinarian be called upon to inspect what seems not in his profession. I take the ground that the whole subject is one of health and disease; that where such bad conditions prevail it naturally leads to disease of some kind and the only one capable of clearly defining these diseases is the veterinarian; hence, this matter of inspection should properly belong to him. He may call in, of course, as many expert bacteriologists as he desires, but for an opinion as to diseases and general management of this inspection, the veterinarian's certificate should be required. When we come to contagious diseases we know that a number of the same are transmitted through milk. It is no longer disputed that food like milk, oysters, do transmit typhoid fever. Swithinbank and Newman make this statement:

"We have seen that the disease is commonly spread by polluted excreta; in its early stages by alvine discharges, in its later stages and during convalescence, in a certain number of cases, by the urine; that the bacillus may remain in the body for long periods after convalescence, and hence apparently healthy persons may carry about and possibly disseminate the seeds of the disease for months or even years; that the bacillus may be voided in countless numbers during such periods; that under certain circumstances such discharges, or the dried dust

resulting ultimately therefrom, may contaminate water or milk ; that when this accident occurs, a comparatively small pollution may lead to a widespread epidemic among persons consuming such water or milk ; and finally, that there is some evidence to suppose that the virus of the disease may remain dormant but alive for long periods of time in a saprophytic stage of existence. But little reflection will be necessary to convince any careful observer that an intelligent appreciation of these facts is of essential importance in considering the relationship of polluted milk to typhoid fever, or as, in part, explanatory of spasmodic or apparently spontaneous or repeated outbreaks."

Schuder arrived at the following conclusions concerning six hundred thirty-eight epidemics of typhoid fever studied by him : " It seems that 70.8 of such epidemics were produced by drinking infected water, 17 per cent. by drinking infected milk and 3.5 per cent. from other forms of food, 9 per cent. by wearing the clothes of the typhoid patients, dust, etc." The following statement of the subject will be of interest in this connection.

Sedgwick in his " Principles of Sanitary Science and Public Health " makes the following interesting comments of the spread of typhoid fever in the village of Marlborough, Mass., through skim milk. " In August and September, 1894, a small epidemic of typhoid fever appeared in the city of Marlborough, Mass. Various ' theories ' of the cause of the outbreak were held or suggested, and the local newspapers contained numerous letters on the subject, some alleging that the water supply was infected, some that the sewers were to blame, and some that accumulations of filth, especially dump-heaps, were responsible. The localization of the cases, however, not only disproved these theories but also suggested milk as the probable cause. It soon became evident, nevertheless, that none of the regular milkmen were involved, the cases apparently deriving their milk supplies from a variety of different sources. Eventually, however, it turned out that there existed within the city

itself a creamery from which was despatched daily a wagon loaded with skimmed milk (separator milk), and that nearly all the cases of typhoid fever had been supplied with such skimmed milk either from this wagon or directly from the creamery itself. Further investigation showed that the driver of the skimmed-milk wagon was at the time of the inquiry living on the upper floor of the creamery, and just recovering from a severe attack of typhoid fever. This young man had not only been the driver of the wagon, but had also worked over the milk, transferring it, filling cans, and otherwise making himself useful about the creamery."

We come now to the subject of the conveyance of other infectious diseases, namely, scarlet fever and diphtheria. These diseases will be treated collectively although there is no relation between them from a bacteriological standpoint. There seems to have been evidence for a long time that scarlet fever is conveyed by milk. As early as 1882 the medical inspector under the government local board of North London thought he had pretty good evidence of the conveying of scarlet fever through milk. In this case, however, it was supposed by Mr. Power that the disease occurred in the animals on a certain farm. Dr. Klein, investigating the question at the time, obtained negative results in most instances.

Switlinbank and Newman record the evidence of various outbreaks of scarlet fever as due to milk as follows:

City.	Year.	Cases.	Deaths.
Handsworth	1876	37	4
Fallowfield, Manchester	1879	35	
Paddington and Bayswater	1880	Families 84	
Halifax	1881	510	86
Greenock	1882	20	
Dundee	1883	17	4
Sutton Goldfield	1891	40	5
Glasgow	1892	236	11
Hastings	1893	40	1
Beverly and Salem	1901	60	11

Now turn to the subject of diphtheria. We find that the

evidence of transmission is usually supposed to be much better than in scarlet fever, but the facts do not bear it out.

What relation does the subject of diphtheria bear to the occurrence of the somewhat similar disease in lower animals, and how far may the veterinarian be called upon to prevent outbreaks of this disease, is a question of practical importance. There is no longer any doubt in the minds of bacteriologists and sanitarians that the organism described by Klebs in 1883, and since known as Klebs-Löffler bacillus, is the cause of this disease, the organism having been found in the false membrane in patients suffering from this disease and time after time found to be the cause. It is a well-known fact that the diphtheria organism produces in addition to the false membrane, general poisoning, muscular weakness, and tendency to albuminuria. It is further recognized that certain other bacteria are concerned in producing secondary complications, such as suppuration, and gangrenous conditions. It is a well-known fact also that there are other organisms resembling the Klebs-Löffler bacillus that so closely resemble it in some of its culture and morphological characteristics and the clinical symptoms produced by them that it is difficult to diagnose the cause unless cultures of the Klebs-Löffler bacillus are made.

As to the distribution of the organism and nature the reports are somewhat conflicting. It is a well-known fact that dried diphtheria membrane kept in the presence of light and at room temperature contains living and virulent diphtheria bacillus at the end of several months. The same results have been obtained with bacilli obtained from cultures kept on dried threads. It is therefore very evident that this organism has considerable vitality. On the authority of Prof. Sims Woodhead: "the persistence of the diphtheria bacillus for periods up to eight weeks is of very common occurrence whether antitoxin be given or not; indeed, the majority of cases appear to retain bacilli in the throat for from two to nine weeks." Other cases might be cited, but it is not necessary to enter into detail on this occasion.

Suffice it to say that the veterinarian should also be our guardians for outbreaks of this kind.

Let us briefly turn our attention to this subject of tuberculosis. No other disease in modern times has attracted so much attention as the subject of tuberculosis, because of the large number of deaths annually occurring in all parts of the civilized world, and also because it so widely affects bovine animals. The organism discovered by Koch in 1882 as the cause of this disease certainly has had a most important bearing upon the subject of the treatment of the disease. The disease, at first supposed to be hereditary, although known to be contagious as early as 1843, when Klenke had produced tuberculosis in rabbits by intravenous injection of tubercular material. But to Villemin belongs the credit of having first carried on systematic experiments in proving that this disease is contagious.

In a recent general summary of the subject by Dr. Harris, the following essential facts are given :

Variety of Tuberculosis.—This has been the subject of repeated investigations during recent times, especially so since the address of Koch at the Congress of Tuberculosis in 1901 in which he made the statement that human and bovine tuberculosis were distinct, and that if a susceptibility of the human subject to the latter exists, infection is of very rare occurrence—so rare that it is not advisable to take any measures against it.

Previously to this, Theobald Smith had pointed out differences between human and bovine tubercle bacilli, the most important being that the latter possesses a much higher virulence to the guinea-pig, and other animals, and in particular that human tubercle bacilli, on inoculation into oxen, produce either no disease or only local lesions without any dissemination. He also found that the bovine bacilli on cultivation grow less vigorously for a time, and tend to be shorter and straighter than the human bacilli. Koch's conclusions were based chiefly on the result of his inoculations in the bovine species with human tubercle bacilli, the result being confirmatory of Smith's, and, secondly, on the supposition that infection of the human

subject through the intestine is of very rare occurrence.

Muir and Ritchie in their recent text-book on the subject of bacteriology (the American edition edited by Dr. Harris) entirely disagree with the opinions expressed by Koch and hold to the view expressed by many of the English, French and Danish veterinarians. They say that the ox is little susceptible to human bacilli may be accepted, but it does not follow that the converse is true, namely, that the human subject cannot be infected from the bovine species, seeing that bovine tubercle bacilli have been found to have a greater virulence for all animals tested than bacilli from the human subject. Moreover, there are cases, notably those recorded by Ravenel, in which direct inoculation of the human subject with bovine tubercle has occurred. Even if the human subject is little susceptible to bovine tuberculosis, it is quite likely, in view of the large proportion of young subjects exposed to infection, that the number of cases of tuberculosis produced in this way is by no means small. And, furthermore, although the ox is little susceptible to human tubercle bacilli, tuberculosis with general infection has been produced in calves by means of them on more than one occasion. Such a result has been obtained by Ravenel, and also, in this country, by Delepine. There are also facts which go to show that tubercle bacilli cultivated from lesions in young children have a higher degree of virulence for animals than those obtained from adults; that is, they resemble more the bovine bacilli; this is what one might expect if the bacilli in question had come comparatively recently from the tissues of the ox. As at present the subject is still under investigation in this and other countries it would not be justifiable to dogmatise, but in the meantime, we see no sufficient reason to depart from the view entertained up to this time, that the tubercle bacilli infecting mammals are of one and the same species, though differences in virulence obtain and that milk containing tubercle bacilli is a highly important source of infection to the human subject. It may also be added that tubercle bacilli obtained from other mammals than the ox

generally correspond more closely, as regards their virulence or inoculation, with bovine than with human bacilli.

This seems to me to be a fair statement of the case. You are at liberty, of course, to take whatever view you choose. The evidence, it seems to me, is that we are dealing with a somewhat polymorphic species which occurs under slightly varying conditions in bovine animals, man and fowls. The organism, it seems to me, as it occurs in bovine animals is contagious to man. Whether you accept these views or not it is certainly pertinent to the question whether cattle and all forms of meat should not be inspected. The claim has been made by several packing-house people that hogs coming from certain dairy districts are much subject to intestinal tuberculosis; that they have observed a relationship existing between tuberculosis and the use of milk from creameries. May we not also ask therefore that all meat supplies should be inspected whether for export or interstate commerce. Should not our commonwealth demand or make provisions for a district inspection. Every county, or when the city is large enough, should have an abattoir where all kinds of live stock should be inspected. There is no reason why the people of Europe should have more wholesome food than we are enjoying. If we are to have inspection we should have inspection both of the live and slaughtered animals. If the inspection that I have in mind shall be carried on by the veterinarian, it means that he should be broadly educated and that he will occupy a commanding position in the community. I must, therefore, maintain that nothing in the way of education is too good for the veterinarian. Let the calling of the veterinarian be dignified by the laymen and the profession itself. Let an active body of laymen by the help of the veterinarian secure more favorable legislation to secure better and more wholesome food. This great commonwealth with its wealth of live stock should secure the passage of the best inspection laws of any State in the Union. With good inspection and the eradication of tuberculosis from our herds, there will be a larger demand for our blooded stock.

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."

DIAPHRAGMATIC HERNIA.*

By DR. G. W. KINSEY, Wheeling, W. Va.

Noticing an article in the December number of the AMERICAN VETERINARY REVIEW by Dr. E. L. Moore, of the Dakota Agricultural College, describing a case of diaphragmatocele, whose symptomatology differed so radically from the one I had occasion to visit professionally, about the same time, I thought perhaps a recital of this case would be of some interest to the profession.

The animal was a bay gelding, five years old, weighing about 1200 pounds, and belonged to a farmer who lived about ten miles from town. While on his way to market one afternoon between three and four o'clock the horse was watered at a roadside trough near the top of a hill, perhaps a half-mile long. On going down the hill a short distance the owner noticed the horse twisting his tail and showing signs of pain. When I saw the animal, about an hour and a half afterward, he presented the following symptoms: Temperature normal, pulse full and rather soft, bowels loose, spasmodic pain, with an inclination to walk as the pains came on. During the two hours that I was with him he laid down but twice, and rolled furiously from side to side, perhaps half a dozen times.

There was a slight distension of the nostrils, which became more prominent as the case progressed. Perhaps the most differential symptom from a case of spasmodic colic was the peculiar stiff elevated position of the head and neck without looking around or turning to one side. This horse perspired none while I saw him, and was practically under control at all times. Medicinal treatment had little effect. The patient was seen again about four hours later and a half hour before he died, and presented the same symptoms, somewhat aggravated, except the pulse had become hard and wiry, the nostrils more distended and the breathing short and hardly perceptible; no inclination to lie down and moving continually.

*Presented to the Annual Meeting of the Ohio State V.M.A., Jan 16, 1906.

On post-mortem the following morning the chest cavity was found to contain some five to six gallons of blood or highly colored serum and about fifty feet of the small intestines with the attached peritoneum. These bowels had passed through the foramen dextrum or lower opening in the diaphragm, which is for the passage of the posterior vena cava. For fifty feet of bowel to pass through this opening and be lodged in the chest cavity would seem almost incredible and perhaps would be more interesting from the standpoint of morbid anatomy. No gas had accumulated in the bowels in either cavity to amount to anything; those in the abdomen were scarcely colored or inflamed, while those in the thorax were hæmorrhagic, black and filled with blood. The lungs were very light, floated upward and perhaps one-third their natural size. The patient probably died from intoxication, as no oxygen could be taken into the blood. The history of the horse was that he had never been sick before in his life. He lived scarcely nine hours after the attack. The exciting cause was probably the drink of water and immediately going down the hill.

I gave a diagnosis of colic with volvulus and probably or possibly a rupture of the diaphragm. An unfavorable prognosis was given.

The symptoms presented by the case reported by Dr. Moore are as follows:—Animal bathed in perspiration, pulse imperceptible, respiration labored, temperature 103.8; pawing with the front feet occasionally, looking around, lying down and usually stretching out on one side.

Rectal examination revealed the presence of a few balls of fæces, dry and unmasticated. The attendants stated that during the preceding night the patient had frequently sat on his haunches like a dog for several minutes at a time. The history of this case was that he had received a bushel of oats on Thursday, was taken sick on Friday, and died Sunday morning about two o'clock. He had twelve to fourteen feet of bowel imprisoned in the thoracic cavity and lived perhaps forty hours.

These are the cases that require some mental strain in order not to fall down, as we seldom meet with them in practice. While the anatomical conditions are almost the same, the outward manifestations may be quite different. One of these cases had nearly four degrees of fever, the other had none. In one the pulse was imperceptible, in the other full. In one the bowels were constipated, in the other relaxed. One had a tendency to look around, lie down and roll, the other to go straight

ahead. One perspired freely, the other very little; and in conclusion I might add that about the only symptom in common was that they both died.

A DIMINUTIVE FOAL WITH CONVULSIONS.

By WILLIAM W. YARD, D. V. S., Denver, Colorado.

On March 12th I was called to go to the headquarters of a circus eight miles from Denver. Upon arriving I found a colt which had been born early in the morning in convulsions. The mother was a small circus pony. Upon investigation I found that about an hour after the colt was born it was taken with convulsions, which were repeated all through the day up to this time, which was 2.30 P. M.

In making an examination as to the cause, I found that the colt was so small that it could not reach its mother's teat to nurse. It was exactly 12 inches high, 18 inches long, and at this time weighed 14 pounds. The hostler told me the colt had tried to nurse at first, but could not, and that nothing passed either the bowels or kidneys. Not having nursed the mother, it was evident that not having the essential physic which the new-born gets from the colostrum or first milk, a physic was indicated. Upon looking over the stock of drugs which a circus generally carries, nothing of this kind could be found. The colt was getting weaker after each paroxysm, so as a last resort an egg was beaten up and given the patient. At the expiration of an hour the bowels moved freely, and by five o'clock in the afternoon the colt was up and walking around.

I presume water would have had the same effect. The fact of the liquid causing a shock to the intestinal walls started the vermicular motion of the intestines. The colt is perfectly well, and will start on its summer tour with its mother April 3d.

AS THE REVIEW goes to press it learns that the veterinarians of Baltimore, Md., have started to raise a fund for the relief of the veterinarians of San Francisco, many of whom lost everything they possessed in the world including their homes. Always foremost in every movement for the advancement of the well being of the profession, Dr. Wm. Dougherty called a meeting of the practitioners of the Monumental City to consider means of raising funds for the immediate succor of our brethren on the Pacific Coast, and a respectable sum was subscribed at once. The subscription list was thus started, and all subscribers to the REVIEW are invited to unite with the Baltimoreans.

STAKED: A CASE OF EMERGENCY.*

By J. H. McLEOD, V. S., Charles City, Iowa.

On February 11, 1905, an urgent call came by 'phone to visit a Shorthorn cow. She was four years old, carrying her second calf, and shortly due. While talking to the owner was informed that the cow, while attempting to jump out of the yard, got impaled on a fence stake, the owner finding her in that condition, and by hard lifting he succeeded in getting her off the stake and into the barn. Was also informed that the case was a desperate one, as the abdominal contents were protruding from the incision.

The weather was below zero, the drive 11 miles and the outlook for a recovery on the whole very bad, and so informed the owner to that effect. He would not agree, however, and an attempt at least should be made to relieve the cow.

On arrival my patient was standing in stanchions with a very distressed appearance. Had laid down and got up several times. On the off side and in the inferior diaphragmatic region was the injury, and protruding therefrom quite a large portion of the stomach and omentum. The animal was quite offensively inclined, and would kick wickedly when an attempt was made at examination. The hobbles were quickly applied and the cow placed on her back, the four feet securely locked together, and all made fast to the top of the row of stanchions. The wound and that part of the stomach and omentum protruding (being very dirty and covered with white frost), were carefully washed and disinfected with warm creolin solution and returned to the abdomen. The wound needed nothing only trimming of the ragged edges and stitching, which was done with a small seton needle, and a three-inch cotton bandage interrupted X stitch through the whole integument, deep into the muscles and skin, leaving a tube at lower aspect of the wound for drainage, and dressed throughout with boracic acid. The cow was allowed to get up, which she did with some help. Sloppy feed ordered for a few days. The stitches were removed in ten days, when there was good union throughout the wound, and complete recovery.

REMARKABLE FECUNDITY IN DOMESTIC ANIMALS.

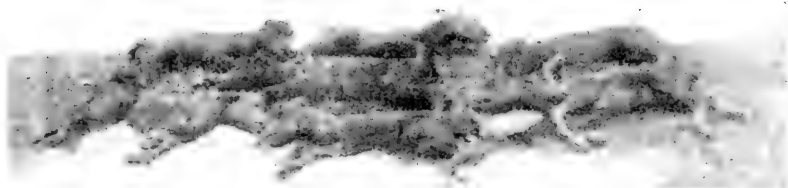
The following extraordinary cases came to the REVIEW almost simultaneously, and are so remarkable as to constitute records in each instance, so far as we have been able to learn.

* Presented to the Annual Meeting of the Iowa Veterinary Association, January, 1906.

Seven Calves at One Parturition.

By J. F. WINCHESTER, D. V. S., Lawrence, Mass.

On March 20, 1906, on the farm of Mr. H. S. Hill, Pleasant Valley, Methuen, Mass., a Durham cow, weighing 1,100 pounds, gave birth in two hours, to SEVEN CALVES, comprising four



males, weighing 30 pounds each, and three females, weighing 25 pounds each. All of these calves died during or directly after birth. The cow did well.

* * *

Five Lambs at One Parturition.

By W. REID BLAIR, D. V. S., New York Zoölogical Park.

These FIVE LAMBS were found *in utero* in a Chinese domes-



tic sheep, of the fat-tailed variety. The ewe died as the result of congestion and œdema of the lungs just at approaching parturition. The lambs were fully developed in every respect, the average weight being about three pounds, and the largest one measured 18 inches in length.

SURGICAL ITEMS.

BY DRs. LOUIS A. AND EDWARD MERRILLAT, CHICAGO, ILL.

CRYPTORCHID CASTRATION ON THE OPERATING TABLE.

From time immemorial a certain particular position has been regarded as a *sine qua non* in cryptorchid castration. It was thought that the casting harness that firmly flexed the hind legs upon the pelvis and spread them apart as far as their elasticity would permit was the *one* and the *only* attitude that rendered this operation possible. Miles, others before him and many very skilful operators since his demise are responsible for this widespread impression. Prof. Williams (February REVIEW, 1906), tries to prove this erroneous and says so in no equivocal terms. We have it that a cryptorchid horse was successfully castrated upon an operating table. The cryptorchid



Miles' method of securing a horse for ridgling castration, showing the use of an improvised "spreader" to still farther part the legs.

was no ordinary one. Several veterinarians had failed to find the hidden testicle. The inguinal channel as a result of the past bungling attempts to find the testicle was blocked with an abundance of scar tissue. But in spite of these obstacles the operation was successfully performed on the operating table and no incident marred the convalescence. Forsooth, the operation was a success. Surely, after this, the old saying "There is nothing new under the sun," will no longer stand the acid test. On the one hand is the picturesque Miles, sitting flat upon the tail of a ridgling secured in the barn-yard with sixty feet of rope, while on the other is the modern surgeon, gowned in immaculate white, with his cryptorchid on a scrupulously clean operating table, under profound anæsthesia. This is, indeed, a transformation, but before adopting the method as a standing one let us see if it is as ultra-practical as we might be led to believe. This is a very pertinent proposition. It deserves to be well thrashed over before jumping wildly and enthusiastically at a conclusion, which might easily lead one into a very critical situation.

We will admit that the operation in question has shown that a cryptorchid *can be* successfully castrated upon a *special operating table providing the subject is under profound anæsthesia*. But has it shown the practicability of the method? We think not. In the first place the ordinary operating table will not answer the purpose. While standing upon the floor at the patient's buttocks the operating region is out of reach and if one climbs upon the table its narrow edge will be found decidedly uncomfortable. It is, in fact, an impossible position on the ordinary table. Furthermore, it is positively dangerous both to patient and surgeon to lift a hind leg "ceilingward" without first administering a general anæsthetic. A horse in that position, not anæsthetised, will always tug violently with the up-lifted leg and thus bruises the hip and strains the member. I would warn veterinarians who operate for revenue against this practice. Besides, will general anæsthesia ever be universally administered for ridgling castration? If not the operating table will have to be eliminated and the old method revived. The finality of the argument is that with the ropes the operation is finished and the patient is at the feed box, little the worse from the ordeal, before the tabled patient can be anæsthetised. Furthermore, anæsthesia is superfluous in cryptorchid castration. The operation does not provoke long-continued suffering. There is some pain while incising the skin and a sharp pang when the

testicular cord is emasculated, but otherwise there is no pain that will compare with the discomfort of taking and reviving from the anæsthetic.

Furthermore, while championing the cause of the operating table as so very practical for ridgling castration, it must not be forgotten that few such operations are performed in the hospital. These are nearly all out-of-door operations. The surgeon must go to his patient with a portable restraining apparatus.

We have tried both the *table* and the *ropes* for such operations, including ablation of the mammæ, dissection of scirrhus cords, and reduction of strangulated hernias, and have found that the latter places the seat of operation in a much more accessible position than the former, even if an anæsthetic is used.

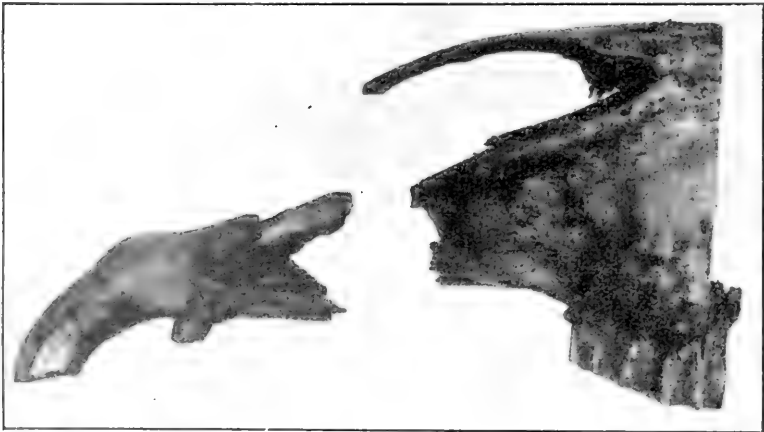
Finally, it is absolutely wrong and positively misleading to claim too much for any one of the various methods of restraining the horse for surgical operations. Some operations are much more easily performed upon the operating table, others in the stock, others with the ropes (or harness), and still others with the single sideline in the standing position. To claim that any one is particularly perfect under all circumstances is quite as wrong as to condemn either one as being entirely useless. They all have their good points, they all have their appropriate places, and none are universally satisfactory.

The selection of the method of restraint is no small item in any given equine surgical operation. It is a problem that should be decided only after intelligent consideration. Certain individuals, certain morbid processes and certain seats of disease demand particular restraining methods if all of the small things which contribute to a practitioner's success is thought worth while. It is quite as wrong to cast and tie up a horse on the table or ropes for a trivial operation as it is to attempt a major procedure in the standing position. And, again, a horse that complacently submits to an operation of considerable magnitude (firing, for example,) might have fought the recumbent restraint most violently. It is also as harmful and as foolish to anæsthetize unnecessarily as it is to omit the anæsthetic during a long painful dissection. These recommendations might be enumerated indefinitely. The only point we wish to make, however, is that of correcting an erroneous impression that any one apparatus for securing horses is absolutely perfect under all circumstances. The veterinarian who is daily engaged in operating on all-comers (the draft-horse, the cab-horse, the coach-horse, the broncho, the cheap plug, etc., etc.), in all different

states of health and for all manner of diseases, will very soon discover the patent defects of any single apparatus and will very soon learn to duly respect the good points of each of the standard methods.

The ropes will always retain their place among the expedients to secure the large animals, because a large majority of all surgical operations are performed outside of the hospital, if not because certain ones are greatly facilitated by their use. It is wrong to ignore them in training the student. They will be compelled to use them more frequently than their polished table in the hospital. It is a sin of commission to stigmatize them and a sin of omission to fail to teach their appropriate use. Many a neat surgical operation is performed with their use every day.

* * *



Fractured Premaxilla caused with a ratchet mouth speculum, reported in the March number of the REVIEW.

THE ONTARIO VETERINARY COLLEGE has graduated more than 3,000 men in the 44 years it has been established.

THE VETERINARIANS OF KANSAS who attended the Missouri Valley Association in Kansas City in February, held a special meeting to consider plans of campaign for procuring a veterinary practice law in that State at the hands of the next Legislature. The veterinarians of the State are waking up to the fact that the practice laws recently enacted in the adjacent States of Nebraska and Missouri are causing a great influx of non-graduate practitioners into Kansas.

EXTRACTS FROM EXCHANGES.

GERMAN AND HUNGARIAN REVIEW.

By ADOLPH EICHHORN, D. V. S., Bureau of Animal Industry, Great Bend, Kansas.

A NEW REMEDY AGAINST TUBERCULOSIS [*Extract from a Lecture delivered before the German Agricultural Society, by Prof. v. Behring*].—The bovovaccine introduced by the author into practice, has the mission to immunize young cattle against tuberculosis, which then will produce in the course of a few years milk adapted for the nourishment of babies. To accomplish quicker this purpose it would be recommendable to inoculate at the present milking cows; for this object, however, the bovovaccine is impracticable on account that a dose of the same, which would prove harmless for newly-born animals, would prove fatal to older animals with symptoms of œdema of the lungs. While the introduction of material containing the living bacilli under the skin is not accompanied with that danger, however, the results of the inoculation are doubtful on account of a large quantity of the inoculated material remaining under the skin, thereby producing local tubercular processes which then retards the process of immunity. This kind of preventive inoculation of cows is also dangerous for the reason that from the local tubercular nodules, living tubercle bacilli may enter the circulation, and from there into the milk. The author announced before the Congress of Tuberculosis at Paris, a new anti-tubercular product which will not possess the described danger and still accomplish immunity in cattle. This product, however, must also be injected into the blood, and its production is so expensive and lengthy, at the same time very unstable, that its practical use would undoubtedly meet considerable objection. Lately, however, he succeeded in producing by a new method a material which does not contain living bacilli, yet it possesses the immunizing qualities. The new product, which is named by B. "*tuberculase*," is a yellow semi-solid mass, does not spoil in transportation and is not very expensive; animals ought to be injected with it several times in from 2-4 weeks. With this product B. has not only treated cows free from tuberculosis, but also those which appeared clinically healthy, yet their milk was contaminated with tubercle bacilli. During the treatment of these cows the bacilli disappeared from the milk.

This observation suggests the hope that it will be possible to apply this product successfully against human tuberculosis. On cows, however, which would suggest an infection similar to that of human tuberculosis, this material has not yet been experimented on; therefore the above described hopes are not yet based on experimental results. Notwithstanding, B. is of the belief that the material will be a success; while he does not believe that it will effect cures in severe affections of human tuberculosis, but in cases of young people, applied at an early stage, it will prevent the extending of the tubercular process, so that with the aid of nature it will accomplish a cure and consequently it will also prevent new infections. B. will not deliver the material to the public before next fall; his experiments will before long prove their benefit and success, and he is gradually nearing his object to procure milk from cows, with which he will be able to immunize babies against tuberculosis.—(*Allatorvosi Lapok.*)

YOHIMBIN HYDROCHLORICUM (SPIEGEL)—A NEW APHRODISIAC AND A SPECIFIC AGAINST IMPOTENCE [*H. Holterbach*].—The bark of the yohimbe tree was for the first time brought to Europe in the year of 1895, after some explorers noted in German Kamerun, that the natives prepared of the same through boiling an effectful and harmless aphrodisiac. Its active principle, yohimbin, was discovered two years later by Spiegel. He isolated from the bark two alkaloids; a yellow substance, the yohimbenin, and a white, yohimbin. The yohimbin hydrochloricum appears as white crystals, which are slightly soluble in cold water, but very soluble in distilled hot water. In the form of tablets the drug remains unchanged, while the solution is very unstable. At the Animal Physiological Laboratory of the Agricultural Institute of Berlin the first experiments were carried out to study its medical properties. The following was established: 1. The different species of animals reacted in different ways to yohimbin. 2. When administered in small doses the only result noticeable was a very pronounced effect on the genitals, an action peculiar to yohimbin only. 3. Bad effects of any kind could not be noticed, and are positively excluded. The action was general and local. The former manifested itself in increased liveliness of the animals, which after increasing the dose, reached a state of very great excitement. The local action manifested itself in a moderate hyperæmia of the mucous membranes; in rabbits the ears, in dogs the muzzle

were of a brighter red, and warmer, due to a dilatation of the bloodvessels. The astonishing changes were noticed on the genital apparatus. The testicles swelled in a few minutes, sometimes immediately, and remained in that condition for about one hour. The effect on the penis appeared shortly after; in the dog it became reddened, swelled easily, and passed into a very strong erection. It is remarkable that an injection of yohimbin into castrated dogs was also followed by erectio penis, the same way as in uncastrated dogs. Consequently the cause of the erection must lie in direct irritation of the erection centre. The hyperæmia of the genitals lasts generally for a few hours, then disappears gradually (with it also the erection) without leaving any after effects. Notwithstanding daily injections, lasting for four weeks, of yohimbin, no bad after effects were noticed on animals; in the same way no inflammatory changes on the genitals. Yohimbin in large doses, however, acts poisonous on respiration and heart's action; the blood pressure falls constantly from the moment of injection, the pulse beats decrease correspondingly in number. Therapeutically the preparation is especially adapted for the treatment of impotence in males, of which the principal cause is generally neurasthenia. The author has successfully treated with yohimbin animals which suffered from nervous impotence, considering in this class all such cases in which after a very careful examination no cause could be detected; especially in bulls and stallions he has many good results recorded. An accurate determination of the dose in proportion to weight has not yet been established. The author recommends on his experience the following doses: Dog, 0.002-0.005 gm. 3 times daily; hog, 0.05, 3-5 times daily; bull, 0.1-0.3, 3-5 times daily; stallion, 0.1, 3 times daily. The preparation can be administered subcutaneously or per os.—(*Deutsch. Tier. Wochenschr.*)

THE TREATMENT OF SPAVIN WITH PERFORATING FIRING WITH FRÖHNER'S KNOWN METHOD.—Eighteen cases of spavins were treated recently in the German Army. From these 11 recovered, 5 improved, while in 2 the treatment brought no results. With Hoffmann's method 7 cases were treated, of which 4 recovered and 3 improved. The following 2 cases are noteworthy: In one, eight days following the firing an amber-colored yellow discharge ran from the highest perforating canal; after two weeks a fluctuating swelling appeared on the outside of the hock, from which about two tablespoonfuls of pus were removed; following this 30 gm. of Lugol's solution were inject-

ed into the abscess, after which complete recovery took place. In the other case, 13 punctures were made 1 cm. apart on the spavin; six days afterward the skin, which was painted with ichthyol-collodium, sloughed off. The wound healed in four weeks and after eight weeks not a trace of the lameness could be noticed.—(*Allatorvosi Lapok.*)

MORPHIUM ANÆSTHESIA.—Rosenbaum recommends in larger (healthy) horses for the purpose of anæsthesia larger doses of morphia; before castration he injects 1 gm., in treating prolapse uteri 1.5 g. of morphia, and the excitement and straining cease.—(*Allatorvosi Lapok.*)

GERMAN REVIEW.

By J. P. O'LEARY, D. V. S., Bureau of Animal Industry, Buffalo, N. Y.

CALVING FEVER (PARTURIENT FEVER) [*Kreistierarzt David*].—D. has been occupied with the study of parturient fever and its origin. This skilful practitioner, who died several months ago, conjointly with his assistant Karnetzky, made accurate notes of the symptoms, temperature, success or failure of the treatment; likewise of atmospheric and dietetic conditions of the animals. His reports are extremely interesting and deserve full consideration. They are reported *verbatim* as follows: "We have come to certain important conclusions other than those usually given in the text-books. Before all, we are not satisfied with the theory which tells us that the etiology of the disease is based upon the formation of toxins, whether they originate in the udder or uterus; particularly since the use of the air treatment. That theory concerning the etiology of a disease is doubtless the best by which enforced explanations may be given. Dr. Arnsohn was first to express the thought that parturient paralysis was due to an arterial anæmia of the brain, induced by a forcible diversion of blood to the udder. This purely physical theory, which was not elaborated by the originator, we consider an important one according to our observations. By means of this theory all the symptoms of parturient fever can be easily explained, surely more easily than by any other chemical, bacteriological or physical theory which has been advanced thus far. We shall try, therefore, to substantiate this purely physical theory. Thomassen (quoted according to Franck's Obstetrics) has arranged the following five questions,

which any theory of parturient paresis must answer: (1) Why this disease is present exclusively in cattle? (2) Why in later life (that is, after the birth of the third calf)? (3) Why in good milch cows which have calved easily? (4) Why this disease appears at least 48 hours before or after calving? (5) Why this disease develops suddenly and also disappears rapidly? If an intense congestion of one organ (the udder) in this case, produces anæmia of another organ (the brain), the udder must have possessed in the first place a prodigious receptive faculty for blood. This faculty is present among all our domesticated animals only in the udder of cows and especially in the udder of good milch cows. Young cows as a rule give less milk than older ones. Usually the highest point of milk production in most cows does not take place until they have calved at least three times. The function of the udder and the congestion of that organ is at its maximum 36 to 72 hours after calving. Thus questions 1 to 4 are decided—only with regard to question 4 it may be further said that according to our experience milk fever occurs only before calving when the animal has acquired an udder teeming with rich milk and usually if the owner upon those grounds permits the milking of the cow before calving. The conditions which usually appear after calving were therefore present before calving. The congestion of the udder present at this time, increased by the irritation of milking, becomes greater and greater, and consequent anæmia of the other organs resulting affects most the highest lying organ in the erect animal, namely, the brain. The question as to why it is that only animals having an easy birth are victims of the disease, is explained as follows: In cases of difficult parturition the act is tardy; it brings a continuous flow of blood to the genital tract, which is not the case in easy and rapid births. Further, we must consider, that with difficult parturition there is a physiological disturbance in the functions of the other organs of the body; also of the mammary gland. Consequently the formation of milk is not so great; also the blood diversion is not necessitated. We must bear in mind the close connection between the digestive apparatus and milk production. It happens frequently, that through simple indigestion, the milk production of the animal may be essentially diminished. According to our opinion, no theory can explain question 5 as satisfactorily as the one we have been discussing, and we maintain that the well-known Schmidt-Kolding toxine theory is completely overthrown. The mammary gland at the maximum of its activity

necessitates a vast supply of blood. At this time we have no scientific investigations regarding the quantity of blood; particularly when we are discussing animals; for example, cows with parturient fever which have been dry for some time and consequently the blood flow to the udder has been slight. There takes place a complete reversal in the conditions of the circulation, namely in the sudden and rapid milk secretion, that a physical balance does not take place. The animal becomes paralyzed. If the disturbance of the circulation became balanced by repelling the flow of blood, through infusion of water or better pumping in of air or in rare cases spontaneously. The anæmic brain as a result of oxygen regains its function and excepting slight debilitating morbid influences remain until those latter symptoms also disappear. For the reason that through the infusion of clear water or air into the udder of animals often has the same embarrassing result as through means of the infusion of potassium iodide solution, proves according to my idea that not the toxine theory but the physical theory we have been discussing is the correct one. The relater further states that he frequently missed the subnormal temperature which has been mentioned by most recent observers as characteristic. In only four out of 59 cases the temperature was less than 37.3 C. In the remaining cases the temperature varied between 37.3 C and 38.8 C. D. agrees with the observations of older veterinarians that cold is a predisposing factor and because the irritation of cold increases the blood congestion of the udder. D. observed a large number of parturient fever cases after atmospheric changes, with consequent falling of the barometer.—(*Veroff aus den Jahres-Veterinar-Berichten der beamteten Tierärzte Preussens für das Jahr 1903. II Teil. S. 32-35.*)

CONCERNING FIXED AND FLOATING MEMBRANES IN THE VITREOUS HUMOR OF THE HORSE'S EYE [*Dr. Theodor Schmidt*].—S. occasionally inspected large stables of horses on account of moonblindness. He found between 10 and 15 per cent. of all the horses inspected affected with fixed and floating membranes of varying sizes in the vitreous humor. In two cases only out of about one hundred he could detect these membranes by the aid of the ophthalmoscope; in the remainder, however, it necessitates a special method of examination. This was accomplished by means of the Priestly-Smith lamp. The light is thrown into the eye as much as possible perpendicularly to the vertex of the cornea. At the same time the lens of the lamp must be held at a distance 35 to 45 mm. from the cornea, and the head of the

observer must be close to the lamp. It needs first some practice until the eye of the observer has accommodated itself to the vitreous humor of the horse's eye; for it is apparently always directed first on the cornea or papillary plane. When one has acquired the necessary practice, it is very easy to recognize the delicate thin grayish-white web-like formations suspended in the vitreous humor; stretched curtain-like antero-posteriorly or appearing only in suspended threads and floating membranes. Many of the membranes seem as if studded with little crystals, others appear to be woven into thicker threads which cross one another and at the point of intersection exhibit little bodies resembling particles of meal. These membranes are found in horses which have suffered from moonblindness, also in those animals which have never been attacked with an internal inflammation of the eyes. According to the observations of S., however, it is most frequent in horses between the ages of 6 and 14 years. Visual disturbance could not be traced to these membranes; concerning their nature and significance, there is yet no light on the subject. Possibly one has to deal with pathological growths which reflect themselves on the fibril and fibril-nets found normally in the vitreous humor.—(*Monatshefte für Prak. Tierheilkunde, XVII, 3/4 heft, S. 166.*)

DR. J. H. MCNEIL, of Ames, Iowa, made a trip to New Orleans, La., in March.

DRS. L. A. AND EDWARD MERILLAT, Chicago, Ill., have been selected by the Chicago Live Stock Exchange as its veterinary advisors.

AN OLD TIMER'S EXPERIENCE OF VETERINARY SURGERY.—In the early days of Manitoba, Treasurer W. F. Thomas of Melita, Man., had a painful adventure which is detailed as follows in a recent issue of the *Hartney Star*: While duck shooting the accidental discharge of his gun badly fractured one of his arms and as no medical aid could be secured mortification of the injured member had commenced when Mr. Dann, a veterinary surgeon (now of Deloraine), looking for land, happened to call at the shanty. This gentleman with more than ordinary skill and with no other instruments than a sharp knife and a hand-saw proceeded to cut off the injured arm. The operation was exceedingly painful as no chloroform could be obtained to deaden the pain. Mr. Thomas made a good recovery, the operation being performed over twenty-five years ago, and has since filled his place in the community with honor to himself.

CORRESPONDENCE.

IMMUNIZATION OF CATTLE AGAINST TUBERCULOSIS.

Extract from an Article by PROF. DR. ROBERT KOCH, PROF. DR. W. SCHÜTZ, PROF. DR. L. NEUFELD AND DR. H. MIESSNER.

(A report of work conducted in the Institute for Infectious Diseases in Berlin and in the Pathological Institute in the Veterinary High School in Berlin. From the *Zeitschrift für Hygiene und Infektionskrankheiten*, Vol. 51, No. 2.)

“Von Behring, in company with his colleagues Römer and Ruppel, has reported upon a considerable number of experiments that they have carried on for the purpose of immunizing cattle against tuberculosis, and, from the results obtained, he recommends a method for the practical immunization of cattle by intravenous injections with a certain strain of human tubercle bacilli (Culture I). The plan relates to the immunization of calves but a few months old, for the purpose of gradually developing a herd free from tuberculosis. As to the method employed, von Behring at first recommended, provisionally, the intravenous inoculation of cattle from five to seven months old with his culture in a first dose of 0.001 grm. and, after four weeks, with a second injection of 0.025 grm. Later, he recommended a first dose of 0.004 grm. and a second of 0.01 grm. Still later, he recommended the use of the same culture after it had been dried at a low temperature in vacuum; the first dose to consist of 0.004 grm. and the second, which should be given at the earliest 12 weeks after the previous injection, to consist of 0.02 grm. of dried substance. The inoculation shall, as a rule, be applied only to calves of from three to four months of age and only exceptionally to older animals up to two years and then only after they had been tested with a negative result with tuberculin. The vaccine is said to keep in this dried state for one month.

“To this time, von Behring has published no experiments in which an animal has been immunized in accordance with the method he recommends and in which the result of the immunization has been determined by a control inoculation. On the other hand, a number of cattle immunized by him in different ways have undoubtedly possessed sufficient immunity to protect them for a time against tuberculosis inoculations fatal to control animals. Among such animals described in his first report are numbers 8, 10, 11, 16, 17 and 20. It was, however, found upon post-mortem examination that the majority of these cattle were not free from lesions of tuberculosis. In some, indeed, there

were extensive lesions, which may be due in part to the test to which they were subjected with virulent material and in part to the injections that were made during their earlier treatment. All of these cattle, before they were tested with virulent material, were inoculated, either intravenously or subcutaneously, with bovine tuberculous material of low virulence. This is a preliminary treatment that both von Behring and Römer repeatedly say should be entirely excluded in practical work. Most of the above named animals had, beside this, repeated injections of human tubercle bacilli (two had nine such injections). In what way the immunity was obtained in these cases cannot be determined positively.

"The later experiments that are reported by Römer seem to us to furnish even less proof upon the question of immunization, and because proof is lacking to the effect that the culture of bovine tubercle bacilli that he used for testing immunity was sufficiently virulent. On the contrary, a review of his curves shows that bovine tubercle bacilli No. 18, which was used most, did not have high virulence, at least in May, 1903. May 26, 1903, two control cattle were inoculated intravenously with 0.0005 gram. of this culture (in one of these animals it is probable that all of the material did not actually go into the veins), and on the 6th and 13th of October, 1903, these cattle were killed. The findings in the first animal were: In each of four glands one or two nodules from the size of a pin head to that of a grain of millet seed, with few tubercle bacilli; the internal organs free from lesions. The second animal did not at any time show fever and aside from two glands with caseous or calcareous nodules there were in the apex of one lung three calcareous tubercles, each about the size of a grain of millet seed, with a few bacilli. The same culture administered subcutaneously July 5th, 1903, to a control bovine animal in a dose of 0.0025 gram. produced less marked lesions, as was shown when the animal was killed August 29th. Therefore, the cattle that were tested with this culture during the period above referred to, during which the virulence of the culture was being tested, need not necessarily be regarded as having been immunized. Römer reports but one single animal (No. 44) that developed acute, progressive tuberculosis after inoculation with this bovine culture. It was inoculated intravenously in August, 1902, with 0.01 gram. of the culture. This, however, is an animal that had been immunized approximately after the method that von Behring recommends for practice, in that it

had received two injections (0.01 and 0.02 grm.) of Culture I of human tubercle bacilli and, beside these, two injections of the Arloing culture. It became very ill after the injection of bovine tubercle bacilli and when it was killed eight weeks later it was found to have generalized tuberculosis of the lungs. Römer remarks that this failure may be due to the fact that this animal No. 44 (which at the beginning of the experiment weighed 146 kg.) was already too advanced in age. But this explanation does not accord with our own nor with Hutyra's observations.

"As to the second strain of bovine tubercle bacilli (2015) used by von Behring, there is no evidence as to a test of its virulence for cattle. Of course it cannot be expected that for every tuberculosis experiment upon large animals that a control animal shall be sacrificed, but, from time to time, and in connection with every large series of experiments, it is unqualifiedly necessary to establish the virulence of the bovine culture, if the experiments are to be convincing. It must be regarded as strange that Römer recommends a method of immunization upon a basis of experiments in which the few control inoculations that were made resulted negatively.

"In one place, von Behring reports upon five calves, one of which received preliminary treatment with one injection of human tubercle bacilli, Culture I, and the others with several injections with the same culture. All, together with a control animal, were inoculated intravenously with 0.0005 grm. of bovine tubercle bacilli of the strain No. 18, which apparently had been kept in vacuum for twenty-four days. Since the control animal was not fatally infected and since there is no post-mortem report upon this animal, nor upon the five experimental calves, it is not possible to draw conclusions as to any immunity that may have resulted in these cases.

"Von Behring has expressed himself particularly with regard to the use of tubercle bacilli dried in vacuum. Experiments in my own institute show that the herein described protective inoculation with Culture I of human tubercle bacilli produced considerable resistance against following inoculations, but not to the extent that acutely fatal doses of bovine tubercle bacilli are well withstood.

"One can summarize the experiments of von Behring and his fellow workers by saying that they show the possibility of immunizing cattle, but not a satisfactory method of immunization.

"In order to make it possible to obtain an unprejudiced trial, von Behring has sent a number of animals that he has protectively inoculated to other investigators to be tested, but these cattle also were not in any way treated by a method that von Behring recommends for practice. On the contrary, they had received numerous injections of different materials. While, as a result of these experiments, it is quite impossible to draw a conclusion as to the efficiency of the procedure that is recommended for practice, they do not, indeed, in all cases, even show that the animals in question were immunized. On one hand, most of them were not subjected to an infection that was fatal for control cattle; on the other hand, some of the cattle, although they were not tested with highly virulent material, were afterwards found to contain lesions of tuberculosis.

"Lorenz received [from von Behring] two calves, one of which had eight and the other fourteen injections with tuberculous material. The material used by Lorenz for testing the immunity of these animals was of so low virulence that while the control animals inoculated subcutaneously showed moderately intense local reactions, when they were killed only very slight lesions of tuberculosis were found in the internal organs. Moreover, there is no post-mortem report in the two animals that were treated and so, of course, there is no evidence that they were immunized.

"Schlegel subjected to test two cattle immunized in Marburg. One of which (No. 14) had received nine and the other (No. 40) three injections of tuberculous material. In this connection it is especially to be noted that animal number 14 was treated eight times with the culture (I) of human tubercle bacilli that is recommended for practical use. The doses were progressive and varied from 0.005 to 0.4 gm. and were injected into the veins. In the first test both experimental cattle and one control animal were inoculated with a piece of tuberculous gland from a bovine animal. No difference could be observed between the effect upon the experimental cattle and the control animal excepting that the last one became more sensitive to the action of tuberculin, a point upon which Römer lays special weight. But Römer overlooks the possibility that the sensitiveness to tuberculin of experimental cattle can be dulled as a result of repeated injections with tuberculous material. Thereafter, these three cattle were inoculated intravenously, together with two additional control cattle, with 0.0005 gm. of bovine tubercle bacilli. This is the case that was referred to above in

which the strain of bovine tubercle bacilli No. 18 showed itself as of such low virulence for control cattle. The previously treated animal No. 14, gradually emaciated; when it was killed about three months later small nodules were found in the mediastinal glands also in one lung and in one kidney, which contained tubercle bacilli. The control animal first mentioned, which had twice received injections of parts of bovine tuberculous lesions, showed numerous nodules in the lungs, kidneys, spleen and in a number of lymphatic glands. The other two control cattle, which had received bovine tubercle bacilli but once, and then in the veins, showed, as already mentioned above, either no lesions or very small lesions in the internal organs. There is as yet no record upon the post-mortem examination of the second animal that had received protective treatment.

"Two cattle were sent to Eber to be tested. One of them (No. 9) had been treated with eight intravenous injections and one intraocular injection; for the purpose of testing its immunity, it was four times inoculated with emulsions of lesions of bovine tuberculosis administered subcutaneously or intravenously. Only the material that was used for the fifth (intravenous) injection (0.01 grm. of a culture of bovine tubercle bacilli) was of sufficient virulence to kill two control cattle after twenty-eight and thirty-eight days respectively. The immunized animal was killed in a highly diseased condition five and three quarter months later and showed numerous caseous nodules in the lungs and kidneys, and also tuberculous basilar meningitis. As to the result of the test of this animal, and of the animal No. 46, Eber says: 'The resistance of the previously treated cattle was not absolute; with sufficiently heavy dosage, both animals became ill as a result of a tuberculous infection.'

"The experiments of Hutyra resulted very much more favorably. Hutyra used in part the original vaccine material of von Behring and also three different fresh cultures of his own of tubercle bacilli of human type. It is to be noted that one of these last named cultures was obtained from a monkey. The experimental calves of Hutyra ranged in age from three and a half to twelve months. Of Behring's vaccine Hutyra injected first, 0.004, second, 0.01 grm. in some cases; in other cases, the second injection consisted of 0.04 grm. Of his own culture, he used 0.005 grm. and 0.025 grm. respectively. The period between vaccinations was about forty days; from the second vac-

ination to the infection the period was from seven to eight weeks. The dose for testing resistance was 0.02 gm. of von Behring's bovine culture No. 18. This was injected in one case subcutaneously, in others intravenously, and its virulence was always tested on control animals. Four of the ten vaccinated cattle were fed the same culture for a period of fourteen days, in addition to being inoculated intravenously. Of the ten vaccinated animals, there was no immunization in one case [treated with von Behring's vaccine], for the animal died of miliary tuberculosis at about the same time as the control animals, that is about five weeks after the infection. After all of the control animals had died of miliary tuberculosis of the lungs, the other cattle were killed after two and a half to three months. None of these animals were entirely free from tuberculosis. On the contrary, there were in all nodules in the internal organs containing tubercle bacilli and in some lymphatic glands. These lesions were in part of rather slight extent: in part they were extensive. It is worthy of remark that the fresh cultures made by the author himself gave distinctly better results than von Behring's original vaccine.

In view of the quantity of infectious material that was used for testing these animals, the virulence of which was regularly controlled, there can be no doubt that these experimental animals of Hutvra, in most part possessed a considerable degree of immunity.

"In addition, Thomassen has published a report, according to which he has succeeded in producing a considerable degree of immunity against bovine tuberculosis in two calves by injecting them intravenously with human tubercle bacilli. When these calves were tested by control injections of bovine tubercle bacilli they showed only slight lesions of tuberculosis in the lungs, while the control calf inoculated at the same time, with the same quantity of bovine tubercle bacilli, died of generalized tuberculosis at the end of nineteen days. Thomassen immunized a second animal by intraocular injection. This experimental calf was free from tuberculosis.

"A year before this, Pearson and Gilliland had had good success in immunizing two calves. They treated two calves for a period of two months by intravenous injections of human tubercle bacilli in increasing doses until, altogether, the calves had received 0.16 gm. At the end of another period of two months, both experimental calves and two control calves were given an injection of bovine tubercle bacilli into the trachea.

At the end of a further period of two months, all the calves were killed. Upon post-mortem examination it was found that the experimental calves were free from tuberculosis, while the control calves showed numerous lesions in the lungs and in many lymphatic glands." * * *

* * *

To the above, it should be added that the authors have made many experiments of their own, described at length in their paper, which show that they have used a system for protecting cattle against tuberculosis by vaccinating them with a fresh, moist vaccine different from that of von Behring and essentially the same as that used for several years in the work of the Pennsylvania State Livestock Sanitary Board. The results of their work are most encouraging and go far to confirm the work of others to the effect that the fresh, moist vaccine gives a higher degree of immunity and is more effective than the dried and weakened vaccine of von Behring.

* * *

The paper is closed as follows:

"We feel that we are justified in concluding, as a result of these experiments, that the problem of the immunization of cattle against tuberculosis is solved, to the extent that we now know the conditions under which in laboratory experiments animals may with great certainty be protected against large quantities of the most virulent tuberculous material. And we can say, as with regard to other diseases, that even in tuberculosis a true immunity may be produced, the possibility of which was generally doubted a few years ago, and that this may be done by the use of comparatively simple methods and with a high degree of certainty.

"But we must remember that, for the present, this applies only to laboratory experiments.

Although in our cases the infection was severe—probably many times as severe as under natural transmission of the disease—still, the natural conditions are different and one can determine only in practice how the artificially immunized animal will be affected.

"For experiments in practice we advise that protective inoculation shall be carried out in all respects as closely as possible in accordance with the methods that we have found to be most successful in laboratory experiments."

COLUMELLA.

DIPS FOR CATTLE TICKS.

SANTIAGO DE LAS VEGAS, CUBA, March 21, 1906.

Editors American Veterinary Review:

DEAR SIRs:—Cuba in common with other tropical countries is thoroughly infested with the cattle tick, which constitutes the greatest pest that the Cuban cattle grower has to contend with. The Cuban cattle tick (*Boophilus australis*) is a slightly different variety from the cattle tick of the Southern United States (*B. annulatus*), but is for all practical purposes identical. They transmit the organism of Texas fever as do the cattle ticks of the Southern United States, but this is of relatively small importance to the damage they do as parasites. I have recently visited a ranch where 225 out of 500 recently imported Southern immune cattle died from the parasitic effects of cattle ticks. The cattle were simply "shingled" with them and the owner, who could read English and had consulted a report of the United States Bureau of Animal Industry in which "hand-picking" the ticks was suggested, cast serious reflections upon the intelligence of the author of the referred to bulletin. During the past year we have been devoting a good deal of attention to experimenting with various remedies in order to find a cheap, efficient and easily applied medicine that would destroy cattle ticks without injury to the animal. In our experiments we tried a large number of remedies—practically everything that we could devise or that others could recommend. Among them were various coal tar preparations that are advertised for this purpose, emulsions of kerosene and crude petroleum, solutions of tobacco, etc., but none gave satisfactory results. All the remedies were tested by applying them to tick-infested animals.

Among a great number of remedies tried only three proved efficient in killing the ticks, and are as follows: Cebadilla 1 lb., mixed with *Aguardiente* (a moderately strong alcohol) 5 gallons. The ground cebadilla seed is placed in the alcohol and allowed to stand for two days before using. The medicine is applied by hand washing.

It is a very efficient remedy, kills all ticks and does not injure the cattle. The only objection is its cost. The cebadilla costs about 25 cts. per lb., and the *aguardiente* from 10 to 12 cts. per gallon.

We also tried a variety of crude petroleum, sold under the trade name of "Tickicide," which conforms to the require-

ments of the United States Bureau of Animal Industry in its specific gravity and per cent. of sulphur. This was efficient in killing ticks, but had the following serious objections: (1) Its cost, about 8 cts. per gallon in Cuba; (2) When treated animals are allowed in a pasture the oil from the cattle taints considerable grass, so cattle will not eat it; (3) The most serious objection of all is its effect upon the cattle. The oil seems to close the pores of the skin and is such a good conductor of heat that, in this climate, the animals suffer greatly from the heat, and if the cattle are not in fair physical condition serious losses are liable to follow.

The remedy which has given us the best results, all things considered, is a solution of arsenic. We first tried the South African dip and then the Australian official dip, both arsenical dips, and both gave us good results; but both had the serious objection, that of boiling a large quantity of the solution for a long time. We modified both the above formulæ into what we call the Cuban dip. This formula can probably be improved upon and we are still working along this line:

Arsenious acid,	8 lbs.
Soda carbonate, cryst.,	24 lbs.
Yellow soap,	24 lbs.
Pine tar,	1 gallon.
Water,	500 gallons.

Dissolve the arsenic in 20 gallons or more of water by boiling for thirty or forty minutes. When dissolved add to 100 gallons of water. Dissolve the soap and soda in 20 gallons of boiling water, first shaving the soap, and while boiling add the pine tar in a thin stream and stir until it is dissolved. Mix this with the arsenical solution and add sufficient water to make 500 gallons.

We have used this solution as a hand dressing and by applying with a spray pump with excellent results. We have not had an opportunity to use it in a dipping vat.

This solution kills the ticks and does not irritate the cattle, but it does cause some irritation to the thin skin of the arms of men who work in the solution for more than two days.

I understand the United States Bureau of Animal Industry have tested some arsenical dips, but seem to have abandoned their use in favor of Beaumont crude petroleum. The arsenical dips are successfully used in South Africa and the official dip of Australia is an arsenical solution. A government commission in Uruguay, appointed to test various proprietary remedies,

recommended the arsenical dips above all others. The Cuban dip can be made here for less than one cent per gallon for cost of materials.

I should be glad if any veterinarians in the Southern States would try this solution and report upon it. N. S. MAYO.

THAT CANADIAN DIPLOMA MILL—CORRESPONDENCE WHICH EXPLAINS ITSELF.

MEMPHIS, MO., March 31, 1906.

Editors American Veterinary Review:

DEAR SIRS:—The veterinary law lately enacted in our State is causing some of the "hoss doctors" no little concern, as the enclosed application will show. As this is a rare specimen, I thought it would be of interest to the profession. Yours truly,

E. BRAINERD, D. V. S.

"Jan. 8, 1906. Dr. Brainerd, V. S., Dear Sir: i understand that you as assistant State veterinary if so of Mo. i would Like to Have a Permit to Practis as i Have Bin in Veterinary Practis in Clark Co. for 15 years and Have diploma under Kanada. Kaldeg will you Pleas inform me about the matter. This School was enterd according to act of Congress in the year of 1896 By J. E. Hodgins and T. Hasket in Librarian of Congress at Washington D. C. Will you give me some advise about the matter as i Have severl Patrons on Hands i will come up and see you.

Resp. — — —

"P. S. Please tell me if Diploma From this school is all Right in U. S."

OBITUARY.

DR. CONSTANT LAKE, PORTSMOUTH, OHIO, a graduate of Ontario Veterinary College, and member of the Ohio State Veterinary Medical Association, died suddenly and unexpectedly at 1 o'clock on the morning of March 15. His death was not only a great shock to the family, but to his many friends as well, few of whom even knew he was ill. He had taken cold and went to bed, but his illness was not thought serious. He expired without even awakening the family.

Dr. Lake was born in Wooster, Ohio, in 1849. He was a good citizen, led an exemplary life and will be missed.

W. H. GRIBBLE.

ARMY VETERINARY DEPARTMENT.

SCHOOL OF APPLICATION, U. S. ARMY.

ENLISTED MEN OF THE CAVALRY, FIELD ARTILLERY AND ENGINEER CORPS TRAINING SCHOOL FOR HORSESHOERS.

The United States Army applies the proper term horseshoer to the "smithy," while farrier, relating to iron, covers a multitude; the name is still employed among foreign armies to the enlisted men found at the forge. Our farrier truly represents the stable orderly, or in many instances the stable sergeant, a non-commissioned officer, who is directly responsible to the organization commander for all horses under his supervision.

The school for horseshoers was established during the infancy of this school with the same object in view, to have a constant and sufficient number of available competent men on hand for this important purpose of shoeing horses in the different branches of the service.

Instructors in Charge.—Director of School, Captain of Cavalry; Senior Instructor, a veterinarian, civilian, practical horseshoer and a graduate of Harvard University, Veterinary Department; one civilian, practical horseshoer; one enlisted man, chosen by reason of his proficiency in the art of shoeing and a former graduate of this school.

The Pupils Chosen for this Course.—The class numbers about fifty-five men. As with farriers, men of good character, intelligent, able-bodied and well developed muscularly, are chosen by their respective organization commanders, one man each term, men who may possibly have been engaged in this work previous to entering the Army service. As practice perfects, a green man, if willing and able, soon learns to do good work, even though he may be slow at first.

As all Cavalry and Artillery horses are shod monthly, the smith in each organization divides the work in such a manner as to render the shoeing of several horses daily. He becomes thoroughly familiar with the condition of the foot of each and every horse before him and it is seldom that trouble arises, producing lameness, since trained men from this school have been employed in this work.

It is interesting to note the requests from many old enlisted men, horseshoers in the service, who wish to take this course.

Theoretical Work.—A concise, practical and intelligent text-

book, compiled by the profession, is followed, one hour daily being devoted to recitation, with the senior instructor in charge. The anatomy and physiology of the entire foot is carefully and thoroughly taught.

The horseshoer's tools and their uses are also taken up, every man becoming familiar with the name and usage of each; the forge and economic use of fuel, heating of iron and steel, are subjects carefully taught.

Practical Work at the Forge.—Several hours daily are devoted to the work on the floor of the large school shop. The supply of horses on hand being sufficient, no trouble is experienced in selecting good and fit subjects for the beginner.

Considerable time is spent in the preparation of the sound hoof; the art of modeling a shoe after a pattern follows, then the application of a plain shoe.

In the Army, conditions permitting, all horses are shod with a plain shoe, without calks of either kind.

Later calked shoes are made, their application taught, the subject of gaits entered into, confirmed or corrected by use of special shoes.

Pathological Shoeing.—This subject is later taken up; sore feet, corns, side-bones, quarter-cracks, etc., are provided for; horses that have developed faulty hoofs after several years of valuable service, are, in many instances, rendered further useful by the careful application of properly made, special shoes.

Methods of restraint among refractory horses and mules are also taught and in many cases these animals are permanently subdued in a humane manner.

The system employed has worked admirably; the Army secures a large number of efficient horseshoers, and to those men who leave the service at the expiration of enlistment, it affords a means of livelihood. Among sound feet, with intelligent and competent horseshoers, the shoe will eventually not be a necessary evil.

The Director.—He is an officer of the mounted service, a thorough and true equestrian in every sense, having been selected by the War Department for this purpose by virtue of exceptional qualifications possessed, a true lover of the horse, an intelligent understanding and an inherent disposition to cultivate the close relation of each and every animal presented; this, with a general knowledge of breeding and husbandry, the selection of horses for mounted and traction purposes, especially fits him for the important position he occupies.

The efforts of this officer, Captain W. C. Short, 13th U. S. Cavalry, are constantly enlisted in behalf of the veterinarian.

L. E. WILLYOUNG,
Veterinarian Artillery Corps.

* * *

PERSONAL NOTES.

VETERINARIANS LUSK AND ENGLISH, 2d Cav., recently arrived in the States from the Philippines, after a two-years' tour of duty. Veterinarian Lusk takes station at Fort Assiniboine, Mont., and Veterinarian English goes to Fort Snelling, Minn.

DR. CHARLES A. RAPP, Veterinarian 3d Cav., resigned from the Army on Feb. 15. His reasons for severing his connection with the service were that he could see no future for the Army veterinarian.

VETERINARIAN DEAD.—*Seattle, Wash., April 16.*—Henry N. Couden, a veterinarian in the United States Army and son of the Rev. Henry N. Couden, the blind chaplain of the National House of Representatives, died to-day. He was stricken with heart disease while riding back to Fort Lawton last evening and rolled off his horse, suffering a fracture of the spinal column. Dr. Couden only recently graduated from a college of veterinary surgery in Chicago.—(*Kansas City Times and Star.*) [There is no record of this veterinarian being in the service of the U. S. Army (Regular).—L. E. W.]

DR. CLAUDE H. CASE, of Akron, Ohio, has just recovered from a three-months illness due to an infection of the bone, involving the radius and ulna above the wrist, which very much resembled tuberculosis. It started after testing a herd of cattle (out of which six reacted to tuberculin) and the holding of post-mortems on two of the most advanced cases. The removal of a part of the bone is gradually bringing about recovery.

DR. VERANUS A. MOORE, of the New York State Veterinary College, will address the members of the Veterinary Medical Association of New York County at their May meeting on "The Agglutination Method for the Diagnosis of Glanders." His address will be in the nature of a preliminary statement of the method now in use and the results being obtained. He purposes presenting a paper on the subject at the August meeting of the A. V. M. A., and our readers are promised the full text of Dr. Moore's report.

COLLEGE COMMENCEMENTS.

ONTARIO VETERINARY COLLEGE.

At the closing exercises of this school, March 29, the following received diplomas:

Cecil Scott Anderson, Waterford, Ont.; Herbert Anderson, New York City; Artie B. Angell, Taneytown, Md., U. S.; Stewart W. Armitage, Manitou, Man.; George S. Arnett, Knowlesville, N. Y., U. S.; Howard B. Atkinson, Edgeley, Ont.; J. S. Atkinson, Marinette, Wis., U. S.; Charles E. Attale, Port of Spain, Trinidad, B. W. I.; W. H. Barrett, Port Dover, Ont.; John P. Beck, Cavetown, Md., U. S.; Alder A. Black, Searlton P. E. I.; James Scott Bone, Paisley, Ont.; Harry H. Berry, Brantford, Ont.; Howard B. Brady, Millersville, Pa., U. S.; John F. Bracy, Rockwood, Ont.; Frank T. Burnett, New York City, U. S.; Van. V. Botkin, Muncie, Ind., U. S.; John G. Buie, Michel, B. C.; Frederick T. Cairns, Forest, Ont.; John L. Carolan, Dobbs Ferry, N. Y., U. S.; Earl H. Carter, Toledo, Ohio, U. S.; Charles M. Casey, Syracuse, N. Y., U. S.; Edwin B. W. Cavell, Howell, Mich., U. S.; Francoise de F. L. Chaumont, Oak River, Man.; Victor V. Christie, Island Brook, P. Q.; R. E. Christopher, Armstrong, Iowa, U. S.; Donald L. Clark, Delhi, N. Y., U. S.; James Fielding Cottrill, London, Eng.; Thomas F. Craig, Niagara Falls, N. Y., U. S.; Glenn W. Cronkite, Alma, Mich., U. S.; Volney Manning Curry, Leslie, Mich., U. S.; Daniel J. Cronin, Chelsea, Mass., U. S.; E. Beverley Cowan, Orono, Ont.; J. Graham Davidson, Niagara Falls, Ont.; Amos H. Dyson, Jamestown, N. Y., U. S.; C. Edgar Edgett, Moncton, N. B.; John A. Espindola, La Plata, Argentina; Col. E. Edmunds, Ardsley, N. Y., U. S.; Wm. Austin Ferr, Put-in-Bay, Ohio, U. S.; Louis P. Foss, Cincinnati, Ohio, U. S.; Royal G. Flowers, Lyndonville, N. Y., U. S.; A. Scott Gebbie, Howick, P. Q.; George H. Gerlach, Elmore, Ohio, U. S.; Eugene L. Hannon, Pittsfield, Mass., U. S.; Charles Edward Hayes, West Shefford, P. Q.; Charles Head, Buffalo, N. Y., U. S.; A. Frank Hill, St. Johnsbury, Vt., U. S.; Arthur D. Howden, St. Louis Station, P. Q.; Aubrey G. Husband, Wawanesa, Man.; Frederick Hutchinson, Cheltenham, Ont.; Joseph Johnson, Stoughton, Wis., U. S.; Chas. A. Joynt, North Augusta, Ont.; James Jones, New Liskeard, Ont.; Robert Kenwell, Mount Eaton, Ohio, U. S.; Henry F. Kirkby, Walton, Ont.; Judson Kellogg, Ripon, Wis., U. S.; Thos. J. Kain, Totten-

ham, Ont. ; R. Harry Leadley, Cookstown, Ont. ; W. H. Tulloch Lee, Boissevain, Man. ; Beverley M. Leigh, Columbus, Miss., U. S. ; C. Douglas MacCormack, Jamaica, B. W. I. ; Alexander McFadzean, Waldemar, Ont. ; Walter H. McKenzie, Oakville, Man. ; Donald McMillan, St. Louis de Gongagne, P. Q. ; Charles H. McNab, Rosemont, Ont. ; C. O. Maconachie, Guelph, Ont. ; Wm. Frank Madill, Orillia, Ont. ; Stanley Thomas Martin, Winnipeg, Man. ; C. Ernest Miller, Peru, Ind., U. S. ; Earl W. Miller, Rockford, Ohio, U. S. ; John Joseph Montgomery Brantford, Ont. ; C. A. Minshall, Verogua, Wis., U. S. ; Milton E. Muma, Arkona, Ont. ; Achibald S. Miller, East Aurora, N. Y., U. S. ; William H. Moffatt, Picton, Ont. ; Reginald Edward Murray, Cooksville, Ont. ; William G. Moore, Petrolia, Ont. ; Maynard S. Nighbert, Pittsfield, Ill., U. S. ; William T. Patton, Paris, Ont. ; Harry W. Pegg, Holland Landing, Ont. ; William Reid, Nassagaweya, Ont. ; James Marshall Reilly, Rupert, P. Q. ; John Martin Rice, Salhouse, Norfolk, Eng. ; Charles D. Ritter, Allentown, Pa., U. S. ; Albert B. Ritter, Pennsburg, Pa., U. S. ; Abram W. River, Cresco, Iowa, U. S. ; George Avery Root, Milville, N. Y., U. S. ; Charles W. Ruttan, Wingham, Ont. ; Henry W. Sheurer, Brighton, Ill., U. S. ; Earle F. Schofield, Greenwich, Conn., U. S. ; William F. Sirett, Glendale, Man. ; Clarence D. Smith, Justus, Ohio, U. S. ; William Cyril Steele, Grenada, B. W. I. ; Clark E. Swail, Randboro, Que. ; Herbert R. Sharp, Moosomin, Sask. ; D. Crozier Tennent, London, Ont. ; John A. Thomas, Shreve, Ohio, U. S. ; Thomas Thompson, Oakdale, Ont. ; Hosea B. Turney, Marysville, Ohio, U. S. ; George S. Thorneywill, Charlottsville, Va., U. S. ; Samuel S. Westgate, Pickering, Ont. ; Andrew Fenwick Wilson, Portage La Prairie, Man. ; A. Newton Wilson, Howick, P. Q.

The gold medal for the best general examination, donated by the Ontario Veterinary Association, was won by C. E. Attale, of Port au Spain, Trinidad.

GRAND RAPIDS VETERINARY COLLEGE.

The exercises were held in the College Auditorium on Thursday evening, March 29, and the following received diplomas :

Arntz, Wm., Sheridan, Mich. ; Brown, J. R., E. Boston, Mass. ; Bucher, C., Whitehouse, Ohio ; Bordner, L. A., So-Wayne, Wis. ; Byrnes, M. R., Friend, Nebr. ; Burke, E., Cal.

cutta, India ; Compton, A. L., Morrice, Mich. ; Coomer, W. E., Bay City, Mich. ; Corkill, Jos., Mauch Chunk, Pa. ; Craig, D. S., Hanover, Ont. ; Cash, G. B., Fremont, Mich. ; Carr, Jas. F., Muskegon, Mich. ; Dunning, Glenn, Emmett, Mich. ; Draper, J. P., Camlachie, Ont. ; Eiler, F., Chapin, Ill. ; Edwards, W. C., Cambria, Wis. ; Elzinga, H., Grand Rapids, Mich. ; Fitzpatrick, Wm., Mt. Holly, N. J. ; Fitzwater, M. C., Canton, Pa. ; Gahagan, W. H., Porter, Pa. ; Glass, B. F., Prophetstown, Ill. ; Hutson, E. J., Webberville, Mich. ; Hobart, Geo. R., Ithaca, Mich. ; Hansen, J. W. G., Sheridan, Mich. ; Hostetter, H., Topeka, Ind. ; Kells, R. E., Arthur, Ont. ; Knox, H., Picton, Ont. ; Livengood, A. G., Elk Lick, Pa. ; Leary, D. H., Darlington, Wis. ; Law, J. J., Nashville, Mich. ; Life, N. L., Jane Lew, W. Va. ; Menold, G. J. ; Thompsonville, Mich. ; McBreen, P. L., Mahonoy, City, Pa. ; Morel, Jules F., Mons, Belgium ; Moyle, Isaac, Waterford, Wis. ; Monroe, H., Ilion, N. Y. ; McMasters, J., Key, Ohio ; Marble, F. E., Indian Falls, N. Y. ; Miller, J. M., Avilla, Ind. ; Ocobock, C. F., Paw Paw, Mich. ; Peterson, L., Carl, Mich. ; Parks, J. L., Ft. Fairfield Me. ; Pearson, Geo., Pickney, Mich. ; Rock, J. F., Marinette, Wis. ; Ramsey, Roy, Pierson, Mich. ; Roseberry, F. M., Marion, Ohio ; Rommeck, W., Detroit, Mich. ; Stevens, H. L., Farmington, Me. ; Scoville, Glenn, Clarksville, Mich. ; Scherz, F. J., Rice Lake, Wis. ; Sauer, Aug., Grand Rapids, Mich. ; Snyder, E. D., New London, Ohio ; Smith, W., Lehighton, Pa. ; Timms, J. M., Pittsford, Mich. ; Whitney, J. G., Union Grove, N. Y. ; Walters, Ezra, Carleton, Mich. ; Wilson, R. H., Toronto, Ont. ; Woolston, Chas., Bauer, Mich. ; Zimmerman, Israel, Bridgeport, Conn.

UNITED STATES COLLEGE OF VETERINARY SUR- GEONS.

At the twelfth annual exercises of this college fellowship degrees, in recognition of research work in veterinary science and valuable contributions to the literature of the profession, were conferred upon Charles F. Dawson, M. D., D. V. S., State Veterinarian of Florida ; James G. Ferneyhough, B. S., D. V. S., State Veterinarian of Virginia, and Robert W. Summers, D. V. S., a professor in the college.

The graduates were : John R. Aufente, Illinois ; William Francis Davis, Maryland ; Robert Henry Duenner, Tennessee ; Charles Jefferson Frey, New York ; Oscar Harry Gratz, Penn-

sylvania; John Philip Kiefer, District of Columbia; William S. Pollard, Massachusetts; Mann Page Smith, Virginia; Clarence Clayton Walker, A. B., M. D., District of Columbia; Cornelius Campbell Weeks, Illinois, and Eddie Powell Yager, Virginia.

McKILLIP VETERINARY COLLEGE.

After the annual banquet, which was attended by professors, students and friends of the college, the commencement exercises were held in Handel Hall. The degree of M.D.V. was conferred upon the following:—S. T. P. Nichol, E. P. Johnson, D. C. Treloar, H. H. Halverson, C. H. Mainhart, F. W. Morgan, E. J. Cunningham, E. E. McDaniels, G. W. Neff, A. R. McBurney, B. E. Sherman, H. N. Thompson, O. E. Lindburg, F. P. St. Clair, F. J. Verduin, C. F. Blair, J. O. Fenstermacher, H. N. Couden, W. Meiser, T. B. Harries, M. Guillaume, J. E. Standsbury, J. W. Haffer, B. F. Hudson, G. H. Peters, C. L. Lumby, G. F. Flaherty, W. F. Miller, J. W. McLaughlin, G. A. Barnes, E. J. Peck, O. L. Prien, P. W. Flickinger, W. Hilton, S. Robinson, E. L. Knight, A. C. Stoltzman, J. M. Mulick, E. S. Hess, C. Muth, O. J. Matthias, C. H. Schultz, C. B. Estey, F. L. Skrabble, J. F. Mack, M. Vanderhack, E. B. Shaw, C. W. Lassen, H. G. Thompson, L. A. Wilson, R. D. Mankin.

INDIANA VETERINARY COLLEGE.

The fourteenth annual commencement of this college was held March 30, 1906, at 'Das Deutsche Haus,' Indianapolis. Diplomas were granted the following: Howard Danner, Indianapolis; Frank J. Douglass, Indianapolis; Byron Eckols, Indianapolis; William H. Heaton, Nora, Ind.; Ora W. Hiner, Butler, Ind.; Geo. Charles Kœhnlein, Dwight, Ill.; Stephen G. C. Kelly, Noblesville, Ind.; Jacob B. Kingery, Cutler, Ind.; Benjamin F. Mauck, Owensville, Ind.; Bert Rodibaugh, New Augusta, Ind.

CHARLES WEILAND, owner of Sir Albert S., 2.03 $\frac{3}{4}$, says he has discovered a new system of feeding and training, by which he can fit a harness horse for racing with about one-half the work and in one-half the time ordinarily required to get one ready. He feeds a light bran mash with a handful of flaxseed added every day in the early spring, and says it works wonders in hastening the preparation.

SOCIETY MEETINGS.

MISSOURI VALLEY VETERINARY ASSOCIATION.

The semi-annual meeting of this Association was held February 12, 13 and 14, 1906, in the lecture-room of the Kansas City Veterinary College, N. W. cor. 15th Street and Lydia Ave., Kansas City, Mo.

The meeting was called to order at 9.30 A. M., Feb. 12, by President Dr. J. S. Anderson, of Seward, Neb.

This meeting was the largest in point of attendance and proved to be the most interesting of any held in the history of the organization. There were 120 veterinarians and 300 students in attendance. The following is a partial list of the members and visiting veterinarians:

THE ATTENDANCE.

Missouri.—Drs. E. J. Netherton, H. McConnel, F. F. Brown, A. T. Kinsley, S. Stewart, C. E. Steel, E. A. Van Antwerp, R. P. Poage, A. J. Munn, L. Champlain, J. D. Cooper, B. F. Kaupp, G. W. Merker, R. C. Moore, O. J. Phillips, W. E. Martin, L. D. Brown, T. S. Hickman, W. R. Cooper, A. D. Knowles, H. T. Doak, M. A. Peck, R. B. Grimes, J. B. Wood, J. Robards, O. Olson, C. Hubbard, J. H. Slater, W. B. Welch, A. W. James, J. G. Eagle, C. E. Hart, A. Trickett, S. A. Peck, R. L. Allen, J. B. Williams, J. W. Chenowith, H. J. McCartney, B. P. Rainey, F. M. Starr, D. F. Lucky, W. H. Gatchell, A. Byrd, E. M. Hendy, H. Bradley, W. L. West, T. B. Craycroft, Wm. Yenner, C. Conley, L. R. Baker, M. C. Lint, M. A. Sappington, C. M. McFarland, F. N. Elwell, C. H. Bugbee, B. Yenner, O. Stingley, G. E. Butin.

Kansas.—Drs. D. O. Knisley, G. J. Roach, H. S. Maxwell, R. H. Hayes, M. C. Lint, J. C. Young, N. V. Boyce, C. H. Davies, W. E. Flanders, M. C. Campbell, F. W. Roach, W. F. Smith, C. B. McClelland, W. N. Hobbs, C. Saunders, T. W. Hadley, W. T. King, E. H. Kilian, J. Tyler, R. Dill, F. S. Schoenleber, A. T. Jones, C. M. Crandall, N. I. Richmond, F. Jellen, O. M. Norton, E. Biart, C. A. Monney, L. A. Licking, T. C. McCassey, G. Mutziger, C. B. Kerns, W. Saylor, H. Dumbault, W. J. Guilfoil, D. M. Allen, G. M. Fox.

Nebraska.—Drs. J. S. Anderson, H. Jensen, A. T. Peters, P. Simonson, J. D. Sprague, C. A. McKim, E. F. Stewart, D. C. Scott, G. A. Meixel, A. N. Reber, H. T. Hahn, R. A. Huntley, G. W. Smith, F. E. Johnson.

Indian Territory.—Dr. W. J. McAlister.

Oklahoma.—Dr. G. W. Roach.

Iowa.—Drs. F. A. Andrews, H. E. Pinkerton, E. McNair, W. H. Jenkins, S. T. Miller.

NEW MEMBERS.

The following names, duly vouched for and favorably passed upon by the Board of Censors, were elected to membership:

Missouri.—Drs. C. R. Treadway, C. E. Hart, L. Champlain, J. G. Eagle, S. Sheldon, R. P. Poage, E. A. Van Antwerp, C. M. McFarland, E. M. Hendy, L. R. Baker, A. W. James.

Kansas.—Drs. T. C. McCCasey, C. B. Kern, F. S. Schoenleber, T. A. Jones, S. M. Regan, H. Dumbault, F. N. Elwell, H. S. Maxwell, J. D. Sprague, E. H. Kilian.

Nebraska.—Drs. E. F. Stewart, C. A. McKim, F. E. Johnson.

PAPERS AND DISCUSSIONS.

The first paper was presented by Dr. Hugh McConnel, of Marshall, Mo., on "Mad Itch in Cattle." The Doctor gave an interesting account of an outbreak designated under the above heading. Some of the symptoms observed were switching the tail, followed by stamping of hind feet and kicking. When released from stanchion would begin biting hind quarters and limbs, particularly the extremities about fetlocks, and also licking various parts of the posterior extremities, viz., udder, about tail, inside hind legs, etc.; would also back up against objects and rub. Red spots on and swelling of the vulva to a moderate degree, also prolapsus of the rectum, occurred in two or three cases within five to ten hours previous to death. The prolapsus did not appear to be from straining. These were symptoms as observed 12 to 18 hours after first taken ill. Later symptoms were those of kicking and biting and general restlessness. Later the animal would get down and unable to rise. The loss of power was first noticed in the hind limbs, then loss of power in the anterior extremities; finally the animal would be unable to rest on the sternum. The temperature ranged from 100 to 102° F. Death usually occurred in two or three days. Post-mortem findings:—Nothing was found abnormal in the various compartments of the stomach, and rumen contained ingesta, among which was found millet seed. A point brought out later in the discussion was that in many of the outbreaks the cattle had been fed millet. Hæmorrhagic spots were noticed the entire length of the large intestines. The vulva was congested, which

was probably due to rubbing, as the reddened parts were only superficial, not extending back to the rectum. There was evidence of intestinal irritation. The subject was thoroughly discussed by Drs. Peters, Netherton, Anderson, Champlain, L. D. Brown, Kinsley and Moore. Among the interesting points brought out were: that many such outbreaks were caused by feeding mouldy feed, especially millet. The question was raised as to whether it was a toxic substance produced by mould. Many such outbreaks have been reported from time to time in the Missouri Valley.

The next paper presented was by Dr. Lloyd Champlain, of Kansas City, Mo., subject, "One Medico-Biological Problem." This paper was very scientific and was greatly appreciated.

Dr. E. A. Van Antwerp presented a paper on "Parturient Paresis." This paper brought out a lengthy discussion. Dr. H. Jensen, of Weeping Water, Neb., reported that he had relieved comatosed condition in cattle due to corn-stalk disease by inflation of the udder with oxygen. He also recited an interesting experience he had in making an effort to kill a horse by administering strychnine hypodermically. The weather was 25 degrees below zero; the horse was led out to the timber and 10 grains of sulphate of strychnine were given subcutaneously. In the course of an hour an attendant came and said the horse was not dead. To his surprise upon examination he found the report to be true. Ten grains more were administered in a like manner; the Doctor went home thinking surely the quantity would destroy life. About two weeks later he saw the owner, who told him he had to "knock the horse in the head." The Doctor attributed the extreme cold as combatting the tetanic spasms of the muscles.

Meeting adjourned. Luncheon was served in the Kansas City Veterinary College.

THE CLINIC.

The clinic was called to order at 1 P. M. in the clinic amphitheatre of the Kansas City Veterinary College, under the direction of Dr. F. F. Brown.

Case No. 1.—Resuscitation of Dog (Clinician, Dr. C. E. Steel, St. Joseph, Mo.).—A dog, weighing about 25 pounds, was chloroformed. The anæsthesia was pushed till the animal had apparently ceased the respiratory act. Three drops of 2 per cent. hydrocyanic acid were placed on the tongue and artificial respiration applied. In a very short time the animal gasped for

air, muscular tremor was noted and the dog regained his feet in three minutes' time. The patient showed no ill after-effects as result of drugs. The rule for giving dilute hydrocyanic acid for the purpose of resuscitation is one-eighth drop per pound body weight.

Case No. 2.—Contraction of Flexors of the Metacarpus—Operation, Tenotomy of Flexor Metacarpi Externus and Medius (Operator, Dr. R. C. Moore, Kansas City, Mo.).—A bay gelding was presented at the clinic in which there was a contraction of the flexors of the metacarpus, a condition commonly known as "bucked knee." The operation consisted of subcutaneous tenotomy of the flexor metacarpi externus and medius above where the two tendons blend. The operation was successful in relieving the condition.

Case No. 3.—Stringhalt—Operation, Peroneal Tenotomy (Operator, Dr. R. P. Poage, Shelbina, Mo.).—The animal was operated on in a standing position. A side line and "twitch" were used as means of restraint. The tendon was severed above the theca.

Case No. 4.—Laminitis (Clinician, Dr. Chas. Treadway, Kansas City, Mo.).—The case presented was one that had practically made a recovery. The treatment of the case in the acute stage consisted of pulv. alum in one drachm doses every hour for five days, then one-half this amount for the next twenty days. For the first twenty days ice and bran poultices were kept on his feet, later he was kept in water bath four or five hours a day for two months; in three and a half months he was put to work, apparently recovered so far as usefulness was concerned. A ridge on the horny wall marked the hoof. A slight drop of the os pedis was also present.

Case No. 5.—Results of Quittor Operations (Clinician, Dr. R. C. Moore, Kansas City, Mo.).—Three cases were given to illustrate a talk to be given in the evening. In these three cases the quarters were smooth and apparently in normal condition, as a result of the use of iodoform, oakum and tar bandages—a condition that would not have existed had the usual treatment been followed after the operation.

Case No. 6.—Loco Poisoned Horse (Clinician, Dr. A. T. Peters, Lincoln, Nebr.).—A bay gelding, nine years of age, was presented. The horse showed an unsteady gait when moved, was very nervous; the animal was practically blind. On being exercised the symptoms were more aggravated. The *Astragalus molissimus*, or woolly loco, is a plant that grows 10 to 14

inches high, leaves resemble the leaves of the locust tree (except leaflets are shorter); they grow from a short stem, from which develops the blossom and later the pods which contain the seed. The plant retains a pale green appearance all winter and animals acquire a habit of eating it when the other herbage is scarce. Its poisonous influence is exerted upon the nerve centres.

Case No. 7.—Demonstration of Viscera of Horse (Clinician, Dr. B. F. Kaupp, Kansas City Mo.).—A horse had been previously prepared for the demonstration. The attention of the veterinarians was called to the various organs, in regard to their relation to precipitate a discussion in regard to the value of surgical operations. The development of the maxillary sinuses in various individuals; the relations and location of the velum pendulum palati, pharynx, œsophagus, and bloodvessels and nerves adjacent to them; the position of the heart and its relation to the front leg. The various abdominal organs and relations and also pelvic organs were exposed. By the removal of the gluteal muscles and sacro-sciatic ligament the true relation of the pelvic viscera was seen. By a careful dissection of the abdominal muscles, nerves and bloodvessels supplying the part were demonstrated, and by their partial removal and removal of part of the posterior ribs all abdominal viscera were demonstrated. Likewise the muscles between and covering of the ribs were removed and the lungs inflated by means of a bellows.

Case No. 8.—Demonstration of Post-Mortem Findings (Clinician, Dr. A. T. Kinsley, Kansas City, Mo.). A horse, a gray gelding, eight years old, had been ill two weeks previous to death. Diagnosis, pleuro-pneumonia. Laminitis was a complication, which was observed four days before death. The pleuritic exudate was organized; a portion of ribs showing parietal pleura; also lungs were exhibited; a portion of the left anterior lobe of lung had become degenerated, forming an abscess. The heart also contained an ante-mortem clot, which reached from the left auricle into the aorta.

Case No. 9.—Stomach Tube Demonstration (Clinician, Dr. D. O. Knisley, Topeka, Kansas).—Dr. Knisley demonstrated the passage of the new stomach tube after his own idea. It consisted of a double tube. He preferred passing it through the mouth, using a mouth speculum. In passing the tube, he used the stylet in the tube. After reaching the stomach, the stylet was withdrawn, water was introduced through one compart-

ment and returned through the other one, so that the stomach could be thoroughly cleansed. The doctor also demonstrated a new float, run either by electric motor or hand motor, the latter such as used on clipping machines. The stone was cylindrical and made of carborundum.

Meeting adjourned.

The evening session was called to order at 7.30 P. M. by the President, Dr. J. S. Anderson.

PAPERS AND DISCUSSIONS—CONTINUED.

The first paper presented was on the subject of "Sarcomatosis," by Dr. A. T. Kinsley, of the Pathological Laboratory of the Kansas City Veterinary College. The paper was illustrated by aid of the projection apparatus and reflectoscope. After a discussion of the subject, slides and photos of a few interesting cases observed during the past year were presented. The following is a brief description of these cases:

Case 18.—January 31, 1905. Animal, grade Holstein cow, six years old. History: Cow wandered off to herself, lying down much of the time, emaciation. Symptoms: Temperature 104.2, hypersensitive in right hypochondriac region, constipation, agalactia. Clinical diagnosis: Impaction, complicated with enteritis. Post-mortem: Tumors observed in the abomasum, duodenum, and jejunum. Microscopic diagnosis: Lympho-sarcoma.

Case 27.—March 27, 1905. Animal, bay gelding, seven years old. History: Capricious appetite, emaciation, cough; disease continued for about five weeks. Diagnosis: Suspected glanders. Post-mortem: Nodules in lung. Pathological diagnosis: Small round-celled sarcoma.

Case 30.—March 12, 1905. Animal, horse, aged. History: Growth in eye appeared three months previously: Diagnosis: New growth, probably sarcoma. Pathological diagnosis: Small spindle-celled sarcoma.

Case 39.—May 14, 1905. Animal, aged brown gelding. History: Horse was a private carriage horse and was noticed to tire easily. Symptoms: Venous pulse, increased precordial area, weakness; all of the symptoms became more marked and the horse was destroyed. Diagnosis: Obstructed venous circulation. Autopsy: Extensive new growth involving pericardium, mediastinum and pleura. Diagnosis path.: Small round-celled sarcoma.

Case 45.—August 2, 1905. Animal, aged bay gelding.

History and symptoms: The horse was observed to urinate only with difficulty; loss of flesh and energy; enlargement upon the glans penis; was operated upon; the horse was returned to the hospital for treatment Nov. 5, 1905, but was considered an unfavorable case and destroyed Nov. 20, 1905. Autopsy: A large area of necrosis was found involving the superior wall of the bladder, also the pelvic flexure of the great colon and local peritonitis. Pathological diagnosis: Sarcoma.

Case 47.—September 1, 1905. Animal, horse. History: Horse was noticed to be unthrifty; was given a few days' rest, but did not improve; sent to hospital and on examination an enlargement was found on left inferior maxilla; the teeth were examined and found to be practically sound; the enlargement was diagnosed a new growth and the horse was destroyed. Autopsy: An enlargement of the left inferior maxilla. The bone being practically all absorbed; the lymphatic glands of the head and cervical region not involved. Pathological diagnosis: Mixed-celled sarcoma.

Case 49.—September 22, 1905. Animal, pointer dog. History: Dog was noticed about July 1st to be less active and was not inclined to eat; these conditions gradually increased until the dog was brought to the hospital. Symptoms: Emaciated, weakness, large abdominal growth, apparently fixed. The tumor involving the gastro-splenic omentum was removed in the clinic and microscopically was found to be a lympho-sarcoma.

Case 52.—October 2, 1905. Animal, dog, black water spaniel. History and symptoms: Dog was noticed to breathe with difficulty and was sent to the hospital for treatment; upon examination an enlargement was found in the nasal chambers and involving the velum pendulum palati; the growths were removed by thermo-cautery, but the dog died in a few days. Pathological diagnosis: Large spindle-celled sarcoma.

Case 54.—May 17, 1905. Animal, gelding, mule, about two years of age. History: About April 1, 1905, a growth was noticed on the eyelid, which gradually increased in size; was removed in May, again in July. Clinical diagnosis: New growth. Microscopical diagnosis: Spindle-celled sarcoma.

Case 65.—October 25, 1905. Animal, mule. History: The mule was purchased in March and at this time a small growth was noticed on the left inferior eyelid; also some roughened areas on the right inferior eyelid: the growths increased in size and the animal was sent to the hospital for treatment;

a portion of growth from left superior eyelid was removed and examined microscopically and was found to be a spindle-celled sarcoma.

Case 66.—November 4, 1905. Animal, cow, five years old. History: Killed at the packing-house and condemned because of an omental spherical growth about 10 inches in diameter, which was found microscopically to be a spindle-celled sarcoma.

Case 68.—November 10, 1905. Animal, cow, four years old. History: Killed at the packing-house and the ovary was noticed to be about the size of a basket ball and was found on examination to be an alveolar sarcoma.

Case 70.—December 4, 1905. Animal, draft bay gelding, eight years old. History: Horse was in the hospital July 29, '05, for treatment of what appeared then as "granulated eyelids." December 4, '05, horse returned to hospital with a growth in the subconjunctival tissue of the left superior eyelid. The growth was dissected out and was found to be a small round-celled sarcoma.

Case 73.—December 18, 1905. Animal, hog. History: Killed at packing-house. Autopsy: Mesenteric lymphatics much enlarged, stomach walls thickened, spleen slightly enlarged. Microscopical diagnosis: Lympho-sarcoma.

Case 81.—January 4, 1906. Animal, lamb. History: Sheep killed at packing-house; and an enlargement noticed in pericardial sac. Microscopic diagnosis: Small round-celled sarcoma.

In a summary the Doctor stated that the subject of sarcomatosis was important on account of its prevalence in lower animals. Important in giving diagnosis and prognosis on account of its malignant nature. In 15 cases the following tissue was involved: Lymphatic system, 7; eye and surrounding tissue, 4; lungs, 1; bone, 1; nasal chamber, 1; ovary, 1.

This paper was discussed by Drs. Champlain, S. Stewart, Schoenleber, Jensen, Slater, Moore and others.

Dr. Schoenleber asked if there was any way whereby new growths could be grouped so that the practitioner could upon macroscopic examination say to his client whether or not the malady was curable.

Dr. Kinsley stated that if the growth "creaks" when sectioned by knife he could give a favorable prognosis after removing growth. But if it was soft and the thumb could be pushed through it, as is possible in malignant growth of sarcoma, an unfavorable prognosis may be made. There is no well-defined

line of demarkation between the sarcomatous tissue and that tissue that is healthy. In one horse upon which an autopsy was held the spleen was found to weigh 30 pounds. Upon microscopic examination it was found to be a melano-sarcoma.

Dr. Jensen stated that his method of treatment of new growths of a fibroid nature was to inject in tissue around growth a mixture of oil thuja, ℥i, alcohol, ℥viij. This produces a sloughing, after which was applied a mixture of oil thuja, ℥i, vaseline, ℥xvj. Applied twice a day.

The next paper was presented by Dr. C. McFarland, St. Joseph, Mo., subject, "Psoroptic Scabies of Cattle; Symptoms and Differential Diagnosis." This paper was very thorough and interested all present.

It was followed by one by Dr. W. L. West, of Kansas City; subject, "Heart to Heart Talk." The Doctor in his witty way gave some good advice along business lines, and social conduct of the profession.

Dr. Jensen, Weeping Water, Neb., then gave an interesting talk upon the subject of "Therapeutical Agents: Their Preparation and Uses." The Doctor is a close student of medicines, and their therapeutical application, and is always an interesting talker. Among agents discussed was the use of collargolum, 10c.c. of a 2 per cent. solution, given intravenously in purpura hæmorrhagica. The use of the fluid extract of echinacæ given in one-ounce doses per orum every two hours in septicæmia. The intravenous injection of 30m. formalin to 60 c c. water, also recommended for septicæmia. Adrenaline was used with good results in conjunctivitis, and the operation of arytectomy, but had given unfavorable results in spaying operation, preventing healing by first intention. Campho-phenique may be used as a local anæsthetic and as an antiseptic. It is readily soluble by addition of a little alcohol. In flatulent colic the Doctor preferred using as an antiferment eucamphol ℥i in one pint of water.

The next paper was presented by Dr. D. O. Knisley, of Topeka, Kansas; subject, "Acute Indigestion in the Horse: Its Treatment."

Meeting adjourned.

SECOND DAY—FEB. 13, 1906.

Meeting was called to order at 9 A. M. by President Anderson.

The Secretary read regrets of inability to attend from Drs.

W. D. Hammond, Wayne, Nebraska; M. R. Trumbower, Mo-
nett, Mo., and W. Warren, of Sedalia, Mo.

The first paper was presented by Dr. D. F. Lucky; subject, "Plant Poisoning of Cattle." This paper recited the history of an outbreak of a fatal disease among cattle in the southern part of Missouri. The discussion was participated in by Drs. L. D. Brown, Maxwell, Anderson, Peters, McKim, Kaupp, Kinsley, Schoenleber, and others. Dr. Peters in discussing poisoning in cattle by plants stated that in young cane stunted by drouth he had noted fatal results in from 8 to 15 minutes. The cattle apparently died without a struggle. An analysis of some of the plants showed 60 to 80 per cent. prussic acid, the quantity decreasing as plant became larger. It is believed that prussic acid is due to the action of an enzym on a glucocide and that it is held in solution through plant nourishment. As soon as plant life is cut short by harvesting the prussic acid volatilizes and consequently the cured plant has no injurious effect upon animal consuming it. Dr. Lucky discussed the subject of poisoning by *crotolaria sagitalis* (rattle-box plant). Some of the symptoms noted are: becoming lazy, yawning, standing resting one leg, hip dropped, etc.

Meeting adjourned.

STOCK JUDGING.

At 2 P. M. the veterinarians in attendance assembled in the fine stock pavillion, Kansas City Stock Yards, where a demonstration of cattle judging was given by Prof. W. J. Kennedy, of the Iowa State College. A Shorthorn bull was first presented. A talk upon the value of the animal from beef standpoint was discussed. The various parts in regard to their value upon the block was thoroughly discussed and comparison drawn between the two leading beef breeds, viz., Herefords and Shorthorns. The talk brought out many points of value. The Hereford men are making an effort to breed cattle with heavier loins and hind quarters and with lighter fore quarters.

Meeting adjourned.

LITERARY PROGRAM RESUMED.

7.30 P. M. Meeting called to order by Dr. Anderson. The first paper presented was by Dr. H. T. Hahn, Falls City, Neb. The paper included a report of a case in which a foreign body had entered the thoracic cavity, penetrating the lung tissue. The wound was cleansed and treated with antiseptic precautions. It healed and the animal made a perfect recovery.

Dr. F. M. Starr, Odessa, Mo., presented a paper; subject, "Cattle Poisoned by Fungi on Elders." Some of the symptoms of the cattle poisoned were: Sub-normal temperature, diarrhoea, œdema of sternum, accelerated respiration, pulse scarcely perceptible, nervous, would lie apart from the balance of bunch. The treatment administered was one pound Epsom salts and one ounce pulv. belladonna. No deaths occurred. Discussion was taken part in by Drs. Norton, Lucky, and Knowles.

Dr. W. Warren of Sedalia, Mo., sent his paper on "Quittor," which the Secretary read at this time. The paper was discussed by Drs. S. T. Miller, Moore, and others. Dr. Moore gave an excellent talk upon the methods employed at the Kansas City Veterinary College in treating quittor. After operation, which consists in removing the lateral cartilage and diseased tissue, the parts are sterilized with formalin solution, then mopped dry with aseptic cotton and parts filled with iodoform. Some oakum, which is filtrated with iodoform, is placed over the wound, then firmly bandaging the parts down with tar bandages. The bandages are left on for four or five weeks. Out of ten cases only one proved a failure. In this case the flap consisted of scar tissue due to previous operation. The bandages are six yards of unbleached muslin. Two dozen are prepared at one time, placed in a can and pine tar poured over them. In a few hours the tar has thoroughly penetrated all parts. It is found that the tar does not soak into the bandages if they are made from muslin that has been starched and bandages tightly rolled.

Meeting adjourned.

IN THE STOCK YARDS AGAIN.

Meeting again reconvened 8 A. M. February 14, 1906, in fine-stock pavillion at Kansas City Stock Yards.

Prof. Kennedy said: "Among the qualities a good judge must possess is first to be a close observer: to see things quickly and accurately. Second, judgment: to be well balanced in his judgment. Third, ideal type of the animal in mind which he is judging. Among things to keep in mind were, first, market demand. The type that brings the highest price. To keep in mind the breeding of heavy parts that bring the highest value upon the block; second, breeding type of the animal, which includes color, weight, conformation, various points of development of head and neck, fore quarters, body, and hind quarters. The idea was first to determine the weak and then the strong

points of the individual. The length and depth of the body, lowness to ground, straightness of top and under lines. Things to be observed in observing from behind are width of quarters, straightness of legs; from in front, character of head, width of forequarters, constitution as determined by width and depth of chest. Compact and smooth quarters, softness of skin, covering of ribs, back, loins, etc., and mellowness of coat, were among the other points mentioned. The buyer of beef cattle should bear in mind:—the killing percentage, proportion of cut in back, loin and hind quarter, the quality of meat. Under points that indicate good feeding qualities were mentioned:—Deep in the flanks, low to the ground, smoothness of hips, tail, heads straight and low. Among the important points to be taken into consideration from breeding standpoint of Shorthorn are: General appearance; conformation; length, width, and depth, low to the ground; quality and natural flesh; width between the eyes; shape of heads and horns and color. In this type red, red and white or roan are allowable. Color of nostrils should be clear, etc.; bone should be medium size; small joints; head not too heavy; straight in the legs and not down in the pasterns. Three heifers and three bulls of Shorthorn and the same numbers of Hereford were presented in their turn and those present were provided with score cards and each tried his hand at judging.

At 10 o'clock the judging adjourned and a meeting continued at the horse sales pavillion, where a talk upon the breeding and judging of horses was given. Some of the interesting points in Professor Kennedy's remarks were: The man who breeds horses without type and simply has horses to sell is a failure from a financial standpoint. In the market demand for horses the draft horse occupies one of the most prominent places. They are easily reared, and when sound or serviceably sound are of high market value. The price of such animals is gauged by the weight of said animal. Each additional 100 pounds from 1600 to 1800 raises the value \$25; from 1800 to 2000 pounds \$50; every 100 pounds over 2000 pounds \$100. The prices of heavy harness, carriage and coach horses are arranged in like manner. The heavy harness, carriage and coach horse wear collar and back pad, may not be over 14 hands, and weigh 1000 to 1300 pounds; should be good action, plump in form. The prices of such range from \$200 to \$3000. Those 15 to 16 hands are the most popular. The roadsters should have trotting speed with finish; head and neck should

be clean cut; not so plump as the coach horse. The European plain-gait saddle horse has short tail and mane and can walk, trot, canter. The American gaited saddle horse has long tail and mane and can walk, trot, canter, pace, foxtrot, etc. The gaited saddle horse sells for a higher price than the plain gaited. A type of coach and draft horses was presented and a talk on the various points of each was made. Among the points brought out were that the draft horse should be low to the ground; wide across the heel; the width across the heel should be one-half the distance from the toe to the heel. A horse with an upright pastern is regarded as prone to develop side bones.

Adjourned to luncheon.

At 2 P. M. the judging of horses was resumed. Three Belgian stallions were presented; all in attendance were provided with score cards. The experience in judging of the various types of horses under so competent an instructor as Professor Kennedy was greatly appreciated by all. In his visit to Belgium he observed that horses worked at an age of 18 months were consequently shod younger and as a result possess smaller feet. Two draft geldings furnished by Swift & Co. were presented and scored; J. Crouch & Son also furnished German coach and Percheron stallions.

Meeting adjourned at 5 P. M., ending the most interesting meeting in the history of the Association.

B. F. KAUPP, *Secretary*.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-fourth meeting was called to order by President H. S. Smith, of Albion, in Parlor A, Downey House, Lansing, Feb. 6, 1906.

City Attorney O. J. Hood, representing the Mayor of Lansing, gave an address of welcome in a very neat and pleasing manner, which was responded to very appropriately by Dr. G. W. Dunphy, of Detroit.

The following members were present at roll-call:—Drs. Henry M. Armour, Litchfield; W. L. Brenton, Detroit; J. Black, Richmond; Hal L. Bellenger, Plainwell; F. M. Blatchford, Brighton; W. J. Byers, Charlotte; Wm. Coxe, Mayville; D. W. Curtis, Cadillac; D. Cumming, Port Huron; T. G. Duff, St. Louis; Frank Duncan, Ithaca; C. C. Dauber, Sturgis; G.

W. Dunphy, Detroit; J. S. Donald, Bay City; W. H. Erwin, Howell; M. E. Elzinga, Grand Rapids; R. F. Erwin, Alma; Geo. Fitchett, Caseville; Thos. Farmer, Grand Blanc; H. M. Gohn, St. Johns; Geo. D. Gibson, Adrian; James Harrison, Maple Rapids; W. S. Hamilton, Chelsea; Wm. Jopling, Owosso; J. J. Joy, Detroit; C. L. Jones, Monroe; A. McKercher, Lansing; R. W. McDonald, Flint; Geo. C. Moody, Mason; Robertson Muir, Grand Rapids; H. Wynn Nobles, Hastings; C. C. Petty, Lake Odessa; Wm. J. Rook, E. Holland; J. B. Stevens, Yale; H. S. Smith, Albion; C. C. Slaght, Macon; Z. Veldhuis, Freemont; Geo. Waddle, Kalamazoo; Geo. A. Waterman, M. A. C.; C. A. Waldron, Tecumseh; J. C. Whitney, Hillsdale; J. E. Ward, Perry; P. W. Wooley, Lapeer.

Honorary members present: Drs. H. P. Baker, Lansing; Prof. Chas. E. Marshall, M. A. C.

Visitors present:—Drs. W. L. Mills, Peru, N. Y.; T. L. McConnell, Warsaw, N. Y.; E. I. Rishel, Sturgis; A. E. Alexander, Williamson; W. A. Haynes, Jackson; W. F. Carr, Bay City; D. S. Krull, Union City; R. C. Rolls, Eaton Rapids; H. E. Rea, West Branch; John W. Will, Flushing; and T. H. Buckingham, Stockbridge.

Ladies present:—Mrs. S. Brenton, Mrs. J. C. Whitney, and Mrs. G. W. Dunphy.

Dr. H. S. Smith delivered his address as President, which was as follows:

PRESIDENT'S ADDRESS.

“Ladies and Gentlemen and Fellow-Practitioners:

“It affords me great pleasure upon this occasion, the 24th annual meeting of the Michigan State Veterinary Medical Association, to most cordially welcome you as you assemble once more in counsel for the further advancement and edification in behalf of the noblest of all professions, viz., administering to the wants of our dumb friends who cannot help themselves but suffereth and complaineth not. I commend in you this spirit of determination, which brings you together year after year, to glean and exchange knowledge that you and your fellow-practitioner may be of greater value in assisting the onward and upward progress of your profession; and may your earnest endeavors be rewarded by the success they deserve, viz., by placing our noble profession on the plane it belongs with its sister profession, and this reward surely must come, and which can only be reached by seeking for those qualities which ennoble us

and qualify us that we become indispensable as professional citizens in the community in which we labor, hence thus we will raise the standard of the veterinarian far above where his kind have so long held him. So let us always be mindful of the fact that each and every act of ours, whether professionally or otherwise, are the only means by which our clientele and the public may determine our standing and through which we may receive and maintain professional respect and appreciation, and as we are individually so shall we be collectively as a State association; and establish professional respect and appreciation throughout our State. And the same verdict may be applied to us as a national association or body, from which is determined our standing as a body of national benefactors and contributors to America's science. Hence, it is not far-fetched in saying that we as professional individuals are directly responsible in a degree for the standing of the same in the eyes of the veterinary world, and I believe that this was the sentiment of the pioneer members of our association when they met together twenty-four years ago and organized this association from which has resulted a great deal of good, which you and I are to-day unconsciously enjoying. Since that time the pioneer members and the increasing membership have worked consistently for its betterment and should have accomplished all that could be desired were it not for rivalry and contending influences; and I wish that every qualified practitioner within our State would feel it incumbent upon him to consider himself responsible as an individual for our professional standing in Michigan, for we are its sponsors in the eyes of the veterinary world, and if Michigan does not keep pace with the wonderful strides which are being made throughout this and other countries we individually and collectively are responsible and must stand the reflection of criticism by our professional brethren of other States. Whereas, if, on the other hand, we raise the standard, so do we rise and merit all honors to our profession that other States are enjoying, as all other principal States have succeeded in obtaining satisfactory legislation to control the practice of veterinary medicine, it is with regret that we are obliged to acknowledge our veterinary legislation in Michigan falls far short of the ideals of us who are members of the Michigan State Veterinary Medical Association, and now I appeal to the younger members of our profession and also to those who are about to join our Association to-day; in the name of the profession you represent and in honor of the various colleges from which you have graduated

and for the sake of the standing of the veterinary profession in the State of Michigan, to extend to us your best endeavors and active assistance in furthering the progress of our profession, and I assure you if every qualified practitioner in the State of Michigan will but place a shoulder to the wheel with us in our endeavors, we will accomplish our object and each individual practitioner will reap a lasting benefit, and be the means of causing our State to become a more important factor in America's scientific progress. We have reason to look upon some of our sister States with envy and pride in the rapid strides that they are making and the recognition that they are demanding and being rewarded; among them Pennsylvania. With gratification we note that within the last year she has made appropriations of \$200,000 for research in her veterinary and agricultural pursuits, also sent the Dean of their veterinary department as a delegate and representative to the World's International Medical Congress at Budapest this year. But all this was not given without being asked for; she first proved herself worthy of such a demand, then demanded and received it, thus proving that scriptural passage, 'Ask and ye shall receive, etc.' This same stands good for Michigan, when we prove ourselves worthy of it. A word here with reference to our sanitary laws and commissions might not be amiss. While Michigan to-day is enjoying the good fortune of being as free and if not freer from infectious and contagious communicable diseases than any other State, she may not always be so favored by this good fortune; while our commission has been a careful and watchful one, always exerting the best of their abilities in behalf of the State, and deserve credit for the work done in the past, taking into consideration their limit of appropriation, etc., which prevents them from having suitable and proper means of carrying on experimentations with the various diseases of our country, and which are liable at any hour to crop out within our State and from which much valuable time would be lost before the proper methods of control and eradication might be inaugurated, and the financial loss of the live-stock industry in the meantime would suffer fourfold the amount necessary for maintaining a suitable place and provide an annual salary for a qualified veterinarian, who could then devote all his time and attention to said commission, and I am strongly in favor of having our State veterinarian paid a salary sufficient that he can devote his entire duties to research and experiments of such as would be of value to said commission and State and that a suitable place be

provided for him, if not otherwise by having privilege and access to the bacteriological department of our Agricultural College in Lansing, Mich., and if such arrangements could be made the said State Veterinarian to locate permanently in Lansing during his term of office, and devote his entire attention and best services to this work, which is impossible to obtain now under the system of paying them per diem. Still we have as a nation been slow in realizing the needs for such work ; so much so, that the Germans, who are considered a plodding nation, find it opportune to express themselves by an article, which appeared in the *Seuchen Versuchsstationer*, and was copied by our AMERICAN VETERINARY REVIEW a few months ago, which reads thus :

“It is strange that the United States, with their vastly greater live-stock possessions, have not before this made more ample provisions for investigation concerning diseases of animals and for veterinary education.”

“Yet I feel that we can accept this with a German accent. However, we as a profession cannot but accept with regret that ‘our country continues to be the only one of the leading nations of the world that maintains as civilians those who are engaged as veterinarians in our army service,’ and you and I as individuals must stand for this criticism for not qualifying our demands to the extent that they will be recognized by the head of our military department and government. So let us get to work and do our share in remedying this neglect by uniting in a spirit of friendship and mutual coöperation, which are the essential factors in the solution of all difficult problems. Let us bury all bickerings and prejudices, which have retarded the advancement of our profession in the past, and continue the progress that has been made until the standing of the veterinary profession in Michigan becomes the envy of our sister States and a credit to the nation we represent professionally.”

After the President's address, the following gentlemen made application for membership :

- A. McKerracher, Bay City, Mich., O. V. C. '78.
- Ralph C. Harris, Fenton, O. V. C. '04.
- W. A. Haynes, Jackson, Chicago College, '03.
- A. E. Alexander, Williamson, O. V. C. '93.
- B. C. Smith, North Branch, O. V. C. '03.
- A. E. Macbeth, Battle Creek, O. V. C. '89.
- H. E. Rea, West Branch, O. V. C. '02.
- John W. Will, Flushing, O. V. C. '97.

Dan Hisey, Saginaw, West Side, O. V. C. '94.
R. C. Rolls, Eaton Rapids, O. V. C. '94.
D. S. Krull, Union City, O. V. C. '00.
T. H. Buckingham, Stockbridge, O. V. C. '92.
T. H. Attridge, Harbor Beach, Detroit College, '94.
W. F. Carr, Bay City, O. V. C. '05.
A. W. Simeral, Kalamazoo, Uni. of Missouri, '05.

The applications were referred to the Executive Committee, which recommended as follows, that Drs. Haynes (vouchers Joy and Dunphy), Alexander (Smith and W. H. Erwin), B. C. Smith (Smith and Black), Carr (Dauber and Mix), Attridge (Smith and Black), Macbeth (Smith and Bellinger), Krull (Smith and Armour), Rolls (Smith and Black), Rea (Smith and Black), Will (Smith and McDonald), Hisey (Sutherland and Smith), and Buckingham (Smith and Black), be admitted to membership, and that the applications of Drs. McKerracher and R. C. Harris be laid over, as they were unaccompanied by the required fee. Also that the application of A. W. Simeral be held up until the college from which he graduated be investigated, and, if after investigation the Secretary and President be satisfied, Dr. Simeral, upon the payment of fee, be admitted.

Moved and supported that the rules be suspended and that the Secretary be instructed to cast the vote of this Association for the following gentlemen: Drs. Alexander, Haynes, B. C. Smith, Carr, Attridge, Macbeth, Krull, Rolls, Rea, Will, Hisey, and Buckingham. Carried.

The Secretary then cast the ballot and President Smith declared the gentlemen elected to membership.

Moved and supported that the President appoint a committee to ascertain how many would attend the banquet. Drs. Dunphy and Joy were appointed as such committee. On motion the President also appointed a committee to arrange for transportation to the M. A. C. Dr. Bellenger was appointed as such committee.

The annual report of the Secretary and Treasurer was read, and referred to the Financial Committee.

Dr. James B. Bradley, Michigan Auditor-General, gave an address, which was very much appreciated. He spoke in a complimentary manner of the veterinary profession and the good that was being done in stamping out disease, of the vast importance of the horse, of the strides of the veterinary profession in the past few years and the importance of the veterinarian in guarding the public against impure meat products.

Moved and supported that we give Dr. Bradley a vote of thanks for his able and interesting address. Carried by rising vote.

Correspondence was read from Governor Warner, Representative Morrice and from absent members, which was received and placed on file.

REPORTS OF COMMITTEES.

Legislation.—Dr. Wells, chairman, being absent, this report was laid over until the following day.

Intelligence and Education.—Dr. Jopling reported quite fully for this Committee. He spoke of the fine improvement on veterinary lines. Thought it was good policy to get the professors at the M. A. C. to give us their support and good will. Was pleased to see two of them on our program. Speaking of the financial aid extended to the Veterinary Department of the University of Pennsylvania, he hoped such assistance could be procured from our State to establish a veterinary department at our Agricultural College, or at the U. of M.

Finance.—Dr. Nobles, speaking for the Committee, said they had examined the books of the Secretary and Treasurer and found everything correct and a balance on hand of \$70.10.

Disease.—Report postponed until the following day.

Moved and supported that we adjourn until 7 o'clock P. M.
Reconvened at 7.30 P. M.

ELECTION OF OFFICERS.

Election of officers was first in order. Moved and supported that the President appoint two tellers. Drs. Joy and Duff were appointed.

The following were elected :

President—James Harrison, Maple Rapids.

First Vice-President—R. W. McDonald, Flint.

Second Vice-President—T. G. Duff, St. Louis.

Third Vice-President—George D. Gibson, Adrian.

Secretary-Treasurer—J. Black, Richmond.

Directors—Hal L. Bellenger, Plainwell; H. M. Armour, Litchfield; W. L. Brenton, Detroit; J. B. Stevens, Yale; A. McKercher, Lansing; D. W. Curtis, Cadillac.

CASE REPORTS

Dr. J. C. Whitney's report on "My Experience With Cribbers" was well received. The Doctor claimed good results from surgical treatment, but in every case it would recur after six or eight months. Dr. Joy in discussing this subject asked

for a difference between a cribber and a wind-sucker, claiming they are different conditions. The Doctor was of the opinion that in the wind-sucker air was swallowed and that it caused indigestion and poor condition. Dr. Dunphy said he did not believe air was swallowed or sucked into the stomach. Dr. Armour thought it was possible. Drs. Smith and Duff also took part in the discussion of this subject.

Dr. R. W. McDonald read his case report, "A Supposed Case of Rabies." He cited a case that came under his observation in which a dog showed the symptoms of rabies after being bitten by another dog, supposed to be rabid. The former was destroyed about 14 miles from home. The owner went out and got the head, which Dr. McDonald sent to Dr. Marshall, Bacteriologist of the M.A.C. The latter injected some of the brain into rabbits and got no reaction. Dr. Muir discussing this case, said that he had seen but very little rabies in dogs, but had seen much among horses and cattle. Prof. Marshall said that the brain sent him by Dr. McDonald was in such a state of decomposition that the results might not be reliable and that possibly the dog might have been rabid. He also claimed that the period of incubation might be as short as 7 or 9 days, according to virulence of the virus. Dr. Dunphy also made this claim, but the period was usually from 14 to 24 days. In cows from 13 to 27 days. Dr. Armour's experience was 13 to 47 days.

Adjourned to banquet at Church Parlors of the Episcopal Church.

MICHIGAN AGRICULTURAL COLLEGE—FEB. 7TH, 9.30 A. M.

Met in the stock-judging class room for clinic, where the following operations were performed:

Operation consisting of dividing the tendon of the peroneus muscle for stringhalt, by Dr. Hal L. Bellenger.

Operation upon an alleged cryptorchid, Dr. Dunphy.

Operation of trephining for the purpose of exploring a facial fistula, Dr. Geo. M. Moody. This operation revealed a tooth deposit that was in a caries condition and was thought to be the cause of the fistula.

Adjourned to the Veterinary Laboratory, where Dr. McDonald operated on a bitch, performing ovariectomy, and Dr. Dunphy operated on a wry tail.

1.30 P. M.—Chapel, M. A. C.

Meeting called to order by President. Roll-call.

Prof. D. C. Smith, of the Experimental Station of the Agricultural College, being in a hurry to be excused, was called upon for his address upon "Live-stock and Public Health." Among other things, the Professor said there was a great difference in the action of tuberculin owing to the quality, and he thought a pure article should be provided by the State authorities and be placed in the hands of every veterinarian requiring it. In conclusion he extended the good will of the M. A. C. to the visiting vets and asked them to look over their live-stock and farm and to come again. Upon motion, a vote of thanks was extended to Prof. Smith for his contribution to our program.

Dr. James Harrison read an interesting paper upon an interesting subject, viz: "Chemical Knowledge of Food Stuffs as an Aid to Diagnosis."

Dr. Veldhuis read a very interesting paper entitled, "Impressions Received at the A. V. M. A."

The Committee on Legislation through Dr. H. M. Gohn made a report at this time. Dr. Gohn stated that owing to opposition from those high in the council of the powers, that nothing was accomplished this year. Dr. Black reported that when conditions existing were discovered efforts were withdrawn owing to the hopelessness of our prospects and that only about \$22 had been expended for this purpose during the year. Dr. Harrison advised the necessity of beginning our efforts by educating the farmers and enlisting them in our behalf. Dr. H. S. Smith also advised this course.

Committee on Diseases was also called upon to make its report. Dr. Dunphy, chairman, gave a very interesting talk and exhibited some specimens of intestinal calculi found in the alimentary tract of one of P. D. Co.'s laboratory subjects. A nail formed the nucleus and the deposit was apparently cement, supposed to come from the floor through the animal licking. Dr. Dunphy called upon Dr. J. B. Stevens, of Yale, to report a mysterious disease he had encountered at Byron, Michigan. Dr. Stevens said the outbreak occurred in a stable of imported stallions. The symptoms were as follows: temperature from 103 to 107 F., painful grunt with each breath, with each expiration the blood would spurt from both nostrils with a gush and would continue until the discharge would be as clear as water, head pendulous, constipated, urine dribbling almost continuously. The majority of those stricken recovered after a long and critical period of convalescence. No such disease had been encountered by any of the gentlemen present.

Dr. George A. Waterman, Professor of Veterinary Science at the M. A. C., gave an address at this time entitled "Thoughts."

The Executive Committee reported favorably upon A. E. Alexander's application, and recommended that Dr. Wilkinson be suspended for the non-payment of dues and given the privilege of making application as a new member. The report and recommendation were received and adopted.

Moved and supported that a meeting of this Association be held in Detroit next fall during the State Fair. Arrangements and date to be left to the officers. President-elect Harrison was called upon and after a short address he appointed the following standing committees:

Intelligence and Education.—Dr. F. M. Blatchford, Brighton; Dr. H. L. Bellenger, Plainwell; Dr. J. B. Stevens, Yale.

Diseases.—Drs. Z. Veldhuis, Fremont; William Jopling, Owosso; Prof. C. E. Marshall, M. A. C.

Finance.—Drs. C. C. Petty, Lake Odessa; George Fitchett, Caseville; H. Wynn Nobles, Grand Ledge.

Legislation.—Drs. C. A. Waldron, Tecumseh; J. E. Ward, Perry; C. C. Dauber, Sturgis.

Resolutions.—Drs. W. H. Erwin, Howell; W. H. Wilkinson, Holley; C. C. Slaght, Macon.

Press.—Drs. W. L. Brenton, Detroit; D. S. Krull, Union City; D. W. Curtis, Cadillac.

Clinic.—Drs. S. Brenton, Detroit; J. J. Joy, Detroit; G. W. Dunphy, Detroit.

Moved and supported that we adjourn to meet in Detroit, State Fair time. Carried.

J. BLACK, *Secretary.*

TEXAS VETERINARY MEDICAL ASSOCIATION.

Pursuant to a call issued by President Flowers, the members assembled at the Fair Grounds, Dallas, March 19, for their fourth annual meeting. It having been decided by the Executive Committee that the programme this year should consist of clinics and an evening session only, the members proceeded thence to the commodious hospital of Dr. L. E. Warner, at 186 Thomas Ave., where several cases, gathered through the efforts of the Dallas members, Drs. Flowers, Warner and Langley, awaited their attention. After these were inspected, examined and discussed, several successful operations were performed by Drs. Bray, Lewis, Marstello and Francis. An interesting and

spirited discussion ensued upon the exhibition of several other interesting cases. This concluding the first part of the day's program, the members separated to meet again at the Elite at 8 p. m., where a very enjoyable and delightful *menu* awaited them. For an hour or two the pleasures of the table added zest to social and fraternal converse, while matters professional were touched upon informally. At its conclusion the regular order of business was entered upon as follows:

Roll-call:—The following members responded: Drs. M. Francis, College Station; F. G. Cook, Paris; W. G. Langley, Dallas; L. E. Warner, Dallas; Jas. Lewis, McKinney; Wm. M. McKellar, Ft. Worth; S. G. Bittick, Ft. Worth; G. R. Flowers, Dallas; A. E. Flowers, Dallas; T. A. Bray, El Paso; W. A. Knight, Houston; E. L. Lewis, Waxahachie.

The minutes of the last annual meeting were read and approved.

The Executive Committee submitted the following report:

"We, the Executive Committee of this Association, have examined the applications and credentials of the following applicants for membership, and recommend them to the ballot of the Association: Drs. Ross Marstello, College Station; T. W. Watson, Corsicana; L. E. Johnson, El Paso; R. W. C. Lowry, Amarillo; J. C. Brown, Cleburne."

(Signed) "A. E. Flowers, President.

"T. A. Bray, Vice-President.

"W. G. Langley, Treasurer.

"E. L. Lewis, Secretary."

Treasurer Langley submitted the statement of receipts and expenditures since last meeting, which was approved.

The admission of new members now being in order, the following names were presented, as per report of Executive Committee, and upon ballot were unanimously elected to membership:

Ross Marstello, D. V. M., Ohio State Univ., '06, College Station.

T. W. Watson, V. S., Ontario, '87, Corsicana.

L. E. Johnson, D. V. M., U. of Pa., El Paso.

R. W. C. Lowry, D. V. S., K. C. V. C., '05, Amarillo.

J. C. Brown, D. V. S., U. of K. C., '04, Cleburne.

The application of Dr. J. W. Burby, of San Antonio, held over from last meeting, was now considered, and it being shown that the error was unimportant, Dr. Burby was unanimously elected to membership.

The election of officers for the ensuing year resulted as follows:

President—T. A. Bray, El Paso.

First Vice-President—L. E. Warner, Dallas.

Second Vice-President—Jas. Lewis, McKinney.

Secretary—E. L. Lewis, Waxahachie.

Treasurer—M. Francis, College Station.

Under new business, the program for the next meeting came up for discussion. Dr. Lewis, of Waxahachie, moved that we include a series of brief papers along practical lines to be presented and read at the next meeting. Dr. Langley moved a committee composed of the President and one member on place of meeting, be appointed to map out program as suggested. Carried.

A vote of thanks was extended Dr. Warner for his courteous invitation to the Association to utilize his finely-equipped hospital for the morning clinics. A vote of thanks and appreciation was also extended the retiring officers of the Association, for their zeal in behalf of the Association and profession during the past year.

Photographs of the operations at the morning clinics having been taken by a city photographer, it was moved by Dr. Warner, duly seconded, that they be purchased by the Association, provided same proved satisfactory. Carried.

Dr. Langley was appointed as a committee to pass upon and purchase one for each member.

Dr. Bray here exhibited a specimen of sarcomatous growth from the eye of a steer. This growth, it seems, is not uncommon in some regions, and is of an insidious and serious character, involving the entire orbit, the soft tissues and membranes adjacent to eye, and finally enveloping entire head. Upon microscopical examination its cancerous nature was apparent, it being composed of round cells seemingly of embryonic connective tissue, with traces of epithelial which had the appearance of invaginated conjunctivæ. The Doctor stated the lesion was most prevalent among "white faces," and always attacked the choicest of the herd. He attributed them to infection by the horn fly.

Dr. Fallsetter testified to seeing the same in the horse and mule. One of the horses was an Albino. He noted a gradual enlargement of the membrana nictitans. Treatment of six weeks of no avail. Enucleation was performed, he finding generalized necrosis of ball and bones of orbital fossæ. Most cases observed began in summer. Dr. Marstellio stated he saw

two cases in horses and one in dog. In his opinion, it began in horses on the cornea and in cattle on membrana nictitans. After operating on horse he had a recurrence. It was the consensus of opinion of all who had had similar experience that medicinal treatment was futile, and the only satisfactory method was extirpation of all parts involved.

Dr. Falsetter, of Dallas, was called upon and responded in a happy and feeling manner, expressing his pleasure in being a guest upon such an auspicious gathering of the profession of the State. He prophesied great things for the future of the profession and urged ceaseless effort toward the uplifting and progression of the members as useful and honored citizens of the commonwealth. Dr. Falsetter is one of the pioneer veterinary surgeons of the Lone Star State, having settled here many years ago, when veterinary surgeons were almost unknown.

Judge Hawkins, of the Sanitary Commission, also a welcome guest of the Association, on being called responded in a felicitous speech, concluding with an earnest appeal that members take cognizance of the paramount importance of sanitary work in that it is fraught with so much that is vital and important to the welfare of any community. He emphasized the growing appreciation by the public of the intelligent efforts of trained men along these lines, and of its equal importance when studied and exercised by the veterinary practitioner, who is, and should be, in conjunction with the practitioner of human medicine, his co-adjutor and colleague in the guardianship of public health and hygiene.

While the attendance at this, our 4th annual meeting, was not as large as we hoped, still it was a very satisfactory and enjoyable one. The membership is steadily increasing, and it will not be long before we will have an association of which the State can well be proud. Veterinary legislation, as in the past, will be our slogan in the future, and this obtained all other matters will be easy. Recognition and protection are absolutely essential to establish for all time the status, socially and professionally, of the veterinarian. That "unique antique" of blow and bluster, of buckskin and blasphemy, that 4-plied quintessence of gall and galluses, the "hoss doctor" of old, so long the weapon with which the public hurled contempt at the profession, and for whose fat catalogue of sins of commission and omission the qualified veterinarian has had to bear the brunt and burden, will soon attune his unwashed ear to the requiem sounding in the distance.

There being no further business before the Association, on motion of Dr. Francis, duly seconded, the Association adjourned, subject to the call of the Executive Committee.

E. L. LEWIS, *Secretary*.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting was held at Hotel Hartford, Hartford, February 6, 1906, and was called to order by the President, Dr. Gardner, at 11.30 A. M.

The following responded to roll-call:—Drs. C. L. Adams, H. E. Bates, F. F. Bushnell, H. C. Balzer, G. T. Crowley, G. E. Corwin, Jr., B. K. Dow, J. H. Gardner, L. B. Judson, J. H. Kelley, P. T. Keeley, R. P. Lyman, G. W. Loveland, R. D. Martin, E. C. Ross, J. E. Underhill, H. Whitney, C. R. Witte, and H. L. Tower.

Visitors:—Drs. B. D. Pierce and Harry Lukes, Springfield, Mass.; J. A. McLaughlan and L. T. Dunn, Providence, R. I.; C. T. Frye, River Point, R. I.; R. H. Davis, Bridgeport, Conn.; W. H. Pullen, Greenwich, Conn.; G. A. Smith, New Haven, Conn., and H. O. Averill, Washington Depot, Conn., Commissioner of Domestic Animals, also an honorary member of the Association.

Minutes of the previous meeting were read and approved.

Letters were read by the Secretary from the honorary members, replying to notices informing them of their election to honorary membership in the Association at its last meeting. It was voted that the letters be placed on file as property of the Association. Several other communications were read and laid on the table until other business could be transacted.

Reports of the Secretary and the Treasurer were read and accepted.

The Board of Censors reported unfavorably on the application of George A. Smith, V. M. D. A ballot was called for, resulting in a unanimous rejection of Dr. Smith's application.

The following applications for membership were read and referred to the Board of Censors:

Robert Holt Davis, D. V. S., N. Y.-A. V. C., Bridgeport.

W. H. Pullen, V. S., O. V. C., Greenwich.

William J. Glasgow, V. S., O. V. C., Springfield, Mass.

The election of officers resulted as follows:

President—Dr. G. W. Loveland.

First Vice-President—Dr. J. H. Kelley.

Second Vice-President—Dr. R. D. Martin.

Secretary—Dr. B. K. Dow.

Treasurer—Dr. Harrison Whitney.

Board of Censors—Drs. Thos. Bland, J. H. Gardner, F. F. Bushnell, L. B. Judson, and J. E. Underhill.

Adjourned for dinner at 12.45. Reconvened at 2.30 P. M. Under the head of new business, it was voted to pay the Secretary a salary of \$25 a year, to begin with the ensuing year.

Dr. R. P. Lyman presented a bill from Attorney Garvan, of Hartford, for \$100, balance for services in securing the present veterinary law for the Association. Dr. Gardner made a motion that Dr. Lyman see Lawyer Garvan and inform him that the Association considered he had received sufficient fees for his services and that the Association could do no more. Motion seconded and carried.

A letter was read from the Secretary of the Massachusetts Veterinary Association, asking if the Connecticut Association would accept financial assistance from their Association to make the New Haven meeting of the A. V. M. A. a New England convention as far as possible. It was voted that the Connecticut Veterinary Medical Association thanks the Massachusetts Veterinary Association for their kindly offer of finances and coöperation towards the entertainment of the A. V. M. A. in New Haven next August, and that as the Connecticut Veterinary Medical Association has invited the National Association, they desire to make it a State affair. The Connecticut Veterinary Medical Association would be pleased to accept and acknowledge any financial aid that the Massachusetts Veterinary Association may offer, and requests that a delegate or delegates from their Association be selected to serve upon the local committee of arrangements.

Motion made and seconded that the Association be a committee of itself to entertain the A. V. M. A. at the New Haven meeting, with a sub-committee composed of seven members, to be appointed by the President. Motion carried. The President appointed for the sub-committee, Drs. Ingram, Kelley, Ross, Whitney, Bland, Martin and Lyman.

Dr. Ross announced that suit had been brought against the Association by Dr. F. G. Atwood, who was expelled for unprofessional conduct at the annual meeting in 1904. The papers were served on Dr. Ross, setting forth the claim of \$1,000 damages. After the papers specifying the claim for damages had

been read, Dr. Lyman presented Dr. Atwood's resignation as a member of the Association and tendered his dues to date, saying Atwood claimed he was not legally expelled from membership and was therefore still a member of the Association. He stated he had talked the matter over with Dr. Atwood several times, and that Atwood had agreed to withdraw the present law suit if the Association would accept his resignation. This announcement started a lively discussion, in which most of the members freely and vigorously participated. After the case had been argued long and earnestly, it was voted that, provided Dr. Atwood will withdraw his suit against this Association, and make sworn affidavit signifying in writing over his signature that he will not bring further suit against this Association collectively or against any individual of this Association, that may have a bearing upon the lines of the present suit, his resignation will be accepted at the next meeting of this Association, and that he shall discontinue all further advertisement or publication of this affair. The Secretary was instructed to notify Dr. Atwood of this action.

Dr. Ross, chairman of the Committee on Resolutions on the death of Dr. Nathan Tibbals, offered the following :

"WHEREAS, It has pleased God in His infinite wisdom to call from this world our esteemed and honored professional brother, Nathan Tibbals, at the close of a long life of usefulness and success in his profession, and of kindness and assistance to all with whom he came in contact ; be it

"*Resolved*, That we, the Connecticut State Veterinary Medical Association, individually and as a body, pause for a moment to express our regret at the loss of so honorable a member of our Association and so good and true a friend of veterinary medicine, and to convey to his relatives and friends our sympathy in their bereavement and sorrow."

It was voted that the resolutions be adopted and spread on the records of the meeting and a copy be sent to the family of the deceased.

After the business of the meeting had been transacted, Commissioner on Domestic Animals H. O. Averill, an honorary member, gave a short address on sanitary conditions of keeping cattle in stables.

Dr. C. R. Witte read a paper on "Tuberculosis."

Dr. R. P. Lyman read a paper on "The Veterinarian in Connecticut: His Attainments and His Possibilities."*

* Published in the March REVIEW.

Dr. B. D. Pierce, of Springfield, Mass., gave an interesting description of an outbreak of rabies in Massachusetts and his experience in tracing the origin of the various cases.

Dr. L. T. Dunn, of Providence, R. I., spoke of the work his Association was doing toward veterinary legislation.

An interesting discussion followed each paper and address.

It was voted to hold the semi-annual meeting in New Haven at call of the President.

Meeting adjourned at 5.45 P. M. B. K. Dow, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular monthly meeting was called to order at 8.30 P. M., Dr. C. E. Clayton, the Vice-President, in the chair.

Roll-call dispensed with. Minutes of previous meeting adopted as read.

Members present: Drs. J. E. Ryder, C. E. Clayton, E. B. Ackerman, J. L. Robertson, J. E. Assing, C. Lamensdorf, Roscoe R. Bell, R. S. Mackeller, T. A. Keller, R. Dickson, D. J. Mangan, C. W. Shaw, J. J. Foy, R. J. Schreiber, T. G. Sherwood, A. O'Shea, W. Lellmann, G. F. Bowers, R. W. McCully, R. W. Ellis, G. H. Berns, and F. C. Grenside. Visitors: Drs. F. H. Miller, W. Reid Blair, T. S. Childs, A. Silkman, and Hayes; also students of the New York-American Veterinary College.

Dr. F. H. Miller read a paper on "Observations Made in the Diagnosis and Treatment of Parasitic Dermatitis of the Dog."*

Dr. Bell then took the chair, and a very instructive discussion followed on Dr. Miller's paper.

Dr. Wilfred Lellmann spoke on "Some Interesting Facts," during which he told of the results he has obtained in the use of bovovaccine. The Doctor's talk was very conservative, and he reminded the members that science has no country.

Dr. Miller reported a couple of dog cases; he recited the history of each, and Dr. Blair reported the results of a microscopical examination of one of them.

Dr. F. C. Grenside read a paper on "A Veterinarian at the Horse Show."* The discussion which followed revolved itself around a great number of practical facts, and settled some questions on the problems which a veterinarian meets at the horse show.

* Will be published in a later number of the REVIEW.

The subject of illegal practicing was then taken up and a motion was made and carried to establish a prosecuting fund by the aid of voluntary subscriptions.

Dr. Clayton moved to appoint a prosecuting committee of three. Dr. Ackerman moved to amend Dr. Clayton's motion; instead of three, have the committee composed of four members, the fourth being the President of the Association.

The original motion and its amendment were duly seconded and carried.

Dr. Ackerman moved, it was seconded and carried that the committee be empowered to employ agents and an attorney.

The President appointed the committee, which consists as follows: D. J. Mangan, chairman, E. B. Ackerman, C. E. Clayton, Roscoe R. Bell.

Meeting adjourned.

D. J. MANGAN, *Secretary*.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting was held at Belfast, April 11th, 1906, and consisted of a clinic at the hospital of Dr. Darling during the afternoon, at which a number of interesting cases were presented for treatment. Different operations were performed by all members present, and each case was thoroughly and ably discussed by all. The clinic proved, as usual, to be a drawing card, and twelve members turned out and helped to make a most interesting and profitable afternoon.

At 7 o'clock the members adjourned to the Windsor Hotel, where a hearty supper was thoroughly enjoyed. The regular business meeting was called to order at the Windsor Hotel at 8.10 P. M., President, Dr. Blakely, in the chair. The following members answered to roll-call: Drs. Blakely, Augusta; F. E. Freeman, Rockland; Lord, Portland; Joly, Waterville; Darling, Belfast; McGillicuddy, Bath, and R. E. Freeman, Dexter. Visitors present were Drs. H. L. Stevens, Farmington, and Wm. Jackson, Belfast.

The minutes of the last meeting were read and approved.

The application of Dr. Pugsley, of Ashland, was read and accepted, and it was voted that he be made a member upon payment of initiation fee and signing Constitution and By-laws, and the Secretary was authorized to write him of same. Moved, seconded, and carried, that the Secretary notify all members who are back in dues to pay up to date or be suspended, and that the Secretary is to hold back certificates until all dues are paid.

Moved and carried that the books of the past Secretary and Treasurer be audited by the Executive Committee. Moved by Dr. Lord that the President look into the matter of Dr. W. H. Spear, of Portland. Carried.

In the matter of our new veterinary law, Dr. Freeman made complaint against one so-called horse doctor in his county, and asked the help or advice of the Association. Moved by Dr. McGillicuddy, of Bath, and seconded by all members present, that Dr. Freeman employ counsel and prosecute this man, and that the Association stand by what he does. Carried.

The next subject being the reading of papers. The Association had the pleasure of listening to a paper by Dr. A. Joly, of Waterville, entitled "Hog Cholera and Swine Plague." This was a fine paper, and the Doctor reported cases where he used the serum treatment with very gratifying results. This paper was fully discussed by all members present.

Dr. F. E. Freeman, of Rockland, was excused from reading paper by reporting a number of cases, especially where he performed cæsarian section on the hog and bitch with very flattering results.

Distemper in dogs was fully discussed by all members and all different remedies in the treatment of the disease were discussed.

Tuberculosis was discussed by all members, and was very interesting.

Voted that the next meeting of the Association be held in Augusta at Hotel North the second Monday in July.

Papers to be read by Drs. F. E. Freeman and W. S. Lord. Communications to be read by Drs. Murch and Salley.

A vote of thanks was extended Dr. Darling, for the valuable clinic he prepared for the meeting; also to Dr. Joly for the able paper that he read.

Meeting adjourned at 11 P. M.

R. E. FREEMAN, *Secretary*.

INDIANA VETERINARY COLLEGE ALUMNI ASSOCIATION.

This Association met March 30, at 2 P. M., at the College Building. Roll-call developed the fact that it was the best attended meeting it has had. Ten new members were admitted. It was ordered that a banquet should follow the next meeting. One of the main features was that of urging the new members

to spend much time reading veterinary publications, books, new literature, etc., including especially the AMERICAN VETERINARY REVIEW.

Officers elected for the ensuing year were as follows:

President—Dr. J. J. Herron, Tipton, Ind.

Vice-President—Dr. H. Alhersmeier, Indianapolis, Ind.

Secretary-Treasurer—Dr. Ferd. A. Mueller, Indianapolis, Ind.
FERD. A. MUELLER, *Secretary*.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

FORTY-THIRD ANNUAL MEETING, NEW HAVEN, CONN., AUGUST 21 TO 24, 1906.

5246 OSAGE AVE., PHILADELPHIA, PA., April 16, 1906.

To the Members of the American Veterinary Medical Association:

As has been previously announced through the columns of the REVIEW, the next meeting will be held at New Haven, Connecticut, August 21 to 24, 1906. The date being only four months distant it is necessary for us to become active in preparation of the program. It is, therefore, requested that the members very soon send to this office the titles of their papers for this meeting so that the question as to the character of the program may be settled early. There are many who defer their decision in regard to attendance until they know what the program is going to be. An early announcement of the contributors and their subjects will aid greatly in getting a large attendance.

The report of the Cleveland meeting has been sent out and is now in the hands of the members. It is the largest book yet issued and is replete with good things. This book is certainly worth as much as the yearly dues, so that in this item alone each member has returned to him the annual outlay for his membership. In each case the report has been sent to the address last furnished to the Secretary's office. If any member has failed to get his copy, it is likely due to a change of address of which this office has not been notified. In this connection I should like to call attention to the fact that it is important to inform the Secretary immediately upon changing address.

Our membership should be much greater than it is. There are many good men scattered all through the country who ought in their own interest as well as that of the profession to be members. Each member has a duty to perform in directing these

men into our organization. Our growth would be more rapid if our missionary spirit were stronger. The amendment adopted at St. Louis requiring the application for membership to be in the Secretary's office thirty days before the meeting, resulted in fewer than usual securing election at Cleveland. Now that plenty of notice has been given this should no longer stand in the way, and the record at New Haven should far exceed that of any previous meeting. Remember that the application must be in before July 23, 1906. Application blanks and information will be furnished by your resident secretary or by this office. The list of resident secretaries may be found in the report of proceedings.

Let each one determine now to contribute his full share to the success of the meeting and start at once with the aim to accomplish glorious results at New Haven.

Sincerely yours, JOHN J. REPP, *Secretary*.

* * *

A MODEL RESIDENT SECRETARY.

Editors American Veterinary Review:

DEAR SIRs:—I am sending you the following letter to print as a sample of the sort of enthusiasm which if generally shown would soon swell our membership to the point at which it should be. My hope is that it may act as a ferment to the entire number of Resident Secretaries, yes, even to the whole Association.

Respectfully yours, JOHN J. REPP, *Secretary*.

"NASHVILLE, TENN., March 25, 1906.

"*Dr. J. J. Repp, Philadelphia, Pa.*

"DEAR DOCTOR REPP:—Your circular letter to Resident Secretaries received and contents carefully noted. It is quite an explanatory production and is O. K. for the purpose for which it is intended. I also received the copies of Constitution and By-laws and application blanks. Please send me about three or four more of each, as I am liable to need them. I expect to visit *each* and *every* eligible veterinarian in Tennessee and make a personal appeal for his membership in the A. V. M. A. I feel almost safe in promising to put the application of *every* eligible man in this State in *your* hands before the New Haven meeting. Yours truly,

G. R. WHITE."

A DESPATCH from Fort Dodge, Iowa, dated April 16, says: "M. Stegner, a veterinarian, stooped over the bedside of his dying wife to catch her last words to-day and fell dead beside her."

NEWS AND ITEMS.

DR. M. R. THYNGE, of Morton, N. Y., has located in Charlotte, Mich.

PROF. CURIE, the discoverer of radium, was killed by being run over on April 19.

DR. F. V. MATTHEWS has established a nice practice and a very neat veterinary hospital in McKeesport, Pa.

PROF. WM. L. ZUILL, formerly of Philadelphia, Pa., is professor of laryngology and rhinology in the College of Physicians and Surgeons of Los Angeles, Cal.

DR. WM. NICHOLSON has been appointed city veterinarian of Allegheny, Pa., succeeding Dr. C. W. Boyd, owing to changes in political administration and authority.

DR. HARRY E. EMERY, of Pittsburgh, Pa., has lately built a large six-story pressed brick building, which he uses as a hospital, shoeing forge, boarding and sale stable.

DR. JUDSON BLACK, Secretary of the Michigan State Association, has been reelected Treasurer of his municipality by a small majority, although his political party is about 200 in the minority.

DRS. A. B. SEXMITH, of South Lyons, Mich., and C. C. Mix, of Coldwater, Mich., graduates of the Ontario Veterinary College, took a post-graduate course at the Chicago Veterinary College during the term just closed.

DR. W. E. WIGHT has built an elegant residence and a commodious veterinary hospital in the aristocratic section of Pittsburgh, Pa., after having amassed a comfortable fortune in seven years in general practice in Pennsylvania.

DR. JAS. HARRISON, of Maple Rapids, Mich., President of Michigan State Veterinary Medical Association, has been appointed health officer in his town after a contest in which the Doctor and two M. D.'s were participants.

THE NOCARD MONUMENT.—At the last meeting of the Committee for the erection of the Nocard Monument it was decided that the ceremony will take place in the School of Alfort, France, in the forenoon of June 24, 1906. Any of our readers contemplating visiting Europe this summer should make a note of this date, and be present at this important function.

DR. D. O. KNISLEY, of Topeka, Kansas, is the inventor of a new design of stomach tube for use in the horse. It differs from other tubes in being double to permit the injection of fluid through a lesser and thinner walled compartment, and thereby

thin the stomach contents that it may flow more freely out through the larger and more rigid walled compartment.

THE WASHINGTON STATE COLLEGE, Pullman, Wash., announces the establishment of a four years' course in veterinary science, leading to a Bachelor's degree. We observe a full complement of veterinarians in the faculty, including Sofus B. Nelson, D. V. M., professor of veterinary science; Maynard Rosenberger, D. V. M., bacteriology and pathology; Kirk W. Stouder, D. V. M., anatomy and surgery; Wyatt E. Ralston, D. V. M., obstetrics; and Otto Menig, D. V. S., ophthalmology, while the allied branches are in charge of experienced teachers and specialists.

"THE RAPID DIAGNOSIS OF RABIES," by Langdon Frothingham, M.D.V. (Austin Teaching Fellow in Bacteriology, Harvard Medical School), is the title of a splendid article in the *Journal of Medical Research* for April, 1906. The recent extensive outbreak of rabies in Massachusetts has given Dr. Frothingham an opportunity to study the two chief methods of rapid diagnosis—the pathological changes in the nerve ganglia and the presence of the so-called Negri bodies. Among the conclusions of Dr. F. the following are noted: "The presence of Negri bodies is diagnostic for rabies, and, if found, animal inoculation is unnecessary. . . . The Ammon's horn is the most likely place to find Negri bodies; if not found in impression preparations of Ammon's horn, they must be sought for in sections. . . . If no Negri bodies can be found, and there are no lesions in the Gasserian ganglion, a negative report may be made; but if persons have been bitten, animal inoculations are advisable to allay apprehension."

THE AGGLUTINATION METHOD OF DIAGNOSING GLANDERS is being extensively tested by Dr. Veranus A. Moore, of Cornell, in connection with several practitioners of Brooklyn, the latter of whom supply Dr. Moore with specimens of blood from glandered or suspected cases. The results of the testing have been so accurate as proven by clinical symptoms, by subsequent development and by post-mortem findings that enthusiasm has been aroused, and Dr. George H. Berns is fitting up in his Brooklyn hospital a laboratory for the use of Mr. Cassius Way, assistant to Dr. Moore, where the tests can be made immediately after the withdrawal of blood. Dr. Way will spend his summer vacation in Brooklyn, and the practitioners will keep him well supplied with material, as it is always accessible in this hot-bed of glanders. Dr. Ackerman, veterinarian to the Health Depart-

ment, has had some remarkably accurate diagnoses from Dr. Moore. Veterinarians of New York City are urged to cooperate with Mr. Way to the end that a thorough test of the new method may be had, and accurate data furnished for the paper which Dr. Moore is preparing for the New Haven meeting of the A. V. M. A.

WHAT REVIEW SUBSCRIBERS SAY.

"THE REVIEW is better than ever. It is the 'solid extract' of the profession."—(*J. Fayne Lowe, D. V. S., Passaic, N. J.*)

"I could not do without the REVIEW as its arrival is always a source of great pleasure."—(*F. E. Anderson, Findlay, Ohio.*)

"WE consider the REVIEW a very valuable publication, and indispensable to veterinarians."—(*Drs. Jones and Jones, Blanchester, Ohio.*)

"IF a veterinarian intends to be up-to-date he must be a faithful student of the AMERICAN VETERINARY REVIEW."—(*Charles Eastman, San Luis Obispo, Cal.*)

"PERMIT me to say that I have derived great benefit from the REVIEW, and find it always interesting, instructive and up-to-date."—(*J. Wigglesworth, V. S., Eau Claire, Wis.*)

"I CONSIDER THE REVIEW better than any reference book I could purchase. What we need is more interest taken in its Army Department by veterinarians of the regular service."—(*Charles H. Jewell, Vet. 13th Cav., U. S. Army.*)

"'SCHIER DREISZIG JAHRE BIST DU ALT, HAST MANCHEN STURM ERLEBT' ['thirty years old are you, and many storms have you weathered']; but the adversities of the past have left no ear-mark on the REVIEW. No. 1, Vol. XXX, appears more pretentious than its predecessor. The REVIEW is easily the best value in veterinary periodicals."—(*Peter F. Bahnsen, V. S., Americus, Ga.*)

"I AM MORE AND MORE IMPRESSED with the obligation of the profession of this country to the REVIEW for the large amount of helpful veterinary literature placed in its hands regularly every 30 days. Only to those who have undertaken work of similar character is it possible to appreciate the labor and energy bestowed in order to produce such an excellent periodical. May the profession grow to more and more appreciate its value to them and give it their hearty financial support."—(*S. Stewart, M. D., D. V. M., Kansas City, Mo.*)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

Secretaries are requested to see that their organizations are properly included in the following list.

Name of Organization.	Date of Next Meeting.	Place of Meeting	Name and Address Secretary.
American V. M. Ass'n.....	Aug. 21-24, '06	N. Haven, Ct.	J. J. Repp, Phila., Pa.
Vet. Med. Ass'n of N. J.....	July 12-13, '06.	Asbury Park.	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.....	Call of President	New Haven.	B. K. Dow, Willimantic.
New York S. V. M. Soc'y....	Sept. 11-12 13	Buffalo.	G. T. Stone, Binghamton.
Schuylkill Valley V. M. A....	June 20.	Reading.	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Monthly.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.....	Monthly.	Boston.	F. J. Babbitt, Lynn, Mass.
Maine Vet. Med. Ass'n.....	July 9, 1906.	Augusta.	R. E. Freeman, Dexter.
Central Canada V. Ass'n.....	.....	Ottawa.	A. E. James, Ottawa.
Michigan State V. M. Ass'n....	State Fair week.	Detroit.	Judson Black, Richmond.
Alumni Ass'n N. Y.-A. V. C....	April, 1907.	141 W. 54th St	W. C. Miller, N. Y. City.
Illinois State V. M. Ass'n.....	July 12, 1906.	Bloomington.	F. H. Barr, Pana.
Wisconsin Soc. Vet. Grad.....	Call of Pres't.	Sheboygan.	S. Beattie, Madison.
Illinois V. M. and Surg. A....	.....	Decatur.	C. M. Walton Rantoul.
Vet. Ass'n of Manitoba.....	Not Stated.	Winnipeg.	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n....	.....	.....	T. B. Carroll, Wilmington.
Ontario Vet. Ass'n.....	.....	.....	C. H. Sweetapple, Toronto.
V. M. Ass'n New York Co....	1st Wed. May	141 W. 54th St	D. J. Mangan, N. Y. City.
Ohio State V. M. Ass'n.....	.....	Columbus.	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n....	1st Wed. ea. mo	Pittsburgh.	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.....	.....	.....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n....	July 12, 1906.	Roch't'r, N. Y.	J. H. Taylor, Henrietta, N. Y.
Iowa State V. M. Ass'n.....	.....	.....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n..	July, 11, 12, '06	Minneapolis.	C. A. Mack, Stillwater.
Pennsylvania State V. M. A....	.....	.....	C. J. Marshall, Philadelphia.
Keystone V. M. Ass'n.....	2d Tues. May	Philadelphia.	A. W. Ormeston, 102 Her- man St., Germantown, Pa.
Colorado State V. M. Ass'n....	1st Mon. in June	Denver.	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n.....	.....	.....	B. F. Kaupp, Kansas City
Rhode Island V. M. Ass'n....	June and Dec.	Providence.	T. E. Robinson, Westerly, R I
North Dakota V. M. Ass'n....	.....	.....	J. A. Winslow, Cooperstown.
California State V. M. Ass'n....	Mch. Je. Sep, De	San Francisco	C. H. Blemer, San Francisco.
Southern Auxiliary of Califor nia State V. M. Ass'n.....	Jan. Apl. Jy, Oct.	Los Angeles.	J. A. Edmons, Los Angeles.
South Dakota V. M. A.....	July, 1906.	Brookings.	E. L. Moore, Brookings.
Nebraska V. M. Ass'n.....	.....	.....	Hans Jensen, Weeping Water
Kansas State V. M. Ass'n....	Jan. 8-9, '07.	Topeka.	Hugh S. Maxwell, Salina.
Ass'n Médécalle Veterinaire Francaise "Laval,"	1st & 3d Thur. of each month.	Lect. R'm La- val Un'y Mon.	J. P. A. Houde, Montreal.
Alumni Association A. V. Col.	April each yr.	New York.	F. R. Hanson, N. Y. City.
Province of Quebec V. M. A....	.....	Mon. & Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.....	.....	.....	D. A. Piatt, Lexington.
Washington State Col. V. M. A.	Monthly.	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association.	.....	.....	E. M. Bromson, Indianapolis.
Iowa-Nebraska V. M. Ass'n....	.....	.....	A. T. Peters, Lincoln, Neb.
Louisiana State V. M. Ass'n..	.....	.....	E. P. Flower, Ba on Rouge.
Twin City V. M. Ass'n.....	.....	.....	S. H. Ward, St Paul, Minn.
Hamilton Co. (Ohio) V. A.....	.....	Cincinnati.	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n..	August, 1906.	Agricultural College.	J. C. Robert, Agricultural College.

PUBLISHERS' DEPARTMENT.

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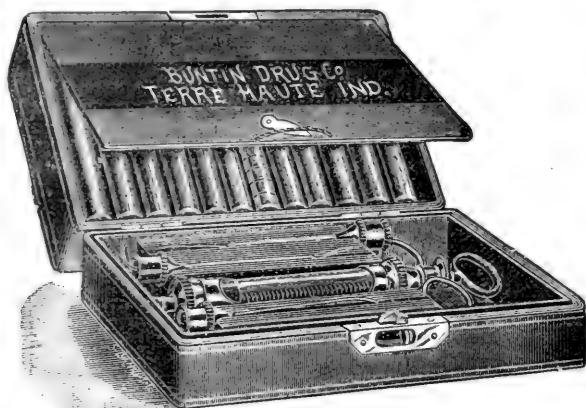
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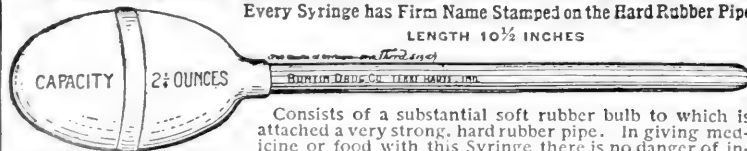
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119	Atropine Sulphate.....	1 gr.	33
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	{ Eserine.....	1-2 gr. }	
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108	Morphine Sulphate.....	1 gr.	19
136	Morphine Sulphate.....	1 1/2 grs.	27
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	{ Morphine Sulph.....	1 1/2 grs. }	
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139	Morphine and Atropine.....		35
	{ Morphine Sulph.....	1 1/2 grs. }	
	{ Atropine Sulph.....	1/4 gr. }	
140	Morphine and Atropine.....		40
	{ Morphine Sulph.....	2 grs. }	
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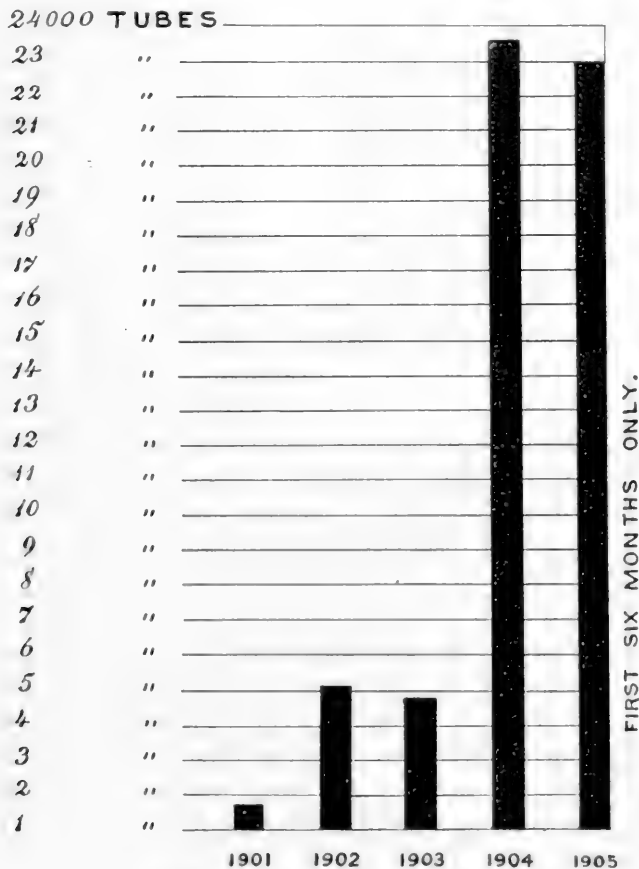
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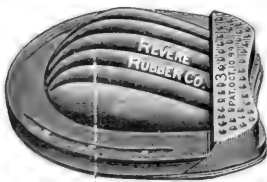
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BOVOVACCINE.

(von Behring.)

AUTHENTIC REPORTS CONCISELY PUT.

It is a matter of history that fully four years elapsed between the announcement by von Behring of his discovery of Diphtheria Antitoxin and the recognition of its merits and its adoption by the medical profession generally. Many Medical Congresses met during this interval, but none endorsed the remedy; indeed it was maliciously attacked and condemned by many. Nevertheless, the incalculable value of this momentous discovery is to-day recognized by physicians and laymen the world over. The fact, therefore, that Behring's latest discovery, his immunizing-method against Bovine Tuberculosis, was not endorsed by the Eighth International Veterinary Congress, and that it is derided by men, whose motives, in some instances at least, are not above suspicion, detracts absolutely nothing from the value of Bovovaccine; history is merely repeating itself. To present here a complete review of the scientific reports on Bovovaccine is unnecessary and quite impossible. Behring's own numerous and successful experiments are not referred to at all, since they may by some not be considered unbiased. Suffice it to merely give a short résumé of the results of the *most recent experiments* conducted by *absolutely disinterested observers*.

Abstract from an article, "The Experiences of Antitubercular Vaccinations at Melun", by J. Masbrenier, which appeared in the *Presse Médicale*, Paris, Dec. 6th, 1905:

"Under the official direction of the Minister of Agriculture, an examination was made Dec. 2d and 3d, 1905, at Melun, France, of 40 calves, 20 of which one year previously had been subjected to the inoculation of Behring's Vaccine. Prof. Vallée himself conducted the experiments, also the autopsies. One of the vaccinated animals died during the year from an accident, without presenting any signs of tuberculosis at the autopsy; the remainder were in perfect health at the end of the year, although they had been exposed to various causes of infection. Some were placed in a stable with tuberculous cattle, some received intravenous, others subcutaneous injections of a virulent tubercle culture. The control animals were subjected to the same treatment; they all became infected, and many died of generalized tuberculosis, while others showed extensive tuberculous lesions. In contrast to all this, the vaccinated animals appeared to be immune, and did not react to the tuberculin test. The vaccinated animals and the controls were all killed Dec. 2d, 1905, and subjected to a most careful autopsy, and the contrast between the conditions found in the vaccinated and the control animals is regarded as affording indisputable proof of the value of the vaccine, especially since the conditions of the tests were more severe than would be likely to be met in ordinary practice." (See A. V. R., Edit. Feb., '06.)

To those who do not want to be convinced, these experiments of course prove nothing, but Prof. Vallée, the distinguished scientist, The Society of Practical Veterinary Medicine and the audience at Melun, considered the results of sufficient import to send von Behring a joint telegram of congratulation, expressing their most respectful admiration for his achievement.

The following is quoted from the *Berliner Tierärztliche Wochenschrift*, No. 1, 1906:

"After extensive experiments and observations, the Commission of Belgian State Veterinarians has obtained most satisfactory results from the use of Behring's antitubercular substance. The Commission, therefore, does not hesitate to declare, that the Belgian stock of cattle will be protected, after a few years, from tuberculosis through the Behring vaccination, and that there after an infection of man through cow-milk need be feared no longer."

The report of the Commission of Belgian State Veterinarians appointed to test von Behring's Bovovaccine was recently published, and the conclusions reached were as follows:

"(1). That the injection of virus-vaccine of von Behring has not caused tuberculosis.

"(2). That the vaccinated animals generally resist natural infection.

"(3). That the resistance of the vaccinated animals can be overcome by the injection of strong doses of active tubercle virus.

"(4). That it is advisable in practice, to keep the vaccinated animals as much as possible away from any infection during the entire time that they are under the influence of the virus-vaccine.

"(5). That it is prudent to delay the vaccination of animals in stables where broncho-pneumonia is prevalent."

Most convincing proof of the *harmlessness, practicability and efficiency* of the bovovaccination is to be found in the report of Dr. Strelinger, "Three Years' Experience with von Behring's Vaccination against Bovine Tuberculosis", which appeared in Vol. 10 of the *Zeitschrift für Tiermedizin*. These vaccinations were made on the Hungarian Estates of Prince Ludwig of Bavaria, by Dr. Strelinger, with the cooperation of Baron Leonrod, and many of the vaccinations, tuberculin tests and autopsies were witnessed by a number of county and district veterinarians. Altogether 880 animals were vaccinated, and unpleasant complications attributable to the vaccination were observed in *not one single case*. Approximately one-third of these animals were vaccinated as early as 1902, and have therefore been *under observation between three and four years*.

All animals who had received their second inoculation one year previously were recently subjected to the tuberculin test, and after eliminating 13 animals which had been found to be tuberculous at the time of the vaccination, there reacted in August, 1905, only 9 animals out of the 590, the total number tested, *i.e.*, 1½ per cent., and of the reacting animals four had been tested within one year after the last vaccination; thus the possibility of a hypersensitiveness to tuberculin on account of the bovovaccination is not altogether excluded. *Could better results be reasonably expected?* In answering this question, it must be considered that on these estates, according to Dr. Strelinger, fully 50 per cent. of animals of about the same age as these vaccinated calves used to react to the tuberculin test prior to the introduction of the bovovaccination; it must also be remembered, that according to the reports, no attempt at isolation or special hygienic precautions were made, but that the vaccinated calves were kept in stables with older, non-immunized animals, which means in tuberculosis infected stables on an estate where 50 per cent. of the calves used to react to Tuberculin.

Dr. Strelinger concludes his report with the following sentence:

"It appears to me not unjustified to draw the conclusion, that the von Behring method of protective inoculations solves the problem of a rational procedure for the extermination of tuberculosis in cattle." (See *Zeitschrift für Tiermedizin*, Vol. X, 1906.)

Dr. Ebeling, Woldegk, reports in the *Berliner Tierärztliche Wochenschrift*, No. 1, 1905, that up to that time he had vaccinated 1126 calves without any detrimental consequences; of these he had so far dissected 37 head, 36 of these were found to be entirely free from tuberculosis; one animal which had been vaccinated at the age of seven months, and had strongly reacted to the virus inoculation at the time and evidently had been already infected, showed tuberculosis of the bronchial glands. This has become especially significant, since Dr. Ebeling more recently reports that 30 per cent. of the non-vaccinated cattle of this herd showed, on post-mortem, tubercular infection.

Recently we received the following report from Dr. Ebeling, regarding a herd of cattle wherein the method had been introduced three years ago. He writes as follows:

"This herd was the worst infected one I have ever seen. A high percentage of the animals had died from tuberculosis each year, and a number of other animals had become entirely worthless. This condition had reached its point of culmination shortly before the introduction of the von Behring method of

vaccination, so that I had advised the owner to sell the entire herd, have the stable remain empty for a time, and have it disinfected according to scientific principles; then purchase new animals, which would show no reaction to tuberculin. The owner had already become reconciled to this idea, when suddenly Behring's method of eradicating tuberculosis offered a possibility of conquering the disease in this manner. Since the introduction of the vaccination, the young stock has grown much healthier, and this seems to me the surest proof of the reliability of the method. Within the last years I have dissected several of the vaccinated animals and have not found evidences of tuberculosis in a single case."

In the beginning of this year we received the following letter from Dr. Samuel S. Buckley, Professor of Veterinary Science at the Maryland Agricultural College, viz.:

COLLEGE PARK, MD., January 10th, 1906.

"MESSRS. C. BISCHOFF & Co., New York.

"GENTLEMEN:—You will be pleased to have the results of the preliminary tests made at the Maryland Agricultural Experiment Station with Prof. von Behring's Bovovaccine for the protection of cattle against tuberculosis.

"That part of the test which has been completed is most encouraging, as shown by the following summary:

"A—Calf V was immunized with Bovovaccine according to the method of von Behring. The first vaccination was made April 10th, 1905, the second and final vaccination was made July 17th, 1905. On Nov. 24th, 1905, this calf received two centigrammes of a virulent culture of tubercle bacilli from a bovine source. On the same date, Nov. 24th, a healthy calf, without previous vaccination, received two centigrammes of the same culture. This was control calf X.

"On Jan. 3d, 1906, control calf X died of acute military tuberculosis, and showed pronounced lesions on post-mortem examination. On Jan. 6th, 1906, vaccinated calf V was killed and rigid examination failed to show any traces of tuberculosis.

"B—Calf III was immunized with Bovovaccine at the same time as calf V above mentioned. On Nov. 24th vaccinated calf III and an unvaccinated calf, IX, were each inoculated with one centigramme of the virulent culture of tubercle bacilli used in group A.

"On Jan. 6th, 1906, both calves were killed. Vaccinated calf III failed to show tuberculosis while the control calf IX showed numbers of military tubercles in the lungs and lymphatic glands.

"This work confirms that already reported by Prof. Vallée and others, and is, I believe, the first complete test of its kind in America. It is my purpose to extend this method of immunization as far as possible, since I have great confidence in its value. Very truly yours, SAM'L S. BUCKLEY, D. V. S."

Dr. Buckley goes further than that. Acting upon his convictions, he addressed a circular letter dated Jan. 27th, 1906, to the veterinarians of his State, in which letter he reports his results with von Behring's Bovovaccine to encourage them to vaccinate the calves of their clients. He writes as follows:

"* * * my sole motives are to see practiced any method which will minimize tuberculosis in our cattle. Such a method seems to be at hand in the Bovovaccine of von Behring * * *

"This very encouraging report is made to you at this time, in order that you will be in a position to answer any questions as to the probable value of the method, and because it seems desirable that you should have the report early enough to be in the work of vaccination this spring on young calves, if requested by your clients. The printed report will probably appear too late to enable you to give the information in time."

District-Veterinarian Schrieker, of Groenenbach, Germany, in the *Wochenschrift für Tierheilkunde und Viehzucht*, Vol. 50, No. 7, reports having performed the preventive inoculation according to von Behring in the young stock of seven stables, six of which were highly tuberculosis infected. In most cases the reaction of these animals to the first and second inoculation was but slight. Only a few animals showed elevations of temperature. Later on, the author tuberculinized ten of the vaccinated young cattle, and only one of the animals showed the typical reaction. So far, three of the immunized animals have been slaughtered: two of them are perfectly healthy, and one showed calci-

fied tuberculous lesions of the bronchial glands and a tubercle, the size of a cherry-pit, in the lung. The last mentioned animal was immunized according to von Behring's method at the age of two years, and was therefore in all probability already infected prior to vaccination. From these observations Schricker concludes, that through the preventive vaccination of calves below the age of four months and which are not tubercularly infected, the resistance of these animals to severe natural infection can be greatly enhanced.

In his opinion, bovovaccination is indicated in all severely infected herds.

The following is an extract from a lecture delivered by Dr. Roemer at Koenigsberg, before the Board of Agriculture of East Prussia, on Jan. 24th, 1906:

"Extremely interesting are the tests now being conducted by Prof. Eber, of Leipsic. He placed four immunized cattle together with three not vaccinated and tuberculosis infected animals; he made the natural conditions of infection more severe by creating tuberculous suppuration of the skin in the latter. No doubt the immunized and non-immunized animals licked up the pus containing tubercle bacilli. In November of that year, all control animals reacted to tuberculin, while of the immunized animals not one reacted. The experiment will be continued."

Dr. Rothe, of Tollmingkehmen, Germany, published in the agricultural journal *Georgine*, No. 2, of 1906, an interesting report, of which the following is an extract:

"Results so far obtained have indubitably proven that:

"(1). The vaccinations, if performed by a competent veterinarian and on healthy calves, are absolutely harmless.

"(2). These vaccinations are a great protection against the artificial infection of tubercle virus. Doses which kill non vaccinated control animals within a short time, do not in the least affect vaccinated calves.

"It has not as yet been fully proven whether the vaccination has a curative effect on such calves which were already tubercularly infected prior to the vaccination and, further, whether the vaccinated animals will be as immune against natural infection as against artificial infection. Lastly, the question whether this vaccination of calves will protect them during their life time has not as yet been decided. Naturally, these last three questions can be only definitely decided after a number of years, and after the general introduction of the method into practice. Von Behring answers these points already at the present time in the affirmative, and states important proofs which cannot be discussed in the columns of this paper.

"The established fact of the *absolute harmlessness* and the *immunity against artificial infection* with tubercle virus must suffice for us to undertake the introduction of Bovovaccine with enthusiasm and on as large a scale as possible. I am fully convinced that the sooner this is done, the sooner these last questions will be settled, and bovine tuberculosis conquered.

"I will here state briefly, that in the last two years I have lost, out of 84 calves vaccinated according to von Behring, but one, and this in consequence of an intervening disease."

Quite recently there appeared in the May number of the *AMERICAN VETERINARY REVIEW*, of May, 1906, a reference to the experiments made with Bovovaccine by the Italian Commission, whose results were said to have raised unbounded enthusiasm and were to be celebrated by a great feast.

The detailed report of these results has not yet reached us.

Dr. Paul H. Roemer, of Marburg, in a lecture given at Darmstadt, Germany, on Jan. 6th, 1906, reports that up to that time, three and one-half years since the introduction of von Behring's method of protective inoculation into practice, a total of about 70,000 cattle had been bovovaccinated.

Literature on this topic will be mailed to any one on request.

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AMERICAN VETERINARY REVIEW.

JUNE, 1906.

Correspondents will please note the change in address of Dr. Roscoe R. Bell, from Seventh Avenue and Union Street, to 710 East Second Street, Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, April 15, 1906.

THE ETIOLOGY OF STRINGHALT.—For a number of years Prof. R. Bossi, director of the Veterinary School of Turin, has published very interesting articles relating to the study of some clinical forms of the symptom known as chronic stringhalt—the chronic “harper” of the French.

In those various publications the following conclusions were presented:

(1) There exists among equines and bovines a form of chronic stringhalt, due to a *sudden displacement of the patella*, over the internal border of the femoral trochlea, beyond the normal limits. The displacement is essentially identical to those resulting from “cramps,” but differs from these by its duration. This form of stringhalt differs from others by the “patellar cracking,” which is heard at every step of the animal, by the mode of displacement of the leg, and because it can always be cured by section of the internal tibio-patellar ligament.

(2) There exists in solipeds a second form of chronic stringhalt which is very often observed in *dry arthritis of the hock*. In this there is no patellar cracking, and it is characterized by the specific mode with which occurs the flexion of the hock and of the fetlock. With this form section of the tendons, aponeu-

rosis or ligaments have no effect, because it is an alteration of motion with reflex origin.

(3) On rare occasions a third form of chronic stringhalt is observed in equines, which Hartwig has described, and which is due to the retraction of the muscle-stretcher of the fascia lata. This can be cured by section of the retracted muscle.

* * *

There is also chronic stringhalt which can be called *nervous*, observed in horses and also in dogs. It is associated with chronic lumbago, rheumatismal or traumatic, or, again, belonging to chorea. Here there is no patellar cracking, and myotomy or tenotomy is powerless.

There is no doubt that complete or partial removal of chronic stringhalt by section of the peroneo-phalangeal muscle has been observed, and, again, that the operation has failed on many occasions. This difference in results can be easily explained; *similar*, these forms of stringhalt are not identical—they differ in their causes and various lesions as much as in their nature and seat.

Dieckerhoff has called "idiopathic" stringhalt that which he said was due to *retraction and shortening of the tibial aponeurosis*, and he recommended the division of that aponeurosis as it passes over the hock. If this failed, section of the peroneus was to be performed.

Finally, Prof. Bossi concluded that there were evidently six forms of chronic stringhalt, some curable, others incurable, and further studies were desirable.

* * *

The above considerations, which I concisely resume from an article in the *Revue Générale of Leclairché*, are accompanied by the records of three cases of chronic stringhalt, which were treated by three different surgical operations, which by the results show that these three forms are curable, viz.: *patellar stringhalt*, that due to *retraction of the peroneo-phalangeus* muscle, and the *symptomatic of dry tarsal arthritis*. The first case, that of a donkey, was cured by double neurotomy of the

sciatic and anterior tibial nerves. The symptoms had disappeared when the animal arose from the bed where he had lain during the operation. It was due to dry arthritis. The second case was that of a gelding which had stringhalt in both hind legs, due to dry arthritis or retraction of the peroneus muscle. To complete the diagnosis, arthritis was treated by counter-irritation without any success. Tenotomy was then performed on both legs. The result was not immediately manifest, but after a few days improvement was evident, and complete recovery followed. The case was certainly not arthritic in nature. The third case was that of a horse affected with patellar stringhalt in both legs, existing for several months. This animal was treated by the subcutaneous section of the internal tibio-patellar ligament and also of the surrounding aponeurotic fascia. Recovery was not immediate, but gradually became complete. It was a case of patellar stringhalt, easily recognized by the presence of the patellar cracking and the peculiar action in flexion of the extremity.

This new addition by Prof. Bossi to this troublesome affection is no doubt of great interest.

ANTITUBERCULOUS VACCINATIONS.—In a general review of this subject, published in the *Journal of Zoötechnie*, Prof. Nicholas classifies the methods resorted to under two principal headings, preventive and curative vaccination.

Preventive vaccination has been attempted for a long time by the use of serum from hyper-immunized animals, by toxins secreted by the specific bacillus itself, more or less attenuated, and from human or bovine origin.

With *serotherapy* the results have been uncertain; while favorable with the serum of cattle in some instances, with that of cattle and dog only failures are recorded.

With *toxines* also the results have been contradictory. A certain degree of resistance is given to rabbits by some experimentators; with others the results are negative. Tried for a long time, tuberculin does not give immunity.

With the use of the *bacillus* itself, obtained from various sources, favorable results have been obtained in many cases. Introduced through intravenous injections, or subcutaneously, human or bovine viruses have given immunity—if not absolute, at least to such a degree as to allow animals to resist natural infection.

* * *

By *intravenous injection*, de Schweinitz and Schroeder, and McFadyean, show at various dates that cows submitted to virulent inoculations in series obtained high resistance to tubercular infection. Then came the great discovery of Behring, a method which gives a refractory state to the young bovines submitted to intravenous injections of tuberculous virus of human origin. The experimenters of the whole world set to work to control Behring's method. Thomassen, Pearson and Gilliland, Schroeder, Schlegel, Lorenz, Eber, Hutyra, Saas, Carper, Marks, Streilinger, in Germany, in Hungaria, in Italy at Mortara, in France at Melun, in Belgium at Brussels—and what is the general conclusion: the results obtained are different according to the experimenters; if it has great advantages, there are certainly objections; innocuous and efficacious at Melun, it does not meet with the same results everywhere, and the lack of resistance observed sometimes is due to causes to be looked into. Why should immunity last for only one year when Pearson and Gilliland have obtained one immunity resisting for two years, at least to permanent natural infection?

By *subcutaneous injection*. Arloing resorts to this method, and also to the preceding, in using bacilli of human and bovine origin. He has obtained great resistance and almost complete immunity with a given dose of very virulent bovine bacilli. He hopes to soon obtain a virus which will not be exposed to the complications observed in Behring's method.

Lignières also claims to be able to vaccinate by only one subcutaneous injection. He uses the human bacillus. The results obtained by this method during the experiments at Melun show that it needs improvement.

There are two other methods of preventive vaccination which have been tried.

Aziary Bacillus.—The immunity granted in this way is only temporary, not lasting and less solid than that obtained from bacilli of other origin. It is not used by any one.

Bacilli of Cold-Blooded Animals.—Turtle, lizard, and fish are the sources from which the bacilli are obtained. Friedmann succeeds to great immunity with the bacilli of the lizard, and claims to give immunity to cattle and to man [he operated on himself]. But the results are disapproved of by others. Klimmer, with bacilli from fish (carp), has succeeded in immunizing rabbits and cattle. By his method, subcutaneous or intravenous, there are left no lesions, no general accidents. The method is practical, and gives immunity lasting a year and a half.

* * *

Curative Vaccination.—Based upon serotherapy, or upon the use of bacilli of any origin, very virulent or attenuated, it has given only illusive results. It is not the same, however, by the use of the soluble products secreted by the bacillus of Koch. Heymans has obtained the recovery of tuberculous cattle by placing in the peritoneum or in the subcutaneous connective tissue, back of the shoulders, cultures of the bacillus of Koch in collodion sac. At the Congress of Tuberculosis of Paris lately Prof. Behring made known his communication on the curative vaccination of tuberculosis by his new TC, which so far has given the best results in laboratory tests. Behring hopes to apply his method to man. Let us wait.

* * *

After all, how do we stand? Preventive inoculation has not said its last word. It has, indeed, given excellent results in the hands of many experimenters. Its practical use is already accepted in many places. Arloing is still working at his method, which will no doubt prove successful ultimately. Lignières may improve his process, and - - - well, we have not yet heard from Prof. Vallée, who, with Dr. Roux, is carrying out a series of experiments with a serum from horses: an equine

serum against a bovine disease. Let us see what the learned Professor of Alfort said at the Société de Médecine Vétérinaire Pratique at one of its late meetings: "The possibility of vaccinating horses against tuberculosis has not been mentioned until now. On this account it seems to me interesting to make known some attempts which I have been making for the past few months. If anti-tuberculous vaccination of horses has no practical interest, since this animal contracts that disease so seldom, it is very important to lay down the experimental rules of a deep immunization of this species of animal, which would suggest this subject as a choice for the production of serums in general, a serum possessing interesting specific qualities. The various anti-tuberculous serums prepared to this day have an action on the tuberculous organism, more or less marked, but in all cases insufficient. These sera are obtained by the treatment of subjects destined to their production, with soluble products, extracted from cultures of the bacillus of Koch or from the bacilli themselves, after a special treatment. As far as I know, there exist *no horses hyper-vaccinated with the plainly virulent tuberculous bacilli*. I have succeeded in obtaining in three horses satisfactory results in this direction. These subjects were treated successively with increasing doses of human bacilli, first attenuated, then with bacilli in full virulency, killing guinea-pigs, in six or seven weeks, and giving rise in horses, in five milligram doses, to tuberculous lesions with lasting reaction by tuberculin.

* * *

"The following is the condition of one of those subjects: Percheron mare, in excellent condition of health. Does not react to tuberculin :

Days of Experiment.	Inoculation.	Weight of Animal.
" 1st . . . 6	millig. bacilli, attenuated culture of equine bacilli	515 Kil.
" 49th . . 10	" " " human tubercul.	528 "
" 95th . . 15	" " virulent " "	531 "
" 133d . . 25	" " " " "	540 "
" 187th . 20	centigrams " " "	543 "
" 220th . 50	" " " " "	544 "
" 260th . 75	" " " " "	547 "

“The increase in weight of the animals, their general good condition, are proofs of their perfect resistance. Each virulent inoculation is followed, at the beginning, with quite strong febrile reactions, which last forty-eight hours. As the treatment goes on, these reactions diminish. No matter at what time the animals are tuberculined, the well-marked reactions of the beginning of the immunizing treatment entirely stop later on, whether the operation is performed in the fifteen days following the virulent inoculation or several weeks later.”

It remains to be established what the specific qualities are of serum of horses thus treated, and if the horse is not more apt to furnish an antituberculous serum more than the hyper-vaccinated bovine.

* * *

PROF. LANZILLOTTI-BUONSANTI'S SILVER ANNIVERSARY. —In one of the late numbers of the *Clinica Veterinaria*, printed as a special issue, there was an account of the ceremony which took place at the Royal Veterinary School of Milan to celebrate the twenty-fifth anniversary of the nomination of Prof. Lanzillotti-Buonsanti as Director of the School. In the presence of officials representing the Secretaries of the Interior, of Agriculture, of Public Instruction, and before the delegates of the veterinary schools of Italy, with representatives of various public authorities, and a very large number of visitors, Prof. Sertoli, in a long speech, reviewed the professional life and work of the Professor, and presented him with an artistic certificate handsomely illustrated in memory of the ceremony. Prof. Korner, in the name of the Secretary of Agriculture, gave Prof. Lanzillotti a magnificent gold medal, and announced that by the kindness of the King the Professor was raised to the degree of Knight of the Order of Saints Marvine and Lazare.

A subscription had been opened by the members of the profession to create an institution to be known as the Lanzillotti Institute. But, according to the desire expressed by the learned Director, the amount collected will be used to grant prizes to young veterinarians so as to encourage them in the study of in-

fectious diseases of animals. The *Clinica Veterinaria* of February 3 contained an excellent likeness of the Professor.

* * *

POISONING OF HORSES BY "SNOW DROP."—In glancing over the February issue of the *Agricultural Journal of the Cape of Good Hope* my attention was called to an article from Acting Director of Agriculture, Dr. Hutcheon, M. R. C. V. S., on the poisoning of horses by *Cenithogalum Thyrsoides*, or "Chinker inchee." Although the article is well illustrated by a colored plate of the plant, my botanical knowledge did not permit me to locate it, and on researching I found this definition of the "snow drop," as it is also called. "Snow drop" or "silver bill" tree, an American shrub or small tree (*Halesia tetraptera*), with white bell-shaped flowers in clusters. From this I concluded that the accidents referred to by Dr. Hutcheon might be observed in America—hence this short notice. It seems that various numbers of horses at different places in the colony had died after partaking of forage where flower-heads of "snow drop" were. The symptoms had been those of acute gastroenteritis, accompanied by a dull, depressed, stupid effect on the mucous system.

Experiments were carried out by the Department of Agriculture to see the effects produced by the eating of forage containing the plant, some animals being fed by the dry flowers and others with freshly-gathered leaves of the tree. In the majority of cases the post-mortem lesions were about similar, viz.: "heart and spleen normal; slight congestion of the lungs, kidneys and liver. There are areas of fatty degeneration of the liver. There is intense inflammation of the gastric mucous membrane and that of the intestines throughout its extent." In the report one man is said to have lost two horses by this plant, another three, and a third lost five out of fourteen cases, etc. These facts have given rise to much inquiry and created considerable excitement. Purgative treatment is recommended as the one which is indicated to clear the intestines of its irritating contents.

NATIONAL VETERINARY CONGRESS OF FRANCE.—By the time this reaches our friends in America the Vth. Congrès National Veterinaire [yes, another!] of the Veterinary Societies of France will be in session. This Congress will be known hereafter as the *Nocard Congress*, because taking advantage of the presence of veterinarians from all over France, the monument to Nocard will be unveiled, a professional ceremony where I think all subscribers should have been officially invited and asked to represent in an official capacity. It might not have been convenient for the many who subscribed in America to come over, but I am sure some one will come to Europe about that time, and he might be a delegate from all. But, of course, this is only my personal idea of how to show the appreciation of the handsome gift sent from America to the illustrious master that Nocard was.

But let me come back to the Vth French National Veterinary Congress. I do not know exactly the questions which will be brought before the meeting, and, after all, perhaps there will be none which would, strictly speaking, be of interest to American veterinarians. And, yet, there will be one which I think cannot be ignored at this time, when in the States the question of "Reforms in Veterinary Education" is still, I hope, the subject of important investigation. I will give in brief the *résumé* of the report made by the chairman of the Committee, and my next will contain the resolutions adopted.

* * *

The first demand made by the chairman is the abolition of the internal for the students. In the French schools veterinary students are boarding students. External is the rule in all the establishments of higher education, except military schools. Why should it be different in veterinary colleges?

A higher degree of education than the one required should be demanded of the candidate at matriculation. Not only is the present degree of bachelor of classic or modern school obligatory, but a diploma of superior studies in a faculty of sciences, viz., the P. C. N., which means Physics, Chemistry, and Natu-

ral History, is demanded. This obligation would justify the claim to Doctorship, which could be but a proper recognition of the scientific standing of the veterinarian who would have it. A. V. D. (Veterinary Doctor) imposes itself.

The third question treated by the chairman is a serious and delicate one. It touches the situation and recruiting of the teaching bodies of schools and of the program of the curriculum. In relation to the recruiting of the teaching board, it is necessary "to create grades of assistants, repetitors, demonstrators, adjunct and titular professors, a regular hierarchy with a firm base and sufficient remuneration to attract and hold men of scientific value, specialized, giving their exclusive time to their duties. The suppression of one or perhaps two schools might be advantageous."

The faculties should elect their dean, who would be the director of the school, and the position should be held only for ten years—a *decanal*—subject to a reelection, of course.

* * *

Free students we have. Higher degree of education is a stone hard to move in some of the States. A Doctor degree we have in all its various forms. Proper recruiting of our teaching bodies, by graded adaptation and graded education of candidates, is unknown to our schools. The idea of reducing the number of schools for the benefit and improvement of one is a question impossible of consideration. Limit of office for the dean or director of a school is scarcely admissible with us, where so many of our schools are private undertakings. And, yet, with the many objections which can be brought forward by our American *confirères*, the demands made by the chairman of the committee can certainly be a source of thinking for the members of the committee of the A. V. M. A., to whom this question of "reform" has been given for consideration. More on this subject later.

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OUR APOLOGIES TO THE WASHINGTON STATE COLLEGE.—
In my January (1906) "Chronicles," in introducing a letter I

had received from the fair librarian of the Washington State College, at Pullman, asking to exchange a large list of "back numbers" for others which she did not possess, I remarked that it was "very strange that this party should not have seen fit to notify the REVIEW of its error in sending duplicates for such a length of time, without probably having paid for them." In making this statement I was woefully wrong in my hasty conclusion, which was arrived at without any data whatever from the business office. By a letter I have received from Prof. S. B. Nelson, he explains that some complete volumes and others nearly complete were given to the institution, and many other duplicates were purchased, along with other works, from a Chicago bookseller; and at no time have duplicates been received from the publication office. It is seldom that I am led into the making of a statement for which I do not have some data to guide me, but whenever I am wrong I grasp the first opportunity to set myself right. To the Washington State College, and its librarian, I offer sincere apologies, and trust they will consider that the wrong done them was by the head, not the heart.

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BIBLIOGRAPHY.—In closing this, I have to acknowledge the receipt of several bulletins, such as those of the San Francisco and Chicago veterinary colleges, the *Archiva Veterinaria*, of Bucharest, and the first number of the *Journal of Tropical Veterinary Science*. This latter journal was fully considered in the April REVIEW, and I simply here address the editors my best wishes.

A. L.

THE ASSOCIATION OF FACULTIES AND EXAMINING BOARDS.

At the 1905 meeting of the American Veterinary Medical Association, during a delightful sail on Lake Erie, thoughtfully tendered by the veterinary hosts of Cleveland, the Association of Veterinary Faculties and Examining Boards of North

America was reorganized, after a lengthy discussion of its character and purposes. In this discussion it was shown that little could be done to compel schools to adopt uniform standards of requirements for entrance or graduation, or for length of term or character of curriculum, and that any approach toward a more uniform standard than now exists can only be secured by mutual agreement. It was, therefore, considered feasible to have as components of this organization representatives of the various schools, of the examining boards, and of the American Veterinary Medical Association, from whom a working committee of three from each interest can be secured. This Association is to meet annually during the session of the National body, and the feeling seemed general upon adjournment that some good could be accomplished in the matter of establishing a minimum requirement among all schools represented in the composite organization.

One element of power to enforce the standard agreed upon is the right of the examining boards to fix upon uniformity in the examinations for license. Many States of the Union have laws requiring the examination of candidates seeking to practice within their confines, and those having secured laws without this provision can, we believe, with comparatively little effort, effect similar legislation. There are now but few States in which veterinary medicine flourishes to any extent which do not legally recognize the profession, and every year witnesses the decrease of their number.

The greatest power for equalizing the quality of veterinary education in this country, therefore, is vested in the examining boards, and if this strength is exerted wisely, there should be a general betterment of conditions throughout the land.

We fully realize that many obstacles are to be overcome before the organization becomes effective; but if the membership will take up the infant effort inaugurated last year at the approaching Hartford meeting with earnestness and a desire to accomplish something, we have much faith in their ability to do so.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

The meeting at New Haven is drawing near, and Secretary Repp announces elsewhere in this number the program of papers secured to date. While their quality assures a high-class meeting, the number is inadequate for so important an occasion, and those who usually delay sending in their names until just before the list closes should take into account the injury and the anxiety which they occasion, and should at once notify the Secretary of their intention and subject. The outline of the arrangements for the holding of the sessions and the entertainment of the large number expected are well advanced, while the clinic details are in the hands of a strong committee.

The Massachusetts Association has named a committee of three of her best sons—W. L. La Baw, L. H. Howard, and J. F. Winchester—to act in conjunction with the Connecticut veterinarians in working for the success of the convention of 1906.

“VETERINARY NOTES OF THE RUSSIAN ARMY IN THE FAR EAST,” by Col. John Van R. Hoff, United States Army, who was with the Army of the Czar in Manchuria for observation on behalf of our Government, will be published in the “Army Veterinary Department” of the July REVIEW. The author has gathered some data of great value to the veterinary profession concerning the diseases of the animals in charge of the military veterinarians, both those employed in the campaign and those used for food, together with their treatment and mortality. Particularly does his interesting account bring forward in most favorable light the great service of sera in the prevention of epizootics of the most fatal infectious diseases, and shows their almost indispensable value where large bodies of animals are congregated. The profession will, we are sure, feel deeply grateful to the Colonel for the pains he has taken in collecting these facts and for his kindness in permitting the REVIEW to publish them.

ORIGINAL ARTICLES.

THE ETHICS OF VETERINARY DENTISTRY.

BY W. L. WILLIAMS, PROFESSOR OF SURGERY, NEW YORK STATE VETERINARY COLLEGE.

An Address delivered before the Pennsylvania State Veterinary Medical Association, at Philadelphia, March 7, 1906.

During the past few decades there has developed in America a conspicuous tendency to interfere with the teeth of horses and an attempt has been made to dignify the practice by the appellation of "Veterinary Dentistry."

The unique position attained by this alleged profession or professional branch of veterinary surgery is attested in a variety of ways.

1. More has been written upon this subject in America than in all other countries combined, we having two pretentious volumes under the title of veterinary dentistry, besides much current literature.

In other countries there is found much valuable literature in veterinary periodicals; Clark has contributed a valuable volume in his "Horses Teeth," and recently Ostertag has furnished the profession with a most scholarly and valuable work upon this subject in his section on diseases of the teeth in Bayer and Fröhner's "System of Surgery and Obstetrics," but so far as we are aware, no pretentious volume upon veterinary dentistry alone exists outside of America.

2. American veterinary colleges largely have, attached to their faculties, a professor of veterinary dentistry and presumably give a special course in that subject. Great stress is laid upon this feature in the announcements of some of the shorter course veterinary colleges with low matriculation requirements, becoming less conspicuous among the longer course institutions with more rigid requirements for entrance.

3. A perusal of the catalogues of the manufacturers of veterinary instruments show a special emphasis upon dental appa-

ratus by American firms as compared with foreign houses. The instruments are excessive in number, complexity, cost and restrictions by patents.

4. Graduates of American veterinary colleges largely advertise themselves as specialists in dental work and actively solicit it. Many of them conspicuously display elaborate and showy diplomas in veterinary dentistry, and in all their advertising matter, bill heads, letter heads, and professional (?) cards draw attention to their special preparation for this work. In many cases, familiar to us all, the stationery bears a picture of the veterinary dentist himself, heroic in size and pose, filing the teeth of a horse.

5. American horse owners, trainers, coachmen and stablemen have been firmly led to believe that a very large proportion of the diseases and vices of horses are referable to defective teeth and the veterinary dentist is sought as a universal panacea.

Under these conditions it is not strange for us to believe that more work is done upon the teeth of American horses by legal veterinary practitioners than upon the teeth of all other horses in the world combined.

Let us here assert, lest we be misunderstood, our high appreciation of the economic and humane value of scientific veterinary dentistry. During our 27 years as practitioner or as teacher of clinical surgery, no class of work has demanded of us a higher degree of skill, none has yielded more satisfactory results.

For the purposes of this address we wish our title, ethics, to signify the conscientious performance of our duty, according to all available knowledge, toward our patient, our client, and, so far as its interests may be concerned, the public. It is not enough that ethics should demand of us a conscientious application of the knowledge in our possession, that would place a premium upon ignorance, but calls for an honest use of all knowledge which, by proper diligence, we may be able to acquire. It does not stop at what our writers on veterinary dentistry may teach, as these writings may be wanting in authority; it does not cease at what is taught us in college, the

faculty may not have possessed a true veterinary dentist ; it does not terminate with graduation from a special course in veterinary dentistry under a noted professor of this subject and the receipt therefrom of a diploma in dentistry, the professor may have been wanting in scientific attainments, or possessed a very feeble, undeveloped conscience ; it must rest finally and permanently upon a conscientious search for the truth with the animal itself as a basis, taking into account all anatomical, physiological and clinical data. This renders our ethics somewhat elastic, since it recognizes that one may be able to see and learn more than another and consequently has a duty which leads him further than his colleague, whose field of vision is more confined.

Veterinary dentistry, or the processes known by that name, is almost wholly confined to the horse, partly because he suffers more frequently and seriously from dental diseases than other domestic animals ; very largely for the reason that he submits tamely, without material restraint, to prolonged and important dental interference ; and, perhaps above all else, he is held in highest esteem by his owner, who, under false ideas of the facts, permits unwarranted liberties with these essential organs under the delusion that such interference is for the well being of the horse. The horse is practically the only animal in which dental operations are extensively carried out upon sound teeth. It has been stated that women sometimes have the visible teeth of pet dogs filled with gold in order to make them conspicuous, and the breeder removes the tusks of the boar to prevent him from injuring other live stock. Aside from these, sound teeth of animals go practically untouched.

All the teeth of the horse are subject to deformity, disease and injury, and all at times require surgical handling.

The incisors are the most freely open to inspection, were probably the first teeth of the horse to be subjected to surgical handling, and continue to be interfered with in a greater variety of ways than any others. They are really less subject to disease than either the canines or grinders, but their position

renders them very liable to accidental injury. They are also frequently deformed or are abnormal in number. They constitute our most valued criterion in determining the age of horses, and have long been subjected to disguising operations in horses offered for sale or trade. The temporary incisors are prematurely removed from colts in order to hasten the eruption of the permanent ones and cause the horse to sell for a higher price because of the appearance of greater maturity. Fortunately for our profession, this operation is carried out almost wholly by the dealer, it being very simple and easily done by any one. The perniciousness of this fraudulent operation cannot well be denied. It places an immature animal in work for which it is not ready, leading to premature breaking down, the loss to the community of what would have been a valuable animal had it been humanely handled, and deceives the purchaser into paying an adult price for a colt, causing him an important monetary loss.

An older and more grossly deceptive operation for the disguising of the age of horses is the process of bishoping, in order to make the animal appear younger. The operation has been left largely throughout all history to the low, disreputable horse dealer, but at times the veterinarian has done the work for the dealer. In modern veterinary literature, when mentioned at all, it is usually merely done to condemn it and place the veterinarian on his guard when examining horses for soundness. More recently, Merillat has included it in his "Animal Dentistry" under the title of "Artificial Anomalies," and gives all the details for performing the operation in the most deceptive manner. He does not commend it beyond giving it so prominent a place in a volume presumably dedicated to scientific dentistry, but there is a want of that vigorous condemnation which seems to us demanded. Bishoping does no good and very scant harm to the teeth and causes the animal no pain. The important question is the deception of the buyer. We know of no tenable ground upon which a veterinarian can justify his performing this operation, and cannot see how he can escape the self-conviction that when he

bishops the mouth of a horse he has attempted a fraud against a prospective purchaser. Should the buyer call upon the operator for an opinion as to the age of the animal, if he has not previously surrendered all claim to ethical principles, he will have placed himself in an embarrassing position, if, after having received a fee from the seller for doing an operation in order to enable him to deceive the buyer, he now turns upon his dishonest client of yesterday and discloses the fraud to his later employer. But Merrillat claims that the skilful veterinarian can so bishop the mouth of a horse as to deceive himself, and thereby be placed in helpless subserviency to his own fraudulent operation for which he has accepted a professional (?) fee. If he detects his own fraud and exposes it to the buyer, he offends the seller from whom he has already received a fee; if he keeps the secret and accepts another fee from the buyer he doubles the fraud and his fees for committing it. In attempting to condone such operations some veterinarians resort to the plea of inevitability, that the fraud will be perpetrated by some one and so should be done artistically (not scientifically, for science is truth), and the veterinary practitioner had best do the work, and accept the fee. Such an attitude strikes at the foundation of all professional ethics and marks the boundary between science and charlatantry.

In 1889, during a particularly unsteady epoch in the dentistry of animals in this country, Hinebauch made an unsuccessful attempt to dignify as scientific, and give a permanent place in animal dentistry, the filling of horses' teeth. The chapter was written by "veterinary dentist" Sayre and included by Hinebauch in his "Veterinary Dentistry." Fortunately, it failed to meet with any notable response and no one took the trouble to point out its absurdity. As described by Sayre, the work was limited to healthy teeth, where it admittedly could not be effectively applied. It was a comparatively harmless piece of nonsense, for which only a few horse owners, with more money than intelligence, paid fees to the few "veterinary dentists" who did such work. We do not wish to be understood

as absolutely condemning the filling of the teeth of horses or other animals. There may be cases where it is proper and practicable, but we cannot approve the filling of normal infundibuli in the incisors of young horses, nor attempting the absurdity of filling defective cement or dentine areas in the crowns of grinders where the trouble is not recognized or recognizable until the tooth is irretrievably lost. Sayre admits that in the first molar, where this condition is most frequent, the filling is impossible.

Hinebauch attempted, with more success, to dignify another questionable operation upon the incisor teeth, that of resection in order to allow the grinders to come together. He says: "They (the incisors) occasionally need to be shortened more or less, especially if the horse is not allowed to run at pasture, and is fed on hard food, such as whole corn and oats. The molars do not come together near enough to thoroughly grind the food." Merillat condemns this heresy in commendably vigorous language and points out the fact that the shortening of these teeth prevents their apposition, interferes as a consequence with food prehension, and the operation, unless very carefully done, is liable to cause serious fracture of the crowns. It is well known that the teeth of horses are pushed out of their alveoli in inverse proportion to the resistance encountered and that their degree of use influences their rate and extent of protrusion only in so far as attrition shortens them. If two functioning teeth of a horse oppose each other they are each pushed out of their alveoli until they come in contact and thereafter they advance at precisely the rate that their crowns are worn away by attrition or otherwise removed. If one of these teeth is missing its antagonist is pushed out until it may reach and wound the vacant alveolus. Reversing this hypothesis of too long incisors, it could as well be claimed that horses living a comparatively wild life on ranges where the soil is very sandy and stony and the herbage very scant and short, would have their incisors worn so short that they could not come together and the prehension of food would thereby be interfered with or prevented. The reasoning is parallel. The operation is largely

carried out upon aged horses with teeth so worn out that they can no longer effectively grind food whether the incisors be long or short, present or absent. We have seen no clinical evidence of good arising from the resection of the incisors. In some instances such a result might be claimed where other teeth, which were actually interfering with mastication had proper care at the same time or other unfavorable conditions were removed, after which the animal improved in condition. The incisor arcades are far narrower than those of the grinders, and in the process of mastication, if they projected so far as to come in contact would be worn away more rapidly than the grinders. Since the process of mastication in the horse is accomplished largely through lateral motion of mandible, the fixed point being the temporo-maxillary articulation, the incisors move over a greater distance than the grinders and undergo a corresponding greater wear. It should be further remembered that if the incisors and grinders come in like contact during mastication, the presence of food between the grinders would conserve their wear while the incisors without food between them, their intensely hard, milled surface coming together, would cause them to wear away rapidly and bring about a properly adjusted contact. Horses, like men, can adjust the dental contact so that in the normal state, the incisors can be brought in contact while the grinders are held apart and *vice versa*, but such an adjustment could have no permanent influence upon the extension of the teeth. We can find no reason, from any possible view point, for concluding that normal incisors grow to an injurious length and interfere with mastication in animals not allowed to graze. We have not been able to see any appreciable difference in the length of the incisor teeth of grazed and stabled horses. Furthermore, there is a strong tendency in teeth to diminish in power of resistance as their use decreases, which again may serve to aid in maintaining the balance between the various arcades.

The incisors are further interfered with in cases of cribbing, the veterinarian being, at times, asked to saw down between the teeth with the hope of curing the vice, making it possible

for food to become impacted between them and cause disease. In other cases the veterinarian is asked to extract or break off some of the incisors for the same purpose. No evidence exists, within our knowledge, that the condition of the teeth has the remotest relation to the cause of cribbing nor that any known method of changing these teeth can beneficially influence the habit. We have experimentally completely destroyed the sensory nerve supply to all the incisors in both arcades without exerting any influence whatever upon the vice beyond the tenderness of the wounds during the time of healing. We can consequently find no warrant for interfering with these teeth for the cure or amelioration of cribbing.

We meet frequently with deformities, diseases and injuries of the incisors in which surgical handling is so clearly ethical and mandatory as to call for no comment in our discussion.

The canine teeth of the horse virtually escape questionable operations although essentially functionless, so that meddling might be given vent on them rather than the incisors and grinders. They are the only teeth of the horse to suffer from caries comparable to that affection in man, being the only ones in which, under any probable conditions, dentine is exposed on other than a wearing surface; exposed dentine, not in wear, decays, dentine in wear does not decay. Such decay is at times induced by accident, or by error in cutting too deeply to blunt a sharp-pointed canine which has cut the tongue or lips.

The little supernumerary premolars or "wolf teeth" have claimed a very large share of dental charlatanism and being alike harmless and valueless have awakened little protest against the meddling from which they suffer. Considering their small size and inoffensiveness "wolf teeth" have had to endure more than their quota of defamation. The principal charge against these rudimentary organs is that they cause periodic ophthalmia; a charge of too long standing to determine the date or cause of its origin. It has followed the horse to the very corners of the earth, even into climates where "moon blindness" is unknown. Hinebauch says: "Ophthalmia, both periodic and simple, may re-

sult from teething. "The removal of supernumerary teeth acts as a counter-irritant and may possibly be followed by a remission of some of the ophthalmic symptoms." He approves of their removal.

Merillat concedes alike their uselessness and harmlessness, except that in rare cases they may possibly interfere with biting, for which reason he countenances their removal. In ophthalmic diseases he strongly urges their extraction "owing to the popular prejudice against them."

It seems to us that we are unwarranted in advising an operation for the removal of an organ because under certain conditions it may interfere with the comfort of an animal unless the possibility cannot be predetermined or the operation cannot well be performed after it has caused some annoyance.

In these teeth it seems to us that an intelligent veterinarian could determine in each case if a wolf tooth would or would not interfere with the biting process and its removal be advisable. The size, form and direction should show the practitioner whether it can ever cause an abrasion of the cheek from bit pressure. Little harm can come from leaving wolf teeth till they actually interfere with biting and then removing them. Does "popular prejudice" render a painful and useless operation ethical? The veterinary practitioner is a public teacher, he is licensed as such in many of our States, in some commonwealths he is educated at public expense and has an ethical duty to the people of special significance. He is the licensed guardian of the live-stock interests and the adviser and teacher of the horse owner. The veterinarian goes to the legislature asking for practice laws, that the practice of veterinary surgery shall be limited to *scientific* men like himself, and having attained these laws we are urged by him to perform a useless operation in obedience to "popular prejudice," to perpetuate an ancient superstition and carry out the dictates of bygone centuries. Any man who has extracted wolf teeth knows full well that it is a painful operation, as shown by the resistance of the animal, not only causing transient suffering, but rendering timid

animals afraid of manipulations about the mouth thereafter.

The grinders are subject to many forms of disease and defect and offer the most important field for beneficent dentistry. The affections are largely very serious in character, causing great suffering to the animal, inducing emaciation and weakness from partial starvation and frequently jeopardizing the life of the animal. These demand a high order of surgical skill and do not involve, in the ordinary way, questions of ethics. The great mass of dental work unassociated with dental disease is performed upon the grinders of the horse. The superior maxilla being much narrower from side to side than the inferior maxilla, the grinding surface of the two arcades meet on an inclined plane, the superior teeth being longer on the lateral side while the lower ones are longer on their median aspect. This bevelled wear emphasizes the plicæ into which the tooth tissues are thrown and results in sharp dentate projections, consisting chiefly of enamel, on the outer border of the superior, and the inner of the inferior arcades. These prolongations serve a highly essential function in grasping and dividing the food masses into smaller portions and giving the teeth a firm hold upon the food while their milled surfaces effectively crush and grind it. The influence of these sharp and bevelled tooth edges upon the well-being of the animal is variously interpreted, there being a widespread conviction among many stock owners and veterinarians that the grinders were badly made, have become obsolete in form and require great modifications at the hands of the veterinary dentist to make them fit to fulfill modern requirements. Much theorizing has been done regarding the influence of domestication upon the teeth of the horse; we hear little of such influence upon the teeth of other domestic animals. One of these theories is suggested by Merillat who says: "The use of the bit through innumerable generations appears to have rid the interdental space of the premolars" (wolf teeth). As neither history nor tradition reaches back to the period when *equus caballus* had not been domesticated and bitted by man it is difficult to determine what effect the bit has exerted upon his

teeth. One certainty which is largely overlooked by theorists is the fact that supernumerary teeth increase in frequency and size as the intensity of domestication. The more highly bred and fed, and correspondingly the more promptly and constantly bitten, the more constant and larger the wolf teeth. The more vigorous, the larger the horse, the more likely he is to develop supernumerary molars of the same size as the normal ones, which may be placed in front, behind, or at either side of the normal dental arcade. Clinically, therefore, instead of tending to obliterate teeth, domestication does the opposite.

Similarly it is urged that alleged changes of food in domestication has produced important changes in his grinders, especially that the horse now eats largely unground grains. Grains, like horses, have been used by man as far back as history or tradition leads us, and it is fair to assume that the eating of grain by the horse is not a recently acquired habit; it is highly probable that in prehistoric times man did not grind the food for him and that the grains were as hard ten thousand years ago as they are now. Based upon these alleged changes from the natural state, the sharp edges of the grinders are charged with being the cause of many of the ills of the horse, to overcome which, extensive changes are made by the veterinary dentist. Sharp grinders are variously alleged to cause ophthalmia, debility, inappetence, bolting of food, slabbering, shaking of the head, side pulling, lugging on the bit, shying, indigestion, constipation, diarrhœa, running away, standing still, (balking) and numerous other ills.

Since all grinders of the horse are very sharp and armed with pointed denticles of enamel at their prominent edges, it is well to enquire how we may fix the line of delimitation between the normally and abnormally sharp tooth; or if the normal form of the teeth is incorrect, is one of nature's gross blunders, in what manner and degree it is essential to modify them? Upon what basis are we warranted in changing their form? Let us critically examine the clinical evidence of the alleged injuries from sharp grinders. We may divide them

into two categories: interferences with mastication and through this with digestion and nutrition; and disturbances in driving or riding due to painful injuries of the soft parts in the presence of the bit. Mastication may be interrupted by either mechanical or pathologic impediments.

It is alleged that in some cases, without disease, the mandible is so much narrower than the maxilla as to produce a scissor mouth of such an extreme degree that mastication is well nigh impossible.

These cases must be very, very rare, certainly the vast majority of scissor mouths are the result of painful disease of a tooth or teeth and depend upon, instead of causing, bad mastication. In such case it is clear that the alleviation of the cause commands our first attention and only secondarily do we need overcome the shear mouth to restore proper mastication. If the offending tooth is timely removed no shear mouth results. In the extremely rare cases said to occur as an anomaly without disease, it is difficult to see how the shortening of the wedge-shaped teeth can greatly relieve the condition as the inferior maxilla will still be too narrow and good mastication impossible.

If one tooth is lost or worn completely away the antagonist tends to push out till it reaches and abrades the soft tissues in the vacant alveolus. The posterior tooth in either the mandibular or maxillary arcade may be placed somewhat posterior to its antagonist and a portion grow out so long as to penetrate and wound the soft parts opposite; the same condition usually ensues in case of supernumerary molars, which being located frequently behind the normal teeth have no antagonist. So in cases of diseased, misdirected or split teeth and partially detached temporary crowns we meet with serious impediments to mastication.

But all these constitute a very small part of the popular veterinary dentistry, most of it is directed to the removal of the sharp points on the outside of the superior and the inner side of the inferior arcades of otherwise sound and normal teeth. The mere sharpness of these edges are a distinct aid in mastication and are always sharp in a normal mouth, the more normal the

tooth, the sharper. They cannot obstruct the lateral masticatory movements of the jaws because that movement in itself prevents their attaining such proportions. If mastication is interrupted because of wounds to the soft parts from the sharp edges these injuries are readily found. In this case the wound needs be of a character clearly sufficient to establish a case. There are probably few toothed animals which do not occasionally abrade the cheek as a result of accident or inattention during mastication and if we will carefully search the cheeks of horses, many of them will reveal some slight trace of old or recent abrasion.

Does the mere trace of an abrasion of the cheek or tongue warrant surgical interference with the teeth? If we answer in the affirmative we shall need to rasp the teeth of well-nigh every horse and, were the mouths of dogs, cats, pigs, cattle, sheep and goats examined, we should probably find similar conditions in them; it is certainly true of man. There is little reason to believe, either, that blunting the teeth of horses will stop or even lessen the frequency of these accidental abrasions. In order to warrant the inference that a given abrasion constitutes a sufficient cause for surgical interference with the teeth, we need clearly establish the fact that the injury is recent, that it is sufficient to cause pain as verified by sensitiveness to the touch, that the condition of the tooth or teeth which caused the injury is such as to show that the abrasion was not a single accident of no consequence but that it will necessarily be constantly or frequently repeated during the process of mastication. We are then warranted in so modifying the offending tooth or teeth as to avoid the recurrence of the injury, but this gives us no right to meddle with the other teeth which have caused no injury. If we apply this rule in our daily work, we shall cut or rasp few teeth and wear out very few rasps.

In considering the influence of sharp teeth upon biting we should weigh the evidence carefully. If an animal shies, slabs, side-pulls, lugs on the bit or runs away it is not proof that his teeth require surgical attention.

Dribbling of saliva may arise from a great variety of causes, among the least frequent of which is sharp teeth, the most common and inexcusable being improper biting and reining. In many cases of slabbering the cause is to be found in the lodgment of grain beards or other foreign bodies in the mouth, in stomatitis from any cause, in foods like white clover which cause intense ptyalism, etc. These cannot be cured by cutting or rasping the teeth. Lugging, side-pulling and other related vices are rarely due to the condition of the teeth, but, on the other hand, the existence of these tend to cause injury to the surrounding soft parts through their being violently pressed against them. The vicious habit must be overcome before it is worth while to blunt the teeth; after the habit has been corrected the teeth do not need attention. In turf horses, especially in colts, where they are compelled to bear heavily upon the bit, the cheeks may be pressed violently against the edges of the first and, possibly, second superior premolars in a manner to abrade the parts and call for the artificial dulling of normal teeth in order to accommodate the parts to special artificial conditions; these changes should be confined logically, to the first, or first and second superior premolars, and the others left unharmed. In contrast with this view of our professional duty, we find that in many large establishments, the veterinarian recommends the dulling of the grinders in well-nigh all the animals, operates upon them and receives liberal fees therefor.

In speaking with a veterinarian who practices largely among running horses, he stated that he rasped the teeth of practically all horses belonging to his clients once or twice annually, and when the necessity for it was challenged, he confessed its uselessness, its injury to the teeth, the unethical character of the work, and condoned his course upon the basis that, did he refuse to do it, others would accept and he would suffer a corresponding monetary loss. We shorten the life of a tooth by at least the amount we remove, be that 1 per cent. or 10 per cent. If we cut away the projecting edges we remove chiefly enamel and at its thickest part, so that the wearing of the teeth is hastened

more than it would be by the removal of an equal amount of dental tissue from other parts. Of greater importance than the loss of the healthy tooth tissue is the modification of the form of the tooth and a decrease in its efficiency as a grinder.

A still more serious injury lies in the fact that the operation serves to distract attention from the real cause of disease and delays appropriate treatment. Ostertag remarks that many horses are treated by coachmen and blacksmiths for sharp teeth when suffering from some serious internal disorder needing immediate and skilful handling, but as a result of the meddling with the teeth, are not presented to a competent veterinarian at the appropriate time, resulting in increased suffering to the animal and unnecessary loss to the owner. Such cases are familiar to every practitioner, only in this country it is generally the veterinary graduate who performs the needless dental operation instead of the coachman or blacksmith.

A horse was presented at my clinic for side-pulling, with a request that his teeth be rasped. The teeth were normal and the case was diagnosed an unilateral cerebral disease which accounted for the tendency to veer constantly to one side, making it difficult, and at times impossible, for the coachman to keep the horse in the road.

Another veterinarian found abrasions of the cheeks on the side towards which the horse turned, the teeth were liberally rasped, the coachman discharged as incompetent, our professional skill denounced and a roseate prognosis given. A few days later, while some distance out of the city, the horse with the smoothed teeth took his mate, the coachman, carriage and ladies out of the road, over an embankment. The ladies walked home and the horse was sold; a sovereign remedy for sharp teeth which cause side-pulling. If still living, the time of that unfortunate animal is probably still largely occupied in side-pulling, changing owners and having his teeth rasped.

A valuable roadster was presented at our clinic because of great weakness which was attributed to sharp teeth; they had been rasped but supposedly not enough. Examination showed

the teeth so smooth from rasping as to interfere seriously with their grinding power, while valvular disease of the heart explained the weakness.

In another case presented for sharp teeth, the patient was found suffering from pneumonia, so that the examination of the teeth was delayed until recovery from the pulmonary affection had occurred. It was then found that the quidding of food and other symptoms referred to the teeth (which were normal) were caused by a fixation of the tongue due to an osteom occupying the median raphe. This fixation probably caused the pneumonia by interfering with deglutition, leading to the inhalation of food particles. The removal of the osteom alleviated the trouble and restored the patient to usefulness.

One of the most harmful phases of the indiscriminate dulling of the grinders, is the overlooking of really serious dental disorders, while deluding the owner with the popular remedy and preventing him from seeking competent advice. If a horse shows good evidence of dental affection, no pains are taken by the typical veterinary dentist to discover and combat the real difficulty, but the rasp or forceps is brought into requisition, and after a considerable amount of harm has been done by removing a part of their substance and an unjust fee has been collected for doing an animal an irremedial injury, the patient is left to continue to suffer from a painful and dangerous dental affection. This is well illustrated by a case recently occurring in our clinic, a horse being entered with the history that for some weeks previously the patient had shown sharp pain in drinking, quidded her food and exhibited other signs of interference with mastication. Two veterinary dentists had each rasped her teeth without result, and the animal was constantly losing in flesh and condition. Examination revealed a separation of the gums from the inner side of one of the inferior molars and a diagnosis of purulent inflammation of the dental pulp, with escape of the pus into the mouth alongside of the affected tooth was made, the tooth extracted and our diagnosis fully verified. Here two veterinarians' fees for doing damage had left the animal to suffer for

weeks from a very painful affection not devoid of danger to life, had prevented the owner from securing competent advice, and had robbed him of the use of an animal for a long period. It may be urged that these two veterinarians had not been efficiently taught in the diagnosis of such cases, that their professor of veterinary dentistry overlooked this one point, that their books on dentistry were clear on sharp teeth but cloudy on diseased, that their text-books on surgery were silent on this one point, that they overlooked it and that some or all of these facts should condone their failure. Professors and authors are not wholly responsible for the shortcomings of all practitioners; the load would be too heavy for so imperfect a body of men to bear. Because such practitioners are unable by their methods to properly diagnose such a case does not justify them in guessing that rasping the teeth and collecting a fee will meet all the requirements of ethics. We hold it was their duty to learn the facts and apply them. They should have known that sharp teeth alone do not cause pain when the animal is drinking, nor cause the quidding of food, and knowing these things should have searched for, and found, the only tell-tale fact discoverable upon examination, the separation of the gums from the side of the tooth and that this with the history, indicated unmistakably a purulent pulpitis and called for the prompt extraction of the hopelessly diseased organ.

If they did not learn it from professor or book they were in duty bound to take the lesson from the much greater teacher, clinical observation. We hold them in violation of ethics, not because they did not know how to correctly diagnose the case, but for the reason that they had not learned an available piece of information, which their professional calling makes obligatory upon them. Our definition of ethics neither stops nor hesitates at what one knows, but proceeds immediately to what he should know by diligent study of his profession in college and practice. In order to attain this ethical standard, the veterinarian must be an earnest and conscientious student from the beginning of his college career to the end of his service as a veterinary practitioner.

In the veterinary practice of to-day there is no feature more disgraceful than the wholesale rasping or cutting away of horses' teeth. Instrument makers vie with each other in devising a great variety of instruments, each one claiming the highest efficiency. Adjustable floats were introduced to increase the destruction of teeth at a diminished cost to the veterinary dentist and more recently there have been placed on the market power floats, efficient engines of destruction, by which great damage can be inflicted upon normal teeth at a minimum expenditure of time and labor. We do not condemn the instruments nor their proper use.

Ostertag well says: "It is the duty of the veterinarian, in districts where the sharp-tooth-mania is rampant, to discreetly expose its evil results by his teaching and thereby strive to counteract the tendency to diagnose 'sharp teeth' as a cause of deficient nutrition except when a careful search of the oral cavity demonstrates that a degree of sharpness of the teeth exists which possesses an actual clinical importance." "Sharp-tooth-mania" is a peculiarly happy word which forcibly expresses an evil apparently more widespread in America than in any other country. According to Ostertag the practice in Germany is chiefly confined to coachmen and blacksmiths while in this country it unfortunately pervades the veterinary profession to a regrettable and disgraceful degree. This "sharp-tooth-mania" is so deeply rooted in the minds of our horse owners and has been so industriously fostered by our alleged expert veterinary dentists that no early relief from its baleful influence is probable, but it seems to us that the time is opportune to begin a campaign against the evil among ourselves. Our writers on veterinary dentistry cannot be charged with directly advising or commending much of this work but there is a want of that vigorous condemnation so richly deserved. I do not expect you to all agree with me; it is not essential that any one of you should. We only hoped that we might say something which would cause serious, conscientious study, that some of you would ponder over these thoughts during your daily work as

teacher, practitioner or student and be led to take a higher and better stand in the ethics of veterinary dentistry. I ask no one to accept my views as his ethics; the conscientious performance of my duty in relation to the teeth of animals, according to the best I have been able to learn from men, books, and animals is ethical veterinary dentistry for me and a like application on your part is equally ethical for each of you. Neither have I selected this topic as an isolated one without relation to veterinary ethics as a whole, but simply as a concrete example of a great mass of ethical problems which affect our profession. Veterinary societies formulate ethical codes, forbidding certain forms of advertising, stating how consultations shall be conducted, condemning patent medicines and instruments; good enough in their way but impotent to elevate the members of the profession until first they attain to the foundation of professional ethics, the conscientious application of all available scientific knowledge to our daily work, first being just to our patients, second to our patrons and finally to our colleagues. We can define our proper relations to our colleagues and fix ethical codes for them but the more fundamental things are beyond written laws and depend upon an awakened conscience. With our present rapid advancement in veterinary education we should be able to discern a well-marked upbuilding of a higher type of veterinary ethics, of a nobler manhood among veterinarians.

A PASTOR'S SURGERY SAVED A HEN.—*Lower Albany, N. J.*—An industrious hen, which Pastor Anderson, of the Baptist church, prized highly, fell a victim to her appetite the other day and neglected her duty. The dominie discovered that she had not eaten wisely, but too well, for her craw resembled a small balloon. He resolved upon heroic measures, and, with a small, sharp knife, he essayed the role of surgeon. Making an incision in the neck of the hen he was surprised to discover a big bunch of grass, held together by a few yards of string. Removing the obstruction, sewing up the wound and applying necessary disinfectant made the operation highly successful. The hen is laying once more.—(*Phila. Record.*)

DIAGNOSIS AND TREATMENT OF VENTRAL HERNIAS IN BOVINES.*

RÉSUMÉ OF CLINICAL LECTURES.

By CH. BESNOIT, Professor of Bovine Pathology at the Veterinary School of Toulouse.

(Continued from page 180, May Review.)

Really speaking, all methods of treatment by compression of the sac, in cases of very large hernia, which are the rule in bovines, may prove useless and produce only a simple reduction in the size of the lesion; several reapplications are then necessary to reach a radical recovery. They have, besides, an objection—viz., to leave after the sloughing of the clamp or nippers a broad wound, whose cicatrization is always very slow.

From what we have seen, it is shown that none of the preceding methods can be recommended against chronic ventral hernias of bovines. If in a few rare cases of peculiarly small hernias they have given good results, those are exceptional facts, upon which a rule cannot be established. Dangerous sometimes, they often give only a simple improvement, and possible return is likely to follow their use, which necessitates new surgical interference.

At any rate, even in granting that they have a real curative value, their use could not be generalized in the presence of numerous contra-indications. I have already said that old ventral hernias of bovines occur most always through a wide abdominal tear and reach enormous size; in such conditions it would be temerity to hope to obtain the organization of a fibrous pad sufficiently thick and firm to resist the pressure of the abdominal organs. With the preceding methods one would certainly reach a sure failure or at least an incomplete result, followed by an early return of the trouble.

And, again, the preceding methods require, first, the reduction of the protruding organ, and consequently can be applied

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only against hernias without adhesions and without strangulation. When these complications exist, it becomes necessary, before another interference, to open the lesion to free the protruding organ from the adhesences with the sac or excise the hernial sac. These first steps accomplished, it is then easier to finish the operation, which, without being more dangerous in bovines, is still more likely to succeed.

To resume, in *all cases* of old ventral hernia in cattle, small, of medium size, and even large—except in cases whose proportions are so small as to render any interference unnecessary—there is only one curative method deserving of trial, and that is the *operation for radical cure*.

OPERATION.

This method consists in suturing the hernial ring after opening of the sac. The expression, *radical cure*, as it is called, is, if applied singly, somewhat improper, as in reality it applies to all the means which have for object the final disappearance of the hernia.

Indications.—Let us insist on these. As we have seen, it is the only rational means of treatment with old hernias, a method by which, without great danger, a quick and complete recovery can be obtained. It is necessary in all cases where there are adhesions and strangulation; it is most useful, even less dangerous, and in many instances more efficacious than any other method, when those complications are absent. The large size of the lesion is not, properly speaking, a contra-indication, because, if it is too exaggerated, any other mode of treatment will certainly also be a failure.

With recent hernias, the radical operation is again the best mode of treatment. With it lasting recovery is nearly certain, while it is only problematical with the method by bandages. As I have already said, this last can be tried only to satisfy timid owners; but as soon as their insufficiency is evident, it is rational to resort to the *radical cure by suture of the hernial ring*.

Indication for this method seems to me *absolute* in all cases of ventral hernia in bovines. And, yet, commonly used in human surgery for nearly a quarter of a century, it is but little resorted to in veterinary. Especially in bovine practice, notwithstanding the good results obtained by some, it has been and is still considered by many practitioners as delicate and dangerous, to be resorted to only in exceptional cases.

For a long time classical works have discredited it, and the most recent recommend it only in some cases, and then even with caution. "Ventral hernia once established, is irremediable," wrote Bouley, "and it is best to let the animals live with their infirmity than to resort to risky operations, like those which have been recommended, such as the suture of the edges of the hernial ring. . . . A ventral hernia being present, compatible with the health of the animals and their producing usefulness, it is wiser, generally speaking, to let them live and work with their infirmity, than to attempt to cure them with means which may be dangerous to their lives." Peuch advises "to abstain from performing this operation when the hernia is old, large, and where the hernial ring is wide. In such cases," says he, "the animal can be used for months and even years for farm work, or he can be fattened. It would, therefore, be daring to resort to the operation for hernia in such cases."

These observations and these cautions, which represent still the state of mind of the great majority of practitioners, are based upon the supposed dangers of surgical interference with the peritoneum. But if those risks can be admitted for horses, where peritoneal infection is relatively easy, they are, on the contrary, strictly hypothetical for ruminants, where the peritoneum is resistant to all infection in a most surprising manner. It is sufficient, indeed, to recall the little severity and the purely local character of the peritoneal lesion following the accident of dropping of alimentary substances from the rumen into the peritoneal cavity during or after the operation of gastrotomy to appreciate how small the chances of generalized and fatal infection would be after laparotomy in a bovine. At any rate, the

results realized during the last twenty years in surgical anti-sepsis have been such that dangers of infection during laparotomy, considerably reduced for all species, do not, so to speak, exist for ruminants.

Another reason which prevents the spreading of the radical treatment for hernia in cattle is that owners generally prefer to sell their animals to the butcher rather than run the chances of a recovery, considered rather uncertain. Such decision is doubly prejudicial to their interests. First, they get rid of an animal which after recovery would have still rendered long service, and, again, they always sustain by this hasty sale a heavy financial loss. It is only in cases when, notwithstanding the accident, the animal should have kept a general good condition where such decision can be admissible; but these circumstances are exceptional, as in general ventral hernias soon acquire large dimensions and give rise to great loss of condition.

Finally, a last consideration pleads in favor of surgical interference for *all* cases of ventral hernia. It is the possibility that, during the operation or from complications following it and likely to compromise its success, it becomes necessary to slaughter the animal at once; then the benefit derived at that time will, in the majority of cases, be at least equal to that which would have been obtained before any interference.

Technic.—The object of the operation is to reëstablish the normal relations of the protruding organ and close the accidental opening of the abdominal walls through which their exit has taken place. It includes essentially the incision of the envelopes of the hernia, the reduction of the hernia, the suppression or reduction of the serous sac when one exists, suture of the hernial opening, and finally that of the wound of operation.

Preliminaries.—It may be advantageous to keep the animal fasting, and even purge it slightly, during a few days preceding the operation, unless it be urgent. However, these measures are not indispensable: the objects are to empty the intestines and facilitate the manipulations of reduction or the destruction of the adhesions while operating.

The animal is cast on the side opposite to the hernia and, according to the seat of the lesion, is fixed in right or left lateral position or in the dorsal; in some cases it is necessary to have the upper hind leg pulled backwards to expose the flank.

Anæsthesia is not absolutely indispensable; but in all cases is very useful. I always resort to it. It renders the steps of dissection and reduction easier in suppressing the violent struggles of the animal, which have a tendency to force the intestine outwards and in a few seconds destroy the results obtained after long work. A rectal injection of 100 grammes of chloral is given half an hour before the operation, and as soon as the animal lies down anæsthesia is completed by inhalations of chloroform; the animal is asleep in 10 or 15 minutes: these inhalations are carefully kept up during the entire operation. I have often resorted to the mixed method of Dastre and Morat, which consists in the injection half an hour before the inhalations of chloroform, of a solution of 10 or 15 centigrammes of chlorohydrate of morphine and 5 milligrammes of sulphate of atropia in 10 grammes of distilled water. Medullary injections of cocaine have never given me any good results: the loss of sensation is too limited.

The field of operation, hands, instruments, and objects for dressings are carefully aseptized. The surface of the hernia is shaved, soaped and washed successively with water, alcohol and an antiseptic solution, to be afterwards covered with a broad aseptic and fenestrated cloth. The instruments have been boiled in water with a small quantity of carbonate or borate of soda. The hands are well cleaned with soap and washed with water and sublimated solution.

First Step—Incision.—When by touch the situation, direction, and dimensions of the hernial sac have been recognized, the incision must be made opposite it. But if they have not, it is made on the centre of the hernia in a vertical or slightly oblique direction. Proportioned to the dimensions of the hernia, it must in all cases, however, have a minimum length of 15 to 20 centimetres to allow the easy introduction of the whole hand

into the hernial pouch. In very large hernias a long incision is sometimes necessary to facilitate reduction and suture of the muscles; in some cases it may reach without difficulty as much as 60 or 70 centimetres in length.

Thus exposed, the sac is found and opened on the same proportion and with care to avoid injury to the organ in ectopia. The skin and subcutaneous layers are divided, bloodvessels being secured as they are opened.

Second Step—Reduction.—The manipulations of this step vary according to circumstances. Three conditions may be present :

(a) In a first case, the hernia is recent and has been promoted by a traumatism which has perforated the peritoneum at the same time as the muscular wall of the abdomen. Thus there is no serous sac and the organ in ectopia, after passing through the peritoneal and muscular openings, is lodged under the skin. As soon as the cutaneous incision is made, the organ is found directly under. Then it is at once and easily reduced by direct taxis.

(b) In a second case, the hernia is still recent, but the peritoneum has resisted the traumatism and been pushed out by the organ in ectopia in the subcutaneous pouch; this is then lined in its whole extent with a serous coat, yet free from any adherence and constituting a sac which contains the abdominal organs in ectopia. After the opening of this sac the organ is reduced by direct taxis, and then either the sac is also reduced in whole if it is not too big, or, again, it is pulled out so as to form a kind of peduncle, upon which at its base and near the hernial opening a firm ligature of catgut or silk is applied. The protruding sac is excised and the peduncle pushed back into the abdomen. As the sac has not had time to contract adhesions with the skin, one might also, after the cutaneous incision, leave it intact, not opened, and return it in mass with its contents. This *modus operandi* is very delicate, demands great care and can scarcely be applied save on small hernias. At any rate, it is rare that during the cutaneous incision, on account of

the excessive thin condition of the sac, this is not accidentally opened, however careful the precautions may be.

(c) In a third case the hernia is old and has an adherent serous or pseudo-serous sac. Either the sac is formed by the pushed-out peritoneum, which in time contracts firm adhesion with the subcutaneous tissues, or, again, when the peritoneum, perforated by the traumatism, has not taken part in the ectopia, and a pseudo-serous has formed by the organization of the subcutaneous conjunctive layers of the hernial pouch. The sac being opened and the organs that it contains being reduced, by direct taxis, the sac is isolated from the surrounding parts by dissection, a step of the operation always long and difficult, no matter what may have been its origin. One must then proceed slowly, little by little, using fingers and blunt instruments rather than bistoury or scissors. When the dissection is ended as far as the hernial opening, the sac is treated as in the preceding case, pedunculated, ligated and excised. The peduncle is pushed back into the abdomen.

It often occurs that, in very old hernias, the various organs in ectopia, intestinal loops especially, have contracted adhesions more or less firm; these interfere with the reduction, and must be first of all removed. The operation is still more delicate than the preceding and requires great care, so as to avoid injuring the intestine. If, notwithstanding all attentions, a perforation should be made, this must be closed by suture before the reduction is completed; but if the number of perforations be too great or their size too wide, the accident being too serious, it would be more prudent to stop the operation and at once slaughter the animal for the butcher.

In other circumstances, such as the excessive distention of the protruding organ by gases, or as the strangulation of the hernia, the reduction of the contents of the hernia is interfered with or perhaps cannot be executed. In the first case, puncture with a fine trocar is without danger and is sufficient to overcome the difficulty. In the other, incision of the hernial opening is indicated, made towards the superior commissure, with a blunt

bistoury or a guarded instrument guided with a directory. Anyhow, it is necessary to resort to this last step every time that the size between the mass in ectopia and the opening renders the manipulations of reduction too long and difficult.

Third Step—Closing of the Hernial Ring.—This step includes the suture of the musculo-aponeurotic opening of the abdomen.

For recent hernias, the suture is made immediately after the reduction.

For old hernias, the edges of the ring having cicatrized separately and being fibrous, it is necessary to have them unite to excise them with the scissors or bistoury.

When the perforations of the various muscular layers of the abdomen are exactly superposed the *modus operandi* of the suture is simple. But it is no longer the same when, as it most frequently occurs, each of the injured muscles have given away in the direction of its own fibres; the lacerations thus cross each other in X fashion and the complete obliteration of the hernial ring demands several sutures on different levels.

During the suturing, the organs which were reduced, especially if they are intestinal loops, have a tendency to again escape. It is necessary to keep them in the abdomen, away from the opening, so as not to injure them with the needle. If the ring is small this is done by passing the left hand through the ring into the abdomen, with its back turned towards the organs and the palmar face resting on the internal face of the edges of the opening so as to guide the needle. When, on the contrary, the hernia is very large, and the abdominal laceration wide, an assistant is made to introduce and keep in the abdomen a cloth, well aseptized, which will isolate completely the organs from the borders of the perforation. This cloth is taken away later, when the suturing is sufficiently advanced, when the exit of the intestine is no longer possible or can be simply prevented with the hand.

The suture is made of strong catgut or solid silk thread. A few separated stitches are sufficient for simple and not exten-

sive perforations. With wide lacerations it is difficult to bring the edges exactly together; then one or several temporary stitches are placed in the middle of the borders; these are brought as close together as possible, and then other final separated stitches are made on the entire length.

With multiple tears, where several torn muscles cross each other in X fashion, the suture of the deep layers is made first, and afterwards the superficial, being careful in suturing the entire mass of the muscular layers with several isolated stitches.

When the operation lasts long, there sometimes appears a tympanism, which, distending the abdomen, keeps the edges of the muscular orifice apart, and interferes with the application of the sutures. In such a case, puncture of the rumen is indicated to relieve this little difficulty.

Often, under the effect of the extreme tension of the stitches of the suture, especially in very large hernias, the muscles give away and tearing is impendent. This complication is avoided by introducing the needle several centimetres away from the borders of the opening so as to include in the suture a greater thickness of muscular tissue and then reinforcing the suture by extra supporting stitches.

And, again, if there are difficulties which cannot be overcome, it is not essentially necessary to make the edges meet perfectly exact; holding them simply close, the inflammatory exudation will yet be sufficient to close the narrow space left between them and allow cicatrization.

Lafitte has advised to make the suture, "having the hind leg pulled backwards, in such a way that the animal, once up, the stretch applied upon it by the viscera shall be as little as possible." I think this measure is a wrong step, as, at least in some cases, it may render the step of suturing more difficult by widening to excess the edges of the hernial ring.

Fourth Step—Cutaneous and Permanent Stitching.—After the deep sutures of the abdominal walls are made, the serosity and blood are wiped out of the cavity; this is washed with boiled water, then with antiseptic solution, and the operation is

completed by suture of the cutaneous wound. This can be made, without special precautions, with Florence hairs, by interrupted stitches, when the hernia is of small size. If it is large, it is better to make a selvage suture with strong aseptic silk thread or fine silk fishing line. Besides, as in such cases there remains an excess of skin, it is prudent, so as to allow the adhesion of the cutaneous and muscular layers and obtain the complete and immediate disappearance of the cavity, to excise first a more or less wide piece of skin on each side—melon-slice shape.

The operation is completed by the application of an anti-septic dressing, with a bandage in belt rather firmly tightened. I generally dust the wound with iodoform; it may also be protected with gauze and aseptic wadding. A bandage 12 or 13 metres long and 15 wide is rolled around the body. It acts as a surcingle, having for object, first to assist the adhesion of the skin in preventing the gathering of serous exudates under it, and, again, it supports the muscular suture against the pressure of the abdominal viscera.

The operation ended, the animal still asleep, is left on the bed. After a certain time, which varies, generally several hours, it gets up. It is prudent, however, during the anæsthesia, to turn it over once or twice; paralytic accidents may be avoided, they being sometimes the result of too long decubitus on one side.

After-care and Sequelæ.—During the two days following the operation, there appears in the neighborhood of the seat of the operation and in dependent regions, an œdematous swelling due to a serous exudation of inflammatory nature. If this swelling is small and remains stationary, there is no need to worry about it; it will disappear by resorption. If, on the contrary, the swelling is large and increases rapidly, one must interfere at once or the pouch will soon be transformed into a cystic cavity. The bandage being taken off, the lowest stitches of the cutaneous sutures will be removed, or, again, a counter-opening shall be made in the most dependent part and a drain-tube introduced.

The serous discharge will at first be abundant, but will soon subside, and cicatrization will go on regularly. In the most fortunate case this will take place by first intention, and nothing remains to be done until the time comes to remove the sutures of the skin. I have obtained this result once in a case where the incision was 70 centimetres long and where a flap of skin of the same length by 20 centimetres in width had been removed.

Sometimes, however, the subcutaneous pouch becomes infected, either by the sutures or the counter-opening above alluded to. As soon as suppuration appears, the stitches that are involved must be taken out and the hernial cavity treated as an ordinary wound. This complication is, nevertheless, without danger; it does not promote peritonitis, because as soon as it appears—that is, after four or five days—the wound of the muscles and aponeurosis is already closed; all it does is to retard the final cure.

A slight febrile reaction appears sometimes in the evening of the next day after the operation; it is always without importance and of short duration.

For a few days, careful *régime* is indicated, small quantity of selected food in small bulk, farinaceous and cooked roots, to avoid a too strong push outwards of the digestive organs against the musculo-abdominal sutures.

Eversion and peritonitis, so much feared in previous times during or after this operation, are, so to speak, no longer to be feared, at least among bovines. The first is avoided by anaesthesia, which does away with all expulsive efforts from the operated; the second is almost impossible, because of the exceptional resistance of the peritoneum of ruminants to infections and also of the aseptic measures recommended.

Results.—These vary with the situation, the size, and the nature of hernias. Those situated in the superior region of the flank are, generally, formed through a narrow opening, small, and have little tendency to enlarge. It is easier to hold them reduced, and the suture has not to support the weight of the abdominal viscera. In these conditions the cicatrization is

quick and regular. On the contrary, lacerations in the lower abdominal regions spread rapidly under the pressure of the abdominal organs; the hernia soon becomes very large and the suture is too extensive to be able to assist the weight of the viscera. However, I have been able to obtain recovery in a case of hernia situated on the inferior abdominal wall which had an opening measuring 50 centimetres in length.

Likewise, hernias of the intestines or of the abomasum are in general easier to cure than those of the rumen, which are always much larger.

However, one must never allow himself to be impressed by circumstances even apparently very unfavorable. One must always bear in mind (1) that no curative method is as good as that by the operation; (2) that wonderful recoveries have been obtained; (3) that in case of failure there always remains the possibility of selling the animal for butchery in the few days following the operation, as soon as the anæsthetic used has been eliminated.

(a) Few French veterinarians have, since about a century, attempted this operation and obtained encouraging results with methods which are certainly less perfect than the one we have just been considering. Most of these observations relate to *recent hernias*; one only, Serres, speaks of an *old injury*.

In 1828, Peyron operated upon two cows affected with large intestinal hernias at the lower part of the right flank, one 20, the other 14 days old. The treatment was incision of the hernial opening, closed with furrier's suture, quilled suture of the skin, and a bandage around the body. In the two cases the recovery was complete in three weeks after the operation.

A few years later, 1837, Dandrieux also obtained in a cow by the same operation complete recovery in 20 days of an enormous mixed hernia of the small intestine and the abomasum only one day old.

In 1844 Terrien mentioned the recovery by operation of two cows: they had large intestinal hernias, one for five days, the other only one day, strangulated in one and occupying the

whole extent of the right flank as far as the udder. It took one month for complete cicatrization. The treatment consisted in reduction after incision of the ring, suture of the abdominal muscles first, quilled suture of the skin, firm bandage around the whole.

Serres also says that he had often resorted, with success, to the operation for intestinal hernia, but does not give any record of recovery of recent hernia.

Other similar cases have also been recorded by Guittard, Lamoureux, and Mesnard.

One of the cows observed by Guittard had a large mixed hernia of the abomasum and of the intestine, five or six days old, situated in the left flank. It was treated by incision of the skin, incision of the abdominal opening, reduction, selvage suture of the abdominal muscles with strong waxed cord and quills, dressings of camphorated alcohol. Recovery was complete in a month. Another cow, pregnant for eight months, had for fifteen days in the left flank a large hernia of the cæcum and large colon. Operation and recovery as in the preceding case.

Lamoureux has treated a large intestinal hernia of the left flank with the operation. Incision of the skin, reduction of the intestine, suture of the muscles with waxed cord, creolin dressing held in place with quills on the cutaneous edges, and tight bandage around the body. Recovery was slow on account of the slow elimination of the cord used as ligature. It took two months.

Finally, Mesnard has recorded a very interesting recovery in a cow, suffering for two days only with a strangulated ventral hernia, which was obtained by following the modern rules of asepsy. The very narrow hernial ring was closed with two stitches of catgut, one applied on the aponeurotic and deep portion, the other on the muscular. The skin wound was closed, hairs of Florence and a coat of iodoform collodion laid upon it. Three days after the wound was closed by first intention.

As I have said, there exists in our literature, at least as far

as I know, but one observation of radical cure by operation of an *old ventral hernia* in bovines. It is from Serres. A cow had for five months on the lower part of the right flank an intestinal hernia of very large size. After incision of the skin, incision of the hernial ring, the intestine was reduced, the edges of the muscular opening were excised and then brought together with furrier's suture, involving altogether the muscles and the tunica abdominalis; a dressing held by quills was laid upon the wound and held in place by moderately tight bandage covering the whole. A month after the operation the cicatrix was complete, and twenty-five days after the animal delivered in the best condition.

(b) I have myself for several years operated on all the ventral hernias that came under my observation at the clinics of the school. I will select among those that I have followed three cases of interesting recovery.

Observation I—Recent Hernia.—One day a five-year-old cow presented on the lower part of the right flank a small ovoid tumor, which in the few days following increased rapidly. Indeed, on the low part of the flank, on a level with the fold of the stifle, there is a large spherical tumor (Fig. 1), measuring 40



FIG. 1.—INTESTINAL HERNIA (BEFORE OPERATION).

centimetres in diameter. It is not painful, soft, fluctuating, depressible, and œdematous; it is also reducible, and taxis reveals in the upper part of the lesion a solution of continuity in the muscular wall of the abdomen; this is narrow, elongated, and measures 10 centimetres in length with 2 or 3 in width; general condition is good, only slight diarrhœa and now and then colics. Evidently it is an acute intestinal hernia due to an unknown traumatism. The animal is a first-class milker; the operation is decided upon and performed nine days after the accident.

After twenty-four hours' fasting, the animal is prepared—the whole right flank is carefully shaved. Before the operation, 100 grammes of chloral are given in rectal injections in two doses, twenty minutes apart. The animal is cast on the left side and anæsthesia completed with chloroform. The field of operation is washed and disinfected with sublimate solution. Opposite the hernial opening a cutaneous incision is made, 15 centimetres long; the hernial pouch, with no serous lining, is exposed and found filled with loops of the small intestine and the uterus, whose condition indicates a recent delivery. The intestine is a little congested. The uterus is first reduced, then the intestine, without much difficulty, and the hernial opening is closed with sterilized catgut by interrupted sutures. It includes the various muscular layers of the abdominal wall, following the direction of the fibres. Two rows of stitches are necessary: one deep on the small oblique, the other superficial on the great oblique and abdominal tunic; both layers are sutured together afterwards. The hernial pouch being emptied, washed, and aseptized, a third selvage suture is applied on the edges of the skin with cord sterilized in boiling water. Iodoform on wound, collodion, pad of aseptic cotton, and a roller, 15 metres, form a contentive bandage.

No febrile reaction and general condition excellent for a few days. Still, there is serous exudation in the subcutaneous sac; there is a large œdematous swelling forming and bulging in front and back of the bandage. The dressing is removed, the

pouch is punctured with a fine trocar and three litres of a sero-bloody fluid escape. Eight days after the operation the exudation has returned, but the cicatrization of the skin having taken place by first intention it is necessary to puncture the pseudocyst with the actual cautery. Once the fluid escapes, the pouch becomes infected and suppurates for several weeks. A month



FIG. 2.—INTESTINAL HERNIA (AFTER OPERATION).

after the operation, there only remains a small elongated tumor with indurated base. Radically cured (Fig. 2), the animal is returned to its owner, who kept her for several years.

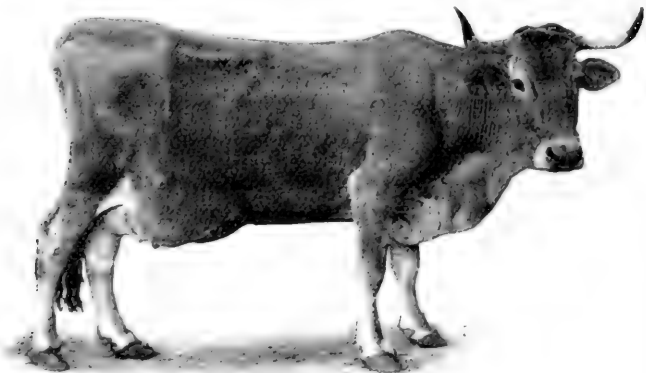


FIG. 3.—INTESTINAL HERNIA (BEFORE OPERATION).

Observation 2—Old Hernia.—A ten-year-old cow was brought to the clinic carrying a large ventral hernia, in existence for about two months, after a normal delivery. The lesion occupies the whole of the lower part of the right flank (Fig. 3), reaching forward to the sternum, depressing the udder to the left and arriving rather high between the hind legs. There is a small cicatrix on the postero-inferior part, a little below the stifle. The characters are those of an intestinal hernia. On account of its great weight, the presence of a hernial opening cannot be revealed by taxis; but in dorsal decubitus a wide circular perforation of the abdominal wall is easily detected; through it a portion of the ectopied mass can be momentarily returned into the abdomen. The general condition is not too bad; the animal is very thin, but all the general functions are normal.

Notwithstanding the conditions, the operation will be performed. All the cares of the preceding case are here again fulfilled, and when the animal is anesthetized, as above, it is placed in the dorsal position, with the right posterior leg stretched backwards. After disinfection the skin of the lower and posterior part of the lesion, on the level with the cicatrix, is incised obliquely from above, below, and from forward, backward, to the extent of about 35 centimetres. The wide subcutaneous pouch, without peritoneal lining, is entered and found to contain almost the whole of the small intestine and a portion of the large.

The hernial opening runs through two muscular layers—the small and the great oblique. They were ruptured in the direction of their fibres and there were therefore two openings superposed, crossing each other slightly, but which by their edges, stretched apart in different directions, gave the impression of a single opening, circular in form. Besides that, there was in the centre of the opening a central band, 3 or 4 centimetres thick, dividing it into two equal parts, and formed by an inflamed and sclerosed portion of the abdominal muscles. This band interfered somewhat with the manipulations of reduction, as the

loops of the intestine roll around it now and then. Still, without much difficulty, the whole ectopied mass was reduced.

With a strong catgut, and without dividing this strong band for fear of hæmorrhage, two rows of sutures are applied and brought together afterwards with a few interrupted stitches. The hernial pouch was sponged, washed with boiled water and sublimate solution, and afterwards the cutaneous wound was closed with selvage sutures with strong aseptic silk cord. An iodoformed collodion dressing, covered with aseptic cotton, was applied and protected with a band of cloth rolled around the body.

The animal had no febrile reaction, but two days later the hernial pouch began to enlarge by a serous exudation, which rapidly increased, and seven days after the operation it became necessary to remove the bandage, to make a puncture with the trocar and allow the escape of four or five litres of sero-bloody fluid: in the meanwhile the cutaneous wound had cicatrized by first intention.

Nevertheless, the serous exudation continued, and the pouch kept on filling and increasing gradually and regularly in size. It soon assumed alarming proportions and threatened to degenerate into a large cyst. On the twelfth day it was freely incised. It was then found filled with solid exudates, partitioned and divided into wide pouches, separated from each other and filled with some thirty litres of citrine liquid.

To insure a perfect and rapid adhesion of the pouch with the abdominal wall, and to avoid the return of this complication, a long and wide flap of skin was removed and the edges brought together with a selvage suture with aseptic silk and a drain applied at the lower part of the wound to allow the escape of the serosity. Cicatrization then went on regularly and without suppuration in the whole extent of the stitched portion. The drained wound suppurred a little. A month later the animal was completely cured.

Observation 3—Old Hernia.—A cow, about ten years old, has suffered for two months and a half with a large intestinal

hernia, situated on the lower region of the right flank. The lesion extends horizontally as far as the hypochondria, and measures 60 centimetres in length, 40 in width, and 30 in thickness. It is easily reducible through an opening 15 centimetres long, with thick and indurated borders, which by taxis one easily feels at the anterior and superior part of the tumor, immediately back of the hypochondria. The animal is thin and worn out, yet her appetite is good. Notwithstanding the unfavorable conditions of the size and age of the lesion with the worn-out appearance of the animal, the operation is decided upon.

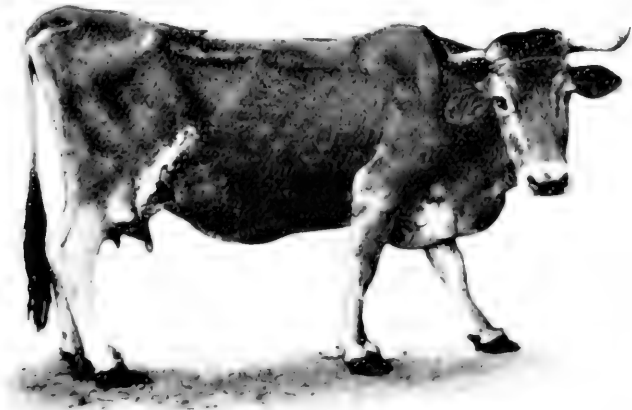


FIG. 4.—INTESTINAL HERNIA (AFTER OPERATION)

The animal, well prepared, and the anesthesia obtained with the mixed method of Dastre and Morat, viz., injection of atropine and morphine previous to the inhalation of chloroform, the operation is performed as follows: After disinfection of the field of operation, the pouch is opened with an incision made on a level and in the direction of the hernial opening. A serous sac is then exposed, formed by the peritoneum in ectopia and slightly adherent to the internal face of the sac, which it lines in its whole extent. On the borders of the hernial opening it forms a shrunken, fibrous and thick cord. The hernial sac is

carefully opened with a straight bistoury, guided by a grooved directory. At once the small intestine is exposed, normal and free from any adhesions. It is easily reduced and held back with an aseptic cloth laid over it. The slight adhesions of the serous sac with the internal face of the cutaneous pouch are carefully isolated; it is pedunculated, ligated and excised. There was, close to the ring, a small cyst, hermetically closed; this was removed, and contained half a litre of yellowish serous fluid.

After excision with scissors of the borders of the hernial opening, the edges were brought together with interrupted sutures made of catgut. Tympanism occurred during the whole operation, which required puncture of the rumen, performed with difficulty, as the animal was lying on its left side. A cutaneous selvage suture was made on the wound with aseptic silk and covered with an antiseptic dressing of iodoformed collodion.

Still under the influence of chloroform, the animal was left on the bed of straw where she had laid. When she got up she had slight paralysis of the extensors of the left anterior leg, upon which she had lain for over six hours.

Nothing abnormal occurred in the following days except a slight serous effusion into the lower part of the pouch. This was opened, the fluid escaped gradually, and three weeks later recovery was such as to be considered final.

DR. GULIAN C. FAGAN has removed from New York City to Warwick, N. Y.

DR. VAN GIESSEN, of the New York City Board of Health, will address the Veterinary Medical Association of New York County at its June meeting on "The Negri Bodies in the Diagnosis of Rabies." Dr. E. A. A. Grange will present a paper on "Motor Stimulants in Horses."

"THE IOWA-NEBRASKA VETERINARY BULLETIN" says: "Dr. C. M. Day is conducting experiments at Council Bluffs with weeds found on the Missouri Bottom to ascertain which one is producing the peculiar disease known as the 'Bottom Disease,' from which so many horses die along the Missouri Bottom."

OBSERVATIONS MADE IN THE DIAGNOSIS AND TREATMENT OF PARASITIC DERMATITIS OF THE DOG.

BY FRANK H. MILLER, D. V. S., NEW YORK CITY.

Read at the March Meeting of the Veterinary Medical Association of New York County.

Mr. President and Fellow-Veterinarians:

I presume the dictates of proper form in good circles indicate that I should lose no time in explaining how happy I am to be present with you to-night, but the plain fact is, few men feel really happy under like circumstances, and when I have the honesty to confess that I am before you in a more or less unprepared condition, I am sure you will agree with me, that I may be here both against my will and better judgment.

When our esteemed brother, your President, wrote me in early January and honored me with a request that I contribute a paper for the February meeting, I pleaded the excuse of personal pleasures anticipated, which would interfere with my being present in February, and gladly asked that I might be placed in line for this meeting and rashly enough suggested a subject; but as you all know, "pleasures are like poppies spread," and mine was followed by an attack of "Grippe" accompanied by a very marked increase in practice, some of which I think the more uncharitable of you may be inclined to believe was more or less due to our late dog show, of which I was the veterinarian in charge.

Be that as it may, the combination was so strong as to force me to abandon the task of preparing a long-winded, high-sounding paper involving the general subject of cutaneous diseases of dogs, nor have I many regrets that this is true, for the reason that such papers are usually constructed at great expense of time and thought, yet prove of very little interest, and as a rule promote but little spirited discussion, so desirable in clinical meetings of this kind.

I am not here, gentlemen, to give anything away, I am here to gather information from you and if possible to give something

in return, and would like to narrow my observations down to those made in the routine diagnosis and treatment of one of the most common, as it is loathsome, of diseases, with which we as veterinarians come in contact.

I refer to that form of parasitic dermatitis of the dog due to infection with the *Demodex folliculorum*, commonly, but I think very erroneously called, "Follicular Mange."

So common is this disease becoming that I venture to assume that there is not one practitioner of two years' experience present, who cannot look back and recall one or more good clients lost by reason of his being charged with the treatment of this disease; lost at times by reason of mistaken diagnosis; but more frequently by inability to effect cures within the limits of the dog's endurance or the client's patience.

Now, why is this?

Is it because this particular disease lacks the cardinal symptoms which make its diagnosis easy and certain under all conditions; or having been correctly diagnosed, is it because of the comparative indestructibility of this parasite as compared with others, which mitigates against satisfactory treatment, or is lack of exact knowledge of the process of dissolution of the parasite also one of our causes of weakness in combatting cases?

Basing my observations as I do entirely on personal experience, I am ready to admit, and that freely, that we often stand convicted upon all three of these points.

I know to my chagrin that I have at times made blunders in diagnosis which were little short of crimes, by trusting myself to physical examination alone, thinking the use of the microscope unnecessary. I know this to be the besetting sin of general veterinarians from the number of cases which appear for examination where lengthy treatments have been followed out for all manner of diseases except the correct one.

We are all prone to fall into methods of haste in this busy world, but the veterinarian who fails to demonstrate the presence or absence of the demodex by the microscope in these cases before he arrives at conclusions and outlines treatment certainly

is working upon his client's time and nerves and much against his own interests.

The number of conditions of the skin of the dog with which this disease may be confounded by mere physical examination are too numerous to mention, and only second in importance in arriving at an exact finding is our ability to exclude the possibility of the presence of two distinct diseases prevailing conjointly, a circumstance not altogether rare, especially in kennel epidemics.

Not only must we be perfectly familiar with the parasite in question, but long experience has more and more convinced me of the great value of studying the parasite as an individual, as their morphological aspects have come to bear much meaning in fixing the stage of disease and prognosis, as well as lending a most valuable (I may say the only) aid in computing the results of our treatment.

This observation resolves itself into an appeal for the constant use of the microscope, no matter how morally certain we may feel regarding our ability to diagnose diseases offhand.

If we will only submit every single solitary case involving the mysterious loss of hair in the dog unassociated with the intense itching which clearly makes for sarcoptic infection to rigid microscopic investigation, we will find this dreadful disease, after all, about the only one in all comparative medicine whose diagnosis can at all times be rendered absolutely error free.

Not only is the diagnosis open to the gravest question when this precaution is not observed, but this disease can only be pronounced cured when after the most rigid microscopic examination we can assure ourselves that the parasites are really no longer present.

So much, gentlemen, for the microscope in diagnosis; I will again briefly refer to its value in treatment.

Fröhner has drawn attention to the great number of remedies known to be of more or less service in the treatment of this disease and very correctly states that their numbers alone

would plainly indicate the difficulty in selecting a perfect cure.

He has also given for our great benefit a scale showing the relative action of many drugs when brought into direct contact with the demodex; but it will be noted that the time required to kill the organism is in the most instances prolonged, some taking a matter of hours, as in the case of one per cent. solution of arsenic, which requires two hours to destroy them; 10 per cent. creosote kills at once; 5 per cent. creosote up to 6 minutes; 5 per cent. carbolic acid about 5 minutes; pure creolin at once; wood tar at once; Peruvian balsam in 10 minutes.

In running over this scale, which may be found in "Friedburger and Fröhner's Special Pathology," under the section upon "Mange," two things will strike the attention very forcibly: First, that by far the greater number of these agents belong to the class of virulent poisons, many of them indeed to the escharotics, and yet we find this small animal resisting such solution as a one per cent. of sublimate of mercury for 15 minutes; while upon the other hand we learn that he is able to live for a short period only in the presence of balsam Peru, an agent which in nowise belongs to the poisons and can be safely given by the mouth even to the carnivora in relatively large doses.

What does this mean? Simply this: That the demodex enjoys life under laws somewhat different from those governing the existence of the higher organisms, and can live and thrive for a long time under conditions which would speedily destroy his host, and may be killed by agents which do not very materially affect higher animals.

And this brings me directly to the main point in my observations.

I have ceased looking in the direction of the drastics for an ideal remedy for this disease, and turned to try and find a specific among safer agents.

I have cured many cases permanently by the application of balsam of Peru, creolin and alcohol, but the time required has almost invariably extended over the third month.

During the past year I have learned to replace the Peru

with large quantities of oleo-resin *aspidii*, still retaining about eight per cent. creolin, replacing one-half the alcohol (grain spirit) with methylic spirit and in the cases of the robust breeds using the latter altogether; an advantage both as regards the cost and efficiency and without ill results of any kind.

Under this treatment I am, in the great majority of instances, with equal diligence and thoroughness of application, able to cut off about one-third of the time required by the old method, reduce the expenses one-third, and inject great elements of safety by cutting out all of the more deadly agents.

While the *aspidium* has the great disadvantage of being costly and of exceedingly bad odor, it has in later years become known as one of the very safest of drugs even when given in extremely large doses.

The question naturally arises as to how this drug exerts its powers as compared with those formerly used. In reply to this I can only say that in my candid opinion it kills out the disease in just the same manner which other agents have done; this not in any sense by reason of local action (in coagulating the protoplasm of the organism by dehydration), but simply and wholly by rendering the conditions of life so very unsuitable to them, as to render them incapable of reproducing their kind, and since such would of necessity be a matter of disturbed nutrition ultimately moving the death of the organism itself.

This, gentleman, is my opinion, based upon general results and close examination (microscopically) of cases under treatment.

I invariably find in such cases as are moving along toward recovery, regardless of this or any other treatment, that the first change is seldom any very marked diminution of the numbers of parasites present; nor for quite a long period is there any perceptible change in the physical appearance of the individual organism.

Finally the organism begins to show change in outline, becoming less long, especially in the posterior parts, and from about this time onward they appear to gather pigment and finally the

entire belly part becomes one mass of degenerative granulation, and the general outline will have become decidedly "chunky," so to speak.

These conditions, if treatment be correct, are now rapidly followed by great diminution of their numbers and early death and disappearance.

In addition to these gradual and well-defined changes, I am convinced that it is a matter of retrograde evolution by reason of the ultimate disappearance of young parasites, characterized as they are by having only three pairs of legs as against the four pairs of the adult, and especially since I had several complete recoveries where treatment was abandoned at a point where parasites were still present, but evidently much embarrassed in their generative possibilities, but not entirely destroyed.

This, gentlemen, forms my final appeal for the value of the microscope in treatment as well as diagnosis. Its use is simply indispensable.

DR. R. A. RAMSAY, recently made Superintendent of Interstate Quarantine Service of the B. A. I., visited the Kansas City Station in March.

THE HORSE INDUSTRY GROWS.—Statistics submitted to the House of Representatives, in connection with the agricultural appropriation bill, show that there has been a notable increase both in the number and value of horses in the United States in last nine years. The aggregate of horses January 1, 1906, stood at 18,718,578 against 14,364,667 at the corresponding date of 1897. Their total value increased from \$452,649,396 in 1897 to \$1,510,889,906. This startling rate of increase in value is no more marked than that of mules, according to the same Government authorities. There were 2,215,654 mules in 1897 and 3,404,061 in 1906, and the values were, respectively, \$92,302,090 and \$334,680,520. If these figures are trustworthy there must have been some improvement in quality as well as noteworthy increase in numbers in the nine years, to account for all the difference. Accuracy in numbers is more easily attainable than accuracy in valuation. An enumeration is not a difficult task, whether it deals with human beings or valuable animals; but the ascertainment of individual wealth, or the valuation of property, is a process fraught with difficulties.

A HEART TO HEART TALK.

BY DR. W. L. WEST, KANSAS CITY, MO.

Read before the Missouri Valley Veterinary Association, February, 1906.

I am not sufficiently venerable and a long way from wise enough to pose as an oracle or try to instruct the brilliant and erudite audience I see before me this evening. If any of my criticisms are too strong, you must remember that all stimulants are more or less in contact irritants, and, again, these societies are not formed for expressing mutual admiration, but for mutual benefit and improvement and nothing begets improvement more readily than good sharp criticisms if applied and received in the proper spirit. William Osler, the most famous diagnostician and teacher in the medical world to-day, said recently in an interview that the saddest thing to him in life was the fact that most of his former pupils were mentally dead; this applies with more than equal force to the veterinary profession, in which a large majority of the men begin at once upon leaving college to fossilize and inspissate; they won't buy the new books or study the old ones; they won't buy new instruments and will hardly keep their old ones in fit condition to be seen; they won't attend meetings of their local societies, and consider it a waste of money to subscribe for a professional journal.

Now, there is no excuse for this state of affairs and the three most prominent etiological factors are ignorance, laziness and indifference.

The fact that a man was so unfortunate as to have his early education neglected and have been at work when he should have been in school, is a good reason why he should be pitied, but in this enlightened age if he continues to be illiterate he is not worthy of pity, but is only entitled to the contempt of honest men, for there is no reason why any man by devoting a few minutes each day to study, or attending a night school, should not get a fair amount of education, which will then only be limited by his persistence and courage. The principal trouble with the class of which I am speaking is not that they have no

opportunity to acquire knowledge, but they are so badly affected with hyperplasia of the cerebrum that they do not see or feel the need of any further knowledge and have strong doubts if there is anybody wise enough to teach them anything.

This is as fatal to progress as death itself, and I pity any person who is afflicted in this way.

The profession is making such rapid strides in the realm of knowledge, that a man who has been out of school for five years should take a post-graduate course, brush up and make an effort to move along with the procession instead of lagging behind and staying in the same old rut year after year. Another thing to think of is, don't let money alone be your being's end and aim, for there are many other things of far more value than money; among them are a good name and the reputation of having some stamina, force and stability, as well as a conscience and a firm determination to do right for right's sake; not that I despise money, far from it, but its only use or its only proper use is its ability to procure for us those things which make life worth the living and add to the happiness of those we love; make it your servant not your master, for, with the immortal Goldsmith, we may say "ill fares the land to hastenings ill a prey, where wealth accumulates and men decay;" not that I would counsel you to be reckless in your disregard for money or to spend it upon those things which are found to be vanity and froth, but would advise you to spend it in a wholesome way with due regard for the improvement of your own and your family's condition.

I can do no better in pointing out to you my idea of what a veterinarian should be than to quote to you an extract from the remarks of Prof. Elliot, of Harvard, to the undergraduates, on the durable essentials of life: "Not simply by earning good livings—not by wealth—not by fame—not by excitements, but by the lasting and durable satisfactions of life are a healthy body, a vigorous, responsive, interested mind—a love of honor for honor's sake." This coming from a man than whom there is no more polished gentleman, more ripe philosopher, or more

cogent reasoner alive on earth to-day, should be accepted by us as final and complete.

Keep your eyes open and be at all times keenly alive to all opportunities for acquiring knowledge, as such opportunities may arise in the unexpected ways and in the most out of way places.

Right here I wish to tell you of an experience of my own where I received a valuable hint from a man who was certainly as humble and illiterate as most. I was going a few miles out to castrate some boars weighing about 400 pounds each and took this man along to help secure them. On the way, I was planning how to secure them for the operation, when the man above referred to, said, "I will show you how to hold them, if that is what you mean." When we arrived, he took a sugar barrel and laid it on the side and sprinkled a trail of corn up to and into it. When one of the boars went in after the corn, he seized him by the hind feet and with him ended up the barrel and by spreading his legs I had as good an operating table as you could ask for, with many desirable features, among which are: the hog can't hurt you, he can't hurt himself, he can't get away, and you can release him instantly.

We must not get the idea in our heads that because we have some technical training that we have secured a preempted right to and a monopoly of all observation, for we meet men every day who are in the most humble walks of life whose powers of observation are wonderfully acute and logical. Some of the most useless and dangerous mistakes of veterinarians are made through ignorance induced by laziness; for instance, I knew a man who while in college was a fairly good student who, after being out a few years, while operating on a poll-evil, excised the *retrehtentes aurem* muscle in a very valuable show horse, leaving him with an ear dropped down over the front of his face like a green patch on the eye of a blind man. This was all due to laziness; had he looked up the anatomy of the part, separated the fibres and put in a drainage tube, he would have saved the looks of a good horse, the wrath of the owner,

and himself a damage suit. A veterinarian of my acquaintance was called to see a cow which was paralyzed (*ante-partum*). He knew he ought to perform dilation of the os and remove the calf, but it was a cold and a dirty job, and he stifled his conscience by leaving the owner some nux and trusting to luck, not Providence—I don't think Providence ought to be accused of having any part in such a performance. Well, the result was, the cow sprawled around for some time after being due to calve, and at last, the owner dilated the os and removed the macerated foetus, when the cow recovered. The veterinarian lost hundreds of dollars by being too lazy and indolent to do his manifest duty.

There are men who occupy prominent positions, who make most glaring mistakes—some through ignorance and some through a general inherent meanness. I have in mind a man who has long been at the head of the sanitary work in a large and prosperous State, who has retained his office by the foulest kind of wire-pulling, and who has repeatedly been informed of abuses of the laws he is sworn to enforce, among which is the law that all animals shipped into the State shall be tested with tuberculin and proven free from tuberculosis. One neighboring State where the most conservative veterinarians assert that two per cent. of the cattle are tuberculous, has within the past five years shipped into the State presided over by the above-named person, more than sixty thousand cattle, mostly for dairy purposes; and these cattle are alleged to have been tested by agents who are selected by, and vouched for, by this man, who are in many cases laymen and in this period not one case has been reported as tuberculous.

One firm who ship from one to three carloads per week get their testing done, or rather their certificates signed, for five dollars per week, so I have been told. There is no excuse for this and I am glad to say that the party above mentioned has no standing with the rank and file of the profession and should be fraternally ostracized.

A very common mistake made by veterinarians when first going into practice is locating their offices in livery stables.

The writer had his in one for four years, and while in some cases there may be extenuating circumstances, the principle is wrong. There are many people who do not wish to bring an animal to a livery stable, there is nothing refined or elevating in the environment, and it is quite likely to breed a feeling of jealousy among other stable owners or dealers. Get an office, if possible, where you can have an operating room in connection, and keep it clean, not only of dirt, but of an undesirable element, viz., loafers. This I wish to emphasize, for nothing tends more to keep desirable clients away than to have to describe their cases before a gaping crowd of idlers.

One of the worst and most dangerous phrases a veterinarian can get into the habit of using and being satisfied is, "that it will do." Now, if it is your best there is no need of qualifying it, and if it is not your best, don't allow it to get away until your very best has been done. Keep your horses in good condition, and don't drive a lame one, for it is certainly a bad advertisement and reflects upon your ability.

Keep your buggy clean and in good repair. I have seen veterinarians riding in buggies which at a distance, coming toward one with curtains flapping in the wind, resembled nothing so much as a vampire bat.

Don't dispense your medicine in beer or other old bottles. New ones cost a very little more money. Also have neat and modest labels, affixed to all packages of drugs you send out.

Keep your instruments clean, not only ordinarily clean, but sterilized.

Keep an accurate record of all the work you do and the amount of money you receive for it. Don't do cheap work and don't cheapen yourself or the profession accepting a twenty-five cent fee. If any service is not worth more than that, make the party a present of it and ask them to call again.

You will be respected as you respect yourself. If you conduct yourself as a refined professional gentleman you will be so accepted by the people. On the other hand, if you associate habitually with the tough element, you will naturally be con-

sidered one of them. I know, of course, a man must be thrown in with some people in a business way who are undesirable as regular associates, but the fact that you would not invite them to a party at your home does not prevent you treating them in a perfectly courteous and gentlemanly way.

Take an interest in the affairs of the city in which you reside. Have some civic pride and show it by inquiring into the way the local health board is conducted; look into the city inspection of meat and milk and all food, and don't hesitate to let your views be known, for if *you* don't have any interest in these things, how could you expect others outside the profession to do so?

A very common mistake of veterinarians in cases of puzzling foot lameness is not removing the shoe. Always do this, no matter if the trouble seems quite plain, and you will be repaid. I knew a case presented with a history of sudden lameness, with one ankle behind badly swollen and tender to the touch. The veterinarian to whom the case was presented looked at the foot casually, and the ankle intently, and prescribed a cooling lotion. The case was seen several times and grew worse, and when a consultation was had, by removing the shoe and by a careful searching of the foot, a large nail was found firmly embedded, leading to a suppurating wound.

Prof. Dick used to relate a case where a fracture was caused by a nail in the foot and the case would have been lost but for his unvarying rule "to always remove the shoe."

A great and fatal mistake made by many veterinarians is in trying to get along without proper equipment in the way of books, instruments and means of restraint. I am not advocating a young practitioner's loading himself up with all sorts of useless truck, most of which is simply made for sale—but no man should try to practice without a good working library, all necessary instruments, and at least two or three different means of restraint. In the matter of instruments, and more especially in the matter of dental instruments, I have found a good many exposed for sale which must have been made by a

blind man, or, at least, the maker could certainly have never seen a horse. A good way to get useful molar extracting forceps, for instance, is to take a skull and saw out the external plate so as to expose the direction in which the molars are implanted and must be drawn and have a good mechanical blacksmith make a set of forceps suitable to the case. There are mistakes of omission as well as commission. If there is one plan or duty more than another that is calculated to help a man to be a better practitioner, it is in the keeping of a case-book and make it complete and a full record of the case—diagnosis, prognosis, treatment, result, and post-mortem. Don't neglect the latter, for there is a great deal of satisfaction in verifying a correct diagnosis and much helpful stimulation in finding out what was the trouble, even if you are wrong. In keeping this case-book don't cheat yourself and pad it up afterwards with the diagnosis you would have made if you had seen the post-mortem first; that won't help you any; but make the record complete and absolutely true; even if it hurts some, it will help later. While we are on this subject let me say never neglect an opportunity to make a post-mortem if you have had the case in charge, for nothing adds more practical pathology than a series of careful and intelligent post-mortems. But there is something more to a properly made post-mortem than merely opening the abdominal cavity and looking at the various organs exposed, meanwhile holding a handkerchief to the nose and standing about ten feet away, which I have actually seen some veterinarians do.

Eternal vigilance is the price of liberty; eternal study is the price of knowledge, and I have never yet seen a good man who was not a reader. I have in mind at present a classmate who was unfortunate in his inability to readily grasp essential details but very fortunate in his capacity for sustained mental effort, who by constant, earnest and intelligent digging, has placed himself at the head of a State institution and is in a fair way to be a national figure of prominence. Don't be too dignified to attend to small details. When Nicholas Senn, one of the world's

most famous surgeons, went to Germany to study, he entered the clinic of one of the world's savants and upon entering was told to wash some bottles at a sink. He inquired if they knew who he was, and was told yes, but wash the bottles, and he washed them and thoroughly without doubt.

One great and at times fatal mistake that is made every day by many practitioners is that they do not use and rely upon the help given them by the use of anæsthetics. I have even known men to perform oöphorectomy in bitches without using an anæsthetic, and in fact I did so once myself, but only once, and I am willing to give a bond that I will never do so again, for I can still hear the cries of the poor beast, and I have much less respect for myself every time I think of it. It does not seem necessary to use much time in argument in support of the more routine use of anæsthetics, for they are humane, their use renders difficult and dangerous operations safe and harmless, they add to the respect for skill with which the surgeon is regarded by the community, and finally the special skill of the trained anæsthetist is acquired by the constant, careful and continued use of these agents.

I hope I have not, from my somewhat emphatic criticisms of the profession in general and some members of it in particular, given you the impression that I am a pessimist—far from it; but I don't think it a wise plan for us to let a too brilliant optimism blind us to our palpable faults.

I believe in the veterinary profession, and I believe it the grandest and most noble vocation in which a man can spend his life. What can be more calculated to lead to the highest realms of peace and happiness than a life spent in the alleviation of the ills and pains of our dumb friends? Gentlemen, I thank you for your kind and thoughtful attention.

TWENTY-SEVEN veterinarians took the Civil Service examination for meat inspector at Kansas City, April 18th.

"THE REVIEW is constantly improving in quantity and quality. I read it regularly with pleasure and profit."—(C. A. Cary, B. S., D. V. M., Ala. Exp. Sta., Auburn, Ala.)

SPAYING THE HEIFER.

BY DR. J. W. ROBINSON, COLEHARBOR, N. D.

Presented to the 1906 Meeting of the North Dakota Veterinary Medical Association

Spaying the heifer is an operation simple enough to the surgeon who has acquainted himself with the work by experience, but to the beginner it seems rather hard to find the proper literature on the subject. At least in my case, I could find but very little practical information outside of surgeons in active practice.

The method I have used is according to the valuable information I have received from Dr. Treacy, who kindly helped me by letters, as I was unable to be with him while operating.

The following outline of the work is intended for field work only, as in spaying on the range we must be quick and practical and cannot spend much time on sepsis. In fact, my experience has proven to me that the operation is much less dangerous if performed quickly than if much time is taken with the hand in the abdominal cavity searching for the ovaries.

Season.—I would prefer spaying at the ordinary castrating season, when the weather is fine and the grass has a good start.

Age.—I prefer operating on yearlings, or what might be termed last year's calves, as they seem to stand the operation well, and at this age there is very little danger of any being pregnant.

Mode of Confinement.—I prefer throwing and tying as for branding; that is, throwing by a slip noose on the hind legs and then tying the front feet, when down, in a similar manner, stretching the ropes tightly to opposite fence-posts in the corral.

Point of Operation.—The left side just anterior to the angle of ilium. Clip the hair and wash the surface with a lysol or creolin solution.

Instruments.—Curved-bladed castrating knife, Miles' spaying shears, Miles' spaying needle, and plenty of strong silk.

Operation.—Make an incision with a curved blade of castrating knife, about four inches long, in a downward and for-

ward direction, keeping as high up as possible and cutting only through the skin and fascia. Now, with the fingers, divide the muscles in the direction of their long fibres. If the opening cannot be made large enough in this way, the knife can be used at either end, being careful not to cut more muscle fibres than necessary, as such a procedure would prevent the closing of the wound and delay healing. When the opening is large enough, insert the hand and puncture the peritoneum with the middle finger, being sure to use force enough to thrust directly through, as if moderate pressure is applied with several fingers, the peritoneum will separate from the muscles, thus allowing the hand to pass between. When the abdominal cavity is entered, keep the hand high and directed backward into the pelvic cavity and search for the left or upper ovary, which varies in size from a common bean to a walnut, according to size and age of the animal. For the beginner it is often difficult to distinguish between the ovary and lymphatic glands of this region, but after a little practice, it can easily be distinguished by its firm membrane.

When located, grasp the ovary between the thumb and forefinger, being careful that no intestine or omentum is included. Insert the shears, guiding the curved points along the arm and hand, open slightly and cut with short snips, keeping close to the thumb and forefinger. Remove the ovary and search for the other, which is removed in a like manner.

Sew the skin with a X-suture, using heavy floss silk, leaving the peritoneum and muscles to take care of themselves. Dress the wound with Squibb's compound alum powder, or boric acid and iodoform.

After-care.—Give access to good, clean pasture, away from old corrals or cattle sheds.

“ARTIFICIAL IMPREGNATOR IN HORSE BREEDING” is the title of Circular No. 5 of the Oklahoma Agricultural Experiment Station, Stillwater, Oklahoma, Dr. L. L. Lewis, Veterinarian. Full instruction on its use is given, with a consideration of the various methods and instruments.

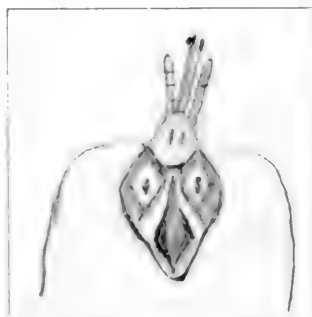
ANIMAL PARASITES OF TEXAS.

By JOSEPH W. PARKER, D. V. S., SAN ANTONIO, TEXAS.

In view of the importance of ectoparasites from a live-stock sanitary point of view, and the considerable number of veterinarians interested in this work, the following notes with reference to parasites found in Texas are offered:

AMBLYOMMA MACULATUM. — Reported by the writer in August, 1905, from De Witt and Live Oak Counties, Texas. Found on cattle, horses, sheep and dogs. Specimen classified by Bureau of Animal Industry, Washington, D. C. This tick was found only in or about ears, usually inside concha, never deep in ear like *R. spinosum*. Usually gathered in clusters, even when few.

It may be readily distinguished from other varieties of the *Amblyomma* by the markings of the scutum. The scutum of female bears antero-laterally two diamonds and posterolaterally two triangular splashes of iridescent silver-bronze, on a ground of a reddish color. These figures seem very regular. The scutum of the male bears silver-bronze markings of symmetrical geometric figures on a reddish ground, the most notable and regular being two imperfect triangles antero-laterally. The markings of the male, however, are subject to considerable variation.



SCUTUM OF *A. maculatum*

The female *A. maculatum* attains a greater size than any other tick known to the writer, one specimen being $\frac{1}{8}$ inch long by $\frac{1}{16}$ inch broad. Male $\frac{1}{16}$ inch by $\frac{1}{16}$ inch. The rostrum being very long and heavily armed, frequently causes wounds that afford access of screw-worms, resulting in lop-ears ("gotch ears"), because of which the tick is locally called a gotch tick. A considerable number of fatalities is said to occur, resulting from screw-worm infection.

RHIPICEPHALUS SANGUINEUS.—Reported for Texas by writer in 1905. Have found it only on dogs. This tick very closely resembles *Boöphilus annulatus* in general details, examination with a lens being necessary to positively distinguish. Main points of difference are: (1) Stigmata of females are blunt commas. (2) Stigmata of males are elongate commas, lateral anal plates rather small, internal anal plates long, and a tail is sometimes present. (3) Legs of both sexes rather larger and darker red than those of *B. annulatus*. (4) Replete female somewhat smaller than *B. annulatus*. The shape of the stigmata varies somewhat, in one specimen being almost round like that of *B. annulatus*. A number of cattle closely associated with dogs infested with *R. sanguineus* have been examined without finding these ticks.

ARGAS MINIATUS.—The Mexican chicken tick. A paralytic fever has been repeatedly observed among chickens infested with *A. miniatus*. The clinical phenomena point to an infective disease conferring a transient immunity, and the tick as the agent of transmission. In one infested yard, during 1905, eighty per cent. of chickens introduced from other yards exhibited the paralysis within eight to twelve days after introduction; most recovered, and only a few were subsequently affected, though nothing effective was done to exterminate the ticks and they were numerous throughout the year. Experimental infestation gave negative results.

CIRCULAR NO. 91 of the Bureau of Animal Industry is a preliminary report of "The Life History of the Twisted Wire-worm (*Hæmonchus contortus*) of Sheep and Other Ruminants," by B. H. Ransom, B. Sc., A. M., Scientific Assistant in charge of the Zoölogical Laboratory.

ABATTOIR FOR HORSES.—It is reported that the consumption of horse meat at Nuremberg, where a few years ago it was quite insignificant, has now increased so greatly that the facilities for horse slaughtering at the municipal abattoir have become insufficient, and the City Council has been obliged to consider the construction of a new abattoir for horses, the cost of which is estimated at \$43,000.

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."

DIAPHRAGMATIC HERNIA IN A TWELVE-YEAR-OLD MULE.

By C. A. CARY, B. S., D. V. M., Auburn, Ala.

The mule had been resting for 10 weeks with what appeared like gonitis in the left hind limb, but had been treated for bone spavin and sesamoiditis. During this time it ran in a lot with a few horses, and occasionally had access to a lot where cattle were fed cotton-seed meal and hulls. On two or three occasions it had colic attacks, which yielded to the ordinary domestic remedies of soda, etc. What seemed to be a fourth attack of colic called me to the case on March 23. I found the mule without fever, normal pulse, and suffering from colicky pains, manifest by uneasiness, getting up, lying down, etc. In the left rib region four ribs were fractured and a marked indenture, as often found in cases of osteoporosis. The lameness history, the broken ribs, and the colic from indigestion, led me to suspect osteoporosis. The mule was sent to the hospital and was treated for colic and in course of 24 hours seemed to be free of pain and eating grain and hay. The broken ribs being movable and sensitive, I expected pleurisy might develop. On the third day my assistant called me to see the pumping breathing of hydrothorax or pleurisy with effusion. Auscultation and percussion did not indicate that the effusion had risen very high in the thorax. Hence, we waited a few hours and the labored breathing disappeared and respirations became nearly normal. The temperature was then 103 to 105 F., and pulse rapid, 80 per minute. That night the mule died. Post-mortem revealed a rupture of the stomach; quite a quantity of food in abdominal cavity; abdomen full of red serum; peritonitis; liver, spleen and kidneys engorged with blood. Thorax, quite a quantity of red serum, but not as much as was found in abdomen. Pleura was only slightly inflamed. Lungs almost normal. The double colon and cæcum were in the left lung cavity; not strangulated nor inflamed, and contained apparently normal semi-liquid material and no more gas than usual. A piece or fold of the mesentery and omentum had at some previous period passed through an opening between the spleen and stomach and

another opening on the left side of the tendonous portion of the diaphragm and become fixed to the inner surface of a fracture of the 11th rib. The hernial opening in the diaphragm was $2\frac{1}{2}$ inches in diameter, and the opening between the spleen and the stomach was about the same size. The edges of each opening were smooth and entirely healed, showing that they were not recently made.

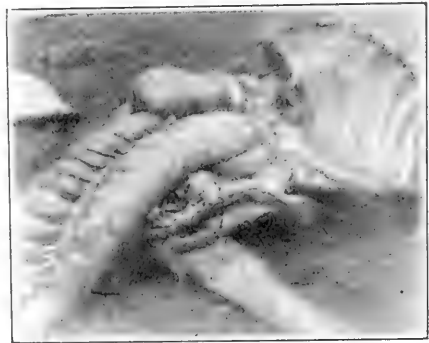
No doubt the immediate cause of death was the rupture of the stomach.

But how could a twelve-year-old mule do hard dray work up to within ten weeks of its death with such a diaphragmatic hernia?

Possibly it occurred some time during the ten weeks.



I.



II.

Explanation of Plates.

I.—The lower end of the ribs point upward in the picture. *D* is the abdominal surface of diaphragm. *R* lies between enlarged places of two broken ribs that have become united by false, movable union. To the enlarged broken rib at the right of *R* is attached the fold of mesentery and omentum after the fold (*M*) passes through the old hernial opening in the diaphragm. The opening is held open by piece of wood stick placed transversely above the *R*. *M* is the omentum and (chiefly) mesentery fold, which passes through an old opening (*O*) between the stomach (*ST*) and the spleen (*SP*) and then the hernial opening in the left part of the tendonous portion of the diaphragm, and is firmly attached to the enlarged part of the 11th rib that had been fractured and united by false union.

II.—Shows the thorax open; three fractured ribs and double colon and caecum that passed through the hernial opening in diaphragm into the left lung cavity.

CARCINOMA OF THE MAXILLARY SINUS AND ALVEOLAR PROCESSES IN THE HORSE.*

By L. VAN ES., M. D., V. S., Agricultural College, N. D.

During the summer just past, the writer was consulted in regard to a case occurring in a patient of Dr. J. W. Dunham, Fargo, N. D.

The horse, gelding, from fifteen to seventeen years old, had for sometime shown some difficulty in mastication. While this was being observed a more or less diffused swelling appeared over the left maxillary sinus. A small opening was drilled into the sinus by Dr. Dunham, from which escaped a small quantity of a clear limp fluid having the appearance of blood serum. As no pus was to be detected and as none of the molars showed any lesions on their face, it was not deemed justifiable to proceed any further in the matter, and after prescribing daily irrigation with an antiseptic solution the case was kept under observation for several days.

During that time there was an increase and extension of the swelling and when the case was seen by the writer the enlargement had extended well under the zygomatic arch, was more or less oedematous and rather painful on pressure. The left side of the face had a bulging appearance from the eye downward. The left nostril showed a muco purulent discharge which at times was tinged with blood. The sub-maxillary lymphnodes were enlarged, indurated and very tender to the touch.

The opening made into the sinus had not yet healed and a common probe could be introduced without difficulty. Inserting the instrument without any force it seemed to follow a canal leading towards the last molars, which, as indicated by the probe, seemed to be eroded on their roots. When the probe was pushed in with a little more force it readily found its way into the oral cavity, a manipulation followed by bleeding from the parts. After the withdrawal of the probe it was noted that the odor so characteristic of necrotic bone could be detected.

Manual examination of the mouth revealed an ulcerated condition posterior to the last molar. The ulcer seemed to be deep and formed a cavity which was filled with tissue debris and quite a quantity of food stuffs. Another feature of the case was the almost complete atrophy of the masseter muscle, on the side involved, which was probably the result of non use.

* Presented to Meeting of North Dakota V. M. A., January, 1906



FIG. 1



FIG. 2



FIG. 3

The general condition of the gelding was not bad, although the attendant informed us that there had been a considerable loss of flesh, apparently due to the difficulty in mastication and swallowing.

Owing to the erosion to the root of the last molar and the evident presence of dead bone, it was recommended that the tooth be removed and any dead bone thoroughly curetted away. This was done on the following day by Dr. Dunham.

The tooth removed was the last molar and the doctor stated that it would not have been difficult to remove three or more teeth on the same side, as they seemed to be implanted into a soft nodular mass with which the greater part of the cavity seemed to be filled. Upon examination of the tooth removed, it was found that some of this tissue was still attached to the molar, and from its appearance and the result of the finding during the operation, malignancy was suspected.

With a view of deciding this point, the tissue was prepared for microscopic examination, which revealed that the growth in question was a typical carcinoma. Consequently the destruction of the animal was advised. This advice was acted upon some two weeks later, and the head turned over to the writer for post-mortem examination.

During the interval the enlargement of the face and subzygomatic region had steadily increased, while the horse itself showed the effects of malnutrition and cachexia.

At the time of the post-mortem it was found that the opening into the sinus had nearly healed. After removal of the skin and soft structures over the involved area, the bony plates of the superior maxillary, lachrymal and malar bones were carefully removed. At some places it was necessary to use the chisel for this purpose, but in others the bones were so softened that they could be readily removed with a knife; in fact, part of the external and the orbital plates of the lachrymal bone had been entirely absorbed, while in some parts of the superior maxillary bone the osseous tissue had been so thoroughly infiltrated by the tumor mass that the two could not be completely separated.

After the removal of the bony coverings, the tumor presented itself as a lobulated, nodular structure filling almost completely the maxillary sinus and reaching into the nasal chamber, without, however, obstructing the air passage. Below it had infiltrated the alveolar processes of the superior maxillary bone to quite an extent. Posteriorly the alveolar

tuberosity is entirely necrotic, while the palatine bone also shares in the erosion. From this region the tumor structure reaches towards the orbital cavity, while further inward the muscular wall of the pharynx was infiltrated and immobilized by it. At one place where the nasal cavity, merges into the pharynx the tumor had actually broken through the mucous membrane and a nodule of the size of a large hazel-nut protruded into the air passage.

Microscopically the cancer proved to be of the glandular type, but otherwise did not present any special features. The stroma is moderately developed, while but few sections show any degenerative changes in the epithelial islands. A higher magnification reveals the presence of numerous cells undergoing division, as shown by the karyokinetic figures representing all the stages of the process.

ERRATIC OR IRREGULAR PARTURIENT PARESIS.*

By Dr. E. A. VAN ANTWERP, Brookfield, Mo.

In choosing this much talked of subject—one that has had papers in untold numbers written about it—I do not expect to bring out or advance any new ideas of the pathology or therapeutics, but simply put before you in as few words as possible my experience with three cases of this disease, which has become a desirable one to handle, thanks to the discovery of the great benefits derived from iodide of potash, then of oxygen, later of sterilized air, and very frequently the latter is used without sterilizing. We no longer dislike to hear a patron say that he has a case of "milk fever"—as it is commonly called—but now we are rather pleased to pit our skill against one of these cases, and if given half a chance can save the "best cow," for the owner will generally tell you it is the best one in the herd. Such were the conditions surrounding the first case I wish to mention.

Case No. 1.—On the morning of July 27, 1904, I received a call to come and see a cow that could not get up; had been found down about 7 A. M. It was nearly 9 o'clock before I saw her. I found a very nice specimen of native or cross-bred cow; she was unable to get upon her feet (as I made no minutes of the case I cannot say about her pulse, respiration, etc., as they have passed my recollection). She held her head free from the

* Read before the Missouri Valley Veterinary Association, February, 1906.

ground and swallowed a small dose of stimulants. Later there were administered a saline purge and nerve stimulant, with ammoniacal liniment to the spine. I left instructions for her care, especially to prevent her getting into a lateral decubitus, and promised to call again in a couple of hours. Upon returning, I found the cow had been allowed to get away from the support and was lying at full length upon her side, with quite a quantity of food at the nostrils, which had regurgitated from stomach. Her eyes were nearly closed, profuse lachrymation, no reflex sensibility; when rolled upon the sternum she would toss her head about, and when resting it would be placed at her side in the characteristic position of a case of paresis. Upon further inquiry I learned that the cow had been fresh four weeks; there was an entire absence of milk in the udder at this time, and she had given very little the night before. In fact, at time of second call she presented many of the symptoms of a case of parturient paresis, but for the four weeks past fresh had me guessing. Perhaps these conditions would have been very plain to many of you, but I have failed to see any description of a case so late after the period of calving.

I hurried back to the office, got the necessary boiled water, syringe, etc., gave cow my regular treatment for parturient paresis and was very much pleased to see an improvement in an hour and felt I was doing all right. After waiting about two hours from first injection I again inflated the udder, and, being obliged to attend to some other calls, gave rigid instructions as to keeping cow in proper position and left my assistant to look after them. I returned in about three hours to find the cow up and in a fair way to make a complete recovery.

Case No. 2.—On April 8, 1905, I received a 'phone call from a friend south of town. His Jersey cow was sick and acted somewhat weak in hind parts; owner believed she had been hurt. I asked some questions, among others if the cow was fresh, and was told she would not be for two months. I arrived at the farm and found a grade Jersey cow in a box stall. The casual observer would observe nothing wrong. I was informed that the cow left the stable that morning to all appearances perfectly well. When driven up at night she appeared weak in her hind legs, stumbled and nearly fell when going in the barn. When caused to move she would stagger about and almost fall down. After such an exertion her pulse would become accelerated to nearly an imperceptible degree, her respiration become hurried, but when left to herself would soon be

nearly normal. While the expression of her face with the drooping ears, half closed eyes, head carried low, showed the action and look of a cow coming down with parturient paresis, I could find no indications of an injury. I learned that she gave no milk that night, the usual amount being about three or four quarts to a milking. I administered a purgative and gave stimulant. About an hour later I determined to try treatment of the udder. I obtained a household syringe, cleansed the same, disinfected the udder, got all the articles clean and ready by disinfection, then inflated the udder with sterilized air, and repeated the same in a couple of hours. About this time I could see a little improvement in the cow and at midnight she was decidedly better. In the morning the owner reported the cow apparently as well as usual with absence of milk, of which she did return to her former amount.

Case No. 3.—On the evening of May 18, 1905, in answering a 'phone call, a lady's voice told me to hurry over and see Uncle Jack's cow. She said the cow was down and couldn't get up, and she believed it would be dead before I could get there. I had some trouble in calming the lady enough to find out where I would find Uncle Jack and his cow. I proceeded to answer the call, and found a nice Jersey cow down and making repeated efforts to get on her feet. She would rise part way and then fall broadside unless supported upon her sternum. When supported up in latter position, she would toss her head about and let fall at her side, assuming characteristic position of parturient paresis. Her eyes were amaurotic, no reflex action, stertorous breathing, air also being passed through mouth, causing cheeks to puff in and out with each respiration. The cow was somewhat bloated, which made it quite necessary to keep her upon her sternum. I learned from owner that the cow had been fresh about four months, that she did not have any milk in her udder that morning, her usual amount being about 8 quarts. After a careful examination, I decided it was a case of belated parturient paresis, and believing it unsafe to give medicine *per os*, I injected a solution of potassium iodide into the udder.

This treatment was given again at 7.30 P. M. Some improvement was observed. She became more quiet. At 10.30 the treatment was repeated. At midnight, thinking patient might be chilly, I picked up an old piece of carpet to throw over her, but it had hardly touched her back before she made a successful effort to regain her feet, and after a little stumbling about walked into the barn.

This is a review of these cases to the best of my recollection. I called them erratic parturient paresis, they being so far out of the usual time. These are the only cases of this kind I have observed in 20 years of practice and several years previous spent upon a dairy farm.

One would not have hesitated in making a diagnosis of parturient paresis had these symptoms appeared at the usual time.

I based my diagnosis on effect of treatment to the udder, which produced favorable changes in the condition of the patient in an hour or two. If they were not parturient paresis, what were they?

CARTILAGINOUS QUITTOR.*

By Dr. W. WARREN, Sedalia, Mo.

On October 23, 1905, a gentleman brought in a mare that was extremely lame, and asked me to take a look at her and see if I thought anything could be done for her. The horse was an ordinary road mare, weighing about 1100 pounds, 14 years old. He gave the history of the case as follows: In July she cut her right front foot on a barb wire across the outside quarter at the heel, making a deep, ugly looking wound which extended across the heel through the coronary band and about half an inch into the hoof. The wound at first apparently healed, as readily as cuts of this nature usually do, but in a short time it broke out again and then showed a tendency not to heal. The mare had been so lame she would not use the foot, only just to touch the toe to the ground. Upon examination I found a fistula just above the middle of the upper margin of the lateral cartilage on the outside of the foot, which by probing I found to extend down into the foot inside the cartilage, and could feel the bone exposed a little. From the direction of the fistula I judged the necrosis on the os pedis was very near the pedal joint; there was some fetor to the discharge, which indicated bone necrosis. I advised an operation, to which the owner consented. I decided to operate next day. The foot was placed in a poultice for 24 hours to soften the horny structures. The following day I called Dr. Bradley to assist me in the operation. We confined the mare on her left side by means of casting harness. The diseased foot was extended by means of a stick, and traps to fasten it so as to keep it as still as possible, and a solution of cocaine was injected over the plantar nerves and the parts cleansed with strong for-

* Read before a Meeting of the Missouri Valley Veterinary Association, February, 1906.

malin solution and soap. The hoof was rasped down as thin as possible, then a tourniquet applied above the fetlock, then removed the wall of the hoof from the heel around to within about an inch of the centre of the toe, made an incision through the sensitive lamina along the base of the lateral cartilage, then dissected the cartilage from the sensitive lamina, made an incision through the cartilage and dissected it loose from the inner structures of the foot. Upon removal of the cartilage, I found a sinus which contained about half an ounce of pus, cleansed this thoroughly, then curetted it thoroughly. I found a necrotic tract extending upward and forward in the coronary band. This was curetted, a dressing of iodoform and acetanilid applied, covered with absorbent cotton and bandages. I removed the ropes from the mare; she seemed to be suffering considerably from shock and did not seem inclined to get up. A stimulant was administered and the animal lay about an hour, then I spoke to her, and she got up and seemed to feel pretty well. I placed her in a box stall, gave some water and small feed of oats, which she ate. I renewed this dressing in 3 days, then again in 3 days, at the end of which time it was found that all the necrotic tissue had not been removed. Another tract seemed to be present.

A dark spot was found, which was swollen above the surrounding tissue. I took some chloride of zinc and applied to this point and pressed it into the tissue as much as I could, then applied dressing as before. In two days I redressed it and found it healing nicely. After that I dressed it once a week for several weeks. It did not appear to be as sore from the time I dressed it the second time as it was before the operation. Within two weeks after the operation she put her entire weight on the foot, and I think she will go as sound as she did before she was injured.

I would not have dressed this quite as often had I not wanted to watch the place that I did not get thoroughly curetted out at first. I did not report this case to teach any one else anything especially, but to show that it is an operation that can be done without an operating table, etc. I heard a party remark here last fall at one of our conventions when Dr. Brown was operating on a foot that it was not necessary to watch him, as we could not do such operations in the country with the ground for an operating table. I think the principal thing is to go after it the best way you can with what you have to work with and use every precaution possible for preventing

septic material entering the wound during the operation, then thoroughly irrigating the wound with a strong antiseptic solution of some kind before applying the dressing. By doing this I think we can obtain good results many times when we feel reluctant to undertake the task.

A BAD CASE OF LAMENESS.*

By C. J. HECKARD, Wheatland, Iowa.

On June 24 last, I was called by a farmer, John Miller, living north of Calamus, to see a lame mare. On examination, I found that there was a small opening at the heel of the right front foot, and by probing found that it extended inward and upward about 1½ inches. There was a little pus escaping and mare was quite lame. I took probe-pointed bistoury and enlarged opening and injected a solution of carbolic acid, and then placed a small piece of sulphate of copper in edges to keep them from healing too soon, and bandaged, advising the owner to remove same in about 12 hours, and then syringe it out with warm water and inject some creolin solution. Also told him to attend to it in this way twice a day.

On July 11 he phoned me and said that it did fine for a while and lameness was just about gone and it was all healed up, but now it had broke again and mare was very lame, and for me to come over again and see her. So I drove over and found her in bad shape.

He told me that the leg had been swollen very badly, and was very hot from the foot up above the knee, and that a neighbor woman came over and saw it and told him that a good cowmanure poultice would be the last and only resort. So he and the hired man took a pants leg and started for the cow barn, she following. She watched them filling the bag far a while, then becoming disgusted by their slow work, took it from them and proceeded to fill it with her hands. After she finished filling it she took it to the barn, and having them hold the horse, slipped it on the leg. This was left on about 24 hours, and when removed found that it had broken in four places, one anterior above ankle, two posterior above and below ankle, and one on outside just above ankle.

It seemed that the entire region was rotten. I injected a solution of creolin through all the openings, which connected, and then covered the entire leg from foot up with Antiphlogis-

* Presented to the Iowa Veterinary Association, Jan., 1906.

tine and bandaged, advising owner to change it every 24 hours for three or four days, and at each time to inject parts out clean with warm water, and then inject white lotion.

A few days later he 'phoned me again and said that that morning when he removed the bandage he saw something loose protruding out of the posterior opening above the ankle, so took hold of it and lifted it out. He wondered what it was, so I told him that I thought it was one of the flexor tendons, which it proved to be on later examination. [Specimen was shown.] He also stated that the mare was very lame, in fact she couldn't put any weight on it at all. I told him that if it was a tendon she would possibly never recover from the lameness. Well, he said he didn't care if she would only live and be able to get around, for she was a good broodmare. I kept sending him medicine, such as creolin, the white lotion, bichloride solution, adding a little carmine to color. Dry dressings, such as calomel, boric acid and iodoform. A salve composed of petrolatum and bismuth, acetanilid and naphthol. These were used for about six or eight weeks, and finally it healed up.

The mare is still somewhat lame, for she hasn't control of her foot, due to the loss of this tendon, and she walks mostly on her heel with the toe raised.

TYMPANY IN A BULL DUE TO TUMORS.*

By C. E. BAXTER, V. S., Oakland, Iowa.

The subject was a five-year-old registered Hereford bull, weighing about 1,500 pounds, in ordinary condition. Was driven in from pasture October 30th, considerably bloated.

Being called to prescribe, and not thinking it necessary to see the patient, I sent a drench, consisting of salicylic acid, oil terebinth., ether sulph., oil lini, with instructions to call in four or five hours if bloat had not subsided. The next evening was called and informed that the bloat of the day before had gone down during the night, and the patient turned on pasture in morning (consisting of second-growth timothy and clover) apparently all right, but was found about 4 o'clock badly bloated. Rumination suspended and a grunt following each expiration. Prescribed salicylic acid, eth. sulph., sodii chloride, sodii sulph., and fluid extract nux vomica, as drench, repeated in eight hours. Instructed them to keep him off the pasture, giving him grain

and dry clover hay. The next day the bloat did not return, but on the day following he was as bad as ever.

This remittent tympany continued (notwithstanding numerous changes in diet and the administration of antacids, nerve tonics, antiferments and intestinal antiseptics) for about three weeks, during which time he seemed to enjoy good health, looked bright out of his eyes, ate, ruminated (except when severely bloated), temperature, pulse and heart sounds normal, but falling off in flesh, and lacking in vitality.

I came to the conclusion that there might be some foreign body in the rumen, and consequently advised rumenotomy, which was performed November 21st.

The rumen being very much distended at the time of the operation, the trocar was introduced and flatus removed. The rumen was then opened and two half-bushel measures of contents removed. This ingesta seemed a little on the dry order if anything, with no offensive odor. The walls of the rumen appeared rather dry, probably due to long distention from gases, and peristaltic action entirely lacking.

Introducing two gallons of normal saline solution at body temperature, the remaining contents of the rumen were thoroughly mixed in search of some foreign body, particular attention being given to the reticulum, but no such intruder could be found. The contents of the omasum seemed to be in a normal condition. I now introduced a saline cathartic through the opening, consisting of sodii chloride, sodii sulph., fluid extract nux vomica, tincture zinziber, and completed the operation, using heavy catgut ligatures.

Concluding the tympany due to paresis and possibly some catarrhal condition of the rumen, the patient was kept in barn with exercise in lot during day, fed on bran mashes, clover hay and oats.

Prescribed strychnine sulph., $\bar{\text{r}}\text{ i}$; fl. ex. gentian rad., $\bar{\text{v}}\text{ viij}$; fl. ex. hydrastis, $\bar{\text{v}}\text{ ij}$; glycerine, $\bar{\text{v}}\text{ iv}$; spts. vini rec., $\bar{\text{v}}\text{ ij}$. Sig. One ounce in a little water twice a day.

The first two days following the operation, he did not care to eat much, after which he ate and drank well; temperature ranging from 102 to 103°.

On November 28th he was noticed to be somewhat tympanitic, and on the day following very much so, gas escaping between stitches, which had been loosened by excessive tension. Removing a stitch I forced an opening into rumen, allowing the gases to escape freely, and tightened the stitches above. As

soon as relieved he went to eating. When gases accumulated they could easily escape through the side.

He continued to eat, although not as heartily as before, kept a bright eye, but gradually failing in flesh, getting very weak, until December 16th he was destroyed.

The autopsy disclosed a collection of what seemed to be fibrous tumors, their aggregate size being about that of a four-quart cup and located in the posterior mediastinum.

The abdominal viscera seemed to be in normal condition except that it presented a rather livid appearance throughout.

I have just been informed by the previous owner that this animal had two or three attacks of tympany during the summer, supposedly due to clover.

USE OF ESERINE IN CHOKE OF DOG.

By MARK WHITE, V. M. D., Denver, Colo.

Pomeranian dog, with cervical choke, due to a bone. The dog had been choked fully fifteen hours when I was called. I could feel the foreign body perfectly in the upper third of the œsophagus. The owner stated that they felt the foreign body the day before, and it had not moved from where they first felt it, which demonstrated that the bone did not have a tendency to move downward.

I decided to inject eserine subcutaneously. To my delight, in less than an hour the bone had moved down and the dog appeared perfectly comfortable.

After injecting the eserine the dog started to swallow repeatedly. The action of the drug is experienced in two ways: that is, it overcomes the spasmodic contraction of the œsophagus upon the foreign body and at the same time stimulates peristalsis.

RAW MEAT AS A FOOD FOR DOGS.

By MARK WHITE, V. M. D., Denver, Colo.

There is strong prejudice against feeding raw meat to dogs. Some veterinarians recommend raw meat, others cooked. Personally I believe raw meat the natural food for dogs and cats, and recommend it to my clients freely, and have never regretted so doing. City dogs which eat raw meat are not troubled with constipation, etc.

I was called to kill a cocker spaniel dog, sixteen years old. I was interested to know the food this dog had received in order to live to such a ripe old age. Owner stated his food had been *raw meat*, and that the dog had lived in the city of Denver all its life and never had been sick. Practically every dog in Denver has to have the distemper, and since this dog escaped it, it leads me to believe the raw meat as a food increased his resisting powers against disease.

THE HORSELESS AGE seems to be a long way off, judging from a statement in the *New York Herald* of May 6, in a brief review of the carriage trade. The total production of horse-drawn vehicles in the United States last year was 1,600,000, as against 25,000 automobiles, while the number of horses in the country was 17,000,000. [The total number of horses as submitted to Congress recently is 18,718,578.—(R. R. B.)] Records of no other year equal these figures, but it is estimated that they will be surpassed by those of 1906. Half a dozen Western States now have carriage building plants that will turn out upward of 25,000 vehicles each; at least two concerns will produce more than 50,000 each, while the great Studebaker plant, at South Bend, Ind., will probably build 75,000 horse-drawn vehicles for business and pleasure to supply its retailing branches throughout the world.

A BRIGHT LOOKING MONSTROSITY.—The accompanying photograph was forwarded to the REVIEW, with the compliments of Guy M. Richards, V.S., Beachview Farm, Oak Harbor, Washington. With no other explanation, the reader is permitted to draw his own conclusions from the splendid photograph, which shows a fifth leg growing from the left flank, this being less well developed than any of the others. Apparently this supernumerary extremity prevents the normal-appearing left hind leg from performing its function in locomotion,



though the little bovine does not seem to be depressed over its affliction.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By J. P. O'LEARY, M. D. V., Bureau of Animal Industry, Buffalo, N. Y.

CONCERNING THE TURNIP FLAVOR OF MILK AND BUTTER.—It is known that the turnip flavor acquired by milk and butter in the case of cows fed largely upon turnips is due to the bacterial contamination of the milk during the process of milking and not by the transmission of taste into the milk by way of the digestive apparatus and the blood. According to this theory, the taste could be obviated by cooking the milk and destroying the bacteria. In a recent article published by Dr. Schaller, of Augsburg, in the weekly *Journal of the Agricultural Society of the Grand Duchy of Baden*, he states, that cooking the milk for a short time is not sufficient to kill the bacteria, but rather helps to intensify the turnip flavor. This fact is explained as follows: that the turnip flavoring bacteria produce spores which resist cooking to a marked degree, while the lactic acid bacteria are not destroyed in the process of cooking, and as a result of their destruction conditions become favorable for the development of the turnip flavor bacteria. In uncooked milk there is a struggle between the bacteria which sets free acid and those which cause this flavor, in which the former limit the latter in their development. As is known, acid is directly harmful for most bacteria. On this account also it is possible to produce butter of full value from cream which is tainted with turnip flavor if it is pasteurized at a high temperature and then subjected to slight artificial acidification.—(*Deutsche Landwirtschaft. Tierzucht, 1905, No. 9.*)

TREATMENT OF BLOOD IN THE MILK (THE SO-CALLED BLOODY MILK OF COWS) THROUGH AN INFUSION OF AIR BY MEANS OF THE AIR FILTER APPARATUS AFTER EWERS-WARREN [*K. Meuch*].—M. determined to report two cases attended with favorable results. *Case I.*—Farmer K. in G. requested him to treat one of his cows, which soon after calving gave red milk and continued to do so for about fourteen days, which he could not and did not wish to use for household purposes. He ordered the animal to be kept in a quiet place, and to use caution in milking out the udder and to use a salve to hasten reabsorption of the blood. He visited the owner after three days; the

latter told him the cow still continued to give bloody milk. M. drew some milk and became convinced that it contained bloody streaks and even some thrombi. The idea suggested itself to him that an infusion of air would cause intense compression on the injured bloodvessels, and eventually close them, and thus stop the hæmorrhage. He proceeded to treat as follows: He had the udder completely milked dry and injected air into the teats by means of the Ewers air filter, so that the udder was well filled with air. The animal was walked about for a short time, since it showed symptoms of uneasiness. He ordered then that the animal be allowed to rest until next day, when the udder was milked dry, asking the owner to inform him of the result. Two days later the owner told M. that the morning following the treatment the cow did not show the least trace of blood in the milk. About one week later M. was informed that the cow was completely cured, and that during the interval no more bloody milk was secreted. *Case II.*—Farmer G. in G. asked M. to treat a cow which gave bloody milk. He again convinced himself of the presence of blood in the milk; he did not employ any other line of treatment, save the above. He had the same successful result, so that the cow was considered cured after a single infusion of air.—(*Berliner Tierärztliche Wochenschrift.*)

CONCERNING THE DANGER FROM THE USE OF MILK AND THE MEANS FOR ITS PREVENTION [*Dr. J. Sobelsohn*].—Contamination of milk may occur through pathogenic or non-pathogenic bacteria. Many diseases of the udder arise from bacterial infection; as a result the organisms already in the udder contaminate the milk. There are numerous indisputable instances recorded in which human subjects have become ill from the use of milk drawn from the diseased udders of cows. Also numerous cases of primary intestinal tuberculosis in man can be traced back with certainty to the use of milk containing tubercle bacilli, and it has been still further proved that cow-pox, foot-and-mouth disease, anthrax, and probably also rabies are communicable to man through the use of milk. The latter in any case only when a lesion of the mucous membrane of the human digestive tract exists. Metallic and organic poisons are also secreted with milk which under circumstances may become harmful to the user. Finally it is well known that newly drawn milk forms a suitable medium for the spores of human infectious diseases. This has been observed frequently in typhus, diphtheria and scarlet fever, and it was recently affirmed also of syphilis. As regards the prevention of these dangers, the author is of the opinion

that the public which consumes the milk must show more interest in hygienic dairying and must also be made acquainted with the handling of milk under different conditions. In support of the Austrian food law the author demands that those persons commissioned for the control of the sale of foods, especially that of milk, should be better educated than heretofore, and if the law prescribes in Par. 24 that the production, preparation, and storage of foods is to be controlled, that of milk should be supervised by veterinarians. In connection with this, the author quoted the respective resolution of the 8th International Congress for Hygiene and Demography held in Budapest, 1905, and demanded at the conclusion an obligatory veterinary milk inspection.—(*Tier. Zentralblatt*, 1905, No. 11-15.)

AN EXPLANATION OF PLACENTOPHAGY [*P. R. Lafitte*].—The desire to eat the afterbirth has been observed in all classes of animals. Witkowsky reports that among the wild tribes of Australia the mother eats the newly born child in case of extreme hunger, and when she has given birth to twins she eats one child in order to be better able to nourish the survivor. Buffon, Reclus, Rippert and others have observed similar instances in Uruguay, Tasmania, and so on. This instinctive habit of eating the placenta in the case of animals is not easily explained. Nevertheless, it is possible that by eating the placenta the secretion of milk is increased. According to the opinion of some doctors, the placenta must possess some galactogenic properties, and they prescribed a macerated animal placenta for poorly nourishing mothers. The adherents of this opotherapeutical medication appeal to the works of Letulle and Mathorn—Larrier, who has scientifically demonstrated that the placenta belongs in the series of organs with internal secretions. This secreted product appears under the microscope in the form of plasmodia-like globules, which are found during pregnancy in the maternal blood and are resorbed more quickly during the period of labor, giving rise to a more rapid secretion of milk. Lafitte is of the opinion that veterinarians ought to be called upon to cooperate in the elucidation of this question. He made experiments with a sow and a bitch; both were poor milk animals, not capable of nourishing their young. He gave them three tablespoonfuls daily of an extract from the placenta of a sheep and already from the third day the milk secretion was remarkably better. However, fresh still-intact placenta must be used, which may be had frequently and in sufficient quantities in the slaughter-houses. The placenta expelled after birth

is utterly useless.—(*Berliner Tierärztliche Wochenschrift.*)

GALLSTONES IN A HORSE [*B. Lewin*].—L. reports the case of a horse suffering from intermittent colic, and consequently was treated with aloes and eserine-pilocarpine injections, by means of which small quantities of fæces were passed. On the third day, the visible mucous membranes were stained a dirty yellowish-red. Respiration 24, temperature 39.9 C. Auscultation, a friction sound was audible over the lower third of the left lung and sensitiveness to pressure on the thoracic wall at the same place. Diagnosis, pleuritis. On the twelfth day of the disease the patient laid down a great deal and looked around frequently; the animal showed great pain, with respiration 32, pulse 72, temperature 40 C. Next day the horse died. Post-mortem: Circumscribed peritonitis; spleen partly grown to the left lobe of the liver and the peritoneum; left lobe of the liver attached to the diaphragm. All the bile ducts of the greatly enlarged liver were dilated; the two principal ducts enlarged to about the size of a fist and containing pulpy masses of food and many small yellowish-brown stones varying in size from a mustard seed to a hazel nut. Small and large intestines had borne the same contents. The small intestine about its middle contained a stone weighing 148 grammes. In the region of the head of the pancreas there was a diverticulum about the size of a fist at the S forming bend of the duodenum. It is worthy of note in the present case that the large number of gall stones (about 500) had never previously caused recognizable digestive disturbances; further, that jaundice was present at the beginning of the disease only; likewise the fact that the local peritonitis had led to the false diagnosis of pleuritis.—(*Zeitschr. für Veterinärk., 17 Jahr., 2 Heft.*)

TWO CASES OF ABDOMINAL PULSATION IN HORSES [*Dr. Zurn*].—Concerning the origin of abdominal pulsations there are varied opinions. Haubner-Siedamgrotzki hold that the phrenic nerve which passes near the heart is excited by the contractions of that organ, thereby causing a periodical diaphragmatic cramp. According to Friedberger and Fröhner, catarrhal and inflammatory conditions of the stomach and intestines, either reflexly or through an extension of the inflammation, is a not infrequent cause of diaphragmatic cramp. Malkmus treats it as a transitory condition, which is to be taken as a neurosis of the diaphragm. Dupas is of opinion that it is the result of excessive exertion of the diaphragmatic muscles, in which an abnormal quantity of lactic acid forms, which either directly

causes an abnormal irritation of the diaphragmatic nerves or the muscle fibres directly. Zurn describes two cases of abdominal pulsation (chorea of the diaphragm) in horses sent to him for treatment of colic or abnormal decomposition in the stomach. The first case showed abdominal pulsation with contraction of the thorax and trembling of the whole body, especially the hind quarters. The symptoms occurred on the average 40 times per minute at regular intervals, but perfectly asynchronous with the pulse wave and respiration. In the second case the abdominal pulsations were 72 per minute, synchronous with the heart beat. Exterior symptoms: a violent trembling of the whole trunk, which occasioned convulsive contractions of the thorax in the subcostal region. Each pulsation was accompanied with a peculiar sound which was audible at some distance from the horse. In both cases recovery ensued. The pulsations lasted only a few hours. Zurn ascribes the first case as according to the Malkmus theory. The second case coincides with the theory of Haubner-Siedamgrotzki, because the pulsations were synchronous with the heart action.—(*Deutsche für. Wochenschrift*, 1905, No. 3.)

FRENCH REVIEW.

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

A CURATIVE TREATMENT FOR TETANUS [*J. Crison*].—Many practitioners have recorded cases of recovery in declared tetanus, with antitetanic serum in large doses, combined with bromides and other sedatives of the nervous system. Many have also pretended to have similar results with expectation. Notwithstanding these successes, there have been so many failures that one may say that the practical and economical treatment of tetanus has not yet been found. Basing himself upon the observed fact that when one bleeds a tetanic animal to death it is observed that as the escape of blood advances a complete relaxation of the muscular system takes place; and, again, as the bacillus of Nicolaier acts by its toxins, which, mixed with the blood, go and infect the nervous system, the author has asked himself, if by removing a certain quantity of toxins by bleeding, the chances of recovery would not be increased? He has tried it in two cases, taking away ten quarts the first day, ten on the third, and combining with this bromide of potassium

in 40-gramme doses. Marked improvement was noticed on the fifth day. A slight relapse occurred on the thirteenth day, when six more quarts of blood were taken away. From that day convalescence set in and was followed by rapid recovery.—(*Journal de Zoötechnie.*)

A CASE OF CHOREA IN A COLT [*Mr. Cabaret*].—May 3 last the author was called to visit a colt, born but a few days. Black in color, like its dam, a powerful Percheron mare, he was unable to stand without help. When up, he was taken with muscular tremblings and was continually jumping with his hind quarters. Its movements were queer indeed: the hind feet were first slightly raised from the ground, and then, the contractions increasing more and more, the feet were raised 10 or 15 centimetres high. After five or ten minutes the colt would fall. These contractions could be stopped by pressing heavily on the croup. The animal was put under bromide of potassium, nux vomica, and belladonna. This did not succeed, and was changed for laxatives and quinine. After a few days the animal seemed to answer to the treatment and began to improve. Convalescence was very slow, but it was not long before the little fellow seemed to be in good health. Unfortunately, while suffering with its choreiform symptoms it had an inguinal hernia, but if it recovers entirely from chorea it is hoped that the hernia may also disappear as soon as the abdominal wall has regained its normal size. It is a known fact that inguinal hernias of young animals get well spontaneously without other treatment than cold douches.—(*Record de Médecine Vétérinaire.*)

BACILLAR SUPPURATION IN A MARE [*J. Cuilh*].—Under this title the author records the history of a case due to a bacillus, which he has found impossible to classify. The disease manifested itself first by symptoms of strangles, with abscess in the throat, viz.: tumefaction, irregular and bosselated, and here and there fluctuation. The animal is in poor condition—lean, coat staring. Nothing wrong in the lungs or intestines; temperature normal; no cough; no nasal discharge. After a few days the abscesses are well formed, and when opened a little pus escapes. The pus is creamy; spread on a glass slide, it presents a great number of granulations of various sizes, not calcareous, and under the microscope are seen composed of long bacilli, coloring well with various aniline colors and taking the Gram. After a month not much change; new abscesses are formed; some appear at the point of the sternum and back of the withers. Two months and a half later improvement be-

comes manifest and finally after four months the abscesses cease to reappear, general condition is gaining, and the animal is returned to its owner. Cultures made with the pus show no streptococci nor micrococci, nor any appearance of the bacilli observed in the granulations of the pus. However, cultures in vacuum succeeded. On peptone, on liquid serum, glycerinated or glucosed bouillons, Martin bouillon, etc., give more or less results. The bacillus is not pathogenous for the guinea-pig or for the horse. The disease that affected the subject of this case resembles no other disease described; it may resemble somewhat actinomycosis, but the specific characters of the threads of pus and the inefficacy of the treatment by iodide of potassium exclude the idea.—(*Revue Vétérinaire.*)

LYMPHOSARCOMA OF THE ANTERIOR MEDIASTINUM IN A COW—SYMPTOMATIC ANALOGY WITH TRAUMATIC PERICARDITIS [*Profs. Mathis and Ball*].—This animal was 13 years old; her history is that she has coughed for some time; that she has been subject to repeated attacks of tympanites; that sometimes she has diarrhœa, and lately she presents at the dewlap an œdema which has increased little by little and spread over the sternal region. The animal has lost considerable flesh, and the veterinarian in attendance thinks she has traumatic pericarditis, and advises slaughtering. She is taken to the clinic of the Toulouse School, when she presents the following condition: General aspect not bad; while standing the front legs are kept a little apart, head and neck extended. If the animal is made to walk she does it slowly, with hesitation, and quickly gets out of breath. Appetite is normal, rumination regular; udder flabby and dry; cow is five months pregnant; respiration calm before eating, but becomes more frequent after the meal, and much accelerated if she is made to walk. The animal has at rare intervals a dry, short cough. Pulse difficult to take on the facial artery—75 or 80; cannot be felt at the tail. Temperature normal. The swelling at the dewlap is enormous, extending back as far as the umbilicus. It is hard and painless. Peripheric veins are very much dilated; there is no venous pulse. The beatings of the heart cannot be felt with the hand; percussion of the chest reveals horizontal dullness in the lower third on both sides at an even height; auscultation detects respiratory murmur all over, with here and there moist râles. The heart is not heard—to the left, or right, or in front. Catheter introduced into the œsophagus detects difficult progression as soon as it enters the chest; it seems as if the instrument touched

a solid membrane. However, this is not constant, as sometimes the catheter can pass without trouble. Rectal exploration reveals nothing. Tuberculin test is negative. Diagnosis of traumatic pericarditis is entertained, and after some time of observation the animal is killed. At the post-mortem, besides extensive lesions of the lymphatic glands of the fore part of the trunk, and a small quantity of exudate in the thoracic cavity, it is found that the anterior mediastinum is occupied by an enormous tumor, spreading over the right and left costal regions, as well as all over the surface of the pericardium, enveloping the heart as a neoplastic cuirass, which in some spots is six centimetres thick. The lympho-sarcomatous nature of the growth was characteristic.—(*Journal de Zoötechnie.*)

A CASE OF RECOVERY FROM ARTHRITIS OF THE FETLOCK [*MM. Le Fue and Grapen*].—The record of a serious injury treated by injection into the wound of ointment of biniodide of mercury, 1-8, mixed with the same quantity of oil; treatment already recommended by other veterinarians, and which on this occasion has given excellent results—far superior, say the authors, to continued irrigation, which with them has never been successful. A horse, harnessed to an ambulance to carry disabled animals, runs away, cuts both of his knees and his hind fetlocks. He finishes his night work. The next day has high fever, and the right fetlock—open, and from which purulent synovia escapes—is much swollen. Of course, the animal is on three legs. The treatment is applied: injection of biniodide as mentioned into the joint, after careful washing and disinfection with Van Swieten solution. The joint is wrapped in wadding dressing. No change next day. The dressing is removed, and another injection given, and dressed as before. This dressing is left in place for about two weeks. At this time the animal rests his foot upon the ground; he has no fever, and his condition is improved. Dressing is taken off; wound cleansed, synovial discharge considerably reduced. After disinfection with solution of permanganate of potassium a third injection of biniodide and oil is made, and a wadding dressing applied. The improvement continues, and a month after the accident the animal resumes his work. The fetlock is somewhat swollen, but there is not the slightest lameness.—(*Revue Generale de Médecine Vétérinaire.*)

A CURIOUS CASE OF VOLVULUS [*M. Rousselot*].—This animal was ten years old; he was taken sick in the morning while in the stable, and from the start the colics which he had assumed

a very severe character. He was in great pain; his face contracted; he constantly scraped the floor with his front feet; walked in a circle; dropped on his hind quarters, and finally threw himself violently upon the floor, where he remained exhausted for a while, to get up and renew the same manifestations. Treatment of blood-letting, sinapisms to the abdomen, opiates, etc., brought but very slight and temporary improvement. Soon the colics returned. Pilocarpine and eserine had but little effect. Death took place during the night. On opening the abdominal cavity a loop of the small intestine, three metres long, appeared all gangrenous. A strangulation had taken place. The knot which caused it was formed by a production, kind of appendix in *cul-de-sac*, 30 centimetres long, a little smaller than the intestine itself in diameter, and grafted on the convex border of the intestine and on one extremity of the gangrenous portion, with which it is continuous and into which it opens near the ilio-cæcal valve, without contraction in its size. The contents of this *cul-de-sac* consisted of a few grains of oats. Its structure was that of the small intestine. The other parts of the digestive tract were more or less congested. What was that appendix? Perhaps a diverticulum of Meckel, answers Prof. Petit.—(*Bulletin Societe Centrale.*)

FACIAL HEMIPLEGIA IN CATTLE [*H. Dutrey*].—Quite frequent in horses, this affection is rather rare in bovines, and its manifestations differ from those of equines. The following case shows it. A five-year-old steer is ailing, keeps lying down, and while ruminating leaves small quantities of food drop from the mouth. Nothing else is observed. Two days later, the condition is more serious. While ruminating the food drops in large quantities, the appetite is bad, fæces hard, mouldy and coated. Temperature 38°. C. Right superior eyelid is drooping, membrana nictitans covers greater part of globe, right ear hanging low, right commissure permits saliva to escape. The two profiles of the head are no longer symmetrical. There is evidently paralysis of the right side of the face. Treatment consists of purgatives, strychnine, and frictions over the face with nuxvomica ointment. Very little change is noticed at the beginning of the treatment. After a week the animal begins to improve, and soon is able to resume work. Traumatism is considered one of the causes of this affection. Probably it was in this case also.

The animal was driven with a strap rolled around the base of the right ear, and it is likely that by its too severe and repeated

action the nervous lesion was started.—(*Revue Vétérinaire*).

TREATMENT OF DOG DISTEMPER WITH PHYSIOLOGICAL SERUM [*M. Parent*].—Eight grammes of chloride of sodium in solution in one litre of distilled water forms the compound known as physiological serum. To a Gordon setter, two years old, suffering from a severe attack of distemper (nasal discharge, difficult respiration, mucous râles, crepitation in the lungs, dullness on percussion, labial breathing, elevated temperature, etc.), all treatment seems of no avail. 30 c.c. of the serum are injected on the sides of the chest. Next day animal less depressed. Another similar injection; improvement is noticeable—labial breathing is gone, temperature lower, animal takes some milk, auscultation more satisfactory. The injections are continued. In four [? R. R. B.] days recovery is complete. An Irish setter, 18 months old, affected in the same manner, received the same treatment, and recovered in six days.—(*Revue Vétérinaire*.)

COPROSTASIS AND COMATOUS URÆMIA FOLLOWING TRAUMATISM IN A YOUNG CAT [*M. Grobon*].—A little male kitten of seven months is so very thin and emaciated that it seems but three months old. For some time past it has had poor appetite and lately eats nothing—when he does he vomits all that he takes. For a week he has passed no urine nor fæces. His whole condition is such that evidently there is a general advanced auto-intoxication and comatous form of uræmia. External manipulations of the abdomen reveal the presence of numerous hard bodies, which fill the intestines and prevent the detection of the kidneys, rather mobile in cats. The bladder seems very much distended. The poor little fellow is chloroformed to death. Post-mortem: complete anemia of all viscera; bladder much distended and contains a quarter of a litre of urine; kidneys very large, look as if they had been macerated; rectum in its whole length and three-quarters of colon packed with blackish excrement, as hard as stone and dilating the intestine to three times its normal diameter. The explanation of this coprostasis is given by examination of the vertebral column. All the ligaments and muscles being removed, the lumbar vertebræ, instead of having their normal shape and forming a curve with convexity turned upwards, have a marked incurvation due to the presence of a large bony callous, true tumor, formed at the inferior face of the vertebræ. While very young the kitten had received a traumatism which had fractured the vertebræ and an imperfect union had followed.—(*Revue Vétérinaire*).

SURGICAL ITEMS.

BY DRs. LOUIS A. AND EDWARD MERILLAT, CHICAGO, ILL.

RADICAL OPERATION FOR ŒSOPHAGEAL OBSTRUCTION IN SOLIPEDS.

Whenever a horse cannot be "unchoked" by the ordinary palliative methods usually practiced there is a surgical operation that is certain to prove effectual. The operation is still unnamed. It was described by the writer at the St. Louis meeting of the American Veterinary Medical Association in 1904, after having performed it several times during the two preceding years. Little was evidently thought of the procedure at that time as it evoked neither interest nor discussion. It was demonstrated at the Cleveland clinic in 1905 by Blattenberg, and was subsequently referred to by Phillips in a recent issue of the AMERICAN VETERINARY REVIEW.

The operation is a washing out process accomplished by first passing a rubber tube down to the obstruction and then ligating the œsophagus in the middle cervical region to prevent the backward flow of the water that is pumped into the tube to wash the mass into the stomach. If a tube is passed into the obstructed œsophagus and no ligature applied there is always danger of flooding the lungs with the water. We have reports of chokes having been thus relieved without the use of the ligature, but these were evidently trivial chokes that would have been cured spontaneously even though the irrigation had been omitted. Horse chokes very frequently "cure themselves" even after several days and after all hope has been abandoned. It is in these trivial chokes that various "sure-shot" choke cures gain their reputations. Often eserine, apomorphine, atropine or a drench of oil, ulmas, etc., are credited with having cured œsophageal obstructions that would have nicely taken care of themselves had they been left alone.

From its pathologic aspect choke in solipeds stands alone. It is unlike similar accidents in the other species. In a word, the accident is *an impaction of a dilated tube*. The œsophagus within the thorax, as the result of previous impactions, is stretched, weakened, thinned out, and is incapable of performing its function. It is likewise unable to withstand any forcible intervention. The probang is out of the question. Its use is

always harmful because the mass is only packed tighter into the dilatation and the delicate walls of the œsophagus are always more or less injured by the forcible attempts to push the obstruction downward. Drenches are of little use as long as ptyalism is sufficiently profuse to lubricate the mass, but when salivation ceases they will serve a useful purpose. They then lubricate and provoke serviceable contractions of the weakened muscular walls, which then often slowly move the mass into the stomach. When all of these expedients have failed and the choked portion of the gullet is threatened with necrosis, radical intervention becomes the only sensible recourse.

The operation should never be performed prematurely, and on the other hand, it should not be postponed too long. Every possible form of palliative treatment precedes the operation, and when these have failed the surgical intervention should be promptly executed. A choked horse should be securely tied to a perfectly empty manger, where there is no access to a single spear of hay or any other kind of solid food. A bucket of clean cold water is placed within easy reach and a full dose of eserine sulphate is administered hypodermically. The attempts to drink water sometimes will wash down the obstruction and will always cause spasmodic contractions of the neck and thus assist in moving the mass. The eserine will at least stimulate the salivary secretion to greater activity and thus supply a still greater amount of dissolving fluids. Whether this alkaloid serves any other purpose is difficult to determine. In any event it has often been credited with having wonderful curative action. It can do no harm and should therefore be administered in every case. The empty manger, the bucket of cold water and the eserine is sufficient treatment for the first twenty-four hours. To attempt to force matters by frequent drenching is not advisable during this phase of the trouble, but at the end of twenty-four hours salivation will have ceased and nature's other reactive forces will be so nearly exhausted that drenching with lubricants, massage of the neck and gentle exercise must then be diligently and judiciously carried out. This line of treatment may be tried for the second twenty-four hours. In drenching, the head is elevated to a comfortable angle and the liquid is administered little by little. At the same time the cervical portion of the gullet is massaged from above downward with considerable force to send the fluid downward into the dilatation with as much force as possible. When seized with a desire to cough the head is released until the coughing ceases. Coughing alone

is mighty effectual in assisting to dislodge a choke. It shakes up the mass and thus favors the dissemination of fluids through it. The more a choked horse coughs the better. It not only helps to move the obstruction, but also clears the bronchial tract of aspirated ingesta. At the end of the second twenty-four hours the disease will have passed into the operative stage, and should then be met with radical treatment. Some isolated cases have been cured with palliative treatments after the third day, but procrastination after this time would not be taking full advantage of the possibilities. In many cases where the patient is old, the dilatation large and the gullet thin and weak, dissolution will supervene earlier than in the young, vigorous animal choked for the first time.

Modus Operandi.—The horse is secured with the twitch. The left side of the middle cervical region is selected as the seat of operation. It is clipped, shaved, and well disinfected in the usual fashion. An incision three inches long is made parallel to the œsophagus, which at this point lies on the supero-lateral aspect of the trachea in the jugular groove. The skin and subjacent muscles are divided until the œsophagus is well exposed. The twitch is then removed and the tube, well lubricated, is passed into the œsophagus by way of the left nostril. When the distal end of the tube reaches the entrance of the thorax a sterilized tape is passed around the œsophagus at the point lying exposed in the incision. The tape is tied firmly but not sufficiently taut to endanger the life of the incarcerated tissues. Water is then pumped into the tube until the œsophagus dilates at the distal side of the tape. In some cases the mass promptly washes into the stomach without much trouble, while in other instances it is dislodged only after repeated aspirations and injections of large quantities of water. When once the tube is in place and the tape adjusted, the surgeon has only to be patient in order to eventually succeed. Too great force must be avoided lest the delicate walls of the œsophagus at the seat of dilatation give way to the water pressure, the degree of which is determined by keeping the finger upon the œsophagus just below the tape. When the gullet is full the pumping is stopped until the water is allowed to aspirate out. The aspirated fluid will always carry along particles of the obstructing mass. Hay chokes prove the most obstinate because hay will not readily flow backward with the injected water, while those consisting largely of half masticated cereals can be entirely removed by aspiration.

The washing process is continued until the injected water flows into the stomach. The tape is then untied, the tube removed and the incision closed with sutures. If the incision has not been soiled it may be safely sealed without drainage, but if it has been handled with dirty fingers a drainage opening is provided at the distal commissure.

The operation, while effectual in every case when judiciously executed, is not entirely without fault. There is danger of rupture of the œsophagus and the discharge of its contents into the mediastinum and not infrequently the incision becomes septic and heals only after considerable trouble. A purulent wound in the jugular groove is always more or less threatening owing to the freedom with which secretions flow downward along the trachea. Again, there is often considerable danger that the œsophagus at the seat of the choke is injured beyond repair. It may be necrotic and cause the patient's death a few days later even though the obstruction has been removed. In other cases the inflammatory and much weakened state of the dilated gullet leaves the patient subject to subsequent attacks as soon as any amount of solid food is ingested. But in spite of these unfortunate results the operation cannot be discredited from any standpoint if applied at the proper time. To resort to it too early might be criticised on the grounds that simpler methods might have accomplished the same results, and to delay it too long will greatly lessen the chances of curing the patient at all. We have found that the third twenty-four hours is the opportune moment in most of the cases. In the aged horse where there is a history of a number of previous serious chokes or where there is reason to suspect the existence of a large dilatation of long standing, earlier operative intervention is justifiable.

It might be well to repeat that the incision in the neck should be made before the tube is inserted. The pain inflicted in making the incision will always provoke more or less resistance. If the tube is dangling from the nostril a sudden movement of the head may wound the Schneiderian membrane sufficiently to produce a hæmorrhage that will mar the procedure. And furthermore the finger on the exposed œsophagus serves the useful purpose of determining the course of the tube. In a choked horse it may pass into the trachea unnoticed.

CARCINOMA.

Carcinoma is about the "darkest" chapter in surgery. In

most every other disease the surgeon is fairly well acquainted with his ground. Causes are generally known, phenomena are well understood and effects are usually predicted with more or less accuracy in surgery. This, however, cannot be applied to cancer. Although carcinoma has been the object of very diligent investigations for years its etiology is still a mystery, its course is still unchecked and its cure is still as uncertain as ever. In the case of cancer the scientist has nothing to boast about, as the investigators have thus far been blocked at every turn. The fact that this fell disease stands sixth in the scale of the cause of death among human beings, its loathsome, encroaching characteristic, its certainty to eventually terminate fatally after a slow course, and the mental and physical misery it always brings to the afflicted, stand out as incentives to solve the problem of its cause. But in spite of the overwhelming importance of the subject nothing seems to have been achieved. Before the cause has been demonstrated successful treatment can hardly be expected. For a time it was thought to be of microbial origin and a number of micro parasites have been described as the causative factors. None, however, stood the test of more rigid, unbiased investigations and the microbial theory as a consequence has been temporarily abandoned. Heredity, race, species, diet, habits, climatic influences, social influences, preëxisting local inflammations, traumatism, and various forms of irritation, have all been carefully scrutinized in search of a causative factor, but with no convincing results. In short, *cancer is still a deep mystery.*

Although cancer is less important in veterinary surgery, the subject is one that must interest every student of pathology. Its frequency in domestic animals has not been determined because of the dearth of reliable statistics, and because there has been no systematic attempt, up to date, to classify the malignant tumors of animals from a strictly scientific differential diagnosis. In several of the large European clinics the subject has received some attention and statistics of more or less value have been compiled therefrom, but in America the veterinary profession cannot claim to have added anything to the knowledge anent this frightful affliction. In the largest clinics in this country, which, by the way, are found in the private veterinary schools, there is a shameful disregard for the scientific aspect of malignant growths. Tumors are ablated and thrown aside. If the growth recurs a diagnosis of cancer is made, if there is no recurrence the matter is dismissed without any further thought.

The world's knowledge of tumors in general is a vague one, the veterinarian's knowledge of them from their own investigations is nil. Readers of current medical literature cannot help but notice that there is at the present time an almost frantic effort to solve the problem of cancer, and affected animals of all species are being sought from various sources with that end in view. There is a great demand for animals suffering from neoplasms of whatever character. Experimentalists hope from this source to determine something that may guide them nearer to solution of this intricate and highly important problem. The veterinarians, especially those in charge of the large clinics, owe an effort to posterity, in this connection. Much might be deducted from carefully compiled data on the frequency, predilection, course, aspect, probable cause, etc., etc., of cancer in the different species of domestic animals. How soon will the veterinary profession have a few members who are willing to devote a few moments to work that brings no tangible reward?

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THE IMPORTANCE OF DENTISTRY IN THE TREATMENT OF TETANUS.

When the treatment of a tetanic horse begins before the trismus has accentuated too far to prevent, the very first step should be that of filing the sharp points from the molars. If there are other dental disorders they too should be remedied. It is very surprising how well a horse with smooth and regular molar arcades will masticate grain and hay, even when the trismus is almost complete. When the enamel points on the superior molar denture are long and pointed as is generally the case mastication is greatly hindered and the buccal surfaces are very often severely wounded in the patient's desperate attempts to masticate food. If these are well rounded food is ground and passed backward with much greater facility and the chances of recovery are greatly enhanced. Sharp points on the superior molars, owing to the contracted state of the masseters and buccinators will always inflict harmful wounds to the cheeks of a horse suffering from a severe tetanus.

DR. NELSON S. MAYO, Chief of the Bureau of Animal Industry of Cuba, has just issued as Bulletin No. 6, of the Department of Agriculture, a well-illustrated treatise on Texas Fever, the illustrations including the immunized pure-bred cattle taken from the United States some time ago, and which are doing good work in improving the herds of the little republic.

ARMY VETERINARY DEPARTMENT.

THE ARMY BILL.

FORT OGLETHORPE, DODGE, GA., May 22, 1906.

Editors American Veterinary Review:

DEAR SIRs:—Following is an extract taken from the *Army and Navy Register* of May 12, 1906: "A favorable report will be made from the Senate Committee on Military Affairs on the bill (S. 3927) to increase the efficiency of the veterinary service of the Army." When the Dental and Medical bills were before the Senate for consideration Senator Hale, who bitterly opposed them, is quoted as saying that "he had received hundreds of letters from prominent men of those professions urging him to vote for the bills, and no doubt his colleagues had also received as many letters." Both of those bills have passed the Senate. I wish he could say the same as regards receiving letters from prominent veterinarians urging the passage of the Veterinary Bill. Very respectfully,

ROBT. J. FOSTER, D. V. M.,

Veterinarian 12th Cavalry.

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FOREIGN SERVICE PAY FOR VETERINARIANS DENIED.

FORT RILEY, KANSAS, May 19, 1906.

Editors American Veterinary Review:

DEAR SIRs:—I write for publication in the Army Department of the REVIEW the decision of the Court of Claims in regard to the foreign service pay of veterinarians.

This claim was prosecuted by King Brothers, of Washington, D. C., in behalf of the veterinarians who had served in the Philippines, since the Comptroller of the Treasury ruled that since we were not commissioned officers we were not entitled to the extra pay.

The Court of Claims rendered an adverse decision on May 8, thus sustaining the ruling previously made by the Comptroller.

This decision shows the ambiguity of the words "pay and allowance," under which we receive, or rather do not receive, our pay and emoluments.

I send this information so that all those in the service may know the results, and be guided accordingly.

CHAS. H. JEWELL,

Veterinarian 13th Cavalry.

ARMY NOTES.

VETERINARIAN RAPP'S reason, given in the last REVIEW, for leaving the Army service is, that there is no future prospect. Since then, I am informed, he has applied to be re-instated.—(L. E. W.)

AN EFFECTIVE REMEDY FOR ERYTHEMA OR SCRATCHES OF THE HEEL.—Remove all hair, wash heels once only with warm water and soap, to which some mild disinfectant has been added, and apply the following preparation once daily: Glycerine, ℥ij; zinc oxide, ℥j. Mix well, spread on gauze, apply to part and cover with roller bandage. Usually two or three applications serve to heal permanently.—(L. E. W.)

CORRESPONDENCE

OPACITY OF THE CRYSTALLINE LENS IN HORSES.

FAIRFAX, S. D., April 23, 1906.

Editors American Veterinary Review:

DEAR SIRS:—I have a valuable pacing gelding which is blind from an opacity of the crystalline lens or a cataract in one eye and almost so in the other, and I would like those who have had experience with this kind of a case to report through these pages, in the next issue, their success and the treatment used.

My knowledge along this line is quite limited, and I think there are several others who can say as much, and very successful practitioners, too. This horse has been blind for more than a year in the left eye and nearly so in the right one. I have known him for the last eight months, and there is little or no change in the condition of the eyes, and I have seen him very frequently. He was raced last season, and, while he has a mark of :21, he could easily lower it to :13.

As near as I can find out, he has been over-exerted in a very hot sun racing, causing an overflow of blood to the head and an overdistention of bloodvessels of the eye, but none seem to be ruptured. It seems to me that the knowledge of our profession is quite limited in this branch of our work, and that the more scientific practitioners of our profession of to-day and the past have been very neglectful of deep study and research into the diseases and treatment, surgical and medical, of this very important little organ of animals, especially the horse, and he is the only one where the loss of sight materially interferes with

his usefulness and value. I would like to call your attention to the extent of the knowledge of the up-to-date optician and the many wonderful things done by them for the human eye, and what is the matter with us that we don't know more and be able to do more for our poor blind creatures, when the loss of their sight deprives them of the only pleasure of their quite miserable existence and dooms them to the hands of men in the most instances many times more brutal than they themselves are? I have had many men say to me, "Doctor, if you could restore that mare's, or gelding's, eyesight, I would give you \$25 or maybe \$50," and this case I have right now I would willingly give \$150 if I could get him two good eyes again.

Very truly yours,

G. L. MEHOLIN.

[If our correspondent will consult Liautard's "Manual of Operative Veterinary Surgery," pp. 749-753, he will find a number of operations described whose objects are to remove or displace the opaque obstruction to vision. Many of those who have written upon the subject report good results, but say many failures are also encountered.—R. R. B.]

EXPERIENCES WITH VON BEHRING'S PREVENTIVE VACCINATION AGAINST BOVINE TUBERCULOSIS (By District-Veterinarian Schricker, Grönenbach; *Wochenschrift für Tierheilkunde und Viehzucht*, Vol. 50, No. 7).—S. performed the preventive vaccination in the young stock (76 animals) of seven stables, six of which stables were highly tuberculosis-infected, whilst one could be considered as almost free from tuberculosis. In most cases, the reaction of these animals to the first and second inoculation was but slight; not taking into consideration coughing; only a few animals showed fever temperatures. Later on, the author tuberculin-tested ten of the vaccinated young cattle and only one of them showed the typical reaction. So far, three of the immunized animals have been slaughtered; two of them (yearlings) were perfectly healthy, one showed calcified tubercular lesions of the bronchial glands and a tubercle, the size of a cherry pit, in the lung. The last mentioned animal was immunized according to Behring's method at the age of two years and therefore was in all probability already infected prior to vaccination. From these observations S. concludes that through the preventive vaccination of calves below the age of 4 months, which are not tubercularly infected, the resistance of these vaccinated animals to severe natural infection can be enhanced.

COLLEGE COMMENCEMENTS.

CHICAGO VETERINARY COLLEGE.

Commencement exercises of this school were held on March 29th, at 8 o'clock, in the lecture room of the college. The hall was handsomely decorated, and was filled with ladies and gentlemen, friends of the faculty and graduating class.

The Secretary's report was made by Dr. Joseph Hughes, which showed that 308 students matriculated for the session of 1905-6, and 98 graduated. The faculty, numbering sixteen, was made up of eleven veterinarians, four doctors of medicine, and one doctor of laws. The departments of microscopy, histology, pathology and bacteriology were much extended and amplified as compared to former years. The degree of Doctor of Comparative Medicine (M. D. C.) was conferred on the graduating class by Dr. A. H. Baker, who called each one, alphabetically, and handed him his diploma. Following is the list with their addresses: F. R. Akin, Pewaukee, Wis.; C. R. Andrew, Atlantic, Ill.; L. C. Appel, Highland, Ill.; W. Ashcraft, Monroe, N. C.; A. E. Byron, Bristol, S. D.; J. C. Buchter, Highland, Ill.; F. F. Brinkamp, Crystal Lake, Ill.; J. C. Brown, Nashville, Tenn.; E. N. Brown, Nashville, Tenn.; C. F. Beamer, West Union, Iowa; C. H. Beere, Bridgeport, Conn.; R. J. Coffeen, Albert Lea, Minn.; R. S. Cameron, Chicago, Ill.; L. R. Dillon, Pueblo, Colorado; R. F. Dean, North Salem, Indiana; Dondanville, Sheridan, Ill.; F. A. Daudel, Andrew, Iowa; R. P. Frans, Stronghurst, Ill.; E. P. Farley, Paducah, Ky.; M. Fletcher, Decatur, Ill.; R. F. Fisher, Paducah, Ky.; J. J. Farrell, Eagleville, Conn.; H. A. Greer, Champaign, Ill.; M. E. Gleason, Roberts, Ill.; A. G. Gieske, Barrington, Ill.; M. L. Hynes, Urbana, Ill.; C. C. Hall, Villisca, Iowa; C. B. Hammatt, Cerro Gordo, Ill.; J. A. Hill, Honolulu, H. I.; T. W. Healey, San Jose, Cal.; L. F. Hartzell, Chicago, Ill.; F. Hecker, Albany, N. Y.; J. C. Harland, Duplainville, Wis.; F. R. Harris, Hillsboro, Ill.; A. D. Hubbell, Raritan, Ill.; E. W. Huenefeld, Watertown, Wis.; E. E. Howe, Des Moines, Iowa; E. W. Hanson, Beaver Dam, Wis.; J. E. Ingmand, Red Oak, Iowa; J. Jamieson, Brandon, Manitoba, Canada; E. J. Jenkins, Ravenna, Ohio; O. N. Johnson, Appleton, Wis.; W. F. Kaiser, Buffalo, N. Y.; R. L. Kramlich, Fogelsville, Pa.; H. L. Keene, Waterman, Ill.; G. Kirkpatrick, Barnard, Kansas; R. E. Krieger, Rolla, N. D.;

E. M. Lang, Louisville, Ky.; O. H. Lintner, Mendota, Ill.; C. H. Leavitt, Molalla, Oregon; R. Lovell, York, Neb.; R. E. Larimer, Geneva, Neb.; E. Mackey, Janesville, Minn.; A. L. Miller, Newton, Ill.; G. W. Maulfair, McNabb, Ill.; J. L. Montooth, Mt. Carroll, Ill.; C. C. Mix, Coldwater, Mich.; W. L. Migely, Chicago, Ill.; G. E. Metzger, Minneapolis, Minn.; W. J. Morgan, Aledo, Ill.; L. N. McNay, Humeston, Iowa; H. C. McCartney, Ellenville, N. Y.; R. A. McCartney, Ellenville, N. Y.; C. C. McIntosh, Monticello, Ill.; J. H. McElroy, Grant City, Mo.; W. V. Nesbitt, Maroa, Ill.; N. E. Nielsen, Chicago, Ill.; E. E. Oldaker, Iowa City, Iowa; H. L. Pool, Maquoketa, Iowa; C. B. Parker, Monticello, Minn.; H. C. Rogers, Oska-loosa, Iowa; A. F. Reichmann, Buena Vista, Iowa; R. C. Roueche, Guy's Mills, Pa.; F. C. Roach, Maquoketa, Iowa; A. F. Rank, Manitowoc, Wis.; T. H. Ruth, Desmet, S. D.; A. E. Rudolph, Farmington, Wis.; T. O. Shearburn, Walnut, Ill.; P. B. B. S. Scott, Galesburg, Ill.; G. A. Swingley, Freeport, Ill.; O. Silfver, Helsingfors, Finland; A. B. Sexsmith, Lyon, Mich.; J. N. Servatius, Ottawa, Kansas; A. L. Sederholm, Moline, Ill.; F. O. Seward, Marengo, Ill.; A. L. Smedley, Petersburg, Ill.; E. L. Stevens, Gt. Barrington, Mass.; H. H. Spencer, Rich Hill, Mo.; F. G. Tegg, Rochester, N. Y.; O. H. Titterud, Anoka, Minn.; E. E. Treiber, Norway, Mich.; R. F. Vermilya, Nund, Ill.; H. L. Wickwire, Elmwood, Ill.; F. H. Wessels, Petersburg, Ill.; C. W. Watson, Harpswell, Me.; O. J. Wingard, Montpelier, Ohio; C. B. Weagly, Hagerstown, Md.; P. Zenor, Mediapolis, Iowa.

KANSAS CITY VETERINARY COLLEGE.

The commencement exercises of this school were held in the auditorium of the Central High School, March 14. The faculty address was made by the Hon. Frank M. Lowe, who delighted his hearers with an account of the extensive and important service being rendered by the veterinary profession in continental Europe, he having made special observation of same during his visits to the continent.

Dr. R. C. Moore, President of the College, conferred the Degree of Doctor of Veterinary Science upon the following named gentlemen:—Alvin J. Abarr, Redding, Ia.; R. D. Abarr, Redding, Ia.; Anthony E. Amend, Wilsey, Kans.; Lonnie P. Arnett, Overbrook, Kans.; A. Clyde Barr, Waverly, Kans.; Ben E. Barham, Oak Ridge, La.; Richard F. Bourne, B. Sc., Del-

phos, Kans. ; J. Kelly Callicotte, Windsor, Mo. ; Geo. J. Collins, Tekamah, Nebr. ; H. Ray Collins, Washington, Kans. ; Chas. M. Cooper, Kansas City, Kans. ; Evert C. Craven, Udall, Kans. ; Dennis E. Crites, Daisy, Mo. ; Bert Deuell, St. Joseph, Mo. ; Elvon S. Dickey, Ph. C., Topeka, Kans. ; Edw. J. Drake, Buffalo Gap, S. D. ; Alex. F. Eagle, Chicago, Ill. ; Wm. Wallace Eagle, Kansas City, Kans. ; Wilton Elery, Anita, Iowa ; Otto Emmitt, Hiattville, Kans. ; Louis R. Fauteck, Kansas City, Kans. ; Harry L. Fretz, Junction City, Kans. ; Charles H. Gaines, Chilhowee, Mo. ; M. William Games, Baldwin, Kans. ; J. Arthur Goodwin, Baton Rouge, La. ; Asa E. Hoffman, Kansas City, Kans. ; Edw. J. Igoe, Kansas City, Kans. ; Sherman R. Ingram, Kansas City, Mo. ; Philip M. James, Kansas City, Mo. ; Edward F. Jameson, Kansas City, Kans. ; Louis L. Jones, Girard, Kans. ; Jesse Warren Joss, Fairview, Kans. ; Paul Juckniess, Omaha, Nebr. ; Edw. D. Kennedy, Rosedale, Kans. ; Robert W. Keepers, Greencastle, Pa. ; Albert D. Knowles, Nevada, Mo. ; Albert R. Koen, Hillsboro, Ill. ; J. Victor Lacroix, Hiawatha, Kans. ; Walter J. Lacy, Jacksonville, Ill. ; S. Frank Loffer, Maitland, Mo. ; Roy C. Livers, Kansas City, Mo. ; Daniel B. Leininger, Kansas City, Mo. ; Wm. Lyons, So. Omaha, Nebr. ; Chas. R. McCoppin, Wilcox, Nebr. ; Robt. A. McCaulay, Cedar Rapids, Ia. ; James I. Martin, Mt. Olive, Ill. ; Jas. M. Mayes, Kansas City, Mo. ; John L. Meixel, Aurora, Nebr. ; S. Meade Meredith, Vinita, I. T. ; Conrad L. Nelson, Kansas City, Kans. ; Geo. C. Newberg, Kansas City, Mo. ; Julian J. Parker, Athens, Texas ; Herbert Pew, Hebron, Nebr. ; Edward Pugh, Lawton, Okla. ; Geo. F. Punteney, Frankfort, Kans. ; Harry A. Reagor, Cambridge, Nebr. ; Marion H. Rhoades, Kansas City, Mo. ; Hartwell Robbins, Furman, Ala. ; Forris L. Saunders, Cayuga, Ind. ; Edw. H. Schaefer, M. D., Kansas City, Mo. ; Robt. N. Sebaugh, Sedgewickville, Mo. ; Henry Singleton, Houston, Texas ; Hiram M. Smith, Zarah, Kans. ; Jesse P. F. Smith, A. B., Kansas City, Mo. ; Joseph Stafford, Auburn, N. Y. ; Gola Steele, Oklahoma City, O. T. ; David F. Stouffer, Bellevue, Nebr. ; Joseph E. Strayer, Carleton, Nebr. ; Charles A. Swanson, Tecamah, Nebr. ; Hugh Thomason, Nashville, Tenn. ; Harry R. Tice, Summerfield, Kans. ; Elmer E. Trabert, Milford, Nebr. ; A. Thos. Waddill, Windsor, Mo. ; Dick E. Warner, Kansas City, Mo. ; John H. Webster, San Francisco, Cal. ; Jesse B. Williams, M. D., New York City, N. Y. ; Geo. H. Woolfolk, Brandenburg, Kv. ; Geo. D. Young, Kansas City, Kan.

SOCIETY MEETINGS.

OHIO STATE UNIVERSITY VETERINARY MEDICAL SOCIETY.

The first annual banquet of the O. S. U. Veterinary Medical Society was held in honor of Dean David S. White, at the Great Southern Hotel, on Wednesday evening, March 14.

The tables were finely decorated. A sumptuous eight-course dinner was served in a style characteristic of the Southern management.

At the conclusion of the feast, Mr. Stanton Youngberg, President of the Society, delivered the address of welcome, and said in part: "Gentlemen, we are assembled here this evening on an occasion which we hope will mark an epoch in the history of our Society and College, and at the same time be established as a precedent that should be followed as long as this institution of learning exists. We are here to celebrate the first annual banquet of the O. S. U. Veterinary Medical Society.

"But that in itself is not the sole object that impels us to this gathering. We are here above all for the purpose of paying our respect to and expressing our love for a man who by



his painstaking and untiring efforts has raised our college to its present high standard, and besides was the man most instrumental in the founding of this Society and its guide during the first tottering steps—Our Honorable Dean, Dr. David Stuart White.

"To the distinguished friends and to the alumni who are present, on behalf of the O. S. U. Veterinary Medical Society, I bid welcome."

At the conclusion of his address he introduced as toastmaster, Dr. Albert M. Bleile.

Dr. Bleile with a few pithy and well-chosen remarks called upon Dr. Thompson, President

of the University, who responded to the toast, "Education as a Profession." Dr. Thompson dwelt on the value of education in training and sharpening the mind to grasp a subject readily and analyze it accurately. The man thus developed is always on the alert and able to meet emergencies whenever they arise. Education is a profession in that it teaches the man to have confidence in himself and to be able to tell when he does know a thing and when he does not.

The toastmaster next called upon Dr. H. W. Brown to respond to the toast, "Success in Practice." Dr. Brown spoke of the radical difference between the old "horse-doctor" of some years ago and the educated, scientific veterinarian of to-day. He said that to elevate the profession in the eyes of the public from the old "horse-doctor" type, the veterinarian should choose for his associates the better class of citizens and by skilful work and strict integrity impress upon them that the veterinarian of to-day is a man of education. By becoming a member of some riding club or like organization, he can in that way gain their patronage and through them that of many influential citizens.

Dr. D. Hammond Udall responded to the toast of "Problems of a Graduate," and said in part: "Advice with reference to entering the field of practice or of government work is superfluous. Acting on the advice of others is often precarious for the one advised. Most men by the time they become seniors are fairly well acquainted with the conditions on which success depends on each. They are usually better acquainted with their own limitations and circumstances than any person upon whom they may call for advice. As in all professions certain individuals enter it because it seems to them to be the easiest and surest way of procuring a livelihood; genuine interest in the profession may be acquired before graduation or it may not. In the latter case the student is handicapped in the struggle for existence regardless of the branch to which he turns his activities.

"Criticism seems to be a legacy that falls to every person who attempts anything. The hard kicks do not all come from four-footed creatures. Often the criticisms are undeserved. The errors that deserve criticism often go undetected. Criticisms should not cause one to lose sleep; on the other hand they should not be ignored. They frequently give one the clue to the correction of mistakes; and they are most powerful stimulators of hypnotized energy. They are often needed to awaken one from the conceit of self-satisfaction. One gets more meaning out of an article on a certain disease after having been thoroughly scarified for his

method of treatment of this affection. Criticism often gives one valuable free advertising."

Mr. George A. Pfaffman, in behalf of the Seniors, responded to the toast, "Senior Retrospectus." He gave a brief review of the three years spent at college, starting from the first day "when we entered the portals of learning with vernal simplicity up to the senior year, that year when so many conflicting emotions strike the heart." And told how in after life "although we may forget the size and shape of the nucleus of an epithelial cell, or whether a tubercle bacillus has rounded ends or not, we never shall forget the love and the friendship and the daily sacrifices of our professors, and above all the principles of a manly character instilled into us by them." And closed with a request of his under-classmates "that they hand down from class to class all the noble thought and sentiment expressed here this evening as a tradition of this our newly organized O. S. U. veterinary college spirit."

The next speaker was Dr. James McD. Phillips, who responded to the toast of "Our Sister Profession." He spoke in part: "Dr. Thompson has just asked me what the feminine of veterinary medicine could be, as he was wondering what the sister profession was. For a moment I was at a loss to answer, but after considering the question I concluded that both veterinary and human medicine are feminine; because I have known men to be wedded to both professions. I have also known many men to be too much in love with the almighty dollar to be in love with any profession."

"These sister professions are only half sisters, their common dam is the scientific foundation, but the paternity of the one is the saving of human life and the alleviation of human suffering; of the other the saving of dollars. In other words, the veterinarian is obliged to consider every question from its economic standpoint, although much of his work, especially that of the meat and milk inspector, has to do with the prevention of human disease.

"Just as a bear has evolved from a grass-eating dog, so was man evolved from a money-making monkey. Every practitioner of your calling is subjected to a constant series of temptations which tend to develop the latent money love of the monkey in him. Yielding to constant temptations is what has brought the veterinary profession down to the level of 'horse doctors.' Happily the veterinary profession is now represented in nearly every city in the country by at least one honorable

and capable man. These men are elevating the calling,—a work in which I trust all of you will join. And if you will but let a good part of your scientific training stick to your bones and be *absolutely square* in all of your dealings I will guarantee you financial success and far better,—the respect of your community.”

The next speaker was Mr. A. F. Schalk, who on behalf of the freshmen responded to the toast “The Veterinary Medical Society.” Mr. Schalk said in part: “In November, 1897, the O. S. U. veterinary students met and effected an organization known as the ‘Ohio State University Veterinary Association.’ The roll sheet at this time contained 45 names. This society convened sometimes weekly, semi-monthly, bi-monthly and finally ceased late in 1902. But the grave was not the goal, and resurrection came Feb. 9, 1904, when fifty-two spirited vets. re-organized the society under our present title of ‘Ohio State University Veterinary Medical Society.’ We are now glad to announce the proud roster of eighty members.

“What are the purposes of this organization? First, it affords excellent advantages for one to broaden his conceptions and increase his knowledge of the science of veterinary medicine. Secondly, it is a most efficient means of developing one’s intellectual training. Further, all students who have been active members of the society for two years by contributing to and participating in its programs are entitled to a beautiful diploma, which, perhaps, though not the most highly prized sheepskin he expects to bag, nevertheless will be highly worthy of an honorary space on the walls of his later library.”

Mr. Leo M. Steckel was called upon to respond to the toast “Our Dean.” Mr. Steckel spoke in behalf of the junior class and said in part: “We especially esteem him for his chivalrous character, his keen judgment, and his unselfish devotion to a noble purpose. His sound and ready advice whenever asked does not fail to awaken in the heart of the receiver a true and friendly regard for the man. The noble example he has set forth spurs us on to enter the work with vim and zeal. His motto: ‘Use judgment and be scrupulous’ is a beautiful expression worthy to adopt as our guide. It is only regretful that our time as students here is so short, but when our college days are over and we are engaged in the battle of life, we shall look back with pride, love, and admiration to the man who has devoted his time and energy to prepare us for our calling, and who helped elevate the status of the veterinary profession.

"And now, Dean White, may you be blessed with many years of health, vigor and happiness, that the noble work you have thus begun will be furthered under your able guidance. May the Ohio State University under the leadership of its broad-minded president, and the Veterinary College, which you have raised to a level with the best schools of the country, be an everlasting source of knowledge and learning. May the ties of friendship we make here to-night as members of the V. M. S., as students, teachers and friends of the O. S. U., never be broken."

Dean White, in response, said that this was one of the happiest moments of his life, and one which would leave a clear, utterly unerasable picture on his mind. In fact it was really too good to be true and he could not help thinking that he was with little "Nemo" in slumberland and afraid to awaken lest it be all a dream. Dean White responding to the toast "Past and Present," said in part: "The growth of the College of Veterinary Medicine has been most gratifying. From a mere handful of students, taught the technical branches of our profession by a solitary veterinarian, and with no equipment beyond a lecture room, with a reputation bad within and without the University, in a decade we have grown to what you see here to-night—125 earnest students, a faculty of which six are veterinarians, a material equipment the best west of the Alleghenys and a standing among the best schools of veterinary learning in the country.

"However, we are not yet full-grown. Much work needs be done. As compared with what we hope to be, we have made but a beginning, only the nucleus around which the mental and material accumulations of the future are to form.

"Our future will depend largely upon the loyalty and standing of our alumni. Their love for the *Alma Mater* must be of the responsive kind. To be ready and willing at all times to stand by her, ever anxious to lend a helping hand, and always desirous of her welfare, instilling into the hearts of the people of this great State the respect for her which will assure her the blessings of permanent prosperity."

The Banquet Committees were as follows: Committee of Arrangement: George A. Pfaffman, Walter A. Brown, Fredrick B. Hadley; Program Committee: Leo Washburn, Leo M. Steckel, and Clark H. Hayes.

REUBEN HILTY, '07,
Secretary.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

PHILADELPHIA, May 20, 1906.

Editors American Veterinary Review:

DEAR SIRS:—The following papers have been promised for the New Haven meeting of the American Veterinary Medical Association:

“Our Insect Enemies”—W. H. Dalrymple, Louisiana.

“The Agglutination Method for the Diagnosis of Glanders”—Veranus A. Moore, Walter J. Taylor, and Ward Giltner, New York.

“Some Bovine Surgical Operations”—J. C. Robert, Miss.

“Tuberculosis in Swine”—Richard Ebbitt, Nebraska.

“The Angora Goat and Sheep Industry of New England in Danger”—James B. Paige, Massachusetts.

(Title not given) P. A. Fish, New York.

“The Veterinarian as a Business Man”—D. Arthur Hughes, Illinois.

The following have made conditional promises of contributions and will probably furnish papers: W. L. Williams, New York; J. G. Rutherford, Canada; L. E. Willyoung, Kansas; J. F. DeVine, New York.

It will be seen from the above that more papers are urgently needed and should soon be announced.

The Committee of Arrangements announce the following: The headquarters will be at the Tontine Hotel, 119 Church St., which has also been selected as the place for the annual banquet. The rates, European plan, are \$1.50 to \$2 per day. There is an excellent café attached. The Hotel Garde makes a rate of \$3.00 a day with bath, American plan, and \$2.50 a day without bath. There are other hotels and boarding houses which give suitable rates. Dr. J. H. Kelly, 70 Olive St., New Haven, has charge of hotel affairs and reservations can be made in advance through him.

The sessions will be held in Harmony Hall, 9 Elm St., and the clinic will be held in a tent in the rear of the meeting place. The Committee have outlined various forms of entertainment for the visitors, such as a visit to Yale University and boat ride on Long Island Sound. The banquet will be held at 7.30 P. M., on Thursday, in the banquet hall of the Tontine Hotel.

It should be borne in mind that applications for membership should be in the hands of the Secretary by July 23d.

Respectfully, JOHN J. REPP, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The regular monthly meeting was held in the college building, 141 West 54th Street, New York City, Wednesday evening, May 2, with Dr. Roscoe R. Bell, President, in the chair. Secretary Mangan being absent on account of sickness, Dr. W. C. Miller was requested to act as secretary *pro tem*. The minutes-book not being on hand, the reading of the minutes of the preceding meeting was postponed, and the attendance was ascertained by count of those present. The room was well filled, and, while all were not recognized, the following members and visiting veterinarians were present: Drs. Roscoe R. Bell, George H. Berns, James L. Robertson, D. J. Dixon (Hoboken), Robert Dickson, Robert W. Ellis, E. A. A. Grange, W. Reid Blair, Theodore A. Keller, John F. DeVine (Goshen), W. Hayes, E. B. Ackerman, Chas. S. Atchison, George F. Bowers, Elishu Hanshew, John G. Slee, Chas. E. Clayton, A. Silkman, C. W. Shaw, Alfred F. Bollinger, C. Lamensdorf, R. A. Mackellar, Thomas G. Sherwood, R. A. McAuslin, J. T. Glennon (Newark), Veranus A. Moore (Ithaca), W. W. Andrews, Theodore E. Krey, David W. Cochrane, W. C. Miller, Wm. J. McKinney, and other visitors and students of the New York-American Veterinary College.

Prof. V. A. Moore delivered a very interesting and instructive lecture on "Agglutination as a Method of Diagnosis in Glanders," and exhibited tubes showing reactions in various degrees with the test fluid, and answered in detail many questions by the members.

Dr. James L. Robertson reported a case of "Hypertrophy of the Heart in a Horse," in which the heart weighed 28½ lbs., and exhibited a specimen of the heart muscles. There were present at the post-mortem Drs. Robertson, D. J. Dixon, and W. F. Harrison (of New Jersey). So far as any one present knew, this case constitutes a record as to size and weight.

Dr. DeVine, of Goshen, described a few cases in sheep that died from some unknown cause, which was discussed by Profs. Moore and Grange. It was suggested that the sheep had been poisoned by a wash used upon them for the destruction of ectozoa.

At the request of Dr. Dickson, Prof. Moore gave a short talk on foot-rot in cattle and sheep, its causes and treatment.

Dr. Slee spoke upon Tropical diseases, he having spent sev-

eral years in the Philippine Islands upon the Insular Board of Health. He described interestingly "Epizootic Lymphangitis" and "Surra."

A hearty vote of thanks was tendered to Dr. Moore for his great kindness in coming from Ithaca to tell us about the new method of diagnosing glanders.

It was regularly moved and seconded that the Association send a message to Dr. Mangan, its efficient Secretary, expressing the sympathy of the members in his affliction, with the hope that he may soon be restored to his accustomed good health.

Adjourned until the June meeting.

W. C. MILLER, *Secretary pro tem.*

MASSACHUSETTS VETERINARY ASSOCIATION.

The twenty-second annual meeting and banquet of this Association was held at Young's Hotel, Boston, Wednesday evening, April 25th. There were twenty-six members present and one guest.

Drs. L. L. Pierce, H. W. Pierce and Edw. P. Dowd were elected members.

Drs. W. L. LaBaw, L. H. Howard and John F. Winchester were elected to serve on the committees of the Connecticut Veterinary Medical Association at the convention of the A. V. M. A. to be held in August.

The following officers were re-elected for the year 1906-7:

President—Daniel Emerson, M. D. V.

First Vice-President—Aug. S. Cleaves, D. V. S.

Second Vice-President—Calvert H. Playdon, M. D. V.

Secretary-Treasurer—Frank J. Babbitt, M. D. V.

The above-named officers with the following names constitute the Executive Committee: Benj. D. Pierce, D. V. S., L. H. Howard, D. V. S., and Chas. H. Perry, M. D. V.

It was voted to hold the monthly meetings at 5 o'clock instead of 7.30 P. M.

Adjourned to the banquet hall, where an excellent dinner was served. After dinner the report of the Secretary-Treasurer was read and accepted.

President Dr. Daniel Emerson then made an address, concluding by introducing Dr. Austin Peters as toastmaster. Dr. J. F. Ryder, of the B. A. I., was the guest of the evening. Dr. Peters called upon many of the members, who responded in a pleasing and able manner. Adjourned 10.30 P. M.

F. J. BABBITT, *Secretary.*

NEWS AND ITEMS.

DR. MARK WHITE, Denver, Col., has been reëlected veterinarian of the Colorado Kennel Club.

DR. H. A. ALCORN, Harlan, Iowa, was in San Francisco during the recent great disaster, but escaped all injury.

DR. J. G. ANNAND, Minneapolis, Minn., has taken the practice of Dr. J. W. Cook, Duluth Minn., who will rest for the present.

DR. A. T. EVERITT, who has been an inspector for the B. A. I. for fifteen years has resigned and begun practice at South Omaha, Neb.

DR. H. D. GILL, of New York City, President of the Road Drivers' Association, is winning laurels on the speedway with his stable of trotters and side-wheelers.

BOSTON has appointed a strong committee to act in conjunction with the Connecticut State Association to entertain the A. V. M. A. at Hartford, Conn., in August.

DR. R. W. MCCULLY, of New York City, was to have left on the 31st ult. for California to look after the yearlings of J. B. Higgins. He expected to be gone two weeks.

DR. C. F. LESLIE, Wahoo, Neb., has removed to Kalispell, Montana, where he will practice his profession. The change was made to benefit the health of his eldest daughter.

ALLOW me to congratulate you on your ability to keep successfully, annually, making the REVIEW better, spicier, and more newsy.—(*W. C. Hanawalt, M. D. C., Galesburg, Ill.*)

"I HAVE TAKEN THE REVIEW FOR TWENTY-FIVE YEARS, and I don't feel like stopping yet. Keep right on sending it till further orders."—(*C. D. Rathburn, Sherwood, Mich.*)

MESSRS. C. BISCHOFF & CO., American representatives of von Behring's Bovovaccine, have removed to 451-453 Washington St., New York City. Their mail address is Box 785.

DR. W. A. THOMAS, late State Veterinarian of Nebraska and the first veterinarian who located in Nebraska, after 25 years' residence in Lincoln, will remove to Weaubleau, Missouri, the middle of June. The Doctor has purchased land in his new location, where he will engage in the stock business.

DR. E. H. SHEPARD, Cleveland, Ohio, suffered the irreparable loss by death of his devoted wife, Effie J. Shepard, on May 13, after an illness of only four hours, from apoplexy. She was 46 years old, and she and the Doctor had been married 25 years and four months.

PRESIDENT W. L. WILLIAMS, of the New York State Veterinary Medical Society, and Secretary Garry T. Stone, are very active in behalf of the program for the meeting at Buffalo in September.

ACETONOMYCOSIS (A NEWSPAPER DISEASE)—INFERENCE—ACTINOMYCOSIS.—William T. Hornaday, director of the Bronx Zoölogical garden, who has expert knowledge of the habits of animals and their diseases, lies dangerously ill at his residence. To-day four surgeons operated on Mr. Hornaday for mastoiditis, which is an abscess within the head back of and below the orifice of the ear. He is still in a most critical condition. His is a remarkable case. It began ten days ago with tonsilitis, which, it is strongly suspected, he caught from a monkey with a bad sore throat, which he was treating. It may end, it is feared, with acetonomycosis, one of the rarest diseases in man and nearly always communicated from animals, in which it is far from common. The farmer whose cattle or swine suffer from acetonomycosis calls it "lumpy jaw."—(*Item going the rounds of the lay press.*)

TO IMPROVE THE BREED OF HORSES IN NEW YORK.—To encourage New York farmers to breed to the thoroughbred stallions which are being stationed through the State for stud service at nominal fees the Jockey Club has decided to institute a system of prizes for the best foals resulting from the use of these thoroughbred sires. At every county fair in the State the Jockey Club will give three prizes of \$50, \$25 and \$10 for the finest half bred colts and fillies shown. As there are 104 fair associations in New York the total of prizes may be \$5,200, if all take advantage of the Jockey Club's offer. In addition to these prizes there will be a series for the keepers of the stallions, \$150 going to the man in charge of the horse that receives the best patronage, with \$100 to the second and \$50 to the third. Application blanks for stallions can be obtained by addressing the Jockey Club, Fifth Avenue, at Forty-sixth street.

MORE ABOUT THE WILD HORSES OF WASHINGTON.—*Ephrata*, April 26.—The rounding up army made thirty miles yesterday and went into camp at Parker's horn. As yet only occasional small bands of wild horses are being sighted, and so far it has been impossible to get more than a passing view, as the spectacle of the mounted men causes them to stampede for the hills. It will be two or three days before the round-up actually commences. It was at first proposed to round up in the corrals along Moses lake, but now it is thought that the first big drive

will be into Red Lockcoulee, where there is a natural corral. . . . About 500 relay mounts have been taken along and more will be gathered up as the cavalcade proceeds over the range. Two thousand of the horses to be corraled have already been purchased by a North Dakota syndicate. They will average about \$10 ahead, the purchasers taking the whole band as they come, and everything above the yearling age will be counted. These will be brought up next week and shipped from Ephrata. The inroads of the settlers who are preëmpting all the land about the Columbia river valley has made the passing of the range imperative. It will mark the obliteration of the last vestige of the romance and story that has so particularly distinguished the West, and the wild horse of the range will pass into history.—(*Seattle Times*).

URSUS-CANIS (PRESUMABLY AMERICANUS).—Half bear half dog, a remarkable prodigy of nature, was brought to the city Wednesday morning from Nebraska by I. Pinter. It is the only known example of the crossing of the dog and bear families. "Teddy" is the name of the hybrid. His mother was a common stray dog of North Platte, Neb., a little bigger than a Scotch terrier and of the same general build and color. Father Bear has never been seen. The dam gave birth to a litter of five of the strange puppies, but four were born dead. The creature is now eleven months old and weighs about thirty-five pounds, but looks much heavier. At first sight the animal gives the impression of a peculiar kind of dog, although on closer examination the bear peculiarities are more evident. The ears are long and drooping, like those of a spaniel, the tail is also that of a spaniel. The eyes are large and have the mild, dog like expression. A bear has short upstanding ears, a stub tail never more than a couple of inches long and the eyes are small and quite different in expression and the manner they are set in the head. But the bear hump is very plain above the hindquarters. The legs are bear paws thick as a man's arm and short, with pads, that will in time make an impression similar to the human foot, and the claws are long. Teddy has never been heard to bark, but will occasionally give a modest bear's growl. In habits he is more like a bear than a dog, lying down on his side like bruin instead of upright as is the fashion in the canine world. He always lies down to eat. The animal shows very little intelligence and energy. He has not strength enough to walk upstairs and will refuse to go more than a mile at a time unless very slow progress is made.—(*Denver Times*.)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

Secretaries are requested to see that their organizations are properly included in the following list.

Name of Organization.	Date of Next Meeting.	Place of Meeting	Name and Address Secretary.
American V. M. Ass'n.	Aug. 21-24, '06	N. Haven, Ct.	J. J. Repp, Phila., Pa.
Vet. Med. Ass'n of N. J.	July 12-13, '06	Asbury Park, N. J.	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.	Call of President	New Haven.	B. K. Dow, Willimantic.
New York S. V. M. Soc'y.	Sept. 11-12-13	Buffalo.	G. T. Stone, Binghamton.
Schuykill Valley V. M. A.	June 20.	Reading.	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.	Monthly.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.	Call Exec. Com.	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.	Monthly.	Boston.	F. J. Babbitt, Lynn, Mass.
Maine Vet. Med. Ass'n.	July 9, 1906.	Augusta.	R. E. Freeman, Dexter.
Central Canada V. Ass'n.	Ottawa.	A. E. James, Ottawa.
Michigan State V. M. Ass'n.	State Fair week	Detroit.	Judson Black, Richmond.
Alumni Ass'n N. Y. - A. V. C.	April, 1907.	141 W. 54th St	W. C. Miller, N. Y. City.
Illinois State V. M. Ass'n.	July 12, 1906.	Bloomington.	F. H. Barr, Pana.
Wisconsin Soc. Vet. Grad.	Call of Pres t.	Sheboygan.	S. Beattie, Madison.
Illinois V. M. and Surg. A.	Decatur.	C. M. Walton, Rantoul.
Vet. Ass'n of Manitoba	Not Stated.	Winnipeg.	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n.	F. B. Carroll, Wilmington.
Ontario Vet. Ass'n.	C. H. Sweetapple, Toronto.
V. M. Ass'n New York Co.	1st Wed. May	141 W. 54th St	D. J. Mangin, N. Y. City.
Ohio State V. M. Ass'n.	Columbus.	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n.	1st Wed. ea mo	Pittsburgh.	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n.	July 12, 1906.	Roch'r, N. Y.	J. H. Taylor, Henrietta, N. Y.
Iowa State V. M. Ass'n.	H. C. Simpson, Denison, Ia.
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EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, May 15, 1906.

VIRULENCY OF MILK FROM TUBERCULOUS ANIMALS.—This subject has been the occasion of many experiments and observations, which the general practitioner probably has not had the opportunity to follow. The virulence had already been demonstrated before the discovery of the bacillus of Koch, whether the milk was taken by ingestion or inoculated. Yet, while some recognized it as infectious only in the case of mammary tuberculosis or very advanced disease, others demonstrated that the bacillus could be found in the healthy udder, by microscopic examination, and also when pulmonary tuberculosis, not far advanced, existed. The *Journal of Zootechnie* has published from the pen of Prof. Nicholas a very interesting review, which I here resume.

In 1899 Rabinovitsch, by experiment, and contrary to Ostag, had come to the conclusion that not only in incipient tuberculosis and without apparent sign of mammitis, but also in the latent form of that disease, detected only by reaction to tuberculin, the milk may contain tuberculous bacilli. In the same year the researches of Adami and Martin, and again those of Rabinovitsch, show that cows which have no other symptom than the faculty of reacting to tuberculin, may eliminate tuberculous bacilli, and that clinical examination cannot be utilized

to recognize the infectious qualities of the milk of those cows.

Besides these positive facts, the following deserve attention: Müller (1899), Ascher (1899), Ostertag (1901), and Weeney obtained negative results with the milk of cows which only reacted to tuberculin; Stenstrom, experimenting with fifty reacting cows, some of them having only latent tuberculosis and the others disease more or less detectable by clinical symptoms, has obtained only negative results by inoculation to guinea-pigs and rabbits. Gehrmann (1895), then with Evans (1901), have revealed the presence of the bacillus of Koch, in the milk of cows having reacted but carrying no tuberculous lesions of the udder.

The question is then studied by a committee, presided over by Dr. Mohler, at Washington. Experiments were carried out with the greatest care, made upon fifty-six cows having reacted to tuberculin, and in ten of which clinical symptoms were present. At the post-mortem of all these cows, the udders were free from lesions, and yet in the milk of thirteen of them there were tuberculous bacilli, and their infectious power was shown by inoculation, feeding, and microscopic examination.

After all these, Moussu, in 1904, has shown that in some cases, in cows "without marked clinical signs of tuberculosis," the udder may carry or eliminate bacilli in sufficient quantity to contaminate guinea-pigs by inoculation.

In 1905 he proved that the milk of those animals may give tuberculosis to sucking calves.

* * *

All these positive facts, confirming those already advanced by Mohler, justify the following conclusions:

(1) Tuberculous bacilli may be detected in the milk of tuberculous cows, even if the udder does not present serious lesions, either macroscopic or microscopic.

(2) This udder may eliminate tuberculous bacilli in sufficient quantity to transmit tuberculosis to animals of experiment *through the digestive tract as well as by inoculation.*

(3) In tuberculous cows the udder may become affected at any time.

(4) The presence of tuberculous bacilli in the milk of tuberculous cows is not constant and varies from one day to another.

(5) Cows that secrete milk containing tuberculous bacilli may have such limited tuberculosis that reaction to tuberculin is the only means by which it can be detected.

(6) Clinical examination or general condition of the animals do not allow conclusions as to the infectious properties of the milk.

(7) The milk of all cows that have reacted to tuberculin must be considered as suspicious and be sterilized before being used.

(8) It would be better to eliminate all tuberculous cows, especially for milk production.

* * *

TUBERCULASE.—On Feb. 8 last, Prof. von Behring made a communication on the "Struggle Against Bovine Tuberculosis and the Hygienic Production of Milk," which was published in the *Deutsche Tierärztliche Wochenschrift*. Its object will, no doubt, interest our readers, even at this late date.

First of all, Behring states that bovovaccination, which consists in the intravenous inoculation of living human bacilli, has for object the immunization of young calves; but such process is not applicable to human tuberculosis. As far as calves are concerned, all that remains to be done is to have bovovaccination enter general practice; this is the business of the agriculturists, and already in some parts of Germany it is as common as the antivariolic vaccination in man.

Sound milk will then be readily obtained. But, in some cases, even under the most favorable conditions, several years will always be required before a number of cows protected against tuberculosis will be found to supply the alimentation of children.

To shorten this period of time, it is necessary to think of the vaccination of subjects more advanced in years. This, however, is not without danger, as it is not rare for a dose of bovo-

vaccine, perfectly harmless for new-born calves, to kill older bovines with symptoms of acute œdema of the lungs.

As to the inoculation of bovovaccine under the skin, the results are not certain, and, again, it may be the starting centre of a local tuberculosis, from which bacilli may escape to pass into the blood and into the milk.

A second point in the question corresponds to the production of the T C announced at the Congress of Paris in 1905. It is known that it is a preparation which does not contain living virus, and consequently unable to allow dangerous bacilli to pass into the milk. But this preparation must also be injected into the circulatory system and its preparation requires such care and expense that its practical use presents the greatest difficulties.

* * *

The third point is the object of the present communication. The author indeed declares that he has discovered a special method by which he preserves the immunizing power of the tuberculous bacilli while destroying their vitality. The product thus obtained has proven itself experimentally very efficacious in subcutaneous injection. Behring calls it *tuberculase*.

It is a semi-fluid preparation, of waxy aspect, which can be transported pretty well, and is of such price as will not prevent its use in general practice. It can be injected not only once or twice, but several times in the space of fifteen days to a month. As subcutaneous injection demands no special technic, it can be done by everybody.

Behring has treated with it not only bovines free from tuberculosis, but also cows which in appearance healthy, had virulent tuberculous bacilli in their milk. In a few weeks the bacilli disappeared.

This observation opens up a perspective full of hope to the point of view of the value of tuberculase in the fight against human tuberculosis.

Yet, and he especially insists on the point, the author has not experimented on bovines having lesions comparable to

those of human pulmonary phthisis, and he claims no scientific basis to admit that this tuberculase can be resorted to in the treatment of such affection. At any rate, at the Congress of Paris he did not intend to speak of a curative agent for pulmonary phthisis, but of a product which used in young animals was able to prevent the development of the disease, and perhaps to act upon the already existing tuberculous centres in such a manner that recovery by the natural forces of the organism could not be interrupted by a new infection. The discovery of tuberculase is a step forward in that direction. Children might from now on be vaccinated with it. For the author, the results of this discovery will be appreciated in a short time and will keep their value for a hundred years or more.

* * *

THE USE OF TUBERCULIN IN DOGS.—Late in March I received from Ohio a letter of inquiry on the use of tuberculin in dogs. The letter got mixed with other papers, and it was only lately that it again came before me. Desirous of getting for my correspondent the proper information, I made several inquiries, and at this late date I send my answer, with apologies for my seeming neglect. I have asked several good authorities here, and the following is the information I have obtained: From Prof. Cadiot, who writes to me on the use of tuberculin in the diagnosis of tuberculosis in dogs: "In this, as in other animals, tuberculin is used in subcutaneous injections, after clipping of the hair and disinfection of the skin with alcohol and sublimate. The injection is usually done in the region situated back of the shoulder. . . . The quantity of the material to inject varies according to the size of the animal. For dogs of medium or of large size, one cubic centimetre of diluted tuberculin is used. For small dogs half a cubic centimetre.

"To declare with certainty that an animal is tuberculous it is necessary that: the thermic reaction reaches or goes beyond 1.5. If the hyperthermia goes above 0.8 the animal is a suspect and another test is indicated. The absence of reaction does not necessarily imply the absence of tuberculosis; but

these errors of tuberculin are rare and observed only in animals extensively diseased and in which the clinical signs are sufficient for a diagnosis."

Again, it is recorded and printed in classical works: "Tuberculin, without giving positive indications, often gives information which is sufficient to confirm the suspicion. The reaction is between one and two degrees." Prof. Vallée, of Alfort, endorses the above, but considers that tuberculin is not as positive in dogs as it is in other animals—and Mr. Drouin, who I understand made numerous experiments in this direction and gathered some thousand observations, considers the use of tuberculin in dogs as very uncertain, and doubtful in many instances.

* * *

CANINE DISEASES IN TUNISIA.—European dogs will do well to avoid the climate of Tunisia, as it is very fatal to them. Those which escape are very few and they do not transmit the immunity which they have acquired. But what are the causes of this exceptional mortality? There are four diseases which are serious and fatal to them; distemper for one; rabies, which is kept endemic by the native dogs; a peculiar miasmatic fever, with its septicæmic and anæmic forms, and finally vermiform diseases, the most important of which is œsophageal spiropterosis. This affection is so frequent that it can be said that no dog escapes it during its life—lucky if he does not die with it. The disease seldom passes overlooked, as it is manifested by symptoms more or less serious and sometimes ending in death. They have severe spells of coughing, ending in the ejection of small quantities of glairy substances. Sometimes there is chorea of the diaphragm, giving rise to vibrations of the cheeks analogous to those observed in labial cough. The appetite is lost, the animal loses flesh. Without fever at the beginning, the temperature soon goes up to 40°, 40.5° C. The animal becomes very nervous and agitated. It soon drops into a cachectic condition and dies, unless to save it more suffering it is chloroformed. The most careful post-mortem reveals no pathological lesions; all the organs of the thoracic and abdominal

cavities as well as the nervous centres are normal. The œsophagus alone shows something, viz. : globular nodules, of various sizes, perhaps as big as a large nut ; it is a pouch with thick walls, divided into small cavities by fibrous bands, and filled with *Spiroptiva sanguinolenta*, easily recognized by their coloration. This pouch has a small opening, which allows of the escape of the parasite.

The author of this communication, which I have read in the *Record de Médecine Vétérinaire*, mentions that sometimes the dog recovers from all the bad symptoms, although it takes time for all the parasites to pass away from the œsophagus. The treatment which has given him the best results has been the administration of spirits of turpentine in oil.

* * *

REPORT OF THE BUREAU OF ANIMAL INDUSTRY.—The twenty-first annual report of the Bureau of Animal Industry for 1904 has reached me. It arrived late, and I was beginning to fear that I had been forgotten. But I was well rewarded for the waiting, as the report for 1904 contains very interesting material. First, there is a concise biography of Dr. E. A. de Schweinitz, the late Chief of the Biochemic Division, and one of Major H. E. Alvord, of the Dairy Division. The two articles pay deserved professional review of the good work done by those two clever members of the Bureau. After that we enter into articles of essential interest (of course, as usual, handsomely illustrated), viz. : "The Danger of Infection with Tuberculosis by Different Kinds of Exposure," by Dr. E. C. Schroeder and Mr. W. E. Cotton ; "Enzymes in Corn stalks and their Relations to Corn-stalk Disease," by T. M. Price, Ph.D. ; "Bacillus Necrophorus and Its Economic Importance," by Dr. J. R. Mohler and Dr. G. B. Morse ; "Foot-rot of Sheep," by Dr. Mohler and H. J. Washburn ; "Etiology of Hog Cholera," by Drs. Dorset, Bolton and McBryde ; "Experiments Concerning Tuberculosis," etc., etc. An analysis of any of these valuable articles is scarcely possible within the limited space of these "Chronicles," and I must recommend those interested to secure the Report.

Towards the last part of the work a *résumé* is given of the status of contagious diseases of domestic animals for the past year in ten foreign countries: Belgium, Denmark, France, Germany, Great Britain, Hungary, Italy, Netherlands, Norway and Sweden. I have looked in this Report for similar statistics for the United States, but, with the exception of the introduction made by the Chief of the Bureau in his report headed "Control of Contagious Diseases," I did not find what I expected. And, yet, it certainly must be intended for it, as I noticed records of investigations and researches made on scab in sheep, cattle and horses, on venereal disease of horses, on trichinosis, on foot-rot in sheep, on tuberculosis, black-leg, Texas fever, hog cholera and swine plague, and glanders, all of which are spoken of, with other miscellaneous subjects relating to work done by the Bureau.

And, should this be intended to correspond to the sanitary bulletins of European countries, is it not strange that no mention is made of two diseases which no doubt exist in various parts of the United States, viz.: anthrax and rabies? Is it to be supposed that, like pleuro-pneumonia and foot-and-mouth disease, they have been wiped out? If so, this is the first knowledge I have had of it. For rabies it may be; but for anthrax? If it is, why should the sale of vaccine against it be so booming? Or is there not an error likely to induce a false security among the interested parties, breeders, etc., etc.?

* * *

"PROCEEDINGS" OF THE 1905 MEETING OF THE A. V. M. A. — I found on my table a few days ago the "Proceedings" of the American Veterinary Medical Association for the year 1905. No doubt, it has already been looked at by many of our readers and by the members of the Association, and, therefore, all the good I might say of it and its contents would be of little importance. I have, however, to say a word or so about two parts of the "Proceedings."

I have read with much attention the report of the Committee on Intelligence and Education, and principally that part due to

Dr. G. R. White, on the schools, and, after perusing the various answers which he received from the many schools in the United States and Canada, I am, at page 163, brought to the "summary of suggestions made by the officials or representatives of the various veterinary institutions as a solution of the educational problem." These suggestions are twenty-one in number, and among those which I read some are but the sanction of the conclusions I presented two years ago in my paper to the Association on "Educational Reforms": uniform entrance requirements, uniform curriculum, uniform graduation requirements, uniform degrees, have the laws of all the States the same as regards entrance requirements—all with the reorganization of the Association of Veterinary Faculties and Examining Boards, and inspection of the colleges by the same. Congratulating myself on the probable influence my paper had on the question, I looked for the action of the Association on the report of Dr. White, expecting to find it discussed, amended, corrected—in fact, acted upon. And all that I can find is that the reading and discussion on some parts of the report of the committee was postponed (page 32), and, of course, Dr. White's part was—and nothing more.

Is it possible that no action has been taken, and that the suggestions made, as they were, by the "*officials or representatives of the various veterinary institutions*" have been entirely ignored? Such an amount of good work as that recorded by Dr. White deserved better consideration.

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The "Proceedings" this year are full of very interesting and valuable papers. To examine all will require more space than is at my immediate command. There is among the many good ones (such as the report of the Committee on Diseases, the artificial immunization of cattle against tuberculosis by Pearson and Gilliland, the pathology of tuberculosis by Carl Schulin, the unusual lesions of tuberculosis by Harrison, etc.), one which, I believe, deserves a special interest, "The Spavin Group of Lamenesses," by W. L. Williams, C. W. Fisher, and D. H. Udall.

Of course, to fully appreciate this paper one needs to read it quietly and carefully, and no doubt the few remarks, resuming the subject, which were presented instead of reading the whole paper, have failed to give a good idea of the scope embraced by the authors. I have read it carefully, and, already prepared to receive the ideas through a somewhat similar article to which I alluded in a previous "Chronicle," I think this gathering of affections, heretofore considered as different, almost under one head by their similarity of lesions, of their locations, etc., is a great advance in the classification of those various causes of lameness. To bring those affections under the heading of one constitutional disease, manifested by similar and parallel lesions in various joints, is certainly a great pathological simplicity that Dr. Williams and his assistants have done well to present before our profession. I have no doubt that he anxiously awaits the opinions of his professional friends. I am glad to give him mine.

* * *

THE "REVIEW" THE LARGEST VETERINARY JOURNAL PRINTED IN THE ENGLISH LANGUAGE.—Well, there is no use to deny it; the REVIEW has struck an unusual record—one that has not been beaten. I thought the April issue, No. 1 of Vol. XXX, might speak about it; it did not; and as I did not receive it until late I was unable to recall just what the record was until to-day.

By the close of Volume XXIX the record was established—1429 pages in one volume (say, 1500 pages with the Index), quantity and quality, of course. 1500 pages!—an increase of 500 pages (one-third) in five years—there were but 1045 pages in Volume XXV. The twelfth number alone had 250 pages. It is the record of veterinary journalism! No other monthly veterinary magazine has ever reached that size. *The Veterinarian* in its great day scarcely reached a thousand pages—838 in 1876, 1048 in 1868 (the largest volume).

Will the REVIEW stop at its latest figures? It is doubtful; but it seems as if some changes are becoming necessary. I fear

the size of the bound volume may be unpleasant for many, and if 1500 pages must be the limit of the volume, or should it be larger, would it not be a good plan to divide the year into two volumes? What do the subscribers of our journal say to this?

* * *

DUPLICATE NUMBERS.—Perhaps this may please some of our readers: I have the following duplicates that any subscriber can have to fill missing ones by writing for them: Vol. XXVIII—Nos. 3, 4, 6, 7, 8, 10, 11, 12; Vol. XXIX—Nos. 1, 2, 3, 5, 8, 9, 10, 11, 12. A. L.

FEDERAL MEAT INSPECTION.

Since the last number of the REVIEW was issued, the subject of the conditions in the abattoirs of the country, particularly of Chicago, has formed a scandalous sensation in the newspapers, not only of this country, but of the whole world. In the wake of all the serious accusations, heralded from the highest office in the land, great good will eventually flow to the live-stock and packing-house industries, and in time the meat products of America will not only regain their lost position in the markets of the world, but will take a higher and broader plane and more extensive development than they have ever known. But this will be obtained at a fearful immediate cost to the gigantic live-stock interests—so great that its contemplation is bewildering and impossible. The more sober-minded, practical observers believe that the reforms secured could have been brought about with less injury to our wealth and good name by adopting more rational and less sensational means.

The newspaper hero of the hour (and only of the hour), Upton Sinclair, who first scandalized American meat products in his novel, "The Jungle," is a man totally lacking in experience in abattoir methods, with a strong tendency to magnify what he beheld in his visits to Packingtown. It would be difficult for an untrained observer, in the presence of blood and offal, to analyze the situation and finely appreciate the pres-

ence or lack of sanitation under such circumstances. Blood is apt to be regarded by such laymen as an impurity, particularly if coagulated and trampled, while to the expert it is as wholesome and pure as affecting the surroundings as the most picturesque cut of meat in the tidy butcher's ice-box. Localized tuberculosis of a mesenteric gland is regarded as rendering the carcass unfit for human consumption by the literary reformer, while the highest authorities of the world believe it perfectly proper to pass such meat for human alimentation. Then the committee sent to Chicago to investigate the sensational accusations of Mr. Sinclair were about as unaccustomed to such sights as he, and were as much horrified at what they saw as the yellow press has been in printing their findings. The great surprise to the contemplative mind is that the President did not despatch on this important mission gentlemen who are familiar with and trained in this work, not only in the United States, but those who have studied the conditions in the great abattoirs of Europe, who know what is normal and what is pathological, what constitutes slaughter-house sanitation and the lack of it. The REVIEW is convinced that much could have been done to improve the conditions, and gradually have instituted the reforms which are to follow the nauseating mess with which the papers have teemed, without dealing such a stunning blow to this great source of national wealth, while holding the country up to the derision of the world. Statistics show that for the eleven months ending with May the total exportation of meat products to about seventy five foreign countries and colonial possessions was \$182,000,000, an increase of more than sixty per cent. in the past decade, the United Kingdom being our largest customer. From everywhere come reports of the almost total ostracism of our goods in these countries, and it will be a long time before we regain our lost ground. It will be a fearful sacrifice, and the load will be heaviest upon the stockman and farmer. Yet the great house-cleaning will bring salient reforms, quick and complete. Could these have been secured through more conservative means? Not so precipitately

surely ; but they could have been effected gradually if the authorities worked persistently and intelligently to that end. A sane business man would not institute reforms by publishing his shortcomings to his customers ; he would set about the work in the way calculated to do the least injury to his business.

In the few years that Federal meat inspection has been in operation in the United States, it has performed wonderful service, hampered as it has been by lack of funds and men. Its system of supervision has been admired and lauded wherever its methods were known ; but Congress has ever acted niggardly in responding to the entreaties of the Bureau for larger appropriations, so that its watchfulness could be extended to all abattoirs having to do with foreign and interstate trade, and the recent request of the Secretary of Agriculture for additional funds to secure extra inspectors for the augmented trade with Germany was met with derision, and instead of \$125,000 asked for, he was given but \$20,000. The head of the Bureau has always recognized the necessity for more thorough inspection, and the late Chief persistently sought extension of the work ; but Congress has been so parsimonious that it has utterly failed to protect the great interests of meat production, and finally by a precipitous move paralyzes for the time being at least the entire foreign trade, as well as greatly diminishing the consumption at home.

And when it is all over, we believe that it will be shown that conditions were not one-tenth as bad as they were painted by the amateurs whom the President entrusted with such an important mission. Investigation of the Stock Yards will be undertaken by interests which want and will have the truth, and the work will be done by men who understand what they are doing. The first of these investigations was begun on June 20 under the joint committee of the Chicago Commercial Association, the Illinois Manufacturers' Association, and the Chicago Medical Association. The experts delegated to make the inspection were Dr. W. A. Evans, professor of pathology at the University of Illinois ; Dr. Maximilian Herzog, Chief of the

Bureau of Science of the Philippines; Dr. A. T. Peters, professor of veterinary medicine at the University of Nebraska; Dr. M. P. Ravenel, pathologist to the Pennsylvania State Live Stock Sanitary Board; and Dr. Ludwig Hektoen. What their report will be the REVIEW has no right to anticipate; but we venture to say that there will be a vast modification of the accounts that preceded it. It will, however, not receive the same publicity, and the damage done can only be repaired by long and thorough inspection by experts under wise guidance.

Elsewhere we publish the call of the Civil Service Commission for one hundred and fifty veterinarians to take the examination for meat inspectors, under the bill introduced by Senator Beveridge and amended in the House under the lash of the President, who saw that unless drastic measures were promptly employed the danger to the country would be increased a hundredfold. It was not a time for compromise nor equivocation, and he did well to insist on the most thorough reform in the inspection system.

Even with this greatly augmented force, the inspection service will not be adequate if the business of the country ever assumes its former proportions; but as the bill carries a permanent appropriation of \$3,000,000, a great many more can be secured at the miserly salary of \$1200 per annum. Since the assigned sum is so generous, would not the ends sought be served more thoroughly if the compensation of the inspectors was raised to an amount where men would be attracted to the service through their adaptability rather than by their necessities?

All's well that ends well. Although the meat producers, and the packers, and many collateral interests must suffer, along with the country's reputation, the end will bring a better inspection service at one bound than we could have obtained in gradual advances in a long time; the Government's guarantee upon her products will slowly but surely restore the confidence of the world, and in time we will be upon a sounder and more substantial basis than we ever were at home and abroad.

FEDERAL CONTROL OF HOG CHOLERA.

And now comes from Minnesota a proposition for national control of hog cholera, looking toward final eradication. Congressman McCleary (Minnesota) has a bill which provides a federal appropriation and a plan of coöperation with the various states and territories chiefly interested. The plan contemplates police sanitary control measures and methods as the primary consideration.

Older members of the A. V. M. A. will remember that Dr. Reynolds presented a paper at the Omaha meeting arguing the feasibility of state control methods as applied to this disease, and detailing the methods then on trial in Minnesota.

It is evident that national control and possible eradication of hog cholera would be enormously expensive; but enormous expenditures in this work would be justified by the annual losses, which run well up in the millions, and which must continue to increase under present conditions. So far as the REVIEW is informed, Minnesota is the only state which attempts any serious control work with this disease.

The results in this state, although, perhaps, only partially successful, working as they are without any coöperation from surrounding states, seem to justify the labor and expense which they are putting into it.

In any case, this seems to be a movement which deserves national encouragement.

LAST CALL FOR THE NEW HAVEN PROGRAM.

Secretary Repp issues an appeal for more papers and more applications for membership in the American Veterinary Medical Association in this number of the REVIEW. It is the last opportunity he will have to speak to the members through this journal in behalf of the New Haven meeting, for when the August number is issued, the official program will have been mailed to them. Therefore, the *present moment is the time for action* by those who desire to contribute either papers or members, and the opportunity should not be lost, for the East must

see to it that the forthcoming convention not only does not fall below the magnificent gatherings of the past few years in the Middle West and in Canada, but that the record of yearly improvement which has regularly marked our progress is not broken in the land which gave birth to the National Association and nourished it almost unaided for a quarter of a century. We are fully assured that it is for no lack of love for the organization, for no lack of competent men to prepare the abundance of material at their command—but the state of professional activity is and has been so strenuous that most practitioners feel reluctance in undertaking such work, while the old enemy, procrastination, is largely responsible for their tardiness in responding to the oft-repeated invitation of the Secretary. This latter cause will some of these days work injury to the Association. Let it not be so at New Haven!

In the August REVIEW we will publish the program in detail and with illustrations—of the *personnel* of the officers in charge of the meeting in Connecticut, and notable buildings in the convention city; but it will be on the eve of the convention, with all in readiness for the great event.

Are you ready for New Haven?

VETERINARY EDUCATION IN NEW YORK.

It is more than probable that this subject will form the most important topic of discussion at the Buffalo meeting of the State Society in September.

It appears that our editorial remarks in the May number have brought the profession to a realization of the gravity of the situation, and papers are announced from at least two sources, while our information is that most of the active minds in the organization are preparing to be in readiness for intelligent discussion of the elements which seem to be contributing to our obliteration from the field of educational activity, which but a few years ago was centred in the American metropolis.

ORIGINAL ARTICLES.

VETERINARY PROGRESS.

BY M. H. REYNOLDS, UNIVERSITY OF MINNESOTA, ST. ANTHONY PARK,
MINN.

Presented to the Twin City Veterinary Medical Association, April 19, 1906.

It is not my intention to argue that young men should study veterinary medicine in preference to other professions. Some young men are especially adapted for the practice of law, others for the practice of human medicine and still others for the practice of veterinary medicine, and every young man should take up the profession which he conscientiously believes to be the one in which he can do the greatest good for society as a body, and himself as a unit.

Young men are occasionally deterred from the study of veterinary medicine by a fear that they would not be so highly thought of in the community as if they studied human medicine or law or theology.

I became convinced years ago that regardless of profession or business, providing it is an honorable one, men are usually given about the social rank and recognition that they deserve. If a lawyer or physician is uncultured in speech and ungentlemanly in manner he is ranked as a boor, regardless of the fact that he is a member of a highly honored profession. If a veterinarian is well educated and a gentleman, he is recognized as such. I know plenty of veterinarians in this State who are so recognized and treated, and I am personally acquainted with veterinarians all over the United States who are recognized as scholarly gentlemen.

In 1890 the two years' course was common all over the United States and Canada. There were but few exceptions. The change to a three-year course was so rapidly made during the early 90's that within a few years there were but two veterinary schools of any prominence in the United States or Canada

that granted diplomas at the completion of a two years' course. We now have at least two four-year schools.

Nearly every State in the union having within her borders a reasonable number of veterinarians has State and local veterinary associations, which meet regularly and discuss professional matters just as do similar associations of physicians. For 43 years we have had a national association. A few years since we decided to enlarge and the name was changed from the United States Veterinary Medical Association to the American Veterinary Medical Association. None but graduates of colleges which furnish satisfactory courses of at least three years are eligible to membership.

Our current literature is abundant.

But after the young man has finished the high school, academic or collegiate course and then this prescribed three or four year veterinary course and graduated, what does the world offer him? What business prospects or what opportunities to gain reputation are there to justify the time and expense involved? It is not my intention to paint the prospects for a young veterinarian in untrue colors, for every intelligent veterinarian and stockman knows that veterinary practice during past years has had its ups and downs; but the stockmen themselves, the business men in our great cities and our medical brethren have suffered something from this same condition. There is a present ratio of three farm animals to each human being, and less than one veterinarian for each ten physicians. The live stock valuation in the United States was estimated several years ago at \$2,000,000,000. Two hundred and fifty million dollars worth of live stock were then sold annually in Chicago. I give these figures to illustrate the need for veterinary service, and the relative scarcity of the supply, not for the purpose of giving an impression that veterinary practice is a universal bonanza, for there are practitioners in veterinary as in human medicine who can scarcely keep their laundry bills paid.

The Government Bureau of Animal Industry is now offering positions for veterinarians as meat and live stock inspectors at

the great slaughter-houses and ports of entry or shipment. Bureau inspectors must be graduates of recognized veterinary colleges. It has been so ordered by Congress. The Government is already employing a large number of trained veterinarians in these capacities and the work is growing.

In nearly every state and territory there is a position for a state or territorial veterinarian or an officer with equivalent duties, and places for a number of deputies. Many of our large cities have city veterinarians in constant employ. There are places in our agricultural colleges and experiment stations for veterinarians who have a taste for work as teachers and experimenters.

But granting the importance of all these things, we must still recognize that the great field for our graduates must always be that of actual practice. The percentage of young men who will go into actual practice must always be very large in proportion to that of those who enter these other fields, and is not the prospect for the general practitioner encouraging? Veterinarians in private practice are all making good livings. Some of them are accumulating considerable wealth.

There can be no question concerning the existence of a considerable number of desirable locations for practice. To illustrate this point, I may say that I have recently been conducting correspondence with veterinary colleges and recent graduates, in an effort to induce a number of desirable men to take up practice in our State during the coming year. I have been able to state that we have 31 county seats in Minnesota without graduates; at least 13 other places that offer desirable locations, where men could be located without injurious competition. Quite a number of young men have written me concerning details for the various places suggested, and in their letters they made mention of the fact that they already had very desirable places in mind, and would like assurances that Minnesota could offer something still better.

I recently assisted a very worthy young man to select a location for practice in this State. I wrote for him to prominent

men in several places, and it was surprising, even to one familiar with the situation, to realize how anxious the live stock breeders and farmers in general were to have reliable men locate in their various neighborhoods. It is certainly not at all common for residents of Minnesota cities to make active efforts to induce young physicians or lawyers to locate in their midst. In other words, there is already a sufficiency, if not a general surplus in these two lines, and a very evident deficiency in our own.

PROGRESS.

I suggest a few thoughts to illustrate progress in certain lines.

The bacteriology of pleuro-pneumonia has been partially cleared up by the discovery of organisms so minute that our most perfect microscopes are unable to define them for the observer. Competent bacteriologists have pronounced the work in this case as free from flaws and there is apparently no reason why we should not accept it. If the specific germ of one disease is too minute for microscopic study, there may be many others. Recent work seems to place hog cholera over in this list. There are several diseases of animals, the specific cause of which has persistently eluded the bacteriologists and it is possible that in this we have an explanation. New methods of bacteriological work may now solve these hitherto impossible problems.

The history of Texas fever presents another triumph. It has been but a few years since the origin and nature of this disease was a mystery. It is difficult to give a definite idea of the seriousness of this disease. A large portion of all cattle in the United States, south of a certain line, are either affected by it or have been rendered immune by infection while young, but remain sources of danger for northern cattle. Southern cattle could not be shipped north for pasturage or market except during cold months. Northern cattle could not be shipped south for the purpose of improving southern stock without almost complete loss. Great business interests were constantly disturbed and the loss to both southern and northern states was

serious. We now have the etiology of this disease before us, as an open book. Southern cattle free from living ticks may now be shipped north without danger. Government veterinarians have been experimenting for some time with dips for destroying the ticks so as to remove the last obstacle to the movement of southern cattle northward at all seasons of the year. Not only that, but it is now quite apparent that young cattle may be immunized and be safely shipped into the southern states. This means the possibility of improving the southern cattle, and you are doubtless aware of the immense cattle interests of the south, particularly of Texas and southwestern Louisiana,—all this to the credit of our profession.

The problem of tuberculosis in the human family and among domestic animals is perhaps the largest, and it may prove the most difficult problem which medical men have ever been compelled to face. Dubard's discovery of tuberculosis in fish was such a revelation that it is unsafe to even speculate concerning the limitations of this disease. Here we have a bacillus, varieties of which can exist in different animal bodies through a range of temperature of from 50 degrees F. in carp to 110 degrees F. in birds. Are these varieties of the bacillus of tuberculosis which are capable of altering from one to the other? Competent research work seems to indicate that this may be the case. If this bacillus can gradually adapt itself so as to thrive in a variety of animal bodies, whose normal temperature vary from 50 degrees F. to 110 or over, then the possibilities as to distribution and saprophytic existence of this microorganism are almost bewildering.

Sanitarians in the field of veterinary medicine have taken hold of the problem, large as it is, and considerable has already been accomplished. But a few years have passed since we had the first positive information as to the specific nature of the disease. We now have a diagnostic test for the presence of this disease which is as nearly infallible as any method of diagnosis in the whole realm of medicine. It gives us positive evidence as to the presence of the disease, even when the lesions are very

recent or slight in extent ; and, so far as known, the errors that may be charged to tuberculin are nearly all in cases that can be diagnosed on clinical evidence without the aid of tuberculin. Widespread interest in bovine tuberculosis has been aroused. Cattle breeders and dairymen are becoming informed as to the nature and extent of the disease. The views of breeders, especially, have changed very much during the past few years. When tuberculin first informed us that a serious percentage of highly bred cattle was tuberculous it naturally aroused the opposition of breeders and owners. But as it became more and more evident that their cattle were actually diseased and that tuberculin was an accurate test as to the presence or absence of the disease, the more intelligent breeders naturally came over and it is now safe to say that there are comparatively few cattle breeders in the United States or Canada who do not believe that bovine tuberculosis is seriously prevalent and that tuberculin is an accurate diagnostic. It is becoming rather common for breeders to purchase stock subject to test or with certificate of test. It is no longer necessary to found a herd of pure bred stock with tuberculous animals, and it is possible with the aid of tuberculin to free a herd from this disease.

In view of work that has been done in Denmark and Germany and by experimenters in this country, it is very evident that it is not only practical but possible to breed tuberculosis out of a herd. This is based upon the demonstrated fact that a very large percentage of healthy calves can be reared from tuberculous dams, providing the calves are removed from the mothers soon after birth and reared upon the milk of healthy cows or upon the sterilized milk of the dams. It is now quite generally recognized that dairymen should not be permitted to sell milk which comes from untested cows, for any city food supply, and a number of cities are making the tuberculin test a condition for issuance of license. Minneapolis was the pioneer in this and deserves great credit. St. Paul has an ordinance similar to the one in force in Minneapolis, and the work for that city will soon be well under way ; so has Duluth and other smaller places.

Surgery.—There are several operations commonly done by surgeons in human practice that we make no attempt to perform. It is scarcely possible in general veterinary practice to furnish ideal conditions during operations, and we cannot control our patients to the same extent after the operation. But in spite of these difficulties, veterinarians are now able to do really good surgery.

Operations are usually performed as a matter of business, as far as the owner is concerned. Sentiment does not play so important a part, but we have reason to be fairly well pleased with the veterinary operative surgery of to-day.

An accurate knowledge of anatomy enables us to use cocaine as an aid in the diagnosis of obscure lameness. If we anesthetize the sensory nerve supply to a certain muscle, or to an entire articulation, and the horse which previously went lame, afterward goes sound for a time, we have fairly satisfactory proof as to the exact location of the injury.

To illustrate: A patient came to the University Veterinary Hospital with a badly swollen ankle and a history of injury while in training on the track several years ago. Examination easily demonstrated that trouble at the ankle was responsible for some of the lameness; but upon further examination I found an unusually bad case of thrush, and while considering the advisability of a certain operation for relief, the question arose as to what part, if any, of the lameness was due to thrush. I cocainized the posterior digital nerves just below the ankle and noticed that the horse continued to go lame as before. I then cocainized the plantar nerves just above the ankle and in from 12 to 15 minutes the horse was apparently free from lameness. I had then located the trouble causing lameness.

Veterinary surgeons are now doing quite a long list of neurectomies for the relief of lameness and the results are very satisfactory on accurately diagnosed and well selected cases. We are cutting the median nerve for the relief of lameness of the back tendons, ring bones and various foot troubles; cutting the plantar nerves, one or both, just above the ankle for ring bones,

navicular disease, corns, etc.; the digital nerves just below the ankle chiefly for navicular disease. We do neurectomies of the anterior and posterior tibial nerves, external saphenous and musculo-cutaneous, for the relief of spavin and other forms of lameness in the posterior limb. We divide the motor branch from the eleventh cranial nerve to the sterno-maxillaris muscle, and the bellies of the sterno-omo-hyoid muscles to prevent a horse from cribbing and cure the habit. The cunean branch of the flexor metatarsus tendon is frequently divided for the relief of spavin lameness. We have a new operation, which is probably superior to the old arytectomy for the relief of roaring. Laparotomies are fairly common; for instance, in cryptorchid castration, ovariectomies, removal of foreign bodies from the alimentary canal, and for volvuli.

Medicine.—Until recently parturient apoplexy, commonly known as milk fever, was one of those diseases which every veterinarian was anxious to avoid. A call to attend a case of parturient apoplexy was very much like a call to attend a funeral. We now have a treatment that is apparently specific.

We can now administer a cathartic and evacuate the alimentary canal of a horse in 25 to 30 minutes by the hypodermic or intratracheal use of eserine sulphate, either alone or in combination with atropia or strychnia.

I have discussed veterinary education, veterinary sanitation, a few operations from the domain of surgery, and a few points in disease and treatment work, to illustrate something of what the modern veterinarian is doing and the progress he has made.

It seems to me that the general trend of actual practice is toward greater certainty in diagnosis, and greater assurance of definite results in treatment. I will illustrate:

We have mallein as a practically certain diagnostic for glanders. We have tuberculin as a similar diagnostic for tuberculosis. The modern veterinarian may, by the skilful use of cocaine and an accurate knowledge of anatomy, make a much more positive diagnosis in certain cases of lameness than was previously possible; he may make an early and reasonably

positive microscope diagnosis of anthrax, by simple procedure.

In a study of prevention we see the same general trend of affairs. Texas fever may now be prevented by calf inoculation, and thus new blood be introduced for the purpose of improving southern cattle.

We have a very satisfactory preventive vaccine for symptomatic anthrax, and for true anthrax. We have a serum for tetanus that is at least very useful and apparently quite reliable as a preventive of this disease. There is one vaccine already before the public with reasonable assurance of successful operation for the immunizing of cattle against tuberculosis, a thing of vast importance. We may prevent the general infection of a stable with glanders by early testing of doubtful cases with mallein. It is possible and altogether practical to prevent milk fever and azoturia with reasonable certainty by intelligent management of diet and exercise. Heaves is easily preventable. The introduction of infectious abortion may be guarded against and even when this disease has gained foothold in a herd it may now be eradicated with a reasonable outlay of time and expense and with considerable certainty.

As illustrating this same thought in connection with treatment, we are able to treat milk fever with great certainty of results. The modern veterinarian's method of dealing with navicular disease is much more positive in operation and satisfactory in results than the old line treatment. We have the stomach tube, which is apparently coming into use for treatment of certain gastric troubles; and even for old fashioned colic we have the Reek's treatment, which is at least definite, and which is based upon precise theories; its users follow out a definite line of treatment, and apparently secure a higher percentage of recoveries than was formerly attained.

I do not mean to suggest that we are rapidly approaching an age of specific lines of treatment, that is, a certain formula for a certain disease regardless of the individual peculiarities of the case and other considerations, but it does seem to me that we are coming quite rapidly out of the old haze of uncertain thera-

peutics, and doubtful diagnosis, and helpless or blind prevention.

And finally we have this encouragement, that a large number of States have now placed upon their statute books veterinary practice acts which at the least recognize in a public and legal way the profession, and promise ultimate freedom from quackish competition, and even promise increased compensation. This is a matter of the greatest importance, even though the immediate benefits of these Acts for men now in the field are not very apparent. We need only to look ahead a term of 25 or 50 years to see that they are of the very greatest importance to our profession.

Are not all these conditions encouraging? Have we not good reason to face the future with great confidence?

CONTRIBUTION TO VETERINARY DENTISTRY.—The following item is from *The Scrap-Book*, April, 1906, page 353: "The greatest dental operation on record was performed upon an elephant in the City of Mexico. The aching tooth was twelve inches long and fourteen inches in diameter at the root. After Mr. Elephant had been securely fastened with chains, his mouth was pried open and a quantity of cocaine was applied to deaden the pain. When this was done a hole was bored through the tooth and an iron bar inserted. Then a rope was twisted around the bar and four horses attached."

THE MINNESOTA STATE LIVE STOCK SANITARY BOARD has succeeded in closing the large, open watering fountains in both St. Paul and Minneapolis and has substituted a more sanitary plan. They have also put into operation a regulation which provides for tuberculin testing of all cows that come into the South St. Paul Stock Yards from other states, and which are to go out of those yards for dairy or breeding purposes. Both St. Paul and Minneapolis have tuberculin test ordinances which have been in operation for several years. This gives Minneapolis and St. Paul dairymen an opportunity to replenish their herds with tested cows. This movement also adds another veterinarian to the working force, making five in constant service in addition to the veterinary members of the Board. This Board is making a good record, and Dr. Ward as Secretary and Executive Officer, deserves a goodly share of the credit.

EXPERIENCES WITH VON BEHRING'S PROTECTIVE INOCULATION AGAINST TUBERCULOSIS IN CATTLE.

BY DISTRICT-VETERINARIAN SCHRICKER, GROENENBACH, GERMANY.

Translated by JOHN V. LADDEY, D. V. S., from *Wochenschrift für Tierheilkunde und Viehzucht*, Vol. 50, No. 7.

It is now three years since von Behring's method of the protective inoculation of calves against tuberculosis has been transferred from the confines of bacteriological experiments into general practice and already favorable conclusions on achieved immunity have reached publicity. It may still take another six to eight years until a final and definite decision in regard to the attainment of a life-long immunity in vaccinated animals is arrived at, but for preliminary consideration and in the interest of a general introduction of this protective inoculation method the publication of the following observations might be of value. At the Eighth International Veterinary Medical Congress in Budapest, two essayists on this theme, Dr. Hutyra and Dr. Römer, expressed themselves to the effect, that the vaccination method, which is harmless for cattle and easily carried out in practice, enhances the resistance of such cattle against artificial tubercular infection to a very considerable degree, and that the question, whether and to what degree immunity attained in this way will be able to resist natural infection, could not be answered definitely for the present, but that, in the interest of a large statistical collection, it would be necessary to further the introduction of the protective inoculation method into general practice under the diversest natural conditions, *i. e.*, in severely, medium and lightly infected herds.

The immunity of protectively inoculated animals towards artificial infection may be considered as proven by several experiments, *i. e.*, those reported by Dr. Lorenz, in No. 48 of the *Berliner Tierärztliche Wochenschrift*, of 1903, also by experiments which Vallée and Moussa recently performed in Paris, where 13 calves, which had been vaccinated the year before, and 13 control animals were inoculated, part subcutaneously

and part intravenously, with virulent cultures of tubercle bacilli, and whereupon all control animals became severely infected with tuberculosis, three even died of this disease, while none of the protectively inoculated animals became infected with tuberculosis.

It is now still necessary to ascertain whether this immunity will also resist the daily influence of natural infection in tubercularly infected stables, and whether von Behring's assumption, that the immunity lasts for the animal's life-time, will be found corroborated in practice.

In this direction the Belgian Commission of State Veterinarians has expressed itself very favorably, perhaps in consideration of the short period of observation too optimistically; this Commission declares, after extensive observations and experiences, that "The Belgian Stock of Cattle will be protected after a few years from tuberculosis through the vaccination, and that thereafter an infection of man through cow-milk need be feared no longer."

Further, Ebeling-Woldegk reports in No. I. of the *Berliner Tierärztliche Wochenschrift*, of 1905, that up to that time he had vaccinated 1126 calves without any detrimental consequences; of these he had so far dissected 37 head, of which 36 head were found to be entirely free from tuberculosis; one animal, which had been vaccinated at the age of 7 months, and, as a febrile reaction reaching 105.8° F. allows us to believe, was probably already tubercularly infected at the time of vaccination, showed tuberculosis of the bronchial glands.

Since two years I have undertaken the protective inoculation of all the young stock of seven herds, of which, it must be mentioned, six were highly tubercularly infected, while one was almost free from tuberculosis; up to the present, 76 animals have been vaccinated without any resulting harm. (In regard to the technique, I refer to an article in No. 18 of this publication, of 1904.) In one establishment a general tuberculinization of the herd, consisting of 58 animals (exclusive of calves up to four months of age), preceded the protective inocu-

lation; 39 head of this herd reacted to this test. In this herd also the non-reacting young stock up to two years of age were vaccinated, while in the other establishments only calves up to four months of age were subjected to the vaccination.

The reaction upon the first and second inoculations was mostly a mild one, and, excepting a cough, only a few of the animals, especially those of a more or less advanced age, showed a mild, febrile elevation of temperature, without any symptoms of a systemic disturbance. Suckling calves as a rule show no reaction whatever. Only two animals presented disturbances of a somewhat serious nature; to these I will again refer later. The vaccinated animals are all in a thriving condition, and present a smooth and glossy coat.

Of the vaccinated animals, three have so far been dissected, viz.: two yearlings on account of tympanites, and a three-year-old primiparous cow, on account of metritis; this last animal was vaccinated at the age of two years, after it had responded negatively to a tuberculin test. These three animals originated from two tubercularly infected establishments. While the two first-mentioned animals, which had been vaccinated as suckling calves, were found to be entirely free from tuberculosis, the cow was found to have tubercular calcification of the bronchial glands, as well as an isolated cherry-pit sized tubercular nodule in the lung; the other organs and lymphatic glands were free from tuberculosis. This may be an instance where tuberculin failed, and where the animal was already tubercularly infected at the time of the vaccination; however, it may also be the case, that the protective inoculation is only successful when administered to young animals, and that for this reason von Behring has recently indicated four months as the extreme age limit, while formerly it was recommended that in exceptional cases also animals at the age of four months to two years could be submitted to the vaccination process; however, only then, when they were entirely free from any signs of tuberculosis, and an injection of tuberculin would cause no reaction whatever.

For the purpose of ascertaining whether protectively inocu-

lated animals could withstand strong natural infection, I submitted, in the case of the above-mentioned establishment, where 67 per cent. of the entire herd had reacted to tuberculin, all those animals, a total of eight, which I had vaccinated a year before, at the age of from 4 weeks to 3 months, to a tuberculin test. Of these eight animals, none had reacted to the vaccination. The method in which the young stock of this farm is raised, consists in allowing the calves to suckle their dams for a month, and then feeding them raw milk for another six months; in winter, spring and fall, the young stock is kept in the stable with the older cattle of the herd, in summer on a separate pasture.

As a dose 0.5 c.c. tuberculin was considered amply sufficient for these yearlings, which reacted in the following manner:

No.	Time of Injection	Following Day			
	7 P. M.	5 A. M.	7 A. M.	9 A. M.	12 M.
1	102.2°F.	102.6°F.	102.2°F.	103.1°F.	100.8°F.
2	101.7 "	103.5 "	103.1 "	103.3 "	101.8 "
3	101.5 "	104.0 "	103.6 "	103.6 "	101.5 "
4	101.7 "	103.8 "	102.4 "	102.2 "	103.3 "
5	100.8 "	102.6 "	102.0 "	101.8 "	101.7 "
6	101.3 "	102.7 "	102.0 "	102.7 "	101.1 "
7	101.8 "	104.0 "	102.4 "	102.9 "	101.5 "
8	101.5 "	104.5 "	104.0 "	103.3 "	102.6 "

(As none of the animals showed any fever, and as the temperature curve was already declining in all the animals, the taking of temperatures was not continued after 12 noon.)

The dam of Nos. 1-5 had reacted upon tuberculin with temperature elevations of: 1.9, 2.2, 2.1, 2.6, and 1.9° C., respectively; the dam of No. 7 had not reacted, and Nos. 7 and 8 had been bought as calves to add to the herd.

In connection with the tuberculinization of protectively inoculated animals, it must be mentioned that according to Dr. Røemer, Director of the Experiment Section of the Hygienic Institute at Marburg, and Collaborator of von Behring, "experience teaches that a hypersensitiveness to tuberculin makes its appearance following the protective inoculation; a tuberculin test, therefore, gives a positive reaction in cases where

no tubercular foci can be demonstrated in the organism."

As the above table shows, this hypersensitiveness to tuberculin might have found expression in the fact, that all the animals showed short and slight elevations of temperature; however, a typical reaction did not take place in any one of them. When the circumstance is now considered that, according to our experience, animals in the first stage of tuberculosis, which stage alone can enter into consideration in young animals, without clinical signs, react the strongest, and when it is further considered that, 0.5 c.c. tuberculin is a strong dose for young animals, then one could arrive at the conclusion, that none of the vaccinated animals is affected with tuberculosis. Nevertheless, so as not to be partial to protective inoculation, I will regard the reaction of animals No. 3 and 8 as positive, but even then this result could be called a favorable one, when compared with the results shown by the sixteen non-vaccinated animals which had been tuberculinized the previous year at the age of from $3\frac{1}{4}$ - $1\frac{1}{2}$ years; ten of this group have reacted positively, and six negatively. The relation of the results by comparison is as follows:

	REACTION.	
	Positive.	Negative.
Non-vaccinated animals.	62 per cent.	38 per cent.
Vaccinated animals	25 " "	75 " "

Guided by a desire to draw for these investigations upon subjects predisposed by heredity and exposed to severe natural infection, I therefore subjected another $1\frac{1}{4}$ year old animal, which had been kept in a tubercularly infected stable, and protectively inoculated in February and May of the previous year. The sire of this yearling was destroyed one month before the birth of the latter, on account of pulmonary tuberculosis, complicated by chronic tympanites; the yearling's dam, a secundiparous Swiss cow, was destroyed about two months after the birth of the former, also on account of pulmonary tuberculosis; the experiment animal was, therefore, at all events by heredity very strongly predisposed to tuberculosis. The animal had reacted upon the first inoculation with a febrile elevation of tempera-

ture (up to 40.5° C.) lasting 2 days, and a somewhat diminished appetite, which lasted several days; upon the second inoculation it reacted only with a slight elevation of temperature and without any systemic disturbances. A few months after the second inoculation this animal, which had always been poor in flesh and rough-coated, suddenly thrived. The tuberculin test gave the following result:

No.	Time of Infection		Following Day				
	7 P. M.	5 A. M.	7 A. M.	9 A. M.	11 A. M.	1 P. M.	
9	102.9°F.	103.6°F.	104.0°F.	101.3°F.	100.4°F.	100.4°F.	

Thus we have also here the same phenomenon as in the aforementioned animals—febrile elevations of temperature of short duration, but no typical reaction; this animal should be looked upon as not affected with tuberculosis.

I further subjected to the tuberculin test a 1¼-year-old bull from another tubercularly infected herd. This experiment animal, which had been protectively inoculated in January and April of the previous year, was also hereditarily strongly predisposed. The animal's sire (the same as in experiment animal No. 9) was destroyed about one month before the birth of the yearling, on account of tuberculosis, and its dam, a primiparous cow, about four months after the birth of the yearling, on account of tuberculosis of the lungs and mesenteric lymphatic glands.

This young bull had already reacted very strongly upon the first inoculation, but still stronger upon the second inoculation, so that on the second day after the inoculation there still existed a temperature of 107.2°F., with chills, anorexia and general systemic disturbances, which caused the somewhat anxious owner to send for me. From the third day after the inoculation the general condition became improved, the appetite slowly returned, and the fever moderated (103.3° F.)

Tuberculinization of No. 10 gave the following result:

Time of Injection	Following Day						
6 30 P. M.	5 A. M.	7 A. M.	9 A. M.	11 A. M.	1 P. M.	3 P. M.	5 P. M.
102.6°F.	105.4°F.	106.0°F.	106.3°F.	106.9°F.	106.0°F.	105.6°F.	104.7°F.

This animal, therefore, was the only one of the ten experiment animals which had shown a typical reaction. In comparison with the reaction of all the other vaccinated animals, this excessively febrile reaction (combined with general systemic disturbances and lessened appetite following both the first and second inoculations) which No. 10 had presented, as well as the strongly hereditary predisposition, would indeed justify us in concluding that the animal in question was already at the time of vaccination affected with tubercular lesions.

According to von Behring, protective inoculation is only successful when the animal to be inoculated is not already infected, or, when the animal has received infection through tuberculous milk, but where no lesions have as yet become established; therefore, if the disease is still in its incubation period. This latter condition might have been the case in animal No. 9. If, however, tuberculous lesions already exist, when, therefore, the disease must be considered as already manifested, then it is impossible to check the progress of this disease by protective inoculation. This might well have been the case in experiment animal No. 10.

In combining the post-mortem findings and the results of tuberculin tests, the following conclusions must be arrived at:

It is possible, through the protective inoculation of calves of less than four months of age, to enhance to a considerable degree the resistance of such vaccinated animals against severe natural infection, in so far as said animals are not already affected with tubercular lesions.

As far as the indications for protective inoculation are concerned, I am of the opinion that it is to be made use of in all severely infected establishments where an energetic method of eradicating tuberculosis has become an economic necessity. The introduction of this protective inoculation procedure into moderately and mildly infected herds might be welcomed in the interest of a collection of more extensive statistics; the necessity for this, however, does not exist in view of the fact that the correctness of the method has still not yet been definitely

decided. It might be well, therefore, to confine this immunization method to the offspring of manifestly tuberculous dams and sires.

Even if this immunity should only last 2-3 years, the advantage derived therefrom would still be great enough in that the second principal factor in the eradication of tuberculosis from infected herds, that of raising offspring free from tuberculosis, would be better served than by the methods heretofore employed. It would obviate the necessity of separating the young stock from the older cattle, which method is not easily carried out and in many cases of a doubtful effect; it would further also be rendered unnecessary to raise calves on sterilized milk, which as experience teaches us often unfavorably influences the development of the calf. Eradication of tuberculosis from infected herds would therefore be materially simpler than heretofore, and could be brought to a successful termination by the following regulations:

(1) Protective inoculation of the young stock possibly already at the age of 3-4 weeks, as well as of all newly added animals under four months of age.

(2) Tuberculinization of newly added animals over four months of age.

(3) The quick removal of dangerously tubercular animals.

Another much discussed point entering into the eradication of tuberculosis—the question whether manifestly tubercular animals should be bred from, has been placed in a different light through the researches of von Behring. Von Behring antagonizes the teachings of hereditary disposition to tuberculosis; he maintains that tubercular infection can be traced mainly to infected milk received in the first few weeks of life; the decisive influence of the transmission of tuberculosis is therefore to be attributed, not directly to heredity, but entirely to the dam in cases where the calf receives the infective milk in a non-sterilized condition. As essayist, he expressed himself in a similar sense on this subject at the Eighth International Veterinary Medical Congress at Budapest; he contended that tubercu-

losis can be transmitted by the parents directly to the offspring to a very slight extent only in cases of extensive generalization of the disease, and that hereditary disposition, in regard to the origin of tuberculosis in the domesticated animals was a matter of secondary consideration.

Of this new theory, that tuberculosis is not hereditary, many practitioners and experienced breeders will surely not be so easily convinced; the costly experiences made with tuberculosis by continued in-breeding are direct proofs against this theory. In accordance with this acceptation, the above-mentioned young bull (No. 10), which will soon attain the age of puberty, could without hesitation be admitted to service in the already tubercularly infected herd.

I should certainly hesitate to give the owner that advice, in spite of the bull's good conformation and noble pedigree (his sire had been bought in Switzerland for 1500 francs, and his dam insured for M. 700). Until such a time when the verdict has been pronounced, that protective inoculation definitely immunizes all animals, including those hereditarily predisposed, against tuberculosis, it will always be advisable to continue to act upon the lessons learned through experience, by introducing new blood to such tubercular infected herds; this can be accomplished to a large extent by the addition of young serviceable bulls which have responded negatively to tuberculin.

DR. CHARLES H. LEAVITT (C. V. C., '06) has sailed on the transport *Dix*, from Seattle, Wash., with army horses for Manila, P. I.

THE FISS, DOERR & CARROLL HORSE COMPANY sold 36,000 horses last year for an average price of \$166 a piece, including second-hand auction animals.

THE MISSISSIPPI VALLEY VETERINARY MEDICAL ASSOCIATION, at its meeting in Monmouth, Illinois, Feb. 22, passed the following resolution: "*Resolved*, That so long as the office of State Veterinarian is held by an empiric, it shall be considered an unprofessional act for any member of this Association or for any graduate veterinarian to serve as Assistant State Veterinarian."

NITROUS OXIDE ANÆSTHESIA IN ANIMALS.

BY LOUIS P. COOK, D. V. S., CINCINNATI, OHIO.

Presented to the Twenty-third Annual Meeting of the Ohio State Veterinary Medical Association, January 16, 1906.

The aim of this paper is to lay before this Association the details of a series of experiments conducted for the purpose of determining the value of nitrous oxide as an anæsthetic for veterinary use. This agent has been used to a very limited extent by veterinarians, and I have been unable to obtain from literature accurate details of its effect on animals. Chloroform and ether, the anæsthetics in common use, have many disadvantages, the most notable being the stage of excitation produced by them before anæsthesia, often long delayed, develops. This stage of excitement makes the use of such agents more or less dangerous to the patient, and the length of time, usually from ten to twenty minutes, required to anæsthetize an animal, often proves embarrassing to the operator. The length of the period of excitement may be shortened and the advent of anæsthesia hastened by the rapid administration of chloroform, but I believe it to be the opinion of experienced veterinarians that such practice is exceedingly risky. True, anæsthesia has often been produced in the horse with chloroform in three or four minutes, but disastrous results, too, have not been infrequent. On account of the slow and uncertain action of chloroform and ether the veterinarian generally operates without the use of anæsthetics, even though anæsthesia would make the operation safer for the patient and easier for the operator, as well as more humane. The more general use of anæsthetics by veterinarians would make veterinary surgery appear more scientific and less like butchery. It, therefore, seems to me that veterinarians, in the interest of their profession, ought to seek for some practicable anæsthetic. The physician finds the same fault with chloroform and ether.

Lately nitrous oxide or "laughing gas," originally used almost exclusively by dentists, has come into very general use

with physicians, who use it to produce primary anæsthesia, which it does in about thirty seconds, and which can be kept up by the use of very little ether. Appliances have been invented for the use of physicians for its administration alone or in combination with ether. Having witnessed its administration to a number of individuals and the prompt and comparatively safe manner in which anæsthesia was produced by it, I decided to try it on horses and dogs. The subjects held for dissecting purposes at the Cincinnati Veterinary College furnished ample material. A hood somewhat like the ordinary nose feeding bag, but smaller, was constructed of leather, rubber and brass, which when adjusted to the animal's head fits neatly. The mechanism of this hood permits the admission of fresh air, chloroform, or gas, alone or in any combination, or in its being made absolutely air-tight. The method of producing anæsthesia is like this: The hood is adjusted, either before or after casting the animal or placing it upon the operating table. The fresh air inlet is allowed to remain open, permitting the animal to breathe freely until the operator is ready to administer the anæsthetic. When all is ready the fresh air inlet is closed, excluding fresh air entirely; simultaneously the nitrous oxide is turned on, which on passing through the chloroform chamber carries with it the chloroform vapor, and the hood at once becomes filled with the combination. The animal takes a few deep inspirations, when usually, in from thirty to sixty seconds, and with very little struggling, complete anæsthesia, with muscular relaxation, etc., develops. The gas is then shut off and the chloroform and fresh air inlets at once thrown open, allowing the inhalation of both chloroform and fresh air, with which a proper state of anæsthesia may be maintained indefinitely and with the use of very little chloroform. I have administered nitrous oxide alone for fully three minutes without producing anæsthesia, though the animal was nearly asphyxiated.

When mixed with a very little chloroform, however, nitrous oxide readily anæsthetizes, consciousness returning in from one to three minutes after its administration is

discontinued, but analgesia lasts for some minutes longer.

The advantage of this method is that anæsthesia can be safely produced in a minute or two, and without any excitement or struggling. Nitrous oxide is practically harmless. It has little effect on the action of the heart, and the small amount of chloroform required to be used with it is insufficient to perceptibly weaken the organ.

The gas is sold in tanks of different sizes, with stopcock, tubing, etc., attached. Tanks costing two dollars contain sufficient to anæsthetize a dozen or more horses. I have administered the gas to some thirty horses and about half this number of dogs, and experience has taught me that it must be given to animals rapidly and entirely free from air and in combination with a small amount of chloroform.

I am deeply interested in nitrous oxide anæsthesia in animals, and I should be pleased to hear from any member of this Association who has had any experience on the subject.

DR. L. VAN ES, of the North Dakota Agricultural College and Experiment Station, recently took an active part in a meeting of the State Medical Association—a good example for all veterinarians who can possibly follow it.

RABIES has recently threatened two well-known members of the veterinary profession. Drs. A. H. Baker, of Chicago, and Geo. E. Corwin, of Connecticut, each of whom was bitten by a dog he was attending. Both at once took the Pasteur treatment and escaped serious consequences. The former made extensive duplicate bacteriological investigations, and the Negri bodies were readily and plainly visible in sections of the nervous system of the dog which inflicted the wound upon his hand.

DR. L. A. MERRILLAT, of Chicago, who conducts "Surgical Items" for the REVIEW, writes from the Yellowstone National Park, Wyoming, under date of June 7: "If the REVIEW should be left without a 'Surgical Item' for July this card will explain the reason. I am here doing a number of surgical operations for the Yellowstone Park Transportation Co. It is very cold here, with snow every day. Tourists have just begun to arrive. The grandeur here cannot be described."

THE CLINICAL EXAMINATION OF THE BLOOD IN VETERINARY PRACTICE.

BY SAMUEL H. BURNETT, NEW YORK STATE VETERINARY COLLEGE,
ITHACA, N. Y.

From about the middle of the nineteenth century active investigations have been in progress on the condition of the blood in man and to a less extent in the domesticated animals. At first these were confined largely to observations on the number, size and shape of the red corpuscles, then came studies of the varieties of the white cells and the other elements found in the blood. About fifteen years ago enough had been learned concerning the condition of the blood in healthy and in diseased persons, and the instruments had been perfected to such a degree that an examination of the blood could be a valuable aid to the practitioner. Since that time the examination of the blood has taken its place among the other physical means of arriving at a diagnosis, and is now used by thousands of physicians and surgeons. In the better hospitals blood examinations are about as much a matter of everyday routine as the examination of the urine.

"The examination of the blood," DaCosta¹ states, "is capable of throwing light upon the diagnosis in so wide a range of conditions that it is difficult to single out any disease in which it may not be of some utility, either as positive or negative evidence." The kind of information afforded by the clinical examination of the blood has been divided by Cabot² into three classes, namely: it "gives us (a) a ready-made diagnosis in a few diseases; (b) side lights on a good many obscure conditions; and (c) the frequently great assistance of a negative report." Examples of the first class are found in malaria, leukemia, surra, Texas fever and filariasis. In the second class are such affections as secondary anemia, chlorosis, sepsis, intestinal helminthiasis, hem-

¹ DaCosta. Clinical hematology, second edition, 1905.

² Cabot. Clinical examination of the blood, fifth edition, 1904.

orrhagic diseases, suppurative processes. Finding that the blood is normal is very often of great assistance, as it enables one to differentiate from the diseases that produce changes in the blood. Hodgkin's disease is diagnosed by a blood examination, yet the blood is normal in the early stages, this serving to distinguish this affection from leukemia, which produces marked changes in the blood but has otherwise similar symptoms. In typhoid fever the blood is nearly normal, this often being of great help in distinguishing it from affections showing somewhat similar symptoms but producing an increase in the number of leucocytes.

Besides its value in diagnosis, the blood frequently gives most important indications as to prognosis and treatment, and is of value in examinations for soundness. For example, in pneumonia there is ordinarily an increase in the number of leucocytes. If instead of there being an increase the number is below the normal it is a very bad sign. During the course of this disease the reappearance of the eosinophiles is a favorable sign, indicating that the crisis is passed. In an anemia in which the hemoglobin is much lessened while the number of red corpuscles remains nearly normal, that is, the coloring matter in each corpuscle is lessened, the indications for a prompt improvement under administration of iron are good; while but little improvement is to be expected where the amount of hemoglobin in each corpuscle is normal, and practically no improvement when the hemoglobin index is above normal, iron being practically contraindicated in the more severe cases where the blood shows very large red corpuscles, each having an increased amount of hemoglobin. In examining a horse for soundness, as suggested by Moore, the blood may reveal the presence of morbid processes not evident by other physical symptoms. For example, a deeply seated suppurative process may be overlooked on an ordinary examination, yet the blood show a marked increase in the polynuclear leucocytes. In subjects infested with tape worms or intestinal round worms there is ordinarily an increase in the number of eosinophiles in the blood. Without multiplying examples, it may be seen that the blood offers excel-

lent facilities for judging as to whether an animal is in a state of health or not.

A great mass of data has been accumulated concerning the changes found in the blood in the several diseases to which human flesh is heir. The books and pamphlets containing these data would make a good sized library. As regards the blood of the domesticated animals but comparatively few clinical observations have been made. Careful studies of the blood have been made in Texas fever, in infectious leukemia in chickens, in trichiniasis in swine and in surra. Clinical examinations from the clinic here of less than a hundred cases of horses, dogs and cows suffering from various disorders are recorded. A considerable amount of work has also been done on the blood of animals in the course of experimental investigations. All told, the available data on the blood of the domesticated animals is meager; yet the importance of these is far greater than mere numbers indicate because, as Moore, Haring and Cady¹ have pointed out, "they show that the changes that occur in the blood of the horse" and, we may add, in the other animals studied "follow very closely those that take place in the human subject under like pathological conditions. This fact being fairly well established makes it possible for us to draw somewhat fully from the demonstrated facts in human hematology to aid us in the interpretations of the findings in horses" and in other animal "blood."

Though only a beginning has been made, yet it is not as though we were building from the very foundation. As soon as the normal condition of the blood in the several kinds of animals is determined, we are ready to make use of clinical examinations. A series of investigations on the blood of the domesticated animals have been in progress here for about four years. As a result of this work, together with that done elsewhere, we have available at the present time a working knowl-

¹ Moore, V. A., Haring, C. M., and Cady, B. J. The clinical examination of the blood of the horse and its value to the veterinarian. *Proceed. Am. Vet. Med. Assn.*, 1904, p. 284.

edge of the blood of the horse, cow, sheep, dog, cat, rabbit and guinea-pig.

In an ordinary clinical examination of the blood the things of value are:—

- the number of red corpuscles,
- the number of leucocytes,
- the amount of hemoglobin or coloring matter,
- the percentage of the several varieties of leucocytes,
- the pathological changes in the red corpuscles and in the leucocytes.

The third of these, the amount of hemoglobin, may be obtained by an inexpensive instrument. The others require a microscope; but aside from the microscope the apparatus is not expensive. It requires some training to learn to make an examination quickly and accurately, but it does not take so long as it does to learn the heart and lung sounds. To get the amount of hemoglobin is no more trouble than to take the temperature, and requires less time. The amount of coloring matter in the blood tells one whether anemia is present and if present to what degree. Making a guess as to the presence of anemia by the appearance of the mucosæ and skin or finding the amount of hemoglobin present in the blood, is very like the difference between taking the temperature with the finger or using a clinical thermometer. A good illustration of the uncertainty of making a diagnosis of anemia from appearances alone, occurred very recently when two persons came to the laboratory to have their blood examined. One, Miss A, was pronounced by her physician to be anemic, while the other, Miss B, was pronounced to be typically normal. The blood examination, much to the surprise of the attending physician, showed that Miss A had a high normal amount of hemoglobin, while Miss B was anemic. This example, which is only one among a considerable number that might be given from my experience, is all the more instructive to us when we consider that changes in the appearance of the skin and mucosæ are much more easily seen in man than in animals.

Every one has cases in his practice where the symptoms are obscure or point about equally to two or more conditions requiring widely different methods of treatment. In such cases one needs all the assistance one can get. Often in just such cases as these the blood points the way to a correct diagnosis. It enables us to see a little farther, a little deeper into the processes that are going on in the tissues. Take, for example, cases of verminous embolism in the horse, due to *Sclerostoma equinum*. Haring's study of four cases showed that in each horse there was an increased number of eosinophiles in the blood. The value of his findings is self-evident in differentiating between spasmodic colics caused by this parasite and those due to intestinal obstruction or causes other than parasites. The value of a blood examination is not so much that it enables us to make a diagnosis by its use alone, though there are several conditions in which the blood alone is sufficient. In the great majority of cases it is to be considered with all the other symptoms available, as simply one kind of objective symptom. For this reason I think that it will not tend to supplant careful observation and study of the other symptoms; but that, on the contrary, by causing us to observe more critically and study our cases more carefully, it will help us to see more clearly what changes are going on in the tissues and organs.

DR. G. E. CORWIN, JR., of Lakeville, Conn., was recently bitten by a rabid dog which he was examining, and three persons belonging to the family of the animal's owner were also victims. All took the Pasteur treatment in New York. The Doctor is known to our readers through his occasional contributions. We trust that his preventive treatment has been entirely successful.

DRS. C. E. AND J. S. HOLLINGSWORTH, of the firm of Hollingsworth Bros., La Salle, Ill., have recently moved into their new Veterinary Hospital. It is built of hollow concrete blocks, having a floor capacity of 36 feet x 115 feet, two stories high, is covered with a slate roof, is electric lighted, furnace heated, with commodious well ventilated stalls and boxes, and is equipped with a Kyle operating table and an ambulance service.

ACONITE POISONING.

BY DR. B. F. KAUPP, KANSAS CITY VETERINARY COLLEGE, KANSAS CITY, MO.

Presented to the Meeting of the Missouri Valley Veterinary Association, Feb., 1906.

Among those who medicate horses for their various ailments are some who have not had the school training which fits one to competently prescribe. Among the drugs used, and often used in poisonous doses, is aconite. That one could, with certainty, recognize the symptoms of a horse given an overdose, he must know the various conditions of impaired functions it produces.

The following is a report of one experiment. The subject was a gray gelding, aged, but in good health.

The following table shows the effects of a poisonous dosage upon this horse:

Time.	REMARKS.	Temp.	Resp.	Pulse.
12-27				
9.10 A. M.	Heart regular and strong. Given 2 drams fluid ext. aconite root, P. D.	99.2	17	35
9.30 A. M.	Movements of swallowing, champing of the jaws. Head protruded. Defecation. Restless.	99.2	20	40
9.40 A. M.	Defecation. Heart weak and irregular. Continuous movement. Swallowed 24 times per minute.			38
9.50 A. M.	Defecation. Rectal muscles relaxed. Slight perspiration. Slight bloating.			
9.55 A. M.	Defecation.	99.9		40
9.56 A. M.	Defecation. Passage of flatus. Labored respiration. Grunt at each exhalation.		10	40
9.57 A. M.	Defecation. Continuous movements of deglutition, 34 times a minute.			
10.10 A. M.	Two drams more of the aconite were administered per orum in 1 oz. of water.			
10.11 A. M.	Defecation. Not so restless. Passage of flatus.			
10.13 A. M.	Defecation. Excrements more soft. Again restless.			
10.15 A. M.	Grunting during exhalation.	99.9	13	
10.17 A. M.	Defecation.			

Time.	REMARKS.	Temp.	Resp.	Pulse.
10.20 A. M.	Cuticular surface more moist. Continuous movements of deglutition, 42 times per minute. Defecation.			
10.25 A. M.	Head protruded. Champing of jaws. Passage of flatus. Heart irregular but stronger.			
10.30 A. M.	Respiration more difficult and grunt during exhalation. Passage of flatus.		9	
10.35 A. M.	Pulse irregular but now weaker. Defecation.			
10.37 A. M.	Passage of flatus. Movements of deglutition now 36 per minute. Perspiration more profuse. Colicky symptoms. Efforts to lie down, but was not permitted to do so.			
10.40 A. M.	Defecation and passage of flatus. Colicky symptoms more acute.	99.9		
10.45 A. M.	Lying down, then up.		18	
10.50 A. M.	Salivation. Still champing jaws. Movements of deglutition and other symptoms same.			
10.57 A. M.	Not so restless. Trembling. Heart very weak. Bloated. Tapped cæcum. Escape of gas followed.			
11.00 A. M.	Colicky pains continue. Salivation. Head protruded. Difficult respiration. Defecation. Dilated nostrils.			
12.30 P. M.	Respiration not so labored. Heart weak and very fast. Colicky. Given 1 gr. strychnia sulph. and 1 dram fluid extract convallaria per orum in 1 ounce of water.	103.5		
1.00 P. M.	Increased salivation. Labored respiration, perspiring freely. Two oz. aromatic spts. ammo. administered per orum.			
4.00 P. M.	Given 1 dram f. e. convallaria. Respiration not labored. No salivation or champing of jaws. Movements of deglutition subsided.	102.5	26	72
5.00 P. M.	Violent efforts as if to vomit. For a few minutes breathing was labored. Colicky. The attack lasted five minutes.	102.5	26	72
11.30 P. M.	Bloated. Colicky. Difficult respirations. Died.			
12-28	An autopsy was held.			

After the carcass had been skinned, the abdominal cavity

was opened; food was found among the abdominal viscera. Upon further investigation it was found that the stomach was ruptured upon the greater curvature for a length of six inches. Hæmorrhages were found over the serous membranes of the stomach, lungs, heart and kidneys, and also in the substance of the right kidney. The liver was congested. The right auricle and ventricle were two-thirds full of black, clotted blood. An ante-mortem clot half the diameter of the pulmonary artery was found.

There was only a small quantity of dark non-coagulated blood in the left auricle and ventricle.

By text-books aconite is described as being a cardiac and respiratory depressant, also diaphoretic and diuretic. Locally it relieves pain, on account of its sedative action upon the sensory peripheral nerve endings. In poisonous doses it kills by respiratory arrest.

In the above single experiment that was conducted, the most prominent derangements were: Movements of swallowing, champing of jaws, salivation, irritant to stomach and bowels, leading to spasms; respiration, heart beat and blood pressure are lowered; pulse irregular; respirations slow and difficult, especially the expiratory effort.

DR. ADOLPH EICHHORN, B. A. I., editor of "German and Hungarian Review" for this publication, has been transferred from field duty in Kansas to laboratory work in Washington.

A QUAIN RECIPE.—The following from an old book is given as "an excellent cure for the murrain in cattle": Take for every beast a quart of old wash and a good quantity of hens' dung, and lay the latter to steep eight or ten hours, and then strain the dung forth, and break to every beast two rotten eggs into the fore-named juice; and give to everyone two penny-worth of spikward, and blend all these together and give it the beast; but first let blood, both sick and sound, and separate the sick from the sound. Drench both horses and swine, for they are both apt to take the disease. Bury the dead deep in the ground, so that dogs cannot get at the carcase.—(*Farm and Home.*)

ACUTE INDIGESTION IN THE HORSE: ITS TREATMENT.

BY DR. D. O. KNISLEY, TOPEKA, KANSAS.

Read before the Semi-Annual Meeting of the Missouri Valley Veterinary Association,
Feb. 12, 13, 14, 1906.

My subject is "Acute Indigestion of the Horse," a trouble that is by no means unfamiliar to you all, and one that is sure to cause all of us, at times, to consider what to do first. Going into the details of etiology and pathology of the cases, I consider it is only time lost, as all of you have had your time of study along this line, so shall omit that and try to give you a short outline of the symptoms usually found in these cases when called in the early stages. I usually find this trouble in the heavy or work horse, rarely in the trotter or thoroughbred, and in one instance only in a mule. The work horse with us seems very prone to the disease.

The patient on one's arrival may or may not be down; it will usually be restless, getting up or down, frequently turning around, slight belching and regurgitation, respiration labored, and short, pulse at this time not very much affected; temperature practically normal. If convenient in these instances, I usually give linseed oil and turpentine or eucalyptolin in 1-oz. doses. If the case is relieved, I always feel thankful, for such cases rarely are, and as the distension of the stomach increases so do the symptoms of distress; breathing becomes very much harder, the patient becomes more restless, can neither lie down nor stand with any comfort, will turn around quickly in the stall, seemingly not knowing what to do, nostrils will be opened wide, and at this time are usually very red, pulse becomes wiry and irregular, belching from the stomach very noticeable, and very frequently a bloody-looking fluid mixed with particles of feed will return through the nose, which fluid has a very sour and disagreeable odor. About this time it is up to the practitioner to do something, as it seems that the different remedies that have been given during the progress of the disease have

apparently been thrown away, or, in other words, have not given the patient any relief. There should be something done to relieve such awful distress of the patient. Especially will the owner of the horse, if he is around, make suggestions to do this and that, when the practitioner knows well himself that as far as giving medicine is concerned, he has done all he can and that no good could come of the suggestions. To satisfy the owner, something must be done, and at this point I shall try to explain how I have consoled myself as well as the owner. My first attempt was made on a case similar to the foregoing description in my paper. The case came to the hospital apparently nearer dead than alive. I could see no good in trying to give medicine. At every inhalation the mouth was opened wide so as to admit more air, the mucous membranes were pale blue. I did not take time to find out the pulse or temperature, but proceeded at once to the office and got a piece of $\frac{1}{2}$ -inch rubber hose, 11 ft. long, and a mouth speculum, and started for my patient, calling an assistant to follow me. I first oiled the tube, then placed the speculum in the patient's mouth, having the assistant hold the horse to prevent swaying from side to side. I introduced the rubber tube, passing it through the mouth and œsophagus into the stomach without any trouble. The pressure in this case was so great that it forced the bloody-looking fluid through the hose. About $1\frac{1}{2}$ pailfuls came away with a good deal of ground corn and bran. After the discharge had stopped, I removed the tube, and left the horse in the open air. Twenty minutes later I gave three drachms of digitalis. About one hour later I placed the horse in a box-stall; three hours later the horse was eating hay slowly and appeared bright, but upon being moved showed soreness. I thought that due to the muscular exertion the animal had gone through. During the next two days I gave stimulants every four hours. On the fourth day the animal went home and was put to work.

The next case that came to the hospital was not in as bad condition as the first, still so bad that there was great distress, breathing very hard, belching gas continually. I decided to

pass the tube as in the previous case, but success was not as easily won as I had anticipated. In this instance I had a great deal of trouble in getting the hose into the œsophagus. It repeatedly entered the trachea. I was persistent and finally succeeded, but for some reason things did not work as before. I got only a small amount of gas on its entrance, and, not being satisfied with this, I got a bucket of water and a funnel and proceeded to fill the hose so as to get suction. After the hose was full I let it drop on the ground and about half a pail of bloody-looking fluid ran out, when the hose appeared to clog up. I again filled it from the bucket, and again lowering it quite a lot of fluid and some feed returned. When it quit this time I removed the hose and took the horse to a box-stall and gave the following: Whiskey, $\bar{\text{E}}$ ij; soda hyposulphate, $\bar{\text{E}}$ ij; water, $\bar{\text{E}}$ viij. I gave nothing further and the horse went home the next morning.

Now arose the question of how to do away with some of my troubles with such cases, and from that time on, as cases came and went, I would try to devise some plan to stop the clogging, as it interfered a great deal in some cases. Finally, I conceived the idea of a double tube—one in which I could use an influx of air or water and thereby either blow it open or use the water pressure to force it back. I spoke to a particular friend of mine, and he thought it a great scheme, and at once said he would finance the scheme if I would follow up the experimental part of it, which I agreed to do. On this plan we proceeded, first making a drawing on paper and sending this drawing to different rubber companies. After five or six companies refused to do anything for us, it looked discouraging; still we kept writing and finally found a firm who said they would venture to make one and stated price for same. By return mail the money was sent with the drawing, and in due time the tube returned, according to my idea, but at my first attempt to use it, I was greatly disappointed. I could not do one thing with it. It was entirely too limber. I could not get enough pressure to make it pass. Yet not being satisfied that it was useless.

We got a stilette for the same. The next trial was a great success. I had no trouble whatever in passing the tube, and the results were very satisfactory, so much so that I have made note of a few cases that I thought might be of interest to some of you, at least. Up to the present time I think I have passed this tube on at least 40 head and have not had a failure.

Oct. 26, a bay mare, belonging to Whitaker Bros., came to the barn at 4 P. M., very acute, would scarcely be induced to walk; breathing very labored; walked with a straddling gait. Put on the wash rack and passed the tube. At once about one pailful of bloody-looking fluid came away. The mare was greatly relieved. Gave alcohol and soda hypo. Half an hour later I gave 15 drops of aconite, followed by two or more doses one hour apart. The mare staid at the hospital four days and then went home to work.

Nov. 4, same mare came to barn at 6.30, breathing very hard and short; distension of the stomach so much that the colored man said, "Doctor, I guess she's a goner this time." I passed the tube and drew off about one pail of that bloody fluid and about two quarts of corn chop. Relief was given at once. Gave 20 drops of aconite. No further treatment. Mare went home next morning.

Nov. 4, Omnibus Company's gray horse, aged, came to barn at 5.30 P. M., breathing short and labored, in great distress, continually getting up and down. Was given one dose of oil of turpentine. Within twenty minutes horse was growing worse; broke out in sweat and could scarcely be kept on his feet. Was brought in and the tube passed, more than a pail of bloody fluid coming away. Relief was at once shown. Gave one dose of alcohol and soda hyposulphate. Horse did not lie down any more and went home next afternoon.

Nov. 17, bay filly, four years old, was brought to the hospital and could scarcely travel. Breathing was performed with great difficulty, bloody exudate and feed were running from both nostrils. I passed the tube at once and drew off about 4 or 5 quarts of bloody fluid. Then I gave $\frac{1}{2}$ ounce of eucalyptolin in

capsule. The filly was greatly relieved, but still kept on belching. One hour later I passed the tube again, draining off about $\frac{1}{2}$ pailful. Again I gave $\frac{1}{2}$ ounce of eucalyptolin. The filly was still in a good deal of distress, and in an hour I passed the tube again for the third time, draining off about $\frac{2}{3}$ of a pail of fluid. This was more than I had gotten at either of the other times. I then gave alcohol and soda hyposulphate. One hour later gave three drachms digitalis and an hour later gave three ounces whiskey with soda hyposulphate. Mare was given no further treatment, and left the hospital on the 19th, two days later.

Nov. 18, black horse, owned by W. J. Burchard, came to the barn at 10.30 A. M., in great distress, badly bloated. I tapped the colon at once, which gave relief. I then gave one-half ounce eucalyptolin in capsule. The colon refilled, and I tapped it again at 1 P. M.; horse quite restless. Gave two grains of morphine hypodermically; no relief apparent; breathing very hard and labored. At 2 P. M. I passed the tube and a pailful more of the bloody fluid came away. Then gave the alcohol and soda hyposulphate and tr. ginger. At 2.30 the horse was resting easy, and went home next morning at 10 o'clock.

Nov. 21, Mr. King's cream mare was very badly bloated at 5.30 P. M. I tapped the colon at once, then drew $\frac{2}{3}$ pail fluid from its stomach and gave alcohol, soda and ginger. Colon refilled and was again tapped at 9 P. M. Gave digitalis and hyp. soda. One hour later gave $\frac{1}{2}$ ounce eucalyptolin; left the mare at 2 A. M., resting easily. She went home in the morning.

Nov. 23, bay horse, owned by Lawrence Ellis, weighing about 1400 pounds, came to barn at 3.40 P. M.; had been sick two hours, belching slightly, very acute pains; could scarcely get him out of wagon. Gave $\frac{1}{2}$ ounce of eucalyptolin in capsule, waited three quarters of an hour and then passed the tube, a full pail of fluid coming away. Then gave the alcohol, soda hyposulphate and ginger, and put the horse in a box-stall. He laid down, and in about half an hour got up and went to eating hay. No further treatment. Horse went to work next morning as usual.

Dec. 1, was called at 4 P. M. to see a bay horse, weight 1700 pounds. I found the horse down, not much distressed, bloated slightly, breathing short, pulse not much affected. I gave $\frac{1}{2}$ ounce eucalyptolin in capsule. In half an hour the horse got worse, more bloated and restless. I advised taking him to the hospital. On arrival I gave 1 quart raw linseed oil and 2 ounces turpentine. At 8 P. M. the breathing was very short and labored, pulse growing wiry and animal getting restless. At 8.30 brought in and passed the tube, removing fully a pail and a half of fluid and at least a quart of corn chop, some pieces as large as half kernels. I then gave alcohol and soda hyposulphate. At 9.30 gave twenty drops of aconite. At 11.00 gave three drachms of digitalis. No further treatment. Horse went home at 8 A. M.

Dec. 24, called 4 $\frac{1}{2}$ miles in the country to see a pony belonging to J. A. Sieben. Had been sick about an hour; found her down and was unable to make her get up. She was in great distress; breathing hard and short; belching particles of feed and bloody fluid from both nostrils; mucous membrane pale blue. I passed the stomach tube at once, a pailful of fluid and feed came away. Then I gave $\frac{1}{2}$ ounce of eucalyptolin. In about twenty minutes she got up and was at once started for town. No further treatment was given. Mare went home next afternoon.

Jan. 1, 1906, mare had been driven 45 miles, came to R. Colvin's barn sick. I was called at once, and found her down; breathing hard and considerable belching. I gave $\frac{1}{2}$ ounce eucalyptolin; waited forty minutes. Mare grew worse in every way; breathing harder; she was very uneasy; could scarcely keep her on her feet. I passed the tube. But in this case there was hardly any fluid. I then gave another dose of $\frac{1}{2}$ ounce eucalyptolin. No further treatment was given. She called for her feed in the morning, but none was given. Was hooked up and driven 16 miles without any further trouble.

A TREATISE ON DOG DISTEMPER, WITH SPECIAL REFERENCE TO TREATMENT.

BY J. C. BUTCHER, LIMA, OHIO.

Presented to the Twenty-third Annual Meeting of the Ohio State Veterinary Medical Association, January 16, 1906

I hesitate to take up a subject so little discussed at our meetings, on which literature is so deficient, so far from conditions met with in actual practice, and so at variance with successful treatment.

Dog distemper is so easily confused with congestive chills; in fact, when we have to deal with but one case (that is, when we have not the contagious form), we can be reasonably sure that a severe chill was its starting point. Another reason for this confusion is the uncertainty of symptoms. The normal pulse varies more in the various breeds of dogs than in any other animal. This is undoubtedly caused by the inherited weakness of the heart valves, brought on by over-exertion and rapid cooling. Secondly, we find all temperaments possible among dogs, and in no animal do we have the variance of care, surroundings and diet, which we find given dogs.

When called to treat a dog, we should remember that in no animal is the anamnesis so important—the care and kind of food the dog may have had; duration of the ailment, etc.

Now, what do we usually find when we suspect a case of dog distemper? On inquiry, we will nearly always find the dog to have been off on some excursion of a day or two, and as a result its condition resembles "a heavy cold" in the human subject. We may well term it a congestive chill, in which all secretions and excretions are completely checked.

Some veterinarians persist, however, in calling everything dog distemper.

A few cases to illustrate: Was called to a neighboring city to see a large Newfoundland dog, which had become greatly emaciated and covered with a scaly coat. An anamnesis similar to the following was obtained: This dog had not eaten any-

thing in two weeks; had become paralyzed and had defecated but once, and that a very small amount, in eleven days, and constantly grew worse under the veterinarian's treatment for distemper. My treatment was an enema of five quarts of warm water, massage of bowels for one-half hour; administered five minims of croton oil, and after another half hour's massage, by ardent admirers of the dog other than myself. Then appeared before our eyes a splendid result of an effort at producing an endless chain, which was as gratifying to the dog as it was nauseating to his admirers. The dog recovered in ten days.

Another, a fox terrier, which had also been treated for distemper, having all characteristic symptoms, and in addition a marked soreness of the bowels. Was told that the bowels had not responded to a cathartic. An enema was impossible and caused great pain. An examination revealed the fact that an injury of some sort had caused the rectum to become entirely occluded on account of an injury to the muscular walls, hence an enema was impossible. An incision each way, followed by curetting, afforded relief, and recovery followed in ten days.

Hence, even in distemper, correct diagnosis is as much an essential as in any other line of our profession.

Another important symptom in cases that have progressed for ten days to two weeks is in the appearance of the mucous membrane. How familiar to all of you is the icteric appearance, and how important this symptom should be in outlining our treatment. This indicates that the liver is congested with the waste products from many internal organs and is unable to secrete them as bile; but why? you will ask. There are two reasons for this: First, constipation of the bowels; second, the inflamed and congested condition of the organ. As a relief to the first, enemas and ordinary cathartics are sufficient. For the second, begin as soon as the cathartics have taken effect by giving podophyllin in one-fourth grain doses, six hours apart, until the liver has begun secreting bile in sufficient quantity to relieve the congestion of all internal organs and the distemper has disappeared. But you will say the kidneys must be looked

after, which is very true, but do as medical journals tell us—that nothing will purify and build up the circulation as will spirits of turpentine, given in small doses, and when called in the early stages of the disease we will find that nothing will give the speedy relief as will 5-10 m. of turpentine given in a tablespoonful of castor oil.

You will perceive from the above that I am not taking my instructions from dog fanciers, who are continually looking for better results from bottles of some favorite "cure all" than from their veterinarian.

A veterinarian of Lexington, Kentucky, recently said to me: "My treatment of K. N. O. 3 and strychnia, which was very successful in Detroit, has no effect whatever in Lexington;" but since he has begun dealing with the facts of the case and not so much of hearsay, his treatment has been much more successful. As well may we expect a few drops of some one's highly recommended and ever famous colic remedy to cure a case of constipation of two or three days' standing, as to expect any specific drug to be a bonanza to us in treating dog distemper.

Hence, you will not be surprised when I say I no more fear a case of dog distemper than I do pneumonia in a horse, and if you follow the treatment given above you will readily agree with me.

The trouble has not been that dog distemper will not yield to proper treatment, but rather that we have paid no attention whatever to the actual conditions, and have given treatment for something foreign to the disease itself.

DR. WM. DOUGHERTY, of Baltimore, sailed for Europe the first of June for health and pleasure. He expected to be present at the unveiling of the Nocard Monument, and to return in time to be at the New Haven meeting of the A. V. M. A.

THE TENNESSEE STATE BOARD OF VETERINARY MEDICAL EXAMINERS held their first meeting for the examination of candidates for certificates of permanent license in Nashville on June 13. Up to that time forty-three certificates of permanent license had been issued. Dr. George R. White, of Nashville, is President, and Dr. M. Jacob, Knoxville, is Secretary.

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."

LEUKEMIA.

By A. T. KINSLEY, M. Sc., D. V. S., Kansas, City, Mo.

Virchow and Bennett described leukemia in 1845. Kelsch and Vaillard made some observations upon the same disease in 1880 and at that time they thought it was infectious. A. M. Lucet reported a case in an ox and one in a dog, 1886, and thought the cause was of bacterial origin. Other cases have been reported occasionally, but the literature, and especially American literature, is quite meager upon the subject.

The reason for the scarcity of veterinary literature on leukemia may be traced to two causes: (1) The owner usually does not wish to feed and care for an incurable animal, and it is usually immediately disposed of; (2) since leukemia is not a common malady, probably the instructors in veterinary colleges have not considered it of sufficient importance to discuss it in the course of study, or, again, the veterinarian may have a clear cut perception of the theory of leukemia and be capable of diagnosing it and yet hesitate in reporting cases.

Leukemia, as usually considered, is a pathological condition characterized by an hyperplasia of the cellular elements of lymph nodes, spleen or bone marrow, accompanied by an excess of leucocytes in the blood. The leucocytes to some extent indicate the lymphoid tissue affected.

Hodgskin's disease has been defined as a pathologic condition characterized by hyperplasia of lymphoid cellular elements without any marked change in the cellular elements of the blood. Leukemia differs from Hodgskin's disease only in the increased leucocytes in the blood, and it is probable that the two conditions are only different degrees of the same pathological condition. The increased number of leucocytes in the blood may be the result of the hyperplasia of the lymphoid tissue surrounding, and by pressure occluding, the efferent lymph vessels thus preventing the exit of the lymphoid cells, or, the hyperplastic cells may become detached and occlude the vessel.

The cause of the above conditions being unknown, it would be unwise to say that they are positively identical; but since they are so closely related, are we not justified to call them the

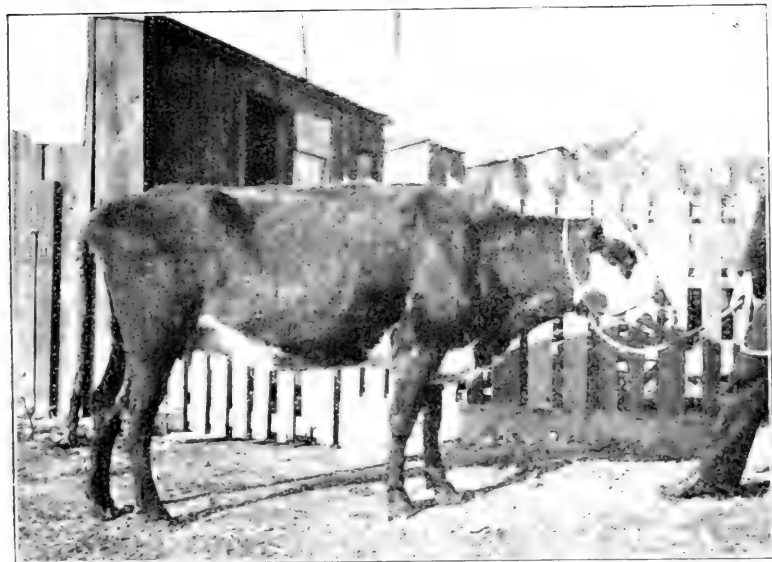


FIG. I.—S. 10, 11, AND 12, FIG. 1, AND PRECIPITAL LAMPH NOTES.



FIG. II.—(1) ENLARGED PRECAPITAL LAMPH NOTE
(2) ENLARGED PRECIPITAL LAMPH NOTE

same thing? In fact, Nocard practically affirmed their identity.

The lymphoid tissue involved has been used as a basis for classification of leukemia, hence lymphatic, splenic and medullary leukemia, but the different types are only rarely distinct and it is questionable if such a classification is justifiable.

The following is not reported as a positive case of leukemia, but rather a questionable one. A six-year-old pregnant cow of common breed was purchased at the Kansas City Stock Yards. The right and left prescapular glands were very much enlarged and the right precrural slightly enlarged, general conditions otherwise good. (See Cut 1.) She was placed in comfortable quarters and fed chop and hay. A record was kept of temperature, respiration and pulse. A blood count and blood smears were made daily. The following table shows the blood count during the period of observation:

Date.	Red Corpuscles.	White Corpuscles.	Proportion. White to Red.
Feb. 3	7,120,000	23,700	1 : 300
" 4	7,000,000	25,000	1 : 280
" 5	7,040,000	24,000	1 : 290
" 6	6,800,000	24,000	1 : 280
" 7	7,040,000	23,500	1 : 310
" 8	6,800,000	22,600	1 : 300
" 9	6,600,000	22,000	1 : 300
" 10	6,800,000	23,500	1 : 290
" 11	6,400,000	23,000	1 : 280
" 12	6,200,000	22,000	1 : 280
" 13	6,400,000	40,000	1 : 160
" 14	6,000,000	37,500	1 : 160
" 15	5,800,000	41,000	1 : 140
" 16	5,600,000	46,600	1 : 120
" 17	5,400,000	43,200	1 : 125
" 18	5,600,000	43,000	1 : 130
" 19	5,600,000	56,000	1 : 100
" 20	5,400,000	60,000	1 : 90
" 21	5,200,000	65,000	1 : 80

Practically all the white blood cells were lymphocytes, only one eosinophile cell and a very few polymorphonuclear leucocytes being observed in the entire time of observation.

From Feb. 3d to 12th, inclusive, the blood indicated nothing abnormal. On the 14th the cow gave birth to a premature calf, which died on the 17th, and of which a careful post-mortem examination was made without finding anything abnormal. On the 13th there was a marked increase in leucocytes; however, in this case it is a doubtful indication of leukemia because the period of parturition is normally accompanied by a marked

leucocytosis, which may be evident for one week or more. Unfortunately the cow died on the 21st.

Autopsy.—The post-pharyngeal, tracheal and prescapular lymph glands very much enlarged, the parietal pleura contained some lymphatic growths; the valves of the heart were thickened and contained some vegetative growths; the 2d, 3d, and 4th compartments of the stomach were surrounded by diffuse lymphatic growths; the mesenteric lymphatic glands very much enlarged, also Peyer's patches. The spleen and liver were practically normal, but the gall bladder was surrounded by a thick layer of lymphoid tissue.

Sections of the involved lymphatic nodes were obtained and a careful examination made of them. The cells closely resembled small lymphocytes. They were separated by a small amount of intercellular substance, which aids in differentiating leukemia from lympho-sarcoma. The nuclei indicated rapid cell multiplication by the karyokenetic figures present.

Another case was reported from the Stock Yards, the subject being a two-year-old steer, in which the precrural glands were almost as large as a man's head, and the prescapular glands were very much enlarged, as is shown by Cut 2. The steer died before a blood count was obtained. Other cases have been reported by the B. A. I. inspectors as leukemia in cattle and hogs, but the complete post-mortem records have not been made and no blood counts were obtained.

Note. Dr. Champlain photographer.

URETHRAL CALCULUS IN THE DOG.*

By PIERRE A. FISH, Ithaca, N. Y.

The patient, a male coach dog, four years of age, weighing about fifty pounds, was brought to the clinic † May 1, 1905. The history, as given by the owner, was to the effect that the dog appeared to be in a normal condition up to within about 24 hours of the time that he reached the clinic. Attempts at micturition were unsuccessful, although the animal used his best efforts.

An examination of the urethral tract was made externally and a small movable mass was detected at the proximal end of the bone of the penis. A small sized catheter was also passed,

* Presented at the Meeting of the N. Y. State Veterinary Medical Society, Ithaca, N. Y., Sept., 1905

† N. Y. State Veterinary College.

but met an obstruction, easily distinguished by a peculiar grating sound and by the fact that the catheter would go no farther. The use of the catheter confirmed the external examination and as it was quite evident that the mass could not be forced out through the urethra, the patient was prepared for an operation.

Anæsthesia was effected by the injection of one-half grain of morphine sulphate hypodermically and the inhalation of ether. The operative area was shaved, disinfected, and a longitudinal incision was made on the left side of the sheath at the proximal end of the penial bone. The cut was continued through the urethra directly to the obstruction, and a calculus of irregular form and about the size of a small pea was removed.

It was planned to draw the accumulated urine from the bladder with a catheter after the calculus was removed, but before this could be accomplished, the patient passed a considerable quantity of urine without assistance, through the urethral incision. The wound was disinfected with sublimate solution and the urethral incision sutured with catgut; the dermal incision was also loosely sutured with the same material. The following day the stitches were removed from the external wound and some clots of blood removed. The sheath and testicles were considerably swollen. Thermofuge was applied locally and eight grains of ichthyol were given internally three times a day to relieve the inflammation. Urination occurred in a normal manner except that the urine last expelled was of a bloody character. The wound was dressed daily with sublimate solution and dusted with compound alum powder. The swelling of the sheath soon yielded to the treatment, but the orchitis continued. After a few days more of the same treatment, this condition also improved. The temperature hung about 103° . The highest temperature recorded was 103.8° .

Two weeks after the operation, 5 grains of sodium benzoate were administered three times daily and the ichthyol discontinued. The dog was discharged May 16, and the owner advised to continue the sodium benzoate and to dress the wound, which was not quite healed, with the sublimate solution.

On June 10, the dog was returned with symptoms similar to those exhibited May 1. The dog could pass only a few drops of urine at a time. The catheter showed an obstruction at the base of the bone of the penis as before. An operation was immediately performed similar to that of May 1, except that the incision was made upon the right side of the sheath. The calculus this time was not much more than a half as large as the

previous one, and with it came a still smaller one. In both operations, there were in addition to the larger calculi a few smaller ones of about the size of a pin-head.

In this operation the urine was not passed through the wound as before, and there was doubtless, less infection, because there was scarcely any swelling of the sheath, and the wound appeared to be in a healthy condition. There was some orchitis, however, which gradually improved without special treatment. The procedure and treatment in the second operation were very similar to that of the first, except that ichthyol was given for a shorter period and a tablet of calcalith three times a day was substituted for the sodium benzoate. The calcalith (a combination of calcium, lithium and colchicine) was given with the idea of its forming combinations with the phosphates and eliminating them through the intestinal canal, thereby decreasing the elimination through the kidneys.

Shortly after the first operation the urine was examined for phosphates, and the normal amount was found to be more than doubled. A partial analysis of the calculus was made. Phosphates and carbonates were found to be present, probably in combination with lime as a base. For three months there was no return of the trouble, and the owner reported the dog to be in as apparently a normal condition as ever.

On Sept. 13, the dog was returned by the owner. (The dog was exhibited at the State meeting, then in session). There was considerable orchitis and swelling of the sheath. On the left side of the sheath, near the scrotum, there was an opening in the skin from one to two centimetres in diameter. It appeared as if some urine escaped through this orifice, but an attempt to pass a catheter through it was not successful. An attempt to pass the catheter through the penis was likewise unsuccessful at first, although it was passed later. The swollen condition of the parts made an external examination for calculus very difficult.

The dog was placed under morphine-ether anesthesia and the skin orifice enlarged and the incision carried down to the urethra. A catheter was easily passed through this orifice into the bladder. A catheter was also passed the full length of the penis without obstruction, indicating that no calculus was present in the urethra and probably no stricture. The wound was dressed antiseptically but not sewed.

On the day after the operation, there was no trouble in passing a catheter and drawing some of the urine. A small opening

now appeared in the skin, upon the right side of the sheath, as if there might be pus present, although none was seen. Temperature 101° . The wound was dressed and injected with compound iodine solution (Lugol's). The swelling of the sheath soon decreased, as did that of the scrotum, although more slowly. The urine at first passed through the wound, but on the sixth day after the operation it was observed to pass normally through the penis.

Within two weeks the swelling and orchitis had disappeared and the wound was healing nicely; but at this time the dog was not feeling so lively as hitherto, and soon gave evidence of sickness by refusing his feed and developing a slight rise in temperature. The treatment consisted of tonics and antipyretics, without much apparent change in his condition. Although not improved in his health, he was taken home by the owner after the third week and the treatment kept up. The dog, however, grew weaker, and two weeks after he was taken home he wandered away and never returned. It is much to be regretted that an autopsy could not have been held.

It was brought out later, that just previous to the last attack the owner had washed the dog in a creek, and he believed that the dog had taken cold at this time. The swelling of the sheath and scrotum may have been caused by this cold bath, as the tissues in the above named parts were probably weakened from the previous operations, and therefore more susceptible—the effect ultimately extending through the whole system, and being more or less responsible for the fatal ending, notwithstanding the fact that the wounds were healing nicely and that the surgical part of the case was apparently successful.

A SUPPOSED CASE OF RABIES.*

By DR. R. W. McDONALD, Flint, Michigan.

About Nov. 30th last a family vacated a house and by some means imprisoned a cocker spaniel dog in the house vacated. Ten days later, the discovery being made, and the dog being released, at once began to act strangely; he ran amuck for a number of blocks, having bitten or attempted to bite a number of dogs, among the number being a spotted coach dog belonging to J. B. Wilson. He was reported to the police and was destroyed. About ten days later the Wilson dog began showing a quarrelsome disposition by biting his daily companion, a

* Presented to Annual Meeting of Michigan State V.M.A., Feb. 6, 1906.

female of the same breed, also four or five other dogs in the immediate vicinity. At 6 P. M., on following Mr. Wilson, he was noticed to skulk behind, and on arriving home he refused to remain in the house, as was his custom, also refused to eat, nothing serious being thought of it at the time. About 9 P. M. Mr. W. received a telephone, about four miles distant, asking what they had done to Duke; they said he came there about 7 P. M. This place in question is one where the Wilson family, also the dog, frequently visited. The dog remained till next morning, and was apparently nervously affected, as the eyes were bloodshot and also showed a nervous tremor. He left there, and, instead of going home, took a westerly direction, and, after having gone four miles, he forced a fight with a farmer's dog. From there he still pressed on, and overtook a man that was gathering ashes; followed him till nightfall. The next place he was heard from was where a prayer meeting was being held; when the meeting was dispersed he followed an old gentleman home, and on arriving at the house he forced the farmer's dog to peacefully repose in some of the outhouses, while he occupied comfortable quarters behind the kitchen stove. Next morning he again forsook hospitality and evidently had Horace Greeley's advice in mind, for he again went West. During the day, as far as we know, he had three fights with farmers' dogs; in one he forced one of the eyes out of its socket and left it entirely exposed; this dog had to be destroyed. The party owning the last dog attacked, telephoned ahead to a neighbor to watch out for a mad dog, which he did, and destroyed him. This occurred on a Friday. On Monday Mr. Wilson heard the dog had been destroyed: he drove about 14 miles to the place and exhumed the dog's head, and I in turn sent the brain to Prof. Marshall, and after 20 days' wait he informed me that the animals injected did not show any bad results, indicating that the dog did not suffer from rabies. I might say, that, so far as can be learned, dogs were the only animals that he attacked, and also his mode of attacks was confined to the heads of his antagonists.

Now, gentlemen, from Prof. Marshall's investigation, the animal did not suffer from rabies; and, if not, what was the malady?

PLUGGING A CARIOUS TOOTH WITH GUTTA-PERCHA.

By G. L. MEHOLIN, V. S., Fairfax, S. D.

March 10, a large aged bay gelding was brought to my in-

firmly with a very foetid discharge from the left nostril, and the fourth upper molar upon examination proved to be mostly decayed—so much so that I could not get sufficient hold of it with forceps to extract it; so I decided to trephine, which I did the next day. I found the facial sinuses literally packed full of the most foul and offensive masticated food, mostly hay in different stages of decay, that I have ever seen, and I have had considerable experience with decayed teeth and different disorders of the teeth and facial sinuses. There was probably as much of this, including the pus, as a pint tin-cup would hold, and contained many hard, spongy, little balls of masticated hay, which I presume were moulded in the cavity of the tooth and forced up by the accumulation of more in the alveolar and tooth cavity, since these were mostly in the lower portion of the accumulation. The opening into the nasal cavity was at the very upper and inside corner of the sinuses, accounting for the fact that none of the accumulation had filtered through into the nasal cavity and been discharged, as it did not, as near as I could determine and from what the man told me who owned the animal.

I irrigated this accumulation, and removed it nearly all through the opening made by the trephine, and punched out the tooth and treated for several days with mild antiseptic irrigations, but the alveolar cavity would not granulate to any purpose, while the discharge from the nostril ceased and the wound became sweet and clean and healthy otherwise. On the 29th I gave horse a heavy feed, and all the good hay he would eat, and what water he wanted, and in the afternoon I cast him and cleaned the mouth and cavity nicely and irrigated wound as usual and plugged the cavity (which was yet larger than a large sized walnut and seemingly not granulated a particle) with gutta-percha and irrigated with cold water and allowed him to rise. Did not give him any feed until the next day late, when the gutta-percha was thoroughly set and as hard as it ever would be.

I saw this case some few days ago and the plugging is still intact, and he is doing very nicely. I, of course, lowered the corresponding lower molar as much as possible, and there is no grinding wear on the plugging as there was on the tooth extracted, since the lower molar had grown much longer than the ones adjoining it on either side. This animal was probably 18 or 20 years old, but quite healthy, and I think his age the cause of the alveolar cavity not granulating.

ACCIDENT WITH CHLOROFORM.

By A. W. WHITEHOUSE, V. S., Laramie, Wyoming.

I have a good deal of trouble in my dental work, partly with the range horses which have been roughly broken but never gentled, and which have no intention of having their mouths interfered with at all, and partly with those whose mouths are infested with the beards of the foxtail grass (wild barley—*hordeum jubatum*), which causes painful ulcers and fistulæ, and consequently the most vigorous resistance. It has recently been my practice to put these cases under partial anæsthesia in preference to throwing and securing them. I have had a muzzle constructed out of an ordinary feed bag. The upper part has a strap to draw it snug round the face. The leather bottom is cut out and hinged, with a couple of straps stitched at each end across its inner face to slip the rag under. A leather cup is strapped on snugly over this hinged flap. From one to two ounces of chloroform will produce in about 10 minutes sufficient dullness to allow of about 15 minutes' quick work, even in a very vicious animal, and they generally stand up.

My case was a bay work horse, 16 years old, that needed fixing, and had a bad foxtail fistula from below the tongue and coming out just back of the junction of the rami. I put on the muzzle and gave him an ounce and a half of chloroform. I noticed his jaws working, but paid little attention, supposing he was trying to push the rag away with his lips. After 8 minutes, as he was still in the excited stage, I got ready another ounce on a fresh rag. I then opened the cap of the muzzle and found that the first rag had disappeared. Reaching as far as he would let me in his mouth I could not feel it, nor could it be detected from outside. Crumpled up this rag was rather larger than a man's fist. I then had him thrown and applied a Sharp & Smith speculum in a hurry. I could now feel part of the rag in a tight wad back of the last right molar. It was wadded too tightly to take hold of with the fingers, and I had to use a forceps to withdraw it. The last part withdrawn was in a long tail, and I have no doubt it had entered the œsophagus.

The result was a very profound anæsthesia considering the small amount of chloroform used, and a rather bad pulse for about a minute. I shall have to put a piece of wire netting across the muzzle, which will prevent a repetition of the accident. I fancy, however, that the occurrence is very unusual.

EXTRACTS FROM EXCHANGES.

GERMAN AND HUNGARIAN REVIEW.

By ADOLPH EICHHORN, D. V. S., Bureau of Animal Industry, Washington D. C.

THE COURSE OF INFECTION IN FEEDING TUBERCULOSIS [*J. Bartel, from the Pathologic-Anatomical Institute, Vienna*].—The author concludes in this work the final results of the experimental studies which he commenced in 1904. (1) Rabbits and guinea-pigs received one dose of a floating culture, dropped into their empty mouths. It developed a cervical, bronchial, and mesenteric lymph gland tuberculosis, apparently without producing changes on the respective mucous membranes. (2) If tubercle bacilli in the form of floating cultures were mixed with the food, principally the mesenteric lymph glands showed the infection. (3) Still more marked were the mesenteric lymph glands in an exclusive participation of the affection, when pieces of tubercular organs were fed. Notwithstanding that the tissue macroscopically appeared normal, microscopically tuberculosis of the epitheloid cells were proven. Oftentimes the presence of tubercle bacilli in the lymphatic tissue was only established through experimental inoculations, in some cases with direct cultivation. The different extensions of the processes, according to the methods of feeding (Nos. 1, 2, 3) deserve full consideration. In one case B. proved the presence of tubercle bacilli in an experimental animal, 104 days after one feeding of tubercle bacilli; they were found in the tonsils, cervical and mesenteric lymph glands. The author concludes, on the ground of these results, that tuberculosis does not have to manifest itself at the regional lymph glands near the place of infection. Therefore, according to B. (accepting that the conditions in animals can be applied to men), in the prevention of tuberculosis uniform attention must be paid to all modes of entrance. An infection of distant groups of lymphatic tissues is possible from an entrance at another place; while the regional tissues are macroscopically and microscopically normal, yet in the extensive propagation of tubercle bacilli they may be present at both places. According to B., an invasion of tubercle bacilli through the intact mucous membrane, is not only occasional after receiving once tubercular bacilli into the digestive tract, but is regular; through this passage, of course, the bacilli

become attenuated, so that sometimes their presence cannot be established by any method, while later, in spite of the absence of microscopical lesions, they are proven frequently (through culture or animal experiments). In most cases the bacilli which were isolated in the second stage could not produce specific changes. Their virulency is reduced, but they are reproductive and remain only for a period in the stage of latency.— (*Hygienische Rundschau.*)

THE COURSE OF THE NATURAL INFECTION OF TUBERCULOSIS IN GUINEA-PIGS [*J. Bartel and F. Spieler*].—In consideration that the experiments relating to the mode of infection of tuberculosis were partly up to the present carried out under unnatural conditions, therefore the authors tried by another just as simple method as a recommendable way to attain their object. A large number of guinea-pigs were given to board with a family affected with tuberculosis. Hereby a series of the animals were kept in cages, to the others perfect freedom was granted. The animals were called for at different intervals; they were observed for some time, then killed, and a minute bacteriological examination made, as well as cultures inoculated from the various organs; also experiments of transmission to other guinea-pigs were followed. The results of the experiments are very remarkable. Most of the animals kept in the cages showed swellings of the cervical lymph glands, frequently rapid emaciation, without the possibility of disclosing the presence of tubercle bacilli. In two cases of this series, however, a pronounced tuberculosis of the lymph glands and organs developed. Still more frequently were found the animals of the other series infected with tuberculosis. Occasionally the presence of tubercle bacilli in the lymphatic tissue was proven by inoculations, though the tissues showed not the specific tubercular changes. Further, it is important that in a large number of those cases in which early affections of the lymph glands were demonstrable, not the bronchial glands but the cervical and mesenteric glands were affected. Based on these observations the authors believe—especially considering the infection of the child organism—that the importance of the "buccal cavity and intestinal canal," as a point of entrance for the tubercle bacilli, outweighs by far the direct entering of the bacilli into the deeper respiratory passages, and to which authors are attaching too much importance. This holds not only to tuberculosis in general, but also for lung tuberculosis.— (*Hygienische Rundschau.*)

A CASE OF SADMIA AND SADISM [*Grundmann*].—One night a hotel keeper was awakened by a painful bellowing of one of his cows. He hastened to the stable and found one of his animals in a serious condition, and thought it advisable to slaughter the cow immediately. The autopsy revealed the following changes: the lips of the vulva and also the vagina swollen, the mucous membrane highly reddened; in the connective tissue around the rectum numerous hæmorrhages; in the wall of the rectum a rupture about 3-4 cm. long; the mesentery, colon, the right lobe of the liver, the omentum and the diaphragm showed lacerations, also the superior part of the right lung had similar injuries; the pleura revealed extensive hæmorrhages. Similar injuries were noticeable on a nine-month-old heifer, this one showing symptoms of sickness since that same morning, and later had also to be slaughtered, as the condition became more aggravated. The examination proved that one of the stable employés had sexual intercourse with the heifer, and then standing up on a stool tried the same performance on the cow; the cow kicked, threw the man from the stool to the ground. He then took a pitchfork and pierced its pole into the rectum of both animals as far as he could. The court sentenced him to six months in the penitentiary and to the loss of his citizen rights for three years.—(*Berl. Thierarzt. Wochenschr*)

ENGLISH REVIEW.

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

SARCOMA OF THE SUB LUMBAR LYMPHATICS IN A HORSE [*W. H. Brooke, M. R. C. V. S.*].—The subject of this record was a brown gelding, 14-15 years old, which three years previous had to be tracheotomized to be able to work. He did it up to this last sickness. Six months ago he appeared to be in bad condition, feeding precariously. There was nothing very marked, and yet it looked as if something was wrong in the digestive apparatus. After a time the bowels became relaxed and kept in that condition until his death, when the excreta were almost liquid and of an extremely unpleasant odor. The teeth had been fixed, his feeding and watering carefully attended to. Was it tuberculosis? Tested with tuberculin, the result was entirely negative. There were no parasites in the bowels.

The author concluded that the trouble was probably a lymphatic obstruction or tumor. His condition became so bad that the animal had to be destroyed. At the autopsy it was found that the small intestine was much shrunken and contained but a little ingesta. The large intestine was scarcely half its ordinary size. The bloodvessels of the intestines were dilated and contained blood of a deep venous tint. Along the margin of the large intestine there was a chain of tumor-like enlargements. Above the ileum, a short distance from the cæcum, a lobulated growth of encephaloid consistency, weighing four pounds, was found. Under the kidneys there was a great mass of tumors, involving the posterior part of the root of the mesentery, weighing a little over 40 pounds. It was irregularly spherical, and in its centre were found some lymphatic glands, with the lobes widely separated by the invasion of the tumor. Through it ran bands of fibrous nature, interspersed with soft masses of encephaloid consistency. The nature of these growths, made out by the microscope, was sarcomatous and composed of round cells.—(*Journal of Comp. Path. and Ther.*)

ON THE USE OF BETA-EUCAINE AND ADRENALIN AS LOCAL ANÆSTHETIC [*E. Wallis Hoare, F. R. C. V. S.*].—Three conditions are essential for a local anæsthetic to fulfill: (1) it should be non-toxic in ordinary amounts; (2) it should prove effectual in rendering the part into which it is injected perfectly anæsthetized; (3) it should not exert any injurious effect on the tissues so as to interfere with healing. For the author these conditions are met by the combination of B. eucaine and adrenalin chloride, to which are added the effects of the last mentioned agent, rendering the superficial structures practically bloodless by the contraction of the capillaries. The solution used by Mr. Hoare consists of B. eucaine hydrochloride gr. 1.6th in each 16.9 minims (practically one per cent.) of water, combined with adrenalin chloride gr. 1-2000th. Diluted with four volumes of normal salt solution it forms the solution to use as a local anæsthetic. Mr. Hoare has used the concentrated solution in canine practice for the removal of tumors, injecting 15-20 minims around the base of the growths, at different points, according to the size, waiting ten minutes before operating. Half an ounce of the solution has been injected without any toxic effect whatever. Its use in horses is rather limited, although in the case of a nervous, well-bred mare the author was able to remove a large, very deep-seated tumor by the in-

jection of three drams of the solution in amounts of 30 minims in different parts of the growth. No pain was manifested and no restraint resorted to. The solution keeps well, even after the bottle containing it has been opened once or twice. For the author this new compound will find its application in many cases where chloroform or any other means of anæsthesia are contra-indicated.—(*Veterinary Record.*)

EXTRUSION OF BOWEL—RECOVERY [*John Renfrew, M. R. C. V. S.*].—The question put by the author at the end of his record is: "Why did this animal not collapse? The bowels were out, filthy stable, and were all the time in the arms of an assistant whose clothes had not been sterilized for a day or two. . . ." Why, indeed? A horse had a suppurating cord; at intervals the discharge stopped, and an abscess was the result. When opened and drained the horse resumed work. This condition lasted for some time, when one day, an abscess having formed, an assistant of the author called to open it. In doing so, the horse made a plunge and the small intestine escaped through an abdominal wound, to be fortunately received and held in the assistant's arms. The position was critical and the surroundings as undesirable as could be imagined. "A dimly-lighted railway arch in the centre of the city, with not a breath of fresh air, no attempt at drainage, and a dung pit in one of the empty stalls." To throw the horse meant probable injury to the bowel; so it was decided to return them into the abdomen with the animal standing. After cleaning the hands and instruments as well as possible, the bowels and clothes holding them were thoroughly disinfected with a 10 per cent. solution of carbolyzed glycerine in tepid water, and slowly but successfully returned into the abdomen, an operation which, however, was considerably facilitated by the shape of the patient's abdomen. The wound in the abdominal wall was eight inches long; the edges, cleaned and disinfected, were brought together with twelve interrupted sutures of silk and eucalyptus tape, all of the structures being caught together in the sutures. The wound was sponged with spirits of turpentine, painted over with collodion, and a pad of antiseptic lint placed over it. It healed by first intention, but the discharge from the suppurating cord remained.—(*Veterinary Record.*)

FRACTURE AND REMOVAL OF THE HEAD OF THE FEMUR [*E. Hibbard, M. R. C. V. S.*].—A Landseer Newfoundland dog, aged seven months, was brought to the author for a very severe lameness of one hind leg, the result of an accident, the dog hav-

ing been run over by a cart. A diagnosis of fracture of the femur was made and a treatment applied, which, after six weeks, proved without result. The dog being useless, in his condition, an operation of stitching the pieces of bone with wire suture was suggested and accepted by the owner. The dog was prepared, put under chloroform, and the operation started by cutting the tissues down to the loose pieces of bone. This was found to consist of the complete head of the femur entirely loose from the body of the bone. Instead of attempting wiring the fragments of bone, the head of the femur was dissected out and removed. The wound was treated antiseptically and cicatrized without complication. The dog is now three years old; he is slightly lame, as could be expected with a leg shorter than the other, but he is otherwise in perfect health, and seems to have no pain whatsoever.—(*Veterinary Journal.*)

SUPPURATION OF THE HEAD OF THE FEMUR [*W. Paner, M. R. C. V. S.*].—A large Great Dane bitch, 10 years old, in jumping in a wagon knocked herself against the seat and hurt herself so badly that she grunted with pain and became very lame. She remained walking on three legs and very seldom put or rested her paw on the ground. A diagnosis was made of tendinous lesions of the hip joint and a treatment prescribed of hot fomentations with applications of sedative lotions. This treatment was kept up, but the pain seemed to increase, especially when the leg was carried in abduction. Yet no enlargement of the joint was visible nor any crepitation detected. After three months of treatment, there being no improvement, the animal was destroyed. At the post-mortem the head of the femur was found almost all gone, macerated as it had been in suppuration of the bony cancellated structure of the femur, which was diseased in the two superior thirds of its length.—(*Veterinary Journal.*)

INTERESTING CRYPTORCHID [*E. Hatch, M. R. C. V. S., and Fred. Hobday, F. R. C. V. S.*].—A cart colt, two years old, is a regular nuisance to his owner. He mounts all animals that come close to him, geldings, mares, and even cattle. He must be castrated. It is a case of hypospadiæ. Looking at him casually from behind he has the appearance of a female. From what should be the vagina protrudes a malformed penis, which when in erection measures ten inches in length. There are two mammae, well developed, and the teats are pierced normally. The animal is cast and chloroformed. Search is started for the testicles. One is found in the perineum, almost subcutaneously,

and about six inches below the badly formed penis. It is of normal size. The other, which is much smaller, is found in the abdominal cavity. Recovery progressed without trouble.—(*Veterinary Journal.*)

UNDIAGNOSED FOREIGN BODY [*M. R. C. V. S.*].—The history of this cat is vague. Aged one year, he has refused food, and seems to be in pain, rolling on the floor and flinging out somewhat like a horse with spasmodic colic. When these acute symptoms have subsided, there seems to be nothing abnormal about him, and all that is seen amiss is a little swelling around the extremity of the left wing of the atlas, which is small, hard and not painful. Expectant treatment is prescribed. Next day condition apparently improved. Animal is brighter; swelling perhaps a little larger. On the third day, if the condition is a little better, the swelling is evidently larger and softer, which is more marked the following day. The swelling bursts open, leaves a little opening just below and behind the wing of the atlas. On manipulating the swelling, the presence of a foreign body, not previously suspected, is made out, and through the orifice of the abscess a thin sewing-needle, two inches long, is extracted, carrying with it a long piece of thread. Of course recovery was rapid and uneventful.—(*Veterinary Record.*)

DIAPHRAGMATIC HERNIA [*J. R. H.*].—This black gelding is difficult to shoe. Taken one day to the shop, he allowed three shoes to be put on without much trouble. But when it came to the fourth he became restless and means of restraint had to be resorted to. The use of a side-line made him more violent, and finally he was put in stocks, with two broad leather bands passed under his belly, with crossbars behind and in front of him. He was not tied, but held by a man. He was quieted and the shoe could be tacked on; he was noticed to sway twice in the stocks, sank down, and was dead. At the post-mortem, on opening the abdomen and chest it was found that the sternal flexure of the colon was displaced forward and entered the chest through a large opening of the diaphragm. The muscular portion of the muscle was completely torn from the xyphoid cartilage and partly from the ribs on either side. The edges of the torn muscle had the appearance of having been ruptured before death. The heart and lungs showed all the characters of asphyxia, which was certainly the cause of death by pressure upon the lungs of the displaced viscera.—(*Veterinary Record.*)

ARMY VETERINARY DEPARTMENT.

NOTES ON THE VETERINARY SERVICE OF THE RUSSIAN ARMIES IN THE FAR EAST, 1905.

BY JOHN VAN RENSSELAER HOFF, A. M., M. D.,

Colonel, Assistant Surgeon-General, U. S. Army, Military Observer.

The Veterinary Corps of the Russian Army was organized on the lines of the Medical Corps, of which Department it was until recently a part, but in the East was an independent factor of the Sanitary Department. The Russian veterinarian is educated in his profession, and so far as I could see had about the same standing in the Army as the physician, with whom he took rank in the "civil grade," the senior veterinarian having the assimilated military rank of Major General.

During peace times there are, according to existing regulations, veterinary *personnel* and *matériel* (hospitals) with mounted units as follows: Cavalry and cossack regiments, detached squadrons or sotnias, and *cadres* of the cavalry reserve. Artillery brigades and mortar regiments, horse artillery and cossack batteries, train battalions.

The veterinary hospitals must receive all sick public animals and the private mounts of officers, for all of which forage is authorized. The regulations are quite specific as to the interior economy of veterinary hospitals; they require that such shall consist of three subdivisions: First, for convalescents or slightly sick; second, for seriously sick, and, third, for infectious diseases (quarantine). The duties of the veterinary surgeon are also prescribed in detail in the veterinary regulations.

In war, sick horses are treated in veterinary organizations at the front, in the train, and at the depots. The veterinary hospitals of the first two categories follow their respective organizations and are designated by their names—those of the third are assigned for the care of the reserve horses, and the animals attached to corps, and are designated by numbers. The first named, being with troops, are practically always organized; the list of such is as given above. The veterinary hospitals of the second category are for the trains of the infantry, rifle and reserve divisions, cavalry and cossack divisions, pontoon divisions and military transport. The hospitals of the third category are assigned one to each corps.

These may be supplemented in case of necessity by additional

veterinary hospitals assigned to separate horse reserves, or to fortresses.

Veterinary hospitals for the division trains are established by the division commander, for the pontoon battalions by the corps or detachment commander, and for the transport by the chief of communications.

The hospitals with horse reserves are under the supervision of the chief veterinary surgeon of the military zone; those with the corps are under the corps' chief veterinarian.

The *personnel* of a depot veterinary hospital and the money allowance for the same are as follows :

Officials.	No.	Yearly allowances.												Class of office.	Class of allowances.
		Original pay				Increase.				Table money Orig. increase.					
		*R	K	R	K	R	K	R	K	R	K	R	K		
Superintendent of hospital	1	420	00	387	00	630	00	582	00	600	00	553	20	VIII	vet II
Ass't veterinarian	1	360	00	333	00	540	00	498	00	300	00	276	00	IX	vet III
Senior feldsher	1	34	28	33	60	66	12	64	80						
Junior feldsher	3	25	87	25	35	49	90	48	90						
Sergeant clerk	1	24	49	24	00	36	73	36	00						

* A ruble is worth about 51 cents U. S. C.

The staff of a veterinary hospital is based on the requirements of one hundred patients.

Military veterinarians have the same rights as military physicians with corresponding allowances for quarters, subsistence, and servants. Feldshers and sergeants receive clothing and subsistence in addition to the above. One soldier is allowed per three horses under treatment.

The senior veterinarian of the depot is in command of it and is charged with its administration; he is accountable for the public property pertaining to the hospital, including the public funds for subsistence of *personnel* and patients, and all records. He is responsible for the discipline of the *personnel*, and is authorized to issue orders thereto, which are entered in the hospital order book. He has the rights of a regimental commander in administering his command.

Veterinary hospitals in the theatre of operations receive their supplies of medicines, surgical instruments and dressings, etc., from field veterinary dispensaries and temporary supply depots.

The following schedule indicates the diseases for which horses should be admitted to hospitals in war time. I might

state here that in battle regular veterinary first aid stations were established in the different fighting organizations.

Causes of admission to train veterinary hospitals: Severe wounds, sore backs or shoulders, lameness from diseased feet, etc., varicocele, severe diseases of the eye and exhaustion requiring rest and nourishment. The depot hospitals receive cases of like character.

Destruction is ordered in the following conditions: Glanders, madness, complicated wounds, fractures, paralysis, wounds of joints, etc., in which the cost of cure is likely to exceed the value of the animal, complicated sprains, hoof rot.

The following was the form of register used in veterinary hospitals:

Name and duties of Horse.	Organization.	Disease.	Admitted.	Discharged recovered.	Transferred to other hospitals.	Died.	Incurable wound.	Incurable disease.	Glanders.

Month and day of admission and discharge of each horse is entered in column "recovered," "transferred," or "died."

Animals admitted to a train hospital were accounted for on the forage requisition of the divisional train or on that of the organization where the hospital was located, but their subsistence was independent of the hospital as a special detachment. Professional reports were rendered to the chief veterinarian.

Commanders of organizations at the front were required to evacuate all animals that could not be treated with the command, to train or depot hospitals. Such animals were supplied with halters, nose-bags, brushes, currycombs and blankets, and accompanied by a certified ration return. When recovered the animals were returned to their commands with a like certified ration return. When it was impracticable to return the horse to his command he was turned into the nearest horse depot or other organization as might be directed. All veterinary hospitals were subjected to inspection by field army veterinary inspectors.

The foregoing somewhat desultory account will at least in-

dicade that Russia had given considerable attention to organization for the care of the animals of her armies in the Far East, and I will now endeavor to show something of what was accomplished by the Veterinary Department.

The following is based upon an official statement made by the Chief Veterinary Inspector of the Army of the Rear, who was impressed with the fact that the problems for solution by the Veterinary Department in the Far East where *mutatis mutandis* quite as difficult as those of the other branches of the service.

The long journey across Asia subjected the horses to constant exposure to anthrax, which is enzoötic in that region. This disease manifested itself among Russian horses in the intestinal form, caught from food or stable litter, with a mortality of from 50 to 80 per cent., and there was every reason to expect a possible epizoötic and certainly a considerable loss from this infection. Preventive inoculations of antitoxin introduced by Professor Langsh, of Kasan, Russia, were used with most satisfactory results. Dr. Dorbrotvorsky reports that this invaluable remedy can be used at any time or place without interfering with the use of the animal, and it is undoubtedly due to Langsh's serum that the army horses escaped an epizoötic of anthrax.

Glanders is universal in Manchuria, but was so effectively controlled by sanitary measures, constant inspection, immediate isolation and destruction in declared cases that the actual loss was less than one in 1,000. Surra did not appear among the Russian animals. In this connection it is stated that the forage obtained in Manchuria, corn, oats, barley, *kaoliang* beans, bean-cake, *shu-mi tzu* (hill rice) straw and even *kaoliang* stalks caused no disease worse than an occasional attack of mycotic inflammation of the digestive tract.

Rinderpest is epizoötic in Siberia. This very infectious disease, which ordinarily is only eliminated by destruction of the infected animals, was satisfactorily controlled by the use of anti-pest toxin, prepared at the Chetinska and Iro antitoxin stations near Troits Kosavaska. This remedy, not only prevented but actually cured the disease and rendered unnecessary the destruction of cattle, which would have ordinarily been demanded in 66 per cent. of all the animals received. When used as a preventive the antitoxin does not produce the disease in modified form. The authority above quoted stated that "anti-pest toxin made it possible to feed the Russian Army with fresh meat, and without it we would have been compelled to rely upon tinned

meat, which contingency was considered in connection with our having to purchase our meat supply in America. This war has settled beyond question the fact that we will not have to depend upon tinned meats so long as cattle on the hoof are available and have been immunized by antipest toxin." Besides rinderpest there were no cattle diseases of importance; aphthæ, pleuro-pneumonia, etc., were little to be feared.

I regret that it was impossible to obtain the full morbidity and mortality statistics of animals used by the Russian armies in the Far East. I addressed a letter to the Chief Veterinary Inspector in the field, but received no reply thereto. The statistics of the rear (furnished from the Harbin office) are as follows: Horses received from Russia, including Siberia, January 1, 1904, to August 1, 1905, 225,819, exclusive of 542 sick; horned cattle from Siberia, 150,419; (horned cattle dead from rinderpest 10,000); sheep passed through Harbin, 100,611.

There was a very careful system of inspection along the entire line of communication, with numerous rest stations and veterinary hospitals, inspection points, etc., scattered between Russia and Manchuria.

There were veterinary hospitals at Harbin. The statistics of one was as follows: July, 1905, treated in hospital, 133 horses; Aug., 1905, 123; Sept., 1905 (to 20th), 113.

During this period 267 horses were treated in quarters. The mortality was as follows: 1 anthrax, 7 glanders, 4 hydrocephalus, 2 apoplexy, 4 lumpy jaw. Among some of the other diseases treated were influenza (epizoötic), 60; rhinitis, 23; lumpy jaw, 13; colic, 27.

I find in looking over the notes of an interview with the Chief Intendant that he stated the wastage of animals had not been computed. He further said that 150,000 mules had been purchased in Manchuria.

The important lesson for us in the Russian veterinary experience is the successful use of antitoxin sera in the treatment of animal diseases. Nothing is said of tetanus by the veterinarians, from which I infer there was little among the animals in the Far East. I presume there must have been some cases, and a large percentage of those probably died, if the veterinary experience was the same as the medical. Russian physicians regard the antitoxin of tetanus as at present made as of little or no value. But with anthrax and rinderpest the results were most satisfactory, and I believe the antipest serum has a present and future value to us which should not be overlooked.

VETERINARY AFFAIRS IN THE ARMY.

Apropos to numerous references concerning the Army Veterinarian, relating to questions of Hygiene, Sanitary Police, etc.:

The actual necessity, as observed by many officers of the Army, has led to the employment of veterinarians. In early days, but a few years ago, before the Hispano-American conflict, all of the ten regiments of Cavalry then existing did not have the authorized two veterinarians to each organization, and the Artillery veterinarian, strictly speaking, was unknown.

It is only since this period that the Army veterinarian has been recognized as a part of an organization; recommendations from him to-day are approved or may be disapproved, as his immediate superior authority may elect.

Our veterinarians, during the past six years have not been idle; true it is, the literature emanating from this source has not been voluminous, but it can be safely stated that most of the gentlemen have been prominent in urging reforms, etc., especially in the methods of hygiene, the construction of stables and their sanitation.

As the veterinarian in the Army to-day is but assimilated to the regular service, not a full officer, it can hardly be expected that he will be nominated on a board of officers, "although they possess intelligent power to think on these points and similar subjects."

But a short time ago (1903) the question of Post Veterinary Hospitals was brought before the Department forcibly. Plans and specifications were prepared, with the assistance of veterinarians in different departmental posts, forwarded to the Quartermaster-General, with the result that more or less of a uniform plan was adopted for a hospital that would answer the needed purpose for both temperate and semi-tropic climes.

At present one model hospital built to accommodate forty patients has been erected and is in daily use. This building is constructed of stone, situated on an elevation; it contains roomy box-stalls, single stalls, one large concrete base and side-walled bath for hot or cold water, two isolation wards and several screened stalls to absolutely prevent fly infection.

An operating and dressing room, 30x30, well lighted above, hot and cold water connections, a well equipped dispensary, with comfortable rooms and accommodations for permanent hospital stewards.

This is the first of its kind and it is contemplated to build

more such ones at different large Army Posts, in the near future.

This is one result of accomplished efforts of the present Army veterinarian, and we trust that more will be accredited to him.

The duties prescribed in Army Regulations are not arduous. The candidate for the service may expect, as many do, a life of comfort and ease. To those, however, who expect to gain merited future recognition (possibly promotion by selection) much remains to be accomplished. The daily record of animals treated, the compilation of a yearly record, statistics, etc. It may be safely stated, that such record is not maintained at all mounted posts.

At present, daily, weekly or monthly inspection of stables, corrals or paddocks is not entrusted to the veterinarian. Why? The respective organization commanders are responsible for the sanitary conditions; the medical officer frequently makes authorized inspections of these surroundings, and to illustrate an incident during 1903, the daily watering troughs, filled with drinking water for two mounted organizations, were given a liberal application of crude petroleum, to kill the larvæ of *Stegomyia fasciata*, which might be present.

While such measures may conserve the health of enlisted men, it in this case suffered the animals to remain thirsty for some time.

The hygienic measures and sanitary conditions rightfully fall within the domain of the veterinarian; it is his duty to make recommendations to his immediate post commander. Reasonable requests, sound and practical suggestions are always given careful consideration, even though they may not always be granted.

Medical officers have much sanitation to control outside of stables and their surroundings, and I believe he would be only too willing to allow the sister profession to officer this work. While in many instances human and comparative medicine are diametric, the time is not far distant when it is to be hoped that in the Army both branches will become assimilated and governed if necessary by a surgeon-general.

Among the veterinarians of our service it may be said there are no Kitasatos, Reeds, Kochs, etc., neither have the limited means of the majority of our colleagues allowed such opportunity for research. The tendency to specialize in modern medicine to-day is forcibly apparent. In human medicine, thousands

of practitioners accept certain standard works of authority, certain members of the profession have acquired distinction by virtue of their specific accomplishments, but how many such exist, compared to the thousands in active practice?

Numerically we are but forty-two, when all vacancies are filled.

Schwarzkopf's elucidation of the possible immunization and therapeutic effect of mallein may be classed among the recent definite results, distinctively correct and given as much credence as foreign reports from any source whatsoever.

The field for research among our number may be unlimited, but laboratory facilities and fund appropriation are lacking, also owing to the fact that at present we possess no definite organization, etc., are all important factors in antagonizing such energy.

Surra made its inroads and decimated our animals during the early days of Philippine invasion; cholera, amœbic dysentery and malaria played havoc among men as well during that period. The same conditions are prone to exist during any active period of invasion. To-day the situation has changed.

During a conversation recently, with one of our nation's legislators, it was stated that comparative medicine could not, nor never would be given the same consideration, owing to the fact that human life is sacred, while ordinary animal life is not. The latter represents a definite money value only; the former, it was no doubt overlooked, also means a pension.

While much remains to be accomplished (quoting Rhodes before death), "so much to do and so little done," time still exists, the future is before us, our men are active and painstaking, and the time is near when more will be achieved.

Recent federal appropriations may again interfere with desired Army legislation in behalf of the veterinarian, but the foundation for this coming act has been established and there comes another year.

L. E. WILLYOUNG, V. A. C.

* * *

ARMY NOTES.

DRS. C. H. LEAVITT, Portland, Oregon and G. A. Swingley, Freeport, Illinois (C. V. C.), are located in Seattle, Wash. Dr. Leavitt is veterinarian in charge of 500 U. S. Army horses at Fort Lawton. He will sail on the transport *Dix* with them for Manila, P. I., in the near future. Dr. Swingley is nicely located in a down-town office, at 1907 First Avenue, and is building up a good practice.

DR. LEMAY, of the Artillery Corps, who has just completed a 500-mile march with two batteries of Field Artillery from Fort Douglas, Utah, to this post, has departed for Fort Ethan Allen, Vt. The horses of the command came through in excellent shape, averaging 25 miles a day, which is an excellent record considering the time of year and the country travelled through.—(FRED FOSTER, *Vet. Artillery Corps, Fort D. A. Russell, Wyoming.*)

VETERINARIAN CHARLES H. JEWELL, 13th Cavalry, is ordered to proceed at the proper time to New Haven, Conn., as a representative of the army veterinarians to attend the meeting of the American Veterinary Medical Association, to be held at New Haven, Aug. 21 to 24.—(*Army and Navy Journal.*) Dr. Jewell will present a paper entitled "The Veterinary Service of the United States Army and the Military Veterinarian." It will embrace what the service has been, what it is at present, and what it is expected to be in the future.

DR. J. E. RYDER, New York, has removed his office from the American Horse Exchange to Bull's Head Market, 24th St.

DR. V. A. MOORE, of the New York State Veterinary College, is at Anaconda, Mont., investigating the smoke-poisoning cases among animals, claimed by the stockmen to be produced by the smoke from the copper smelters, and who are suing the mine owners for a large amount of money.

DIPHTHERIA ANTITOXIN IN THE TREATMENT OF TETANUS.—At the Cleveland meeting of the A. V. M. A., Dr. E. L. Quitman, of Chicago, very guardedly gave his experience with diphtheria antitoxin in four cases of tetanus, all of which recovered, and from the relaxation effects produced had given unmistakable evidence of the influence of the serum upon the clonic convulsions. Undoubtedly Prof. Quitman has pursued the subject, as the disease is very prevalent in the section where his practice chiefly lies, and we may expect an interesting report from him at New Haven concerning his later experiences. In the meantime, Dr. W. G. Hollingworth, of Utica, N. Y., informs us that he has had four successive recoveries and no failures, and, while some of his cases were subacute and might have terminated favorably under other or no treatment, one at least was severely acute and of the nature of those which usually die under other approved methods. The principal objection to the use of this serum is that the size of the dose (about one ounce) makes it a very expensive therapeutic agent.

THE ETIOLOGY OF AZOTURIA.

In a letter published in the April REVIEW, Dr. R. T. Whittlesey, Los Angeles, Cal., gave his experiences with azoturia on the Pacific Coast and in the Southern States. He propounded the following queries to the profession of the country :

“ Is azoturia common in your locality ?

“ Is it very fatal ?

“ Have you ever seen it in mules ?

“ What kind of hay and grain is fed in your State mostly ?

“ What season of the year is it most prevalent ?”

* * *

REPLIES TO DR. WHITTLESEY.

From J. B. L. Terrell, V. S., Dresden, Tenn.

“ In my practice horses are mostly affected—only 3 mules, 2 jacks. Causes are mostly idleness and pea-hay feed, with abundant crop of peas on the vines. Deaths are very few when treated in 48 hours after being attacked.

“ I have had 56 cases with horses and mares—38 horses, 18 mares; mostly old favorites; 12 were under 7 years—5 mares, 7 horses; others were from 7 to 24 years; 6 deaths, 4 horses, 2 mares. Of the two jacks, one was 11 years old, which had a second attack and died; the other was only 3 years old; both wintered on pea-hay. The early spring is the most prevailing time; a few cases early in the fall before frost; stock running on peas and not at work.

“ The above is about 18 years' experience. The disease has been most prevalent in this region for the past eight years, and peas have furnished the principal hay crop.

Previous to eight years ago I had only treated 5 cases, against 51 since.

“ One mule died. I had one case in a stallion early in the spring. He had been kept up in the barn for eight weeks, and when taken out for exercise gave out in less than a mile; did not get him back in barn for two days, and then recovered. I had another case last spring, which was dying when called; had not received any exercise for some time, preparing to show the first of March. When taken out was very game, and was ridden about 15 minutes; collapsed; got him home; in three days I was called; died at night.

“ The hay mostly fed here is timothy and clover.”

From J. F. DeVine, D. V. S., Goshen, N. Y.

I submit the following replies to Dr. Whittlesey's questions:

1. Yes.
2. In heavy horses only.
3. No.
4. Timothy and red top, oats, bran, hominy, and middlings.
5. Have more cases from middle of February to middle of April than in the rest of the entire year.

* * *

From Dr. A. E. McCall, Memphis, Mich.

Azoturia is quite common in this section, but not very fatal—about 10 per cent. get down and 2 per cent. die. There are very few mules in this locality, and I have never seen a case in a mule. The chief feed here is mixed timothy and clover hay, and oats. Have had cases in every month of the year, but it is more common in April, May and June.

CORRESPONDENCE.

IRREGULAR PARTURIENT PARESIS.

GALLATIN, TENN., June 11, 1906.

Editors American Veterinary Review:

DEAR SIRS:—Reading in the June REVIEW a communication from Dr. Van Antwerp on "Peculiar and Irregular Parturient Paresis," I thought I would add my mite of information by recording a case.

On Feb. 21, I was called to see a pure bred Jersey cow, five years old. Found her down, unable to regain her feet, with nearly all the symptoms of parturient paresis. On information from owner, found she was what is called in this country "a stripper," giving one gallon of milk at milking, and would be due to calve in two months. Not knowing any better treatment, I gave her the treatment of air, and, to my surprise, she responded in two hours. And on April 23d she gave birth to a healthy calf, with no returns of the symptoms.

L. T. LEWIS, V. S.

BULLETIN 113 of the Agricultural Experiment Station of the Colorado Agricultural College, treats of "Larkspur and Other Poisonous Plants," and is by the Station Veterinarian, George H. Glover, M. S., D. V. M. It also contains a synopsis of symptoms and treatment for poison weeds, and a bibliologic reference table.

SOCIETY MEETINGS.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The Association convened for its ninth annual session at the Merchants' Hotel, St. Paul, Jan. 10, 1906, and was called to order by President Lees. Roll-call showed thirty-eight members present, with Dr. Peters, of Nebraska, as visitor.

The next order of business was the President's address, but owing to his indisposition he asked to be excused.

Dr. Annand, Treasurer, made his report as follows:—To balance in treasury and receipts, \$174.06; by expense, \$53.10; balance in treasury, \$120.96.

In the absence of the Finance Committee, Dr. Cook was appointed to examine the Treasurer's report.

Dr. Lees then called upon Dr. Whitcomb, chairman of the Committee on Diseases, for his report.

Dr. Ward: I see that Dr. Whitcomb is not present, and I will offer a partial report for him. During the last quarter there have been 319 horses inspected on account of glanders, of which 45 were killed on inspection. There were 221 tested, of which 82 reacted, and 49 were killed; 41 are quarantined for retest. The total number of horses killed during the last six months was about 220. . . . For tuberculosis, I can only give you a report for the last three months. There were 3188 head of cattle tested, of which 444 reacted. In the vicinity of Hutchinson Dr. Lyons tested in the neighborhood of 470 cows, of which 135 reacted—almost 33 per cent. . . . We have had quite a lot of trouble with hog cholera during the last six months, especially in the south-west corner of the State, principally in Lyon, Lincoln and Lac qui Parle counties. The disease has been there for the last three years, and we thought last year we had it about cleaned up, but I presume the warm, dry summer had something to do with the spread of the disease. I have thought that possibly a better way of controlling hog cholera would be by disinfection. I have planned, if we can possibly do it next summer, that when we have an outbreak of hog cholera to send a man down there and kill off all the hogs which are showing symptoms of the disease, and thoroughly disinfect the hog pens, etc., and disinfect them every day until we are satisfied the disease is well under control. Our present

method of controlling the disease has been to quarantine the infected premises, notify the chairman of the existence of the disease, issue certain regulations regarding the tying up of dogs, and visiting infected premises. I have thought that if we could visit those infected farms every day and watch the quarantine, thoroughly disinfect and see that the dead hogs were buried, and kill those showing symptoms of the disease, we might possibly control it better than now. . . . I found a nice case of measly beef in the city of St. Paul about a month ago. This was a milk cow that was in the possession of an owner for some time. Owing to the fact that she was not giving much milk, he dried her up and killed her. He came to the office and put in a claim for reimbursement on account of tuberculosis. The description that he gave was so different to that usually found in tuberculosis, that I decided to investigate and found that he had a case of measly beef. I do not believe there have been any other cases reported in Minnesota. The large muscles, when cut through, presented the appearance as though a lot of peas had been pushed in—small yellow nodules about the size of a pea. On microscopic examination you could see the calcareous corpuscles and a breaking down of the contents. We could not find out where this animal came from, or we might possibly have found some other cases.

Pres. Lees then called on Dr. Cook for his report on Medicine.

Dr. Cook: I am sorry to say that I really have no report to make that would be of any benefit to this Association. I think that practitioners are not in position to experiment with veterinary medicine. They should leave this to the teachers and professors of the different colleges, who are in a position to investigate those things thoroughly. I wish to speak about the practice of writing prescriptions. There is one thing I would like to impress upon the members of this Association, and that is, do not write prescriptions. I believe you are doing an injustice to yourself, your fellow practitioners, and also to your client.

APPLICATIONS FOR MEMBERSHIP.

Applications were presented for consideration, and, after due examination, it was moved, seconded and carried that the following be elected to membership:—

Dr. C. S. Shore (U. P.), Lake City; vouchers, Drs. J. W. Gould and S. H. Ward.

Dr. B. W. Kirby (Chic. V. C.,) St. Paul ; vouchers, Drs. W. Amos and A. F. Lees.

Dr. Harry H. Dell (McGill), Mankato ; vouchers, Drs. J. P. Graff and M. F. Leffingwell.

Dr. Emil Mueller (Chic. V. C.), New Ulm ; vouchers, Drs. J. P. Graff and M. F. Leffingwell.

Dr. Wm. Sonerall (Chic. V. C.), Cambridge ; vouchers, Drs. O. Rydell and J. G. Annand.

Dr. W. A. Kuhns (O. V. C.), Chaska ; vouchers, Drs. J. H. Neumann and S. H. Ward.

Dr. J. Burton (O. V. C.), Wheaton ; vouchers, Drs. O. Rydell and S. H. Ward.

Dr. Gould moved that a reporter be employed for each meeting at a cost not to exceed \$20.00, until the Association takes some further action in the matter. Seconded by Dr. Mack and carried.

Pres. Lees called on Dr. Lyford for his report on Legislation and Empirics, and the Doctor presented the following report:—

LEGISLATION AND EMPIRICS.

I am very sorry that I am asked to report to you again on this same "old chestnut", the "quack". That I should have been continued as chairman of the committee by each succeeding President seems little short of a mania for reappointing, as was the case for years. With the chairmanship of the Committee on Colleges and Education, I now wish to give formal notice that I shall not continue this combined dose of emetic longer, so that when this report is in you may feel relieved, so far as I am concerned. The law of 1903, which requires that a graduate shall be from a three year college or university requiring a six-months' session each year, makes no mention of an examination. Accordingly no examination is really compulsory for such applicants. I think the chairman of the Committee on Legislation and Empirics should be the Secretary of the Examining Board, who has an opportunity of obtaining knowledge in this line that others do not. I think we should at the same time ask of our Examining Board, at each yearly meeting, to report to us a list of the new members to our profession, and other things of interest that come before said Board. In this way we will become acquainted with work done by the Board and have a list of new men who we may expect to meet in practice. Another very important subject that seems to have been ignored, that would prove of great importance to us professionally, to experi-

mental workers especially, is the remedies with which we should be made acquainted at our yearly meetings. If our State Experiment Station is not to be of service in this particular, I think such experiments should be arranged for by the Association and the expenses paid. In this way new fields would be opened to us. The empirics in our State are favored in every way by non-prosecution and by our City Veterinarian employing such to assist in test work, and by our City Fire Department employing a non-licensed empiric at a salary of \$1500 per year. No attention is paid to these things, so we may expect an increase in numbers, unless some steps are taken to remedy this evil. The two darkey empirics from St. Paul, whom Dr. Ward prosecuted when Secretary of the Examining Board, still travel through the State, taking in many of the large stables, pretending to wash sheaths and fix teeth at from 50c. to 75c. each animal, and doing as many as one hundred horses in one day. You can well imagine the quality of the work and the effect upon dentistry work in general. I have no doubt that some of our city pretenders give St. Paul people a like amount of valuable services.

President Lees then called on Dr. Reynolds for his Report on Colleges.

REPORT ON COLLEGES.

Dr. Reynolds: I have a very brief report to make. The important item that I can report in the way of college news is that the Washington School at Pullman, Washington, has established a four-year course, making two four-year-course colleges in operation in this country.

Dr. Lyford: I wish to ask Dr. Reynolds if it is true that the Toronto school has made a three-year course?

Dr. Reynolds: I have no authentic information as to that. You no doubt saw the article in the REVIEW referring to that.

ELECTION OF OFFICERS.

The election of officers being the next order of business, resulted as follows:

President—Dr. Richard Price, St. Paul.

First Vice-President—Dr. E. L. Kalb.

Second Vice-President—Dr. J. W. Cook.

Secretary and Treasurer—Dr. C. A. Mack, Stillwater.

Board of Trustees—Drs. C. A. Lyon, M. S. Whitcomb, M. J. Sexton, and the President and Secretary, *ex-officio*.

The meeting then adjourned until 7.30 P. M.

The newly elected President, Dr. Price, called the meeting to order at 7.30 P. M., and called upon Dr. Peters, of Nebraska, who gave a very interesting talk on hog cholera and also many valuable points on the proper care of hogs, etc.

Dr. Price then called on Dr. Amos for his paper on "The Relation Between Human and Bovine Tuberculosis."*

Dr. Beebe then presented a paper on "Immunity," which led to a lengthy and valuable discussion, all of which will be printed in a later issue.

Dr. J. G. Annand then presented the following paper on

CORNS.

"A corn is an injury to the tissues of the foot at the heel between the wall and the bar. The living horn and soft tissues are involved with a rupture of the small bloodvessels. If nature is strong enough and the injury slight, there is simply a small amount of soreness and local fever and a stained condition of the surrounding horn. If the injury is more severe and a greater area involved, there may be an effusion between the sensitive and insensitive tissues. If no relief is given and the injury is continued, there may be suppuration. The front feet are usually the subjects of the disease, but none are exempt.

"The heavier breeds of horses are most liable to the disease for the reason that the hoof is not so compact as the lighter breeds; also the feet are more liable to be wide and flat and weak at the quarters. Poorly fitted and high heel shoes aggravate the conditions. In the driving horse, contraction is one of the greatest factors in causing corns; but all feet are liable to be bruised, which terminate in corns. Shoes left on too long and the hoof allowed to grow out over the shoes, shifting the weight from the walls to the sole, is also another cause.

"In examination for soundness, the examiner should not fail to look for corns. Pain may be very slight in an old chronic case where the tissues involved are very limited in area and the animal may have become so accustomed to it to present any evidence of the disease. But you will see fever rings in the wall of the foot. The animal may point the foot forward and outward with the weight off the foot and the fetlock flexed, or, in more severe cases, where they refuse to put scarcely any weight on the affected member.

* This paper, and that of Dr. Ketchum, on the "Increase of Tuberculosis in Swine," together with the interesting discussion thereon, will appear in a later number — [EDITOR REVIEW]

"Tapping the wall over the seat of a corn with a hammer will reveal pain or moderate pressure between the jaws of a pair of pincers will also give evidence of disease. With the shoe removed and with the hoof knife in readiness, then the real condition of things is revealed. If the sole is dry, hard and brittle, and the whole thickness is discolored, is evidence of an old corn. If an amber colored fluid is present, the injury is of more recent occurrence.

"The suppurative corn is the one that is of more concern to the veterinarian, as the pus collects and works its way in all directions, but usually finds its way to the heel and makes an opening between the coronary band and wall. The soft tissues may be involved and even necrosed, which often extends to the area of the os pedis, lateral cartilages, or cushion of the foot.

"I do not pretend to be an authority on the treatment of corns, but will describe the course I take in dealing with this disease. In all forms of corns, with the rasp and knife, I remove the wall of the hoof and also the sole so as to relieve all pressure.

"Remove sufficient of wall and sole so the blood oozes out of the surface. I treat the entire quarter in this way. Then with hot poultices of flaxseed meal, I can have some success in reducing the local inflammation. After the acute pain has been alleviated by means of the hot poultices, I apply a good strong counter-irritation all around the coronary band, which should be repeated in two or three weeks. Remove all necrosed tissue and treat with 1-1000 bichloride of mercury solution.

"If both heels are affected and the soreness has nearly disappeared, which usually takes about three weeks in severe cases, put a bar shoe with lots of frog pressure and put the animal to work. If only one quarter is involved put on a half bar shoe. In old dry corns, it is not necessary to lay the animal up."

Dr. Annand: The main object of this paper is to start a discussion, as much more might be said. I have had fairly good results with that form of treatment. I may not have fully described the treatment in detail, but if I can explain it through discussion will be pleased to do so.

Dr. Cotton: I would like to ask the Doctor if he believes in cutting the quarter off so that it will not press upon the branch of the shoe and putting a bar shoe on, or just simply cutting the pressure off without removing the quarter?

Dr. Annand: I used to do that and it appeared for a while that the condition was relieved, but I always found that as soon

as the hoof grew down so that the pressure came on the shoe you had the same condition coming back again. That was one condition that induced me to remove the quarter so that when it did get down it accommodates itself. If you don't cut it off you still have the pressure put on the coronary band and you have no relief whatever. I have found that removing the pressure on the wall out to where you think there is no pressure you can put on the shoe and when it does get down I have not found any trouble. It usually came out in good shape.

Dr. Cotton: In Mohler's "Surgery," he condemns such procedure, claiming that the wall is pushed upon and breaks away from the laminæ, producing a seedy quarter. But oftentimes we are compelled to do something like that. If we do the radical thinning of wall from the coronary band to the ground, the horse is liable to be laid up a little while; we often meet cases that are slightly lame and owner cannot lay the animal off duty, when, if we relieve the pressure on quarter the animal will go sound. That is why I asked the question.

Dr. Annand: In those cases of which you speak, in which you thin the wall clear from the coronary band, those are the cases where you have slight lameness. I put on a shoe and keep them at work.

Dr. Cotton: By working them immediately, don't you sometimes have the wall at the quarter break and produce quarter cracks?

Dr. Annand: No, I have not as yet. I am treating one case now and it was very much contracted. I thinned the wall of the inside and outside quarter of the right front foot and sent this horse home and had it poulticed. I went up three days afterwards to apply the counter-irritant and I could see the outline of the cartilage. When I saw him three days afterwards he was going as though nothing happened.

Dr. Price: I would ask Dr. Cotton if in trimming the hoof when he makes the beveled edge, how does he get it sharp and leave the heavy wall? That is to say, if in removing it he thins and makes a beveled edge on the wall that is left.

Dr. Cotton: In other words, make a gradual union. If you put that animal to work before waiting until you get a new growth you are liable to get a break. I noticed it on a low weak heeled horse, especially, but not on high heeled horses, because they do not have a thin wall.

Dr. Annand: I noticed quite a number of times in those weak quartered horses that if you remove the wall and put on a

counter-irritant and repeat in about three weeks, the wall grows down considerably heavier than before and you have gained on that point, besides relieving the condition of the corn.

Dr. Lyford: You must always find a correspondingly thick heel and with this condition, where heels are high and thick, your quarters are pinched and then you get a decidedly cramped quarter, but in a low heel and thin horn the pressure produces a lack of circulation in the heel with correspondingly slow growth, while the increase in the circulation of the toe gradually increases the rapidity of its growth, also the thickness, while the heels get thin and slow growth. Relieving that pressure naturally diminishes the circulation at the toe and you can get a better quarter. I have found that that relief from pressure has apparently more to do with the increased thickness than blister, though the blister sets up apparently increased circulation and healthy condition, which induces a speedy cure. I find that your stimulant from the blister is very essential, but the relief and the increased circulation continues in proportion to the conditions you keep the foot in afterwards. We have some horses which are subject in their natural conditions to new quarters. We have some families which I have spoken of before in this association, especially the Hartford family, the majority of whose colts' feet are poor in quarters. The horse would get sore and lame as soon as he was worked. If we have inherited these conditions, naturally they must be guarded against. I have raised a Hartford filly and suggested that her toes be kept short and heels in good shape. I think she has remarkably good feet, one of the best of Hartford's family. Those things are of importance, for the reason that circulation, when it becomes pinched and cramped, renders the horn so thin that if the capillaries are pressed the heel becomes weak and the toe gets correspondingly increased. I think Dr. Annand's point is well taken, that the relief of the quarter is essential in most all forms of corns. Of course, the condition and quality of the foot has a great deal to do with the way you do it and the extent of cutting. I sometimes feel as though I had done more cutting than the owner would desire, and still have not done too much. Of course, occasionally we do not get the results that we want. The owner feels that after we have done the cutting we have ruined the horse, and immediately takes other steps, which certainly induces the animal to go on further and not be relieved by the operation.

Dr. Cotton speaks of the question of allowing the horse con-

tinuous rest for a time, and in some cases it is very desirable. In some cases we cannot induce the owner to allow the horse to have that much rest, and I know we have had the very best results in some of the cases where rest was given from two weeks to three months, where in other cases we have had as good results without rest.

Dr. Cook: This subject of corns is a very interesting one, especially to the city practitioner, who has so much trouble with corns. I would like to ask Dr. Annand if he has not observed that a great many of those corns are not produced by the blacksmiths,—the wall of the foot is allowed to grow so long that it of itself is doing most of the growing. I think Dr. Annand's treatment, bichloride of mercury, is weak, especially in cases of suppurating corns. I know I used much stronger solution, and left it on for a couple of days and had good results.

Dr. Annand: Where you have drainage established I find 1:1000 is plenty for the reason that I figure that if the tissue is exposed I would not want to put anything on there that would affect it. In regard to the bar I have never had very many cases which I thought were due to the long condition of the bar. I have had a number of cases which I think were due to the condition of the wall, a sort of turning so that the weight rests on the portion of the wall that was turned in.

Dr. Price: In regard to corns, there is no question but they are often due to contraction of the heels. What is the cause of contraction? Sometimes undue dryness of the hoof, but more often you will find when the horse is shod he is shod with a shoe such as Dr. Annand described as producing the condition in which the walls turn in. They curve in on themselves, and the animal is constantly stepping onto an inverted cone, causing the outside and inside walls to curve on themselves. If the shoer would give them a level bearing you would overcome that condition, and by making sections of the wall wherever the outside curves, shows there is an unnatural reflection of the wall, and by bringing it to a more natural curve you could make section here, for instance; and relieve that. The bar is supposed to hold the heel to prevent it breaking. The bar keeps the hoof from extending too much. The first thing I do is to make section between the bar and the wall, cut it clear through, allow the hoof to extend. It is a fibrous band and intended to keep the hoof from expanding too freely. Of course, removing the quarter relieves the pressure. You can relieve the pressure by making section of the wall, cutting through to

the soft tissue underneath from the coronary band to the solar surface of the hoof which comes in contact with the shoe, and by properly shoeing with a slightly outward bevel in place of having the inward bevel. It is simply a mechanical proposition. By making section of the wall you do not lay the animal up. By section of the wall I mean by cutting the wall with saw or knife from the coronary band to the bottom of the hoof. Of course, you can gain the same thing by removing the wall and laying the animal up.

Dr. Cotton: Did I understand you to say you severed the connection between the bar of the foot and the wall of the foot at the buttress of the heel?

Dr. Price: Yes.

Dr. Cotton: I do not agree with Dr. Price. I was always under the impression that the bar of the foot through the medium of the frog helped expand the quarter. The bar is a reflection of the wall and extends forward about two-thirds of the length of the frog, where it stops and meets the sole. If you want to dilate the horse's foot and have sufficient frog to get a frog pressure by means of a bar shoe, cut the quarters down so that they will not press on the branch of the shoe, place your bar shoe on, pressing directly on the frog, and you will succeed in dilating your foot at the quarters. The reason of this is that the bar of the shoe pressing on the elastic frog exerts an outward pressure on the walls at the quarter through the medium of the bars of the foot. It seems to me that it is exactly wrong to sever the connection between the wall and the bar at the buttress, as it allows the quarter to collapse and you do not get the outward pressure on the quarters produced by the frog pressure directly through the medium of the bars of the foot.

Dr. Annand: In cutting the bar from the wall you only give relief at one point, whereas if you take and remove the quarter clear from the frog to within two-thirds of the way to the front of the toe you give relief along the whole band of contraction. By removing the whole quarter you just give the soft tissues an opportunity to expand, whereas if you just cut from the heel then you have to allow the tissues to force out the contracted part of the hoof. It is smaller than it really ought to be. In removing a quarter I do not make an abrupt cut between the portion I remove and the portion I leave. It is a gradual bevel to the place where I want the real excavation to begin.

Dr. Price: I said I first made a section between the bar and wall, but I also made section of the wall where there was an incurvature of the wall. I practically do the same as Dr. Annand, but I leave the wall. I sever the wall at the bottom, but I do not remove it.

REPORTS OF CASES.

Dr. Ward reported a case for Dr. Lipp, who was called away. A specimen was presented with the following history:

Peterson Horse—Case for Tenotomy.—Part affected, perforans, right front. Duration of trouble: Horse was first noticed to be favoring right front foot in early spring of 1904, latter part of March. Had been working regularly previous to this time, and was kept working subsequently for about a year. The tendon continued to contract all this time and the heel was allowed to grow down to relieve it. In March, 1905, horse was decided unfit for work, and from then till December, 1905, he stood idle, in a stable on a sloping wood floor. During this period of idleness, nearly all of the contraction seen in the accompanying specimen took place. The horse was killed in December, 1905. Post-mortem findings: Right front limb—Small splint, ringbones on both phalanges, very large sidebones with exostosis spongiosum growing back, down and inward from one sidebone. Left front limb—Same as right, including exostosis spongiosum, except larger splint and smaller sidebones.

Horse weighed at time of death about 1500 pounds; age, about 13 years; in fine condition, and apparently sound except as above described.

Ventral Hernia.—Dr. Shore: I had two cases. The first was a two-year-old colt which was quite a ways in the country and I did not get there until just about dark. It had evidently been torn by a cow's horn. The skin was torn for about three inches and then torn under the skin for about a finger's length, and then a tear about three inches through the peritoneum. The only thing I could do was to throw the colt and tie it up and get in there. In doing that I made incision about ten inches long. The intestines would come out repeatedly and I could only get a stitch in at a time with continuous stitch. The tear through the peritoneum was about three inches long, and after three-fourths of an hour I got it closed up. The colt was filled up, as it had been on pasture. It had been hurt perhaps 24 hours before I saw it, and perhaps 36. It was very difficult

to sew on account of the swelling around the wound, but finally sewed up the outside and left drainage at each end. I did not have much hope of the case. My main object was to get through with it, and when the farmer reported he said that the colt had never missed a meal and had made a fine recovery. . . . After perhaps a month I was called to another case within a mile of the same place. I got the call late Saturday night and I had to go by train to Kellog. I could not go that night, so went the next morning. This colt had a large swelling on the side and the farmer thought it was an abscess of some sort and stuck a knife into it, and found something more than he could take care of. I went down the next day and found the muscle ruptured so it left about one foot of omentum through the muscle. They did not know how long it had been hurt. I opened the enlargement by means of an incision 10 or 12 inches long. I then removed the unhealthy portion of the omentum, and replaced the healthy portion. I then sewed up the muscles with catgut, and closed the outside opening with the tape sutures. After about a month the owner called me up by 'phone and said the swelling was about as bad as ever, and I figured that the inside must be closed and it was perhaps due to a collection of pus. He said the outside openings had about closed and I told him to have somebody open them for him. They found a collection of pus and said the bunch went down right away. In perhaps a week after I was there and stopped to see the colt and found both of the openings of the wound were open and discharging pus. By probing I found the muscles were entirely healed. But a fistulous track had formed along the entire line of my incisions, which was lengthwise with the body, and a track had formed downwards from this into a pocket of pus. After giving this drainage it healed readily and the owner reported in a couple of weeks later that the colt had made a fine recovery.

Dental Cyst.—Dr. Amos: My object in presenting this specimen was to leave it with Dr. Reynolds to take to the museum, for I thought it was a good specimen of dentine formation, and I think you can see what the case is. The horse had been affected about four years.

REPORT ON LAST YEAR'S CLINIC.

Dr. Price: I would call on Dr. Sexton and Dr. Cotton to report on our last clinic.

Dr. Cotton: Concerning the large bay horse, would say

that he was brought to my hospital six weeks prior to the meeting. I trephined into the inferior maxillary sinus and sent the animal home with instructions to keep it open and inject antiseptic solutions. The attendant let the opening heal and the evening before the clinic the animal was brought back to the hospital. At this time the temperature was 105° F., and the side of the head was so swollen that the eye was practically closed. The bony plate was necrotic. My assistant, thinking he would relieve the animal a little, put a knife or his finger through the necrotic tissue into the superior sinus. This was the condition when the animal was brought to clinic. You simply opened it, removed all the necrosed bone and left a hole almost large enough to put one's fist into. I kept the animal about a week, flushing the sinuses daily with antiseptics and astringents, then sent him home. Evidently it necrosed through into the nasal cavity. The attendant has allowed it to heal up again, and I understand it is just beginning to swell and discharge from the nostril. I have not seen the case since a week after it left the hospital. Results would have been better if the animal had had better care and the antiseptic irrigation of the sinuses continued longer or until such time as all necrosis had ceased. The animal has been working ever since he left the hospital.

Dr. Price then announced that the clinic would be held the following morning at Dr. Pomeroy's infirmary at 9 o'clock.

The meeting then adjourned.

CLINIC.

Jan. 11, 1906, the Association met at Dr. Pomeroy's infirmary.

Case No. 1—A horse was presented for examination and diagnosed as pharyngitis.

No. 2—Dr. Pomeroy operated on two projecting molars.

No. 3—Dr. Ilstrup floated a mouth of irregular teeth.

No. 4—Dr. McDonald floated two mouths of irregular teeth.

No. 5—Dr. Nickerson, assisted by Dr. Gould, operated on a seedy toe of a mule.

No. 6 was a sorrel horse which showed a peculiar stiffness in the neck. It was desired to have the members express an opinion as to the seat of injury. Several members present gave as their opinion injury to cervical vertebræ involving the spinal cord.

No. 7 was a bitch spayed by Dr. Sexton.

No. 8 was a chestnut horse, lame in both fore feet. Several

of the members diagnosed this case as navicular arthritis and suppurating corns.

No. 9 was a yearling colt suffering from ventral hernia of six months' duration. Dr. Lyford, assisted by Drs. Amos and Shore, operated by casting the animal and putting it under the influence of chloroform. The part was clipped, cleansed and disinfected. A small incision was made, through which, with a pair of curved scissors, the skin was loosened from the muscle to a point two inches around the rupture in the muscle. The skin was then pulled up and all the tissue pressed through the opening inwardly. Two skewers were inserted and a cord drawn around above, making the skin tense as possible. The colt was then put on his feet, the part bandaged. The animal was then supported in slings.

No. 10—Dr. Whitcomb floated a mouth.

No. 11—Dr. J. N. Gould performed median neurectomy. Anæsthesia was obtained by injecting five per cent. solution of nirvanin.

No. 12—Drs. Annand and Whitcomb performed the operation described in Dr. Annand's paper in above report for corns.

C. A. MACK, *Secretary*.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

PHILADELPHIA, June 20, 1906.

Editors American Veterinary Review:

DEAR SIRs:—Since sending my letter for the June REVIEW a few more titles have come in, so that now the program stands as follows:—

"Our Insect Enemies"—W. H. Dalrymple, Louisiana.

"The Agglutination Method for the Diagnosis of Glanders"—V. A. Moore, W. J. Taylor, W. Giltner, New York.

"Some Bovine Surgical Operations"—J. C. Robert, Miss.

"Tuberculosis in Swine"—Richard Ebbitt, Nebraska.

"The Angora Goat and Sheep Industry of New England in Danger"—James B. Paige, Massachusetts.

(Title not given)—P. A. Fish, New York.

"The Veterinarian as a Business Man"—D. Arthur Hughes, Illinois.

"Eradication of Mange Among Cattle in the West"—A. T. Peters, Nebraska.

"Symptoms and Gross Post-mortem Lesions of Hepatic Cirrhosis of Cattle"—W. H. Pethick, Nova Scotia.

"The Veterinary Service of the United States Army and the Military Veterinarian"—Chas. H. Jewell, Kansas.

"Practical and Applied Surgery"—C. C. Lyford, Minnesota.

It is seen that but eleven papers are promised. There should be at least twice that number. It is very desirable that more of those who are interested in the success of the meeting respond to the demand for papers and that their titles be sent in at once. The program must be completed by July 25th in order to be duly printed and distributed before the meeting. It must be that many of our members have something of value and interest to communicate and it is earnestly hoped that they will take the trouble to do it. It is certain that the Association is the most exalted channel through which the results of a scientific or practical observation or research can be given to the profession, and the fact that so few take advantage of it is amazing.

There is nothing to add to what is set forth in the June REVIEW in reference to the local arrangements, but all may feel assured that they will be lacking in no detail looking toward the care and comfort of those who go to New Haven in August. Dr. J. H. Kelly, 70 Olive street, New Haven, has charge of the hotel arrangements and those who wish to make reservations in advance can do so through him. It would be wise to do this.

Applications for membership must be in the secretary's hands by July 23, 1906. The number received so far is much smaller than it should be. Some earnest work between now and July 23 will bear good fruit.

Negotiations in reference to reduced railroad rates are in progress with the various passenger associations and there is every reason to believe that the usual concession of one and one-third fare for the round trip, certificate plan, will be made.

Let all the members pull together in a strenuous campaign for more members and more papers for the program, so that the New Haven meeting will be the banner one in the history of the Association.

Respectfully,

JOHN J. REPP, *Secretary.*

ALUMNI ASSOCIATION OF THE NEW YORK-AMERICAN VETERINARY COLLEGE.

The regular annual meeting was held in the College Building on Tuesday, April 17th, at 3 o'clock P. M., the President, Dr. Wm. Herbert Lowe, in the chair. The minutes of the previous meeting were read and approved.

The matter of dues and collection was discussed, and, upon motion, the Secretary was instructed to send out proper notices and bills to date after conferring with the Treasurer and annually hereafter. It was regularly moved and seconded that the Alumni Prize be awarded and continued.

The following were admitted to membership in this association: Dr. John G. Slee (A.V.C. '97), and Dr. Aguila Mitchell (A.V.C. '95), and the Class of 1906, as a whole.

The Banquet Committee reported that arrangements had been made to hold the annual banquet in the evening at the Hotel Vendome at 7.30 P. M.

The Treasurer being absent there was no regular report of the Treasurer received.

The following officers were elected unanimously to serve for the ensuing year:

President—Dr. W. C. Miller.

First Vice-President—Dr. C. Lamensdorf.

Second Vice-President—Dr. M. R. Powers.

Secretary—Dr. T. F. Krey.

Treasurer—Dr. J. W. Fink.

Under the head of new business, the question of a larger membership was discussed, and it was suggested that if each class had a representative who would be notified of the officers elected and what is going on in the Society it would encourage the members to attend every meeting; and to this end it was suggested that the President take the matter up by calling a meeting of the Executive Committee, to be held at the time of the annual meeting of the A. V. M. A. at New Haven, when some action in regard to the appointment of Resident State Secretaries would be taken, as it was thought in this manner that the membership of this Association would not only be greatly increased, but that the meetings would be generously attended as well.

The President, Dr. W. C. Miller, appointed the following members to constitute the Board of Censors for the coming year: Drs. Wm. Herbert Lowe, chairman; W. J. Coates, R. W. Ellis, W. Horace Hoskins, and T. E. Smith.

Adjourned.

WM. C. MILLER, *Secretary*.

* * *

The banquet, held at the Vendome in the evening, was a pleasant and very successful affair, most of the recent classes and many of those of long ago being represented. Dr. Roscoe

R. Bell acted as toastmaster and responses to sentiments were made by Chancellor MacCracken, Prof. W. J. Coates, Prof. James L. Robertson, Dr. W. Horace Hoskins, Prof. G. G. Van Mater, Dr. Wm. Herbert Lowe, Prof. Wilson, Dr. D. J. Dixon, Dr. Robert W. Ellis, Dr. J. F. DeVine, Dr. W. C. Miller, and others. The occasion was a dual celebration, in that it marked the silver anniversary of Dr. Hoskins' attendance upon these events, he never having missed being present for a quarter of a century, a record probably unequaled by another alumnus, certainly not by one who resides outside of the State.

DR. GEO. B. GILLMOR, graduate of American Veterinary College, has been appointed meat inspector of Pittsburgh, Pa., at a salary of \$1800 a year.

TUBERCULOSIS has been found in a rattlesnake at the Washington, D. C., Zoo, thus illustrating the wide range of individuality of the victims of this universal plague.

A GOOD MASSACHUSETTS LAW.—A law went into effect in Massachusetts on April 20, 1906, which makes it a misdemeanor for any person to sell or use a broken-down horse. The enactment of the law was influenced through the Massachusetts Humane Society and its effect is already noticed, auctioneers who formerly did a big business in disposing of diseased and broken-down animals finding their vocation now practically gone. The law reads: "Section 1. It shall be unlawful for any person holding an auctioneer's license to receive or offer for sale or to sell at public auction any horse which by reason of debility, disease or lameness, or for other cause, could not be worked in this Commonwealth without violating the laws against cruelty to animals. Section 2. It shall be unlawful for any person to lead, ride or drive on any public way, for any purpose except that of conveying the animal to a proper place for its humane keeping or killing, or for medical or surgical treatment, any horse which, by reason of debility, disease or lameness, or for other cause, could not be worked in this Commonwealth without violating the laws against cruelty to animals. Section 3. Any licensed auctioneer violating any provision of this act shall forfeit his license, and any person violating any provision of this act shall be punished by a fine of not less than five nor more than one hundred dollars, or by imprisonment for not more than six months." — — — In the next session of the Michigan Legislature the Humane Society of that State will endeavor to have a similar law enacted.

NEWS AND ITEMS.

WARREN M. JOHNSON, veterinary dentist, died at his home, Pittsburgh, Pa., March 15, after a brief illness of pneumonia, aged 65 years.

DR. D. ARTHUR HUGHES, Veterinary Inspector, Commissary Department, U. S. Army, is spending his vacation trout fishing and shooting in the Maine woods. He will return to Omaha, Neb., about July 15.

DR. W. REID BLAIR, pathologist to the New York Zoölogical Park, will send to the New Haven meeting of the A. V. M. A., a number of interesting gross pathological specimens which he has secured through his fortunate opportunities. From New Haven they will be shipped to Buffalo for the New York State meeting.

DR. SAMUEL O. WOOD, V. S., of Melbourne, Australia, is on his way to America, commissioned by the Australian government to inquire into the condition of the horse industry here and, if pleasing to him, to purchase some good stock for breeding purposes for the government. Also Dr. Wood is interested in the subject of horseshoers' legislation with a view possibly of having legislation applied to the practice of the trade in Australia.—(*Horseshoers' Journal.*)

DR. GOTTLIEB MEYER, a non-graduate practitioner of Allegheny, Pa., died May 9, from cancer of the stomach. He was a native of Bavaria, and attended the Agricultural College at Munich, and studied animal husbandry, but found no employment in that line when he came to this country, and after blistering his hands for a day at a saw-mill, put out his shingle as a veterinary surgeon, and at one time enjoyed a large practice in Allegheny, Pa. He was aged about 60 years, and leaves a widow and five children.

SUICIDE OF A DOG.—According to the New York *Herald*, a female fox terrier, "Beauty", winner of a blue ribbon at the recent bench show of the Westminster Kennel Club, committed suicide on June 16 by jumping from the fourth story window of the flat of James Gilligan, at No. 353 W. 47th St., New York City. The dog became jealous of a Boston bull bitch named "Daisy", which had been in the household a long time, while the fox terrier was a recent acquisition. Her owner was in bed, fondling "Daisy", when "Beauty" also jumped upon the bed. But "Beauty" was forced away, while Gilligan continued to pet the bull, and the terrier returned and frisked about for recognition;

but her owner cast her aside again. This was repeated a third time, with a like result. "Beauty" whined and ran through the flat to the front window, poised for a moment, looked back, wailed, and then jumped into the street below, landing on her neck and dying instantly.

THE ORIGIN OF MALADIE DU COIT IN CANADA.—In Bulletin II, Health of Animals, Department of Agriculture of Canada, Veterinary Director General J. G. Rutherford gives a lucid description of dourine and its differential diagnosis from the benign coital exanthema. In his introduction he draws the inference that it "must" have been imported from the United States, as is the custom of our Canadian cousins to ascribe all their evils to their proximity to the American border, while all their virtues are inherent to the land of the snow. He says: "This disease, which has long been known in the Old World, was introduced to this continent in 1882 by a Percheron stallion imported from France, and used for service in Illinois. Unfortunately the nature of the affection was not discovered until several years had elapsed, during which period a considerable number of stallions and mares had become infected. Some of these infected animals were removed from the district before quarantine was imposed, with the result that a number of disease centres have been established in various parts of the United States. The large influx of American horses is undoubtedly responsible for the introduction of this loathsome malady to western Canada, where its existence was first reported from Lethbridge district in March, 1904. Since that time active measures have been adopted for its repression, but owing to the nature of the malady and the loose conditions under which the horses are handled in the range country, it is a matter of great difficulty to deal with it effectually. . . ."

DEATH OF THE RACEHORSE "SYSONBY".—The death of this distinguished member of the equine family occurred on June 18th at the stables of his owner, James R. Keene, at Sheepshead Bay. His illness had been of considerable newspaper notoriety, he having been afflicted with a form of eczema which baffled the skill of the most prominent veterinarians of the East, and finally his owner's family physician undertook to treat him, with less success than had followed the efforts of the veterinarians. The exanthem was principally around the coronets and finally passed down beneath the horny structure to the sensitive laminæ of the frogs, resulting in extensive canker of all feet. From continual stamping, induced by the extreme irritation, a

deep seated abscess formed in one frog, and finally septicæmia set in, when the veterinarians were again called in, but it was too late to save the great horse's life. When Dr. Wm. Sheppard, of Sheepshead Bay, arrived on the 17th he found "Sysonby" with a temperature of 105 $\frac{3}{4}$, breathing hard, pulse fast and almost imperceptible, his body bedewed with perspiration, and unable to rise. The owner was informed that the end was near, and Dr. R. W. McCully, of New York, was called in consultation, but his opinion simply confirmed that of Dr. Sheppard. Notwithstanding the abandonment of hope, efforts were redoubled to avert the inevitable result. "Sysonby" died the following day. A post-mortem examination, held by the two veterinarians, disclosed a remarkable condition of the liver, and while we have not heard if there was a pathological examination made of its structure, Dr. Sheppard informed us by telephone that it weighed sixty-five pounds, about six times its normal size. "Sysonby" was in his four-year-old form, and had raced as a two- and three-year-old, winning \$182,000 in stakes and purses. Mr. Keene refused \$200,000 for him, and on one occasion it is said that John W. Gates drew from his pocket a blank check, signed his name to it, and handed it to Keene, telling him to fill it out and deliver the horse to him, which the latter promptly refused. It is doubtful if a round million would have induced his owner to part with him. It is to be regretted that he had no opportunity in the stud.

BUREAU OF ANIMAL INDUSTRY.—The following circular was issued by the Civil Service Commission on June 14: "The United States Civil Service Commission announces an examination on June 25, 1906, at the places mentioned in the accompanying list, to secure eligibles from which to make certification to fill 150 vacancies, more or less in the position of veterinary inspector (male), at \$1,200 per annum each, in the Bureau of Animal Industry, Department of Agriculture, due to the contemplated provisions in the appropriation for that Department for the fiscal year ending June 30, 1907, and other similar vacancies as they may occur in that Bureau. Attention is invited to the fact that the supply of eligibles for this position has not been equal to the demand. Qualified persons are therefore urged to enter this examination. The examination will consist of the subjects mentioned below, weighted as indicated: 1. Spelling (twenty words of average difficulty in common use) 5; 2. Arithmetic (simple tests in addition, subtraction, multiplication, and division of whole numbers, and in common and

decimal fractions and United States money) 5; 3. Letter-writing (a letter of not less than 125 words on some subject of general interest. Competitors will be permitted to select one of two subjects given) 5; 4. Penmanship (the handwriting of the competitor in the subject of copying from plain copy will be considered with special reference to the elements of legibility, rapidity, neatness, general appearance, etc.) 5; 5. Copying from plain copy (a simple test in copying accurately a few printed lines in the competitor's handwriting) 5; 6. Veterinary anatomy and physiology 15; 7. Veterinary pathology and meat inspection 30; 8. Theory and practice of veterinary medicine 30. Total 100. The last three subjects include general questions on anatomy and physiology, a consideration of the pathology of diseases in general, and such special pathology as is characteristic in the diseases common to food-producing animals. The symptoms, diagnosis, and treatment of diseases incident to domesticated animals will be considered, also the laws and rules promulgated for the regulated inspection of meats. Seven hours will be allowed for the examination. Age limit, 20 years or over on the date of the examination. Applicants must be graduates of veterinary colleges. Those graduating prior to or during 1897 will be admitted if from colleges having a course of not less than two years in veterinary science; applicants graduating since that time must be from colleges having a course of not less than three years, and must have spent at least two years in the study of veterinary science in such colleges. These facts must be shown in the application. This examination is open to all citizens of the United States who comply with the requirements. Applicants should at once apply either to the United States Civil Service Commission, Washington, D. C., or to the Secretary of the Board of Examiners at any place mentioned in the accompanying list, for application Form 1312. No application will be accepted unless properly executed and filed with the Commission at Washington. In applying for this examination the exact title as given at the head of this announcement should be used in the application. As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will therefore arrange to examine any applicant whose application is received in time to permit the shipment of the necessary papers."

VETERINARY MEDICAL ASSOCIATION MEETINGS.

Secretaries are requested to see that their organizations are properly included in the following list.

Name of Organization.	Date of Next Meeting.	Place of Meeting	Name and Address Secretary.
American V. M. Ass'n.	Aug. 21-24, '06	N. Haven, Ct.	J. J. Repp Phila., Pa.
Vet. Med. Ass'n of N. J.	July 12 13, '06	Asbury Park.	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.	Call of President	New Haven	B. K. Dow, Willimantic.
New York S. V. M. Soc'y.	Sept. 11-12 13	Buffalo.	G. T. Stone, Binghamton.
Schuylkill Valley V. M. A.	June 20.	Reading.	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.	Monthly.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.	Call Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.	Monthly	Boston.	F. J. Babbitt, Lynn, Mass.
Maine Vet Med Ass'n.	July 9, 1906.	Augusta.	R. E. Freeman, Dexter.
Central Canada V. Ass'n.	.....	Ottawa.	A. E. James, Ottawa.
Michigan State V. M. Ass'n.	State Fair week	Detroit.	Judson Black, Richmond.
Alumni Ass'n N. Y.-A. V. C.	April, 1907.	141 W. 54th St	W. C. Miller, N. Y. City.
Illinois State V. M. Ass'n.	July 12, 1906.	Bloomington.	F. H. Parr, Pana
Wisconsin Soc. Vet. Grad.	Call of Pres t.	Sheboygan.	S. Beattie, Madison.
Illinois V. M. and Surg. A.	.....	Decatur.	C. M. Walton Rantoul.
Vet. Ass'n of Manitoba.	Not Stated.	Winnipeg	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n.	.....	.....	T. B. Carroll, Wilmington.
Ontario Vet Ass'n.	.....	.....	C. H. Sweetapple, Toronto.
V. M. Ass'n New York Co.	Vacation.	141 W. 54th St	D. J. Mangan N. Y. City.
Ohio State V. M. Ass'n.	.....	Columbus.	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n.	1st Wed. ea. mo	Pittsburgh.	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n	.....	.....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n.	July 12, 1906.	Roch't'r, N. Y.	J. H. Taylor, Henrietta, N. Y.
Iowa State V. M. Ass'n.	.....	.....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n	July, 11, 12, '06	Minneapolis.	C. A. Mack, Stillwater.
Pennsylvania State V. M. A.	.....	.....	C. J. Marshall, Philadelph
Keystone V. M. Ass'n.	2d Tues. May	Philadelphia	A. W. Ormeston, '02 Her-
Colorado State V. M. Ass'n	1st Mon. in June	Denver.	man St., Germantown, 'a
Missouri Valley V Ass'n	June 18-19	Omaha, Neb.	M. J. Woodliffe, Denver.
Rhode Island V. M. Ass'n.	June and Dec.	Providence.	B. F. Kaupp, Kansas City
North Dakota V. M. Ass'n.	.....	.....	T. E. Robinson, Westerly, R I
California State V. M. Ass'n.	Mch. Je. Sep, Dec	San Francisco	J. A. Winslow, Cooperstown,
Southern Auxiliary of Califor	.....	.....	C. H. Blemer, San Francisco.
nia State V. M. Ass'n.	Jan. Apl. Jy, Oct.	Los Angeles.	J. A. Edmons, Los Angeles.
South Dakota V. M. A	July, 1906.	Brookings	E. L. Moore, Brookings.
Nebraska V. M. Ass'n	.....	.....	Hans Jensen, Weeping Water
Kansas State V. M. Ass'n.	Jan. 8-9, '07.	Topeka.	Hugh S. Maxwell, Salina,
Ass'n Médecine Vétérinaire	1st & 3d Thur.	Lect R'm La-	J. P. A. Houde, Montreal.
Française "Laval."	of each month.	val Un'y Mon	.....
Alumni Association A. V. Col.	April each yr.	New York	F. R. Hanson, N. Y. City.
Province of Quebec V. M. A.	.....	Mon. & Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n	.....	.....	D. A. Piatt, Lexington.
Washington State Col. V. M. A.	Monthly	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association.	.....	.....	E. M. Bronson, Indianapolis.
Iowa-Nebraska V. M. Ass'n.	.....	.....	A. T. Peters, Lincoln, Neb.
Louisiana State V. M. Ass'n.	.....	.....	E. P. Flower, Ba on Rouge.
Twin City V. M. Ass'n.	.....	.....	S. H. Ward, St Paul, Minn
Hamilton Co. (Ohio) V. A.	.....	Cincinnati.	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n.	August, 1906.	Agricultural	J. C. Robert, Agricultural
		College.	College

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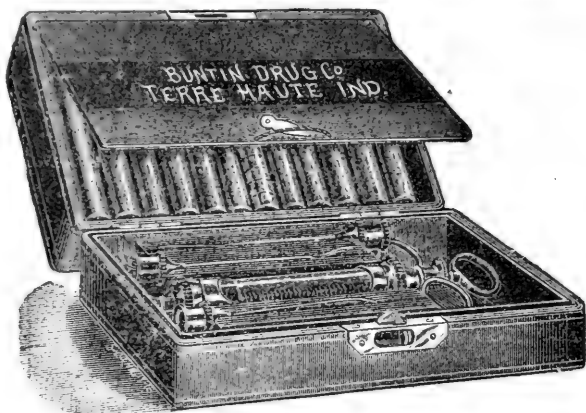
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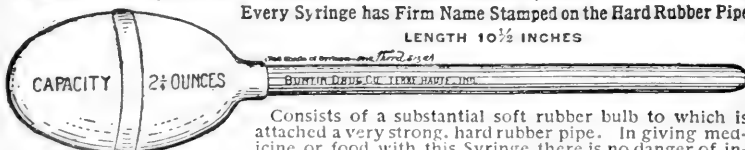
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AMERICAN VETERINARY REVIEW.

AUGUST, 1906.

Correspondents will please note the change in address of Dr. Roscoe R. Bell, from Seventh Avenue and Union Street, to 710 East Second Street, Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, June 24, 1906.

THE UNVEILING OF THE MONUMENT TO NOCARD.—I have just returned from Alfort, and want the REVIEW to have this news as quickly as possible and as early as it will be published in Europe. As I wrote our American friends some time ago, to-day was selected for the ceremony of unveiling the Nocard Monument.

If the subscription has been international, and if funds have been contributed from every part of the world, the representation from veterinarians has not been. Thousands were present, of course; but they were French veterinarians. Dr. Lyd- tin, of Baden, was the official delegate from German veterinary societies; Dr. Perroncito, from Italy; a few from Belgium were also there—but those were all. Letters of excuse, however, were many. Our esteemed friend, Dr. William Dougherty, of Baltimore, and myself took upon ourselves to represent the United States—not officially, however. American veterinarians contributed too handsomely to the fund to have their admiration for Nocard stop there.

The ceremony resembled all similar occasions. Handsome decorations, plenty of good music, very large attendance, and with all that comparatively fine weather, made the whole thing a perfect success. There were several speeches made. Prof.

Chauveau, although eighty years old, and of delicate health, delivered a masterly review of the work done by Nocard. Prof. Leclainche, of Toulouse, as one of his scholars and co-workers; Dr. Roux, of Pasteur Institute, as one of his intimate friends, and several others, told the audience many peculiarities of the life of the subject of the ceremony. The Secretary of Agriculture, who represented the Government of the Republic, took advantage of the ceremony to deliver several decorations.



It is unnecessary for me to review in this short notice the speeches that were made; I may do so later on. I enclose a view of the Monument, which has been placed in the *Cour d'honneur* of the Alfort School, in company with the statues of Bourgelat and Henri Bouley.

* * *

CONCLUSIONS FROM THE MELUN EXPERIMENTS.—The last reports on the experiments at Melun to test von Behring's

bovovaccine has been made public, and the following scientific conclusions have been presented.

(1.) A first mild and cured attack of tuberculosis confers to the organism a very marked, but incomplete, resistance to a new infection.

(2.) Vaccination by Behring's method is harmless for animals kept, during the time necessary for immunization and the six consecutive weeks, away from all accidental infection.

(3.) Vaccination permits the animals to resist for several months natural contagion by cohabitation with infected animals.

(4.) The method grants a resistance truly great to the most severe modes of experimental infection.

(5.) The immunizing bacilli used by Behring constitute true vaccines. Indeed, they are resorbed in subjects kept in media free from contamination, without giving rise to pulmonary lesion, or its annexes, lymphatic glands, and without leaving virulent remains, as observed by the authors who have used as vaccine human bacilli insufficiently attenuated.

(6.) Perfect emulsion of the vaccine is essential for the innocuity of the operation.

(7.) It is indicated not to vaccinate any subject which presents signs of pulmonary trouble.

(8.) The immunity conferred by Behring's method against tuberculosis is not absolute; as for all bacterian diseases, it can be overcome by the inoculation of a strong dose of virus.

(9.) The persistent presence in bronchial glands of the vaccinated animals of virulent bacilli introduced during the control tests cannot be considered as against the method; the bacilli of Koch, even killed by various processes, are very slow to resorb.

(10.) These conclusions are limited only to the Melun experiments, which, after all, are only a large laboratory test, and they cannot extend to interference in an infected centre.

The report of the complete experiment has been published, and I will be glad to send a copy to any of our friends who may ask for it.

MILK AND TUBERCULOSIS AGAIN.—Dr. A. Calmette, the Director of the Pasteur Institute of Lille, in France, has just claimed a discovery which is causing a certain sensation. Up to the present time it is said that milk is not dangerous providing it is sterilized. Boiling it at 100 degrees for five or six minutes seems to be the best precaution against possible infection with tuberculosis. Late experiments by Dr. Calmette and Mr. Breton upset this idea. In a communication made to the Academie des Sciences, Dr. C. declared that after years of study and repeated experiment, he came to the conclusion that the ingestion of tuberculous products, even when sterilized by heat, was dangerous for subjects already affected by tuberculosis, and could be injurious for animals free from that disease. The experiments were conducted on guinea-pigs. Six of these eat dried bacilli; six others received injections of the same bacilli into the peritoneum. Two weeks after, they received in six meals, at intervals of five days, five milligrammes of bovine bacilli, at each time, heated at 100 degrees during five minutes, and mixed with cut-up carrots. All the pigs of the first series lost flesh rapidly and died on an average in forty-one days. Those that had received injections died in thirty-one days. Among the pigs used as witnesses, two died in thirty-seven days, the others lost considerable flesh.

Consequently, the repeated ingestion of small quantities of tuberculous bacilli, killed by heat, hastens death considerably, as would also the repeated injection of small doses of tuberculin. With healthy animals those dead bacilli give rise sometimes to serious disorders absolutely similar to those observed when non-tuberculous animals are made to eat small doses of tuberculin.

Final conclusion: Milk, even sterilized, must be prohibited from use for food with man, and especially for children, if it comes from tuberculous cows. Sterilization is powerless in removing all danger. Milk containing dead tuberculous bacilli stimulates the development of tuberculosis in those that are affected with it.

THE ENTRANCE OF AIR INTO VEINS.—I have recently read an extract from the *Archiv für Wissenschaftliche und Praktische Tierheilkunde* relating to this subject by Dr. Richter, of the Dresden Veterinary School, which may be considered as one of actual interest at present, when intravenous injections have entered the domain of daily practice. Many experiments have already been made, and still opinions differ very much as to the result of this accident. For instance, Kitt and Vogel fear the entrance of a few bubbles of air into a syringe of Pravaz. For Moeller a small quantity of air is without danger, although sometimes it is followed by death; and, again, even very large quantities are harmless.

Bayer doubts a fatal result, and Hare does not believe that death ever takes place.

To solve the question, experiments are necessary. Cases of death by *æramia* have been often recorded. The experiments of Wepfer, as it is called, is but a manner of killing animals by introduction of air into their veins, and many are the authors who have recommended it—Chabert, Rey, Peuch, Vachetta, Passet, and others. Dr. Richter has also experimented, first upon eleven horses. In the exposed jugular he introduced a rubber tube, through which he blew his own breath by two or three insufflations. The effect was positive in all the cases; his eleven horses died, and since then he has killed in a similar way four horses, three dogs and seven rabbits. "I consider," says Dr. Richter, "as sufficiently proved that the entrance of air into veins can be followed by death."

* * *

In the presence of such authority, I hesitate to mention, however, only one experiment that I made many years ago. I had read records of fatal cases following the accident and wanted to see the effects. I had a horse to destroy. I opened his jugular, introduced a blow pipe, and blew into it a small quantity of air. I waited; no result—no change. I renewed the insufflations, and kept them up for a short time. It gave rise, of course, to great general disturbance of respiration and

circulation, but after several hours I was obliged to kill the poor brute, which was suffering greatly.

Was the first step of my experiment imperfect, and the quantity of air insufficient? Was it necessary that a larger quantity be introduced? What quantity of air may cause death? Dr. Richter answers. He has made experiments upon 40 horses, injecting with the syringe of Pravaz of 40 c.c. size, 10, 30, 40, 100, 200 c.c., etc., without producing alarming symptoms, in 21 horses. In others he injected 1,000 c.c. without interruption. One only exhibited some disturbance of its equilibrium. The conclusion is that that quantity (1,000 c.c.) is the extreme dangerous limit. If the injection is more than one litre, the animals become sick and *surely die after the insufflation of eight litres.*

* * *

What is the cause of death after the entrance of air in a vein? For many, the heart is dead. But Vachetta, Passet, Wolf and others have seen the heart beating after death. Panum, Ribbert, Hauer, Passet, Wolf, have observed that the heart is distended by foaming blood, and also the pulmonary artery. *The interference in the circulation of that artery and its ramifications by air mixed with the blood soon gives rise to the complete arrest of the blood, and is the cause of death,* says Dr. Richter. Yet another supposition might be entertained, viz.: *a gaseous embolus of the arteries of the brain: a possibility which can be admitted, not only in the bloodvessels of the brain, but also in those of the spinal cord, of the heart, etc., and yet is realizable only when more than one litre of air has been injected. Dr. R. considers the lung as constituting the natural protection of the organism against air entering the veins, which would constitute for the organism a great danger if it was not "filtered out" in the lung.*

* * *

The therapy against gaseous emboli is powerless. Venesection seems to have succeeded in a few cases. Prophylaxy, by careful attention in the steps of a surgical operation to

prevent the introduction of air, is the important question.

* * *

CHANGES IN ANIMAL TEMPERATURE UNDER VARIOUS INFLUENCES.—Numerous are the observations that have been recorded upon the changes of animal temperature under various influences. Dr. Richter, of Dresden, has made known a new series of researches, which have been published in several European scientific organs. The conclusions resumed in Leclairche's *Revue* are as follows :

(1.) Any movement gives rise to an elevation of temperature.
 (2.) The surrounding temperature being at 21°C ., after a long walk, a rise maxima of 0.4° is an average obtained after 48 minutes.

(3.) During a trot, the thermometer rises slightly during the first 15 minutes ; it increases after 25 to its maxima up to 1.55° , the surrounding temperature being 18.5° .

(4.) The highest elevation, observed after a long trot, has been 2.5° .

(5.) After a long exercise, either walking or trotting, the temperature reaches its highest point more or less rapidly, in general to run down afterwards.

(6.) The proportion of the hyperthermies observed after walking and trotting is as 1 : 7.5.

(7.) After a walking exercise of 60 to 90 minutes, the temperature rises gradually, to return to normal about 75 minutes after.

(8.) After a trot of 20 to 30 minutes, the temperature runs down rapidly during the first quarter of an hour, and slower afterwards, to return to normal on an average in two hours.

(9.) The duration of the running down of the temperature is not in proportion to its rising.

(10.) Sex, breed, or age, have no influence upon the rising or dropping of the temperature.

(11.) There is no difference in the thermic variation between healthy horses and those that suffer from surgical diseases.

(12.) In horses affected with diseases of the respiratory apparatus, except heaves, the hyperthermia after a trot goes one-tenth of a degree higher than with sound horses. After two hours' rest the temperature is still higher than the normal by an average of 0.15° in 40 per cent. of the diseased animals.

(13.) There is no difference in the variations between healthy horses and those which have heaves.

(14.) With these last, the dropping of the temperature is very slow: in the first quarter of an hour it is only one-eighth of the rising; after two hours, the temperature is still 0.4° above the normal, and 0.35° after two hours and a half.

(15.) The quickest dropping observed in emphysematous horses has been one hour and three-quarters.

(16.) In horses suffering with immobility, the rise after a trot is 0.45° less than in healthy animals.

(17.) A sub-febrile temperature of 38.5° is reached in dummy horses after 15 minutes' rest and in about three-quarters of an hour in all others.

* * *

A "DUNG-BAG" FOR CITY HORSES.—Years ago a man came to my office with an idea which he thought he would patent, and he wanted my opinion on his invention. This consisted in the application of a basket to receive the droppings of a horse while at work, with the main object of having the streets of New York kept cleaner. The idea might be considered as good, but the plan was simply horrid—the basket secured under the animal's tail by some means or other, I do not now remember.

I merely recall this incident to show that, after all, the old proverb finds daily application: "there is nothing new under the sun." Our contemporary, the *Veterinary News*, in its issue of May 5, under the title of "The Cleanliness of Our Public Thoroughfares," calls the attention of its readers to an arrangement having the same object, and is the invention of Dr. J. A. Calantarients, of Scarborough. "It consists of a suitable receiver or dung-trap fixed to some convenient part of the

vehicle, as the axle of the front wheels, for example, and a shoot or collector of some flexible waterproof material attached at one end to the breech-strap and at the other end to an outlet tube extending from the top of the receiver in the direction of the animal's breech. The receiver or dung-trap contains an open-topped drawer or removable lining, which can be withdrawn and replaced by its handle at the back of the receiver. The shoot or collector has an expanded trough-like shape near the breech just large enough to catch the dung, but narrows down to the diameter of the inlet tube. . . . Whether the animal is standing or running, its dung is caught by the shoot or collector and travels by gravity along the same into the removable drawer, which can be removed, emptied and cleaned periodically. There is a valvular arrangement at the inlet tube of the receiver to allow the dung to pass freely into the receiver, but to prevent any smell coming out."

* * *

REEKS' "DISEASES OF THE HORSE'S FOOT."—I had read in the English veterinary journals notices and reviews of a new work, "Diseases of the Horse's Foot," by H. C. Reeks, F.R.C. V.S., and, ignorant that a copy had been sent to my co-editor for review in our monthly, I wrote Mr. Alex. Eger, the American publisher, for a copy of the book, which he very kindly sent to me, and for which I here thank him. In the meantime, the REVIEW for April reached my office, and there also I read the pompous article offered to our readers. I was naturally much interested, and regretted my demand upon the Chicago publisher, when the book came a few days later. One can imagine how I examined it. I will be frank: I was disappointed. Not that the book is bad—far from it; but I have failed to discover in it the wonderful superiority I expected, and all I could say when I got through was, as the English reviewers had said: It is an "interesting and instructive compilation," presented "under the form of a very useful, practical and serviceable manual." It is well arranged, has some good illustrations, and improves the descriptions by the records of a

few interesting cases. There is, however, among the plates one (Fig. 43) which is puzzling to me. I cannot very well see how this method of adjusting a side-line preparatory to fixing the hind leg upon the fore can be carried out; if it is, it must be with much more difficulty than with the methods described in other classical works. But, perhaps the plate is badly made. Yet the description agrees with it. However, it is not of very great importance, and can scarcely diminish the value of the work, for which the author deserves credit.

* * *

A NEW WORK ON THE EXTERIOR OF THE HORSE.—Every member of the veterinary profession, and, I might add, every connoisseur of horses in America, knows of that excellent work, "The Exterior of the Horse," the translation that Prof. S. J. J. Harger, of Philadelphia, made of the French work of Goubaux and Barrier. It would seem that this magistral work would have reached, as a classical book, the boundaries of excellency to which one could pretend, and that no other work on the subject could be published. It seems not. Why? Because, although superior as it is, it is a work to which all interested in horses must refer, and, yet, on account of its size, it is not sufficiently didactic, and, above all, because it is limited to the study of the external forms of the horse, and ignores the other principal domestic mammalia, with which the veterinarian ought to be as familiar as with the horse.

A new work has just been issued, by the house of Houzeau & Asselin: "Précis d'exterieur du Cheval et des principaux mammiferes domestiques" ("Compendium of the Exterior of the Horse and of the Principal Domestic Mammalia"), by Prof. F. X. Lisbre, of the Lyon Veterinary School, comes more as a classical work, which offers the students in veterinary schools the opportunity to obtain a knowledge that no other similar work presents.

Let me analyze briefly. After the introduction, the first chapter is on the eye of horses, donkeys, mules, cattle, sheep, goats, camels, lamias, swine, dogs and cats. The second chap-

ter treats of the coats and their peculiarities in horses, other solipeds, large and small ruminants, swine, dogs and cats, with consideration of the description of an animal. The third and fourth chapters are on the centre of gravity, attitudes and movements and gaits. In the fifth chapter we come to the study of the various regions of the body—the trunk and the extremities, with their individual subdivisions. In this chapter, as in the first and second, the differences in the other animals are also considered. Proportion in horses, other solipeds, and in cattle, occupy the sixth chapter. The seventh treats of the selection of saddle and draught horses. The eighth speaks of the examination at the time of sale.

The Compendium is a work of nearly 450 pages, handsomely gotten up, and is illustrated by 280 figures, some of which are very good, several are inferior, and many rather poor. They spoil the appearance of this excellent addition to veterinary literature.

* * *

DEGREES IN VETERINARY MEDICINE.—I have been favored by a concise announcement from the Washington State College at Pullman, which brought the pleasing news of the establishment of a four-year course in veterinary science, which will lead to a Bachelor's Degree. Indeed, in that announcement it is stated that the curriculum of the Department of Veterinary Science will cover four years of two semesters each and that the graduates will receive the degree of *Bachelor* in Veterinary Science. On another page of the announcement it is stated that in the School of Veterinary Science the curriculum will be only three years of two semesters each and that the graduates will receive the degree of *Doctor* in Veterinary Medicine.

Here I am puzzled. In my copy of Webster's Dictionary I am told that a Baccalaureate or degree of Bachelor is the *first* or *lowest* academic degree conferred by universities and colleges, and that a Doctor is one who has taken the *highest* degree conferred by a university or college, or has received a diploma of the highest degree.

As the curriculum is about the same in the two schools in question, with perhaps covering more subjects in the former, where economic science, English, German, and pharmacy Latin are introduced, I am at a loss to explain why a Baccalaureate (inferior degree) should ask four years when the Doctorate (superior degree) requires but three.

Anyhow, the increase to four years is a good move, and the Washington State College deserves credit for being one of the first to inaugurate it.

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COMMUNICATIONS AND PAMPHLETS RECEIVED.—In the *Agricultural Journal of the Cape of Good Hope*, April issue, an article by Tho. Bowhill, F.R.C.V.S., covering the subject of pasteurella of adult cattle, of sheep, goats, swine, horses, and ostriches.

In the "Abstracts of the Laboratory of Veterinary Physiology and Pharmacy of the New York State Veterinary College," sent to me by Prof. P. A. Fish, I find articles on "Urethral Calculus," "The Effect of Sulphurous Acid upon Peptic and Tryptic Digestion," "Status of Therapeutics," "Effect of Sulphurous Acid upon the Urinary Constituents," all by Prof. Fish. By H. J. Milks, "Arecolin Hydrobromate;" by A. J. Beverley, "Ergot as an Abortifacient;" by F. McNair, "The Structure and Function of the Digestive Tract of the Chicken."

I have received also a reprint on "The Rapid Diagnosis of Rabies," by Dr. Langdon Frothingham; the report of State Veterinarian L. Van Es, to the Governor of North Dakota; a number of pamphlets from the Bureau of Animal Industry, among which I notice: "Etiology of Hog Cholera," by Drs. Dorset, Bolton and McBryde; "External Parasites of Hogs," by Dr. E. C. Stevenson; "The Gid Parasite in American Sheep," by B. H. Ransom; "Cattle, Sheep and Hog Feeding in Europe," by W. J. Kennedy; "*Bacillus Necrophorus* and Its Importance," by Dr. J. R. Mohler and G. B. Morse; "Necrotic Stomatitis," by the same authors; "Texas Fever with Method for Its Prevention," by Dr. J. R. Mohler, and a note on the

“Life History of the Twisted Wireworm of Sheep and Other Ruminants,” by B. H. Ransom. A. L.

GOVERNMENT INSPECTION OF MEATS.

In the July number of this publication the above subject was reviewed in its various aspects, not alone the sensational methods adopted to secure a very desirable law, and the consequent paralysis of the export trade in American meats, but we there made a very positive prediction that when the smoke had cleared from the battlefield it would be found that conditions were not nearly so bad as they had been painted by an out-of-place literary romancer and a committee of amateurs sent to do work which should only have been entrusted to experts of national reputation. The more one contemplates this peculiar selection of a committee whose report meant so much to American live-stock interests, the more does the action of the President seem out of harmony with his usual thorough conception of great problems.

We confess to having been imposed upon by the lay press in the matter of the *personnel* of the committee of experts selected by representative commercial and scientific associations of Chicago, for in our narrative of its formation appears the name of a mythical *Dr. Hektoen*, instead of that of our distinguished collaborator, Dr. M. H. Reynolds, professor of veterinary science in the University of Minnesota. This committee made a careful study of the conditions in the large packing-houses of Chicago, working conscientiously for two weeks, and, in the words of a member of it, “made an honest report.” Our prediction in the July number concerning the anticipated findings of this committee was: “We venture to say that there will be a vast modification of the accounts that have preceded it;” and we print the conclusions of that body in justification of our prophetic vision: “As a result of this investigation we ourselves have no hesitancy in stating that the meat products of the well-known firms at the Yards are wholesome and proper for food.”

Some criticism is made of ventilation facilities, toilet rooms and old floors. But they fail utterly to produce any justification for the harrowing stories furnished by "The Jungle" or the President's committee, and it thus becomes a scientific refutation of the reports which have cost the country so much in money and so dearly in reputation. In a review of this document by one of the leading stock papers of the country, the *Breeder's Gazette*, it says: "The entire tenor of the report is such that it deepens the regret at the precipitate action, *based on misleading information*, which has thrown American goods into disrepute the world over. The (committee's) report should be bulletined abroad as widely as the report of the two untrained observers, to whose report all the damage to trade has flowed."

What has been done, however, cannot now be helped, and the patriotic thing to do under the circumstances is for all to unite in a grand effort to impress the world with the fact that the United States now has the safest law for the consumer on earth. Not a pound of meat nor meat products can clear from a port of this country unless it bears the Government label, and the Secretary of Agriculture can be thoroughly relied upon to withhold its stamp of approval unless the law has been rigidly complied with "from the pasture to the package," as well as in the sanitary conditions under which it was prepared.

Elsewhere we print the "Meat Inspection Bill" in full, and commend its careful perusal to all veterinarians. A vast army of inspectors are needed to carry out its provisions, and it is likely that, in securing this large number where so few of our best men are willing to accept such position at the low salary which it carries, many incompetents will be accepted, and the service may suffer some in its *personnel*. Having dealt so liberally with the whole subject in the matter of appropriation, Congress could have redeemed itself by raising the efficiency of the service through increasing the pay of the inspectors to a sum commensurate with the character of the work demanded.

In another section of this number we reprint an editorial

from the representative stock paper referred to above calling for the establishment of a veterinary college at the Union Stock Yards at Chicago to give special training in meat inspection in connection with the great clinical advantages offered by the location.

While the REVIEW is at variance with the policy pursued in bringing about needed reforms in the inspection service, it has no quarrel with the results secured by the veterinary profession. So far as the latter is concerned, such an uplift could not have been obtained for this branch of our science in a decade of the most rapid progress we could have hoped for.

We make one more prediction :

In five years from the present date, no man having knowledge of live-stock conditions can be found who will not acknowledge that the end justified the very harsh means employed.

THE ASSOCIATION OF FACULTIES.

Do not forget that the Association of Veterinary Faculties and Examining Boards will hold its first meeting since its re-organization at New Haven during the A. V. M. A. meeting. It should be fraught with vital importance to the welfare of veterinary education in America, which is greatly in need of some harmonizing and strengthening influence. At last year's meeting the President, Dr. W. Horace Hoskins, was instructed to appoint a committee of three from each of the factors composing the organization (the colleges, the examining boards, and the A. V. M. A.) to present a plan to realize the objects of the organization. We sincerely trust that the duties imposed upon its President have been fulfilled, though we have not heard of any such movement. Dr. Tait Butler, Raleigh, N. C., is Secretary, and has been corresponding with those likely to take active interest in its affairs, urging them to come prepared to contribute to the solution of the problems which the Association was organized to solve.

ALL ROADS LEAD TO NEW HAVEN.

Most veterinarians who can will turn their footsteps toward the beautiful city in Connecticut which will this year be the seat of the annual meeting of the American Veterinary Medical Association. The REVIEW is glad to be able to present in this number a detailed program of all that has been arranged for the benefit and comfort of the members and guests, including the papers, the clinic, the exhibits and diversions, together with the arrangements for travel and accommodation.

We felicitate the Association upon the prospect of a great gathering of veterinarians, and a season of much educational value and social pleasure.

The REVIEW for September will give a faithful picture of the salient points of interest, so that those who are prevented from attending may be recompensed so far as descriptive writing can do so.

DR. SALMON GOES TO URUGUAY.

Dr. Daniel Elmer Salmon, late Chief of the United States Bureau of Animal Industry, has accepted a position with the Uruguayan Government to organize and conduct a department upon somewhat similar lines to the one which he instituted and brought to such a high state of perfection in this country, and for which grand work he was so poorly paid and shabbily treated. Although his new government is but an infant when compared with that to which he gave the most vigorous years of his life, his salary is considerably larger, being \$6,000 in gold and all of his living expenses.

The entire veterinary profession of America wishes him unbounded success in his new field, and many years of health and happiness.

CIVIL SERVICE examinations to fill vacancies in the meat inspection service were held all over the country on June 25, and another is called for Aug. 8.

ORIGINAL ARTICLES.

SYMPTOMATIC ANTHRAX.

BY CHARLES F. DAWSON, M. D., D. V. S., VETERINARIAN FLORIDA
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Synonymy.—Black-leg; black-quarter; quarter ill; (Ger.), rauschbrand; (Fr.), charbon symptomatique; emphysematous anthrax.

Definition.—An acute, fatal, infectious, bacterial disease of cattle, manifested by fever, anorexia, lameness, hot, painful tumors on the neck, shoulder, back, thigh or elsewhere, which become emphysematous and exude black, frothy blood when excised.

Geographical distribution.—It prevails as a local disease in Europe, Asia, Africa, Australia and North America. Hence, climatic conditions do not govern its distribution. In America, it prevails extensively in the cattle-raising States, and to a lesser extent in nearly every State of the Union. It is least prevalent in winter. Outbreaks are most frequent in the spring and in dry seasons. In damp, undrained, uncultivated pastures, the disease prevails to a greater extent than in drained, cultivated pastures. A pasture becomes infected by a first case, or by the droppings of carnivorous birds and dogs that have eaten the carcasses, and by streams and air currents. Infected pastures may remain as such for a number of years, this being especially true of uncultivated pastures having a clay subsoil.

Animals susceptible.—The disease usually occurs in animals six months to two and one-half years old, but may attack those younger or older. Fat yearlings are most susceptible, while suckling calves are rarely affected. This latter peculiarity may be explained by the fact that the suckling calf is a carnivorous animal, or that it is protected for the time being by an immunizing principle in the milk of the dam. The vast majority of

the older animals resist the disease probably because of immunity naturally acquired by previous mild attacks. In cattle where black-leg appeared for the first time, it is probable that animals of all ages would contract the disease. While the disease is primarily one of cattle, it sometimes attacks sheep and goats. Experimentally, it may be inoculated into sheep, goats and guinea-pigs, as well as cattle. Horses, asses, mules, dogs, cats, swine, poultry, rabbits and man are insusceptible; that is to say, the microbe of the disease will not grow in the bodies of these animals under ordinary circumstances. Some immune animals can be made susceptible by the subcutaneous injection of mixed cultures of the bacillus of black-leg and *Bacillus prodigiosus*, or with *Proteus vulgaris*; by the simultaneous injection of an organic acid; by insoluble substances, such as plaster of Paris; by dirt and hair that may be carried under the skin by the inoculating instrument; by mechanical injury to the tissues from blows and surgical operations. An animal inoculated at a given point, and operated upon at another point, will likely develop the disease at or near the point operated upon. In the experience of the writer, a guinea-pig was inoculated with black-leg virus in the thigh. The skull was then trephined. The animal promptly died of black-leg, localized in the face and neck muscles. If sterilized, old cultures of the black-leg bacillus be injected subcutaneously or intra-abdominally into rabbits, the animals will die of a rapidly-progressive emaciation, or toxæmia. The results would probably be the same where the carcasses of animals dead from black-leg were eaten by some carnivorous animals, or by man.

It is well-known that black-leg is more fatal to grades and pure-breds than to common stock; also that an animal in fine condition will take the disease more readily than one in poor condition. This is explained on the theory that in the prime animal, the microbe finds a more suitable pabulum in which to multiply. Infection may occur in punctured wounds, scratches, or through abraded portions of the alimentary tract.

Spores may be absorbed and deposited by the blood in

distant parts where they find suitable conditions of growth.

Etiology.—The cause of black-leg is a rod-shaped bacillus, measuring from 3 to 10 micromillimetres in length and about 0.5 micromillimetres in breadth. It forms spores, and when sporulating, the bacillus becomes shorter and thicker. It is known under several names: *Bacillus anthracis symptomatici*, *Bacillus chauvæ*, *Bacillus of Rausbrand* and *Bacillus anthracis emphysematosi*. The spore is formed in the body of the bacillus and it may be located either in the end or centre of the cell. In the former case, the bacillus becomes club-shaped and in the latter, it assumes a spindle shape. Spores frequently form in the animal body, a point in differential diagnosis between this microbe and that of *malignant œdema*, which it greatly resembles. Biologically considered, the microbe of black-leg is an anærobic, motile, spore-bearing, rod-shaped organism, having a morphology which varies with its culture medium. It ferments weak solutions of glucose with the simultaneous production of CO₂, and an explosive gas. Under anærobic conditions, it grows well on all ordinary culture media, liquefying gelatine. Being a strict anærope, it cannot multiply in the circulating blood. When it is present in the blood, it has gotten there by absorption from local lesion. It is found in the blood extravasations of the local lesions when the blood in these situations has become stagnated and saturated with toxin. Its spores may be found in all the more vascular organs of the body. It begins to multiply only when inoculated, either by accident or design, into the non-vascular connective tissue. Hence the organism may be injected into the circulating blood, and not cause the disease. If, however, the operator allow the microbe to enter the connective tissue of the wall of the artery or vein, or other parts the disease will promptly set in. In cultures, and in the disease-exudate, the microbe may be observed varying in its morphology as follows: 1st, as straight, motile bacilli of uniform thickness throughout, singly and in pairs; 2d, as spindle-shaped, club-shaped, spore-bearing bacilli, the shape being determined according as the spore is located cen-

trally, or at the pole of the cell; 3d, as free spores which have been set free by the degeneration of the cell-wall and contained protoplasm.

Black-leg may be confounded with anthrax and malignant œdema; hence, for the sake of brevity and conciseness, the following table stating the main biological characters of the microbe of each of these diseases is given below:—

<i>Bacillus of Black-Leg.</i>	<i>Bacillus of Anthrax.</i>	<i>Bacillus of Malignant Œdema.</i>
3-10 microms \times 0.5 microms Ends rounded.	5-10 microms \times 1.25 microms Ends square.	3-5 microms \times 1 microm. Free ends rounded. Ends in apposition square.
Occurs singly and in pairs. Does not form filaments. Anaerobic. Motile, Sporulates in living body.	Occurs in chains. Does not form filaments. Ærobic. Non-motile. Does not sporulate in living body.	Occurs in chains. Forms filaments. Anaerobic. Motile. Does not sporulate in living body.
Does not multiply in blood stream	Multiplies in blood stream.	Does not multiply in blood stream.
Fatal principally to cattle. Ferments sugars. Produces gas Not fatal to rabbits. Tumors large and gassy.	Fatal to most animals. Does not ferment sugars. Does not produce gas. Fatal to rabbits. Tumors small and hard	Not fatal to cattle. Ferments sugars. Produces gas. Fatal to rabbits. Tumors large and gassy.
Bacillus and spores present in decomposed body.	Bacillus decompose with body. Spores only present.	Bacillus and spores present in decomposed body.

Effect of disinfectants.—As with all other spore-bearing microbes, that of black-leg is very resistant to the disinfecting effects of heat, chemicals, light and desiccation. While the vegetating microbe is very readily killed, the spore will live for years in the soil, buildings, harness, etc. It may be subjected to cold many degrees below zero and yet retain its virulence. It may be heated in dry air at 200° F. for an hour without being destroyed, although its virulence will be somewhat lessened. If subjected to super-heated steam for 20 minutes, it is destroyed; but will retain its vitality in boiling water for an hour. In practise, none but the more potent chemical reagents need be employed as disinfectants, namely: mercuric chloride, in 10 p.c. solution, carbolic acid, in 5 p.c. solution, the dilute mineral acids, quick-lime, chloride of zine, and strong solutions of any of the recently invented coal-tar disinfectants, fire.

Symptomatology.—The disease runs a rapid course, ending

fatally in from one to three days. Its chief characteristic is the formation of a tumor which, in some cases, is preceded by fever, and in others, is followed by the same. This tumor, small at first, rapidly increases in size, pits on pressure, and finally attains a size of one to two feet in diameter. In rare cases, the whole body is affected. Pressure upon the tumor now produces a crackling sensation, because of the gas imprisoned in the tissues. The swellings may appear upon any part of the body; but they are generally confined to the denser muscular portions. Hence we find them on the thighs, neck, shoulders, and in the lumbar region and sacrum. Less frequently they are located in the palate, tongue and pharynx. They never occur below the knees, or hocks, or on the end of the tail, or ears. The swelling is at first hot and painful, but soon becomes cold in the centre, and that part may be incised without causing the animal to flinch. The main characteristics, then, of the swellings are the crackling upon pressure, or a gurgling sound is emitted when the hand is passed over them. Upon percussion, a tympanitic note is produced. The centre is insensitive, dark in color, and in a condition of dry gangrene. They are cold, and when incised, a dark red, frothy, foul-smelling, bloody fluid flows from the wound. Frequently smaller swellings become confluent, and in this manner the whole body may become swollen. The lymphatic glands may become involved, and these can be felt as little tumors under the skin.

In addition to, and as a result of these conditions, the following general symptoms may be enumerated: Sudden loss of appetite, general depression, high fever, lameness, labored breathing, colicky pains, moaning, increasing weakness, decline of fever, subnormal temperature and death. In some cases, the general symptoms precede the tumor-formation.

Although the disease is generally a fatal one, cases, mild in character have occurred, with recovery in old animals. This observation is especially true in the artificial infection of cattle. Frequently these fail of infection, even when inoculated with large doses of active virus.

Pathological anatomy.—Upon inspection of the carcass, it is found much bloated, with the escape of a bloody froth from the mouth, nose and anus. A limb is generally much swollen and crepitant. The skin covering the swelling is dry and gangrenous. The connective tissue beneath it is infiltrated with blood which contains gas bubbles. At times, this tissue is infiltrated with yellow gelatinous material. The affected muscular tissue is dark, red or yellow, emphysematous, dry in the older portions of the tumor, and moist in the more recently affected parts. The emphysematous or spongy portions are, from their distended condition, much lighter than the more solid parts. When stroked, they crepitate and exude a frothy, tarry, foul-smelling liquid. The contained gases are inflammable, and are supposed to be carburetted and sulphuretted hydrogen. The same degenerative changes take place in the internal muscles, namely, those of the tongue and throat, as occur in the skeleton muscles, when the disease is located in them. When the lymphatic glands participate in the disease process, the lymph vessels are distended with gas.

There are generally little or no changes in the abdominal cavity, unless the inflammatory process has involved the peritoneum, when a blood-red exude of considerable amount may occur. Yellow, gelatinous and hæmorrhagic infiltrations frequently occur in the serous membranes and in the tissues adjacent to the kidneys. The mucous membranes of the stomach and intestines are sometimes congested and contain hæmorrhagic areas; in which cases, the contents of these viscera will be stained with blood.

In the thoracic cavity, the parietal pleuræ may be infiltrated with blood, and the pleural cavities may contain a sero-sanguinous exudate. The lungs, pericardium, myocardium and endocardium will be infiltrated with hæmorrhages. The heart muscle is soft and easily torn.

As the microbe cannot vegetate in the circulating blood, this is not visibly affected during life; but after death, when all the oxygen has disappeared, the germ multiplies with great

rapidity, anærobic conditions having been established. The decomposition of the body is peculiar. For instance, if a hind quarter is the location of the disease, that part of the body will resist putrefaction much longer than the unaffected portions, because the black-leg microbe has, in its growth, produced substances which are inimical to the ordinary germs of putrefaction.

Diagnosis.—We have first to differentiate black-leg from malignant œdema, which it not only resembles, but because both germs have several points in resemblance, to wit: both microbes are anærobic; both are motile; both produce spores, and both produce crepitating, gassy tumors. Neither microbe vegetates in the circulating blood. The history of the outbreak is an important element in arriving at a correct diagnosis. Black-leg is restricted to certain infected districts, while malignant œdema may appear in a susceptible animal anywhere, as the microbe is universally present in the soil, in the spore stage. Malignant œdema attacks man, the horse, rabbits and pigeons, but is rare in cattle. The microbe of black-leg is not pathogenic for man, horses or rabbits. Both organisms are about the same length, but the œdema bacillus is twice as broad as that causing black-leg. The œdema bacillus does not form spores in the living tissues, while the black-leg bacillus does. The former forms filaments in the local lesion, while the latter does not. Both germs are fatal to guinea-pigs, but only one, the œdema bacillus, is fatal to rabbits.

Another disease, anthrax, may be confounded with black-leg, although there are wide differences, both in the respective lesions, and in the two microbes, as well. Being an ærobie, the anthrax microbe is found vegetating in the circulating blood or other highly vascular organs. It grows in chains, and always presents its spore centrally, without causing bulging of the cell walls, as is the case with both the foregoing organisms. Spore production occurs after death, or when the supporting tissue has become impoverished. The bacillus of anthrax is always square on the ends, is non-motile and produces a cottony

growth upon the surface of the ordinary solid culture media. It does not produce gas; hence the swellings produced in anthrax are not gassy. In an outbreak of anthrax, several different kinds of animals may be affected; horses, cattle, sheep, hogs, of all ages; while in black-leg, the disease will be confined to young cattle. Of the ordinary experimental animals, rabbits, guinea-pigs and mice succumb to anthrax inoculation, while rabbits do not take black-leg. Finally, anthrax may be inoculated upon a superficial wound or into the blood stream, being aerobic; while the microbe of black-leg, being anærobic, must be inoculated into an air-free tissue. In black-leg, the muscle tissue always contains gas, and the spleen and blood are perfectly normal. In anthrax, the muscle tissue never contains gas, and the spleen is much swollen. The blood, in anthrax, is dark and tarry and coagulates, if at all, very feebly. The blood in black-leg is normal in appearance. The germ of black-leg may be confounded with some of the gas-producing invasive bacteria, but enough has been said concerning the biology of the black-leg bacillus to render their differentiation easy, in the laboratory.

Prognosis.—This must always be unfavorable. While there can be little doubt that cases, now and then, recover, it is the exception that they do. Doubtless there are many instances where exposed animals take the disease in a clinically unnoticeable form, gaining an immunity thereby. The writer has had considerable experience in attempts to produce a fatal attack by artificial inoculation, and has, in several instances, noted a severe reaction, lasting several days, which ended in final recovery, with atrophy of the affected muscles. Hence, we must conclude that animals do, sometimes, recover from attacks naturally acquired, and it is possible that very many, if not all animals grazing on infected pastures have at one time or another contracted the disease in a clinically unnoticeable form. In the severe form, it is such a malignant disease, and runs such a short course, that an unfavorable prognosis is always to be given.

Therapeutics.—It is evident that there is little to be done in

the way of treatment. Those who believe in the saying that "while there's life, there's hope," would naturally turn their attention to the local lesion. The swelling may be freely incised, as soon as it appears, and packed with cotton soaked in strong disinfectant solutions, such as bichloride of mercury, carbolic acid, and the like, these being necessary to kill the spores which form early. The injection of strong carbolic acid into and around the tumor would be the better and safer method, as there is the added danger of infecting the pasture with the discharges when incisions are made. In a case of malignant œdema in a horse, this method was adopted by the writer, with a favorable result; not, however, without the loss of considerable tissue. The acid was injected hypodermically, in drachm doses, three times a day, for three days. Ligation of the limb to stop circulation and absorption, and free incisions into the tumor, have with one author met with some success. The parenchymatous injection of air or oxygen into the affected tissues would also be logical treatment, if thoroughly done.

Various barbarous methods are resorted to by laymen and illiterate practitioners in the way of treatment. If any of these do any good, it is brought about by the resulting depletion which robs the system of the pabulum on which germs grow.

The following is from the Annual Report of the Bureau of Animal Industry for 1898: "I roped and dragged the animal through a pond of cold water and cut off the end of its tail, and it came out all right." "I started him on a run and kept it up for three miles. Then he seemed easier and recovered. But ninety-nine times out of a hundred they will not run, but just lie down and die." "A 2-year-old steer took lame in the morning with a large swelling on the hind leg. A man on horseback dragged the animal for half an hour, when it began scouring, and in the course of a few days it had recovered." "I saved three out of four by nerving or bleeding them in the foot and running them. One I cured by nerving and giving 20 drops of aconite every two hours. I tried the same on a number of others without effect."

Hygiene.—Evidently the most important hygienic measures are to avoid grazing on infected pastures, and the total destruction by fire of animals that have died of the disease. Such pastures may be cultivated and planted to other crops, or may be used for horses, or other insusceptible animals.

As a means of preventing the spread of the disease, the most radical police regulations must be carried out. All infected animals should be at once cut out of the herd and allowed to die at a place where the body can be entirely destroyed by fire. No part of the body should be reserved, nor should the carcass be dragged across the pasture. Burning is best accomplished by digging a trench, piling wood over it and placing the animal on top of the pile. Sufficient wood must be used to evaporate the water from the body, after which the carcass will burn of itself. The contents of the stomachs and intestine will fall into the pit, which is now to be filled up with soil from a nearby place. In some localities where wood is scarce it will not be practicable to cremate the carcass. In such cases, the only course left is to bury the animal deeply at the place where it dies. Dead bodies should never be thrown into streams. The grave should be at least six feet deep, and to one side of the carcass so it can easily be tumbled in. Lime should be thrown in upon the carcass in a layer four inches thick. Then the top surface of the soil upon which the animal has lain should be shoveled into the grave, and the whole covered. Should stones or wood be handy, a layer of these, if large enough, would prevent dogs from digging down to the carcass, and thereby scattering the virus. Burial should not be permitted near the water supply, or a stream. On farms or ranches where black-leg prevails, it would be economy to fence off a lot, place all affected animals in it, and bury or burn them there when they die. Hay or grass from such a lot should not be used.

Prophylaxis.—This consists in measures which have for their object the fortification of the animal against infection. It has been noted by those who have had practical experience with black-leg, that the disease seems prone to attack most

readily animals in good flesh, while sickly or poor animals are not so readily attacked. Therefore, the artificial reduction of vitality by setons or rowels, or by the administration of laxative or purgative medicines, has been much in vogue by stockmen. The seton or rowel is placed in the dew-lap or shoulder, and consists of passing a piece of rope through or under the skin at these points. The ends are tied or spliced, and it is frequently pulled on to keep up an intense irritation and set up a profuse suppuration, which lowers the vitality of the animal. Sometimes the rope is soaked in irritating substances before its introduction. Garlic is sometimes inserted under the skin for the same purpose. The seton should be used, if at all, only as a temporary expedient, and be removed in a week or ten days. This method is much practised in England, although two eminent English veterinarians, Stockman and McFadyean, are of the opinion that the seton is not only of no value, but may actually favor the production of the disease. Stockman cites the following as evidence to support his view: "At the request of a client, whose losses from black-quarter are annually very high, a friend of mine setoned fifteen yearlings. For some reason a sixteenth animal was not setoned. The sixteen animals were all pastured on the same meadows. All the setoned animals died of black-quarter, and were survived by the one that had not been setoned. In the light of such evidence, it would seem that if the temporary expedient of reducing vitality is to be resorted to, the better method would be the reduction of the feed, and the production of free catharsis, until the other safer prophylactic method, that of protective inoculation, could be carried out.

Protective inoculation.—To Arloing, Cornevin and Thomas, three French scientists, belong the honor of demonstrating that animals can be protected from a fatal attack of the disease by inoculating them with small amounts of black-leg virus. They discovered, that while the subcutaneous and intramuscular inoculation of the virus causes death, the intravenous and intratracheal inoculation causes a harmless attack, and that

immunity from a future fatal attack was thereby produced. At Chaumont, in 1880, they inoculated thirteen animals by intravenous injection of filtered, watery extract of a black-leg tumor. At the same time, they inoculated subcutaneously, twelve animals with part of the same virus. Of these twelve inoculated subcutaneously, nine died of black-leg from the inoculation, while of those inoculated intravenously all not only survived the inoculation, but six months later showed themselves immune to a subcutaneous inoculation of the virus.

Although they proved conclusively that perfect immunity to black-leg could be established by the intravenous and intratracheal injection of the strong virus, the methods were not practicable, because the jugular vein and trachea had to be laid bare in each case, and great care had to be exercised in introducing and withdrawing the syringe needle to prevent any of the virus entering the connective tissue either in the wall of the vein or trachea, or that surrounding them. They subsequently chose for the site of the inoculation, the subcutaneous tissue in the end of the tail, where they found only a temporary swelling was produced in most cases. In some cases, however, the swelling spread to the rump and caused death, or the tail became gangrenous and sloughed off. Evidently such methods could not be adopted in private practice. They and other scientists, who were attracted to the subject by their discoveries, attempted the production of attenuated or weakened cultures and virus to which the name vaccine is now applied. In every case, the object sought was the subjecting of the system to the toxin produced by the growing microbe.

Roux's vaccine was made by first growing the microbe in bouillon, then sterilizing these cultures by heat, and then filtering off the dead microbes through a porcelaine filter. The filtrate or toxin only was used as the vaccine.

In 1883 Arloing, Cornevin and Thomas, who maintain a bacteriological laboratory at Lyons, France, invented a method of preparing a black-leg vaccine which is known as the "French method," "Arloing's method," or as the "Lyons method."

The virus is obtained by grinding up fresh tissue from a black-leg tumor, adding water, and then pressing out the spore-containing juice from the pulp by means of a press or piece of linen. This juice is then poured in thin layers upon plates and dried at 35°C. The resulting scales are then ground into a fine powder, and put into bottles as stock virus.

When vaccine is to be prepared, the powdered virus is mixed in a mortar with twice its weight of water. The semi-fluid mass thus formed is then spread on glass dishes, in layers about $\frac{1}{16}$ inch in thickness. The dishes are then placed in a thermostat at a temperature of 100°C., and are allowed to remain there for seven hours. The contents of the plates, now converted into a dry brown scale, is removed and ground into a fine powder. This powder constitutes what is known as No. 1 vaccine, or 1st lymph. Second vaccine, or 2d lymph, is prepared in the same way, except that it is subjected to a much lower temperature, 90° to 93°C. for the same length of time. These two preparations are spoken of as "double vaccine." In applying them, doses of 1 centigramme for each animal are dissolved in as many cubic centimeters of sterile water, and filtered through a piece of clean, wetted linen, or cotton. Each animal receives subcutaneously at a convenient point, such as the shoulder, one cubic centimeter of the filtrate. Ten days later No. 2 vaccine is prepared, and injected similarly. These procedures cause a very mild and unnoticeable attack of black-leg, which confers a future immunity for eighteen months. Hence, yearlings or older animals will have passed the susceptible age, by the time the artificially-produced immunity disappears, and animals under one year old should be revaccinated the following year, because they would still be of a susceptible age when the protective influence of the vaccine had waned.

Thousands of animals were protected by this method in France, Switzerland and Germany. Hess reports the vaccination of nearly 150,000 head during the ten years from 1885 to 1894, in Berne, with a loss of 5 head per thousand. Sperk, in 1885, vaccinated 925 animals. These were sent to graze on

badly infected pastures in the Tyrolean Alps. None of them died. During 1886, 2,140 cattle were vaccinated in Salzburg, with a loss of only 4 head, while out of 9,160 non-vaccinated animals in the same place, 86 head died with black-leg. In Baden, where the government compels vaccination, and pays for all that die from it, there were, in 1886 to 1894, only three death claims out of 3,567 animals vaccinated.

Although such brilliant results were obtained from the application of Arloing's double vaccine, the method was not altogether satisfactory to the veterinarian or his client, as it entailed a double handling of the cattle and became quite expensive.

It remained for Professor Kitt of the Veterinary College in Munich, Bavaria, to invent a method which removed the objectionable features of the double vaccination. He discovered, while employing the double vaccine of Arloing, that Arloing's second vaccine could be safely used, in many instances, without a previous vaccination with the first vaccine. Kitt now prepared a "single" vaccine, as it is called, and even used virus which had been heated for only six hours at a temperature of from 85°-90° C. He obtained favorable results with this vaccine, and it immediately became very popular with the profession, as it removed the objections attendant upon the use of a double vaccine. From 1890 to 1892, in Salzburg, only 5 head out of 4,112 vaccinated, died. In Bavaria, there were no deaths among 167 protected cattle. Equally favorable results were obtained in other places, except in Lower Austria, where a rather high percentage of deaths occurred from the vaccination.

This misfortune was somewhat of a blow to the adherents of the single vaccine, and the Arloing method, double vaccination, was again adopted. Kitt, recognizing the great inequality of the vaccine, made from the flesh of animals affected with black-leg, and because of the great amount of detail necessary in preparing the vaccine, turned his attention to the preparation of a vaccine consisting of attenuated (weakened) cultures of the microbe. This method has never become popular, and

is essentially a laboratory method, being wholly unsuited for field work on a large scale. Kitt's, and others successes in the use of a single vaccine, notwithstanding some misfortunes in its use, paved the way for future experimenters in this line.

In 1896, the United States Bureau of Animal Industry took up the work of preparing a safe "single" vaccine, according to the Kitt method. The results of preliminary experiments in the field with the single vaccine prepared by the Bureau were so satisfactory that immediate steps were taken to produce the vaccine on a large scale with the view of ultimately stamping out this cattle scourge in the United States.

The method of Kitt was the basis upon which the Bureau "single" vaccine was prepared. Slight modifications were necessary on account of the tremendous demand for the vaccine, these demands amounting to about 700,000 doses a year.

The Annual Report of the Bureau of Animal Industry for 1898 gives the following table of statistics, compiled from reports from stockmen in the states where black-leg prevails as a cattle scourge, and who used the Bureau "single" vaccine.

TABLE SHOWING THE NUMBER OF CATTLE VACCINATED, AND THE PERCENTAGE OF LOSS BEFORE AND AFTER VACCINATION.

STATE OR TERRITORY.	Number of Reports	Number of Cattle Vaccinated.	Average Annual Loss from Black-leg. Per Cent.	Died Before Vaccination.		Died After Vaccination.	
				Number.	Per Cent.	Number	Per Cent
Texas	164	50,609	13	1,462	2.95	227	0.45
Nebraska	71	20,893	17.2	796	3.80	52	0.25
Kansas	140	19,508	11	919	4.76	115	0.58
Colorado	53	12,609	12.8	230	1.83	138	1.09
Oklahoma	37	7,915	17.5	471	5.96	37	0.47
Indian Territory.	20	7,418	17.5	504	7.81	95	1.28
North Dakota . . .	22	6,118	12.75	133	2.18	25	0.41
South Dakota . . .	15	2,299	12.75	74	3.32	11	0.48
Total	522	127,369	14	4,589	3.63	700	0.54

Preparation of the vaccine.—The virus from which the vaccine is made is obtained either from an animal which has died from natural infection, or from one which has died from an arti-

ficial inoculation. The dark, spongy portions of the meat from the affected parts are freed of all fat and fascia, and are cut into strips of about one-half inch thickness. These are then threaded upon strings in a dry, cool, airy, fly-tight room for ten days, to dry. When thoroughly dry, these strips are reduced to a powder, by grinding. This powder is then passed through a 20-mesh sieve to free it of connective tissue and coarse particles.

To each gramme of the meat-powder, or virus, are added two cubic centimetres of water. Mix in an inverted, round-bottom bell-glass with the hand, or a spoon. Spread the dough thus formed in a layer one-quarter inch thick upon a ground glass plate or marble slab, and cut cakes therefrom by means of tin pans, three inches in diameter, and one-sixteenth inch deep, in the same manner as cakes are cut from dough, with the exception that the pans are slid sidewise on the slab and not lifted from it. This method insures an even distribution of the dough in the plates which is not attainable in any other way. The pans are then placed on wire-bottom trays in a thermostat kept at about 93°C . for six hours. The thermostat should be so ventilated that the added water is all evaporated in about three hours. At this time the cakes should begin to curl up, and at the end of the sixth hour, they should be thoroughly dry. To prevent the cakes from adhering to the bottoms of the pans, they should be smeared with vaseline by means of a sponge. The cakes should not be removed too suddenly from the oven, as they are somewhat prone to re-absorb moisture; but they are to be left in the open oven to cool off gradually. When cool, the cakes are put into jars or boxes in a moisture-free atmosphere. They are subsequently passed through a coffee-mill seven or eight times, to reduce them to a very fine powder. The mill for grinding the vaccine should never be used for grinding the original virus, and considerable care must be taken throughout the process to keep the vaccine and virus separated. In fact, the vaccine should be prepared in a separate room provided with its own apparatus. Persons

handling the virus should not take part in the handling of the vaccine, as unattenuated spores are liable to get into the vaccine, and cause a fatal infection in the animal upon which it is used.

For sieving the vaccine, an 80-mesh sieve is used. The top layer of the cakes is difficult to pulverize and is almost insoluble, so it is better to discard that part which is not sufficiently fine after seven or eight passages through the mill. The vaccine should be tested for strength and immunizing properties.

Testing the vaccine.—The vaccine is prepared for testing by dissolving one hundred milligrammes, or ten calf doses, in ten cubic centimetres of sterile water, by grinding in a mortar, and filtering off the insoluble portions through a thin, wetted layer of cotton or linen. The filtrate, which should measure ten cubic centimetres, is the vaccine, and it should be of a light brown color. Each cubic centimetre, is then a calf dose.

Two or three guinea-pigs receive intramuscularly three-fourths of the calf dose, or three-fourths of a cubic centimetre of the filtrate. The same number receive one-half the calf dose or one-half a cubic centimetre, and three others receive one-fourth the calf dose. Their temperatures are recorded daily. Ten days after their temperatures have become normal, the animals should be tested for immunity, and the inoculation of a minimum fatal dose of the unattenuated virus. As every lot of virus differs in virulence from every other, the fatal dose must be pre-determined. This is done by inoculating several guinea-pigs with varying quantities of strong virus, beginning with one-tenth milligramme, and increasing the dose for each succeeding animal by one-tenth milligramme. The minimum fatal dose for an unprotected pig is the size dose for testing the immunity of the vaccinated ones.

The test is not always satisfactory when carried out on guinea-pigs. Experience has shown that a vaccine which causes a noticeable temperature reaction in guinea-pigs which receive the three-quarter, and one-half calf dose, is safe. Should a vigorous guinea-pig die from the small dose, the indications

are the vaccine is insufficiently attenuated, and it might produce black-leg instead of preventing it. Such vaccine should be discarded, or it may be moistened with an equal weight of water, heated at 90°C for two hours, and be re-tested.

A typical test would be observed in a lot of guinea-pigs which showed a rise of two or three degrees in temperature, as a result of the vaccination, and no reaction as a result of a subsequent inoculation with the minimum fatal dose of unattenuated virus. As a matter of fact, this is not always obtained, the pigs often showing discordant results. Sometimes, those which receive the smallest dose of vaccine show the greatest reaction. Where possible, it is better, safer, and more to the point to carry out the test upon range cattle.

A "double" vaccine may be made upon the foregoing plan by attenuating one preparation at 97°C . for six hours, and another preparation at 90°C . for six hours. These are to be tested similarly to "single" vaccine, making the injections at ten-day intervals. There can be little doubt that the double vaccination is the safer, and it is recommended in pure-bred or high-grade animals. In any event, the veterinarian should explain the relative value of the two methods to his client, and should, everything else being equal, advise "double" or even a third vaccination in the case of valuable animals. The vaccine is prepared for use in vaccinating calves in the same manner as directed for testing on guinea-pigs. The injections are made into the subcutaneous tissue of the shoulder.

For attenuating the virus, or making the vaccine, I have used with success, a specially-made, hot-air oven, instead of the expensive oil oven. The temperature in such an oven is very easily regulated, and it can be put to other uses, when desired. It consists of a galvanized-iron cylinder with a ventilating pipe entering the cone-shaped bottom. This cylinder is surrounded by another two inches greater in diameter, and they are fastened together by iron straps. The outer cylinder extends to the floor and supports the inner cylinder. Outside of all, is an inch jacket enclosing completely a dead air space. The whole is cov-

ered with asbestos. The cover fits loosely over the top of the cylinders, is double, and when down in its place, its bottom rests upon a felt-lined flange of the inner cylinder, making a tight joint. The space between the top and bottom of the cover then becomes continuous with that between the inner and outer cylinders. Six tubulations pass through the cover, and connect with the interior of the oven. These serve for regulator, thermometer, and for gauging the rapidity of moisture evaporation. A small opening in the top of the cover allows ventilation for the Bunsen burner below, from which the heat is derived.

Other kinds of black-leg vaccine.—The enormous demand for this vaccine, and the more or less difficulty and expense in applying it has stimulated those interested in the commercial aspect to gain trade by marketing their vaccine in simpler form. Some stockmen who, for reasons best known to themselves, have applied the vaccine, by simply cutting through the skin, and pouring the dry vaccine powder into the incision, the results being dire, in many cases.

One commercial concern markets the vaccine in cords which have been soaked in liquid vaccine, and then dried. They supply a needle, and with this a certain length of cord is passed under the skin in seton fashion.

Another firm markets the vaccine in pill form. This pill is quite small, being made in a very condensed form by ridding the vaccine of much of its insoluble substances. It is inserted under the skin by means of a spring trochar. The pill dissolves quite readily, and if made of good vaccine, it would seem there could be no objection to its use. This firm, which also supplies the vaccine in powder form, reports satisfactory progress with the pill.

At the suggestion of the writer, Mr. Roy Davis, Professor of Physics in the University of Florida, has invented a very ingenious automatic magazine, spring trochar for inserting these pills under the skin. The instrument is perfect in its mechanism, and can be constructed to carry fifty pills or more. It is of convenient size for carrying in the pocket, and with each pull

on the piston a pill is placed in the point of the hollow needle by pneumatic pressure, and is ejected therefrom, under the skin, by pressure upon the piston.

The writer has shown that an aseptic fluid vaccine may be prepared by the practitioner at his office, where conditions are generally more favorable for such work than in the home of his client, or in the field. Its main advantages lie in the fact that it is ready for immediate use, and renders the carrying of the cumbersome filtration outfit unnecessary. It is made as follows: The vaccine powder, say one hundred doses are placed in the mortar and rubbed up with twenty cubic centimetres of clean water. To this paste thus formed are added eighty cubic centimetres of glycerine. After thorough mixing with the pestle, the solution is strained through a cloth of sufficient coarseness to allow a coffee-colored liquid to pass through. The filtrate is the vaccine, and it may be carried in a bottle in the pocket along with the syringe. Should any remain unused, it could be kept for the next engagement.

DR. J. B. TIFFANY, of Columbia, Mo., has accepted a temporary appointment in the B. A. I. and is stationed at So. St. Joseph.

DR. W. F. LAVERY, of the Kansas City meat inspection force, has recently been transferred to Chicago, where it is said he will have charge of the night inspection force.

"PROGRESS OF THE VETERINARIAN IN THE PHILIPPINE ISLANDS" (illustrated), by David G. Moberly, D. V. S., Chief Veterinarian, and Robert H. McMullen, D. V. S., Veterinarian, Bureau of Agriculture, Manila, P. I., will appear in the September REVIEW.

FEW veterinarians residing in New York and adjacent States should fail to attend the New Haven meeting Aug. 21-24; but if for any reason they are unable to be present, they should take advantage of the State meeting at Buffalo Sept. 11, 12 and 13. Secretary Stone presents a program elsewhere that is sufficient to make a veterinarian's mouth water. The clinics of the New Yorkers are always of a high educational value, and the Buffalonians are determined to keep abreast of the standard set by Brooklyn and Ithaca.

CLINICAL EXAMINATION OF THE BLOOD OF NORMAL CATTLE.

BY WILLIAM WALLACE DIMOCK AND MULFORD CONKLIN THOMPSON.

Thesis Presented to the Faculty of the New York State Veterinary College, Cornell University, for the Degree of Doctor of Veterinary Medicine, 1905

The amount of work done and the literature on this subject are very limited, done chiefly by Smith and Kiibourne in their investigations on the nature and etiology of Texas fever in cattle. They have given the number and size of the red cells. They have counted some leucocytes, but on account of the small number which they counted do not consider the results accurate. Bethe and Malassez have also counted and measured the red corpuscles. Stöltzing has also counted the red cells. Gulliver and others have measured the red cells. Hirschfeldt has worked with the leucocytes from a morphological standpoint and has described four varieties. Hayem has counted both the red and white cells and estimated the hæmoglobin of *Bos Indicus*, a closely allied species.

The object of our study has been to obtain data regarding the conditions found in the normal blood of the cow and at the same time to examine and note any changes found in pathological cases that presented themselves, thus giving some idea of what we may expect to find under normal conditions, and also bringing out as far as possible the clinical importance of blood examinations in the bovine species.

In our work we have determined as accurately as possible the number of red and white corpuscles per cubic m.m., making a differential count of the latter and giving the percentages and numbers of each variety. The hæmoglobin has also been estimated in each case. We have made a careful study of methods of obtaining blood for examinations, as an easy and rapid method is essential to success and accuracy. After several trials we selected a point on the tail one to one and one-half feet from the body as being most satisfactory, and an area on the lateral side to avoid puncturing the artery on the lower

side of the tail. The hair was clipped from the area selected, washed with water, disinfected with 5 per cent. carbolic acid, rewashed and dried with alcohol. The puncture was made with a spring fleam. The blood was immediately drawn into pipettes and films spread on slides. The red and white cells were counted from the same preparation. The blood was diluted 1-100 with Toisson's diluting fluid. The apparatus used for counting was Thoma's hematocytometre with the Zappert-Ewing ruling. In counting the red cells one hundred squares were counted by each of us on different slides, thus each checking the others work, and if the results did not agree, the count was discarded and a satisfactory re-count made.

In counting the leucocytes the entire number on the ruled space was counted.

In staining for differential counting Jenner's stain was used entirely.

The hæmoglobin was determined by use of Gower's and Oliver's hemoglobinometres. In some cases the results were checked, one by the other, and found to agree closely.

The blood examined was taken from the Cornell University dairy herd, each animal being at time of count, so far as we were able to determine, in a normal condition. Those examined were from two to nine years of age.

The few abnormal cases examined are from those which have been brought to the college clinic.

The red corpuscles in the circulating blood of mammals are cup-shaped, as has been demonstrated by Weidenrich, and confirmed by Lewis. We have found this to be the case in the blood of the cow. The cup-shaped form may be seen in the counting chamber in fresh blood diluted with Toisson's fluid; but after standing a short time they assume a bi-concave form.

The size of the red corpuscles as determined by Smith and Kilbourne is five to six microns; by Bethe 4.6 to 7.2 microns; by Malassez, 6 microns; by Sussdorf, 5.6 microns; and by Gulliver, 5.95 microns.

There are five varieties of leucocytes, lymphocytes, large

mononuclears, polynuclears, eosinophiles, and mast cells.

The lymphocytes are two to three times as large as the red cells, and have a reticulated structure. The nucleus is very large and circular, occupying nearly the entire cell. The cell body appears as a narrow rim surrounding the nucleus. The nucleus does not stain nearly so deeply as does the cell body.

The mononuclears vary greatly in size: from two to six times as large as the red cells. Like the lymphocytes they have a reticular structure. The nucleus is horse-shoe shaped, but often irregular, and occupies much less of the cell than does that of the lymphocyte, frequently not over one-half. When compared with the lymphocyte the cell body does not stain so deeply.

The polynuclears are larger than the lymphocytes but not so large as the large mononuclears. The nucleus is in two or more parts, these being connected by thread-like bands, though sometimes they appear as a large bent nucleus. The nucleus appears to have a reticulated structure and stains a dark blue. In the cell body are very fine granules which stain a pinkish hue, giving the appearance of this color to the entire cell body.

The eosinophiles are of about the same size as the polynuclears. The nucleus occupies from one-third to one half of the cell body and stains a faint bluish color, and appears to be bi- or tri-lobed; the lobes being connected by stout bands. The cell body contains many large acidophile granules. These have a circular outline and stain a bright red color.

The mast cells are about the same size as the eosins. The nucleus is sometimes bi-lobed; the lobes being connected by a strong band, but more often it appears as a large single bent nucleus. It is frequently hidden by the many large basophile granules contained in the cell body. These granules take a deep blue color, and are about the same size as those of the eosins; they are circular or oval in outline.

The results of our examination of twenty-one normal, and four pathological cases are given in the following table and summary.

No	Age	Breed & Sex	Hb.	Red Corpuscles	White Corpuscles	Differential Count of Leucocytes										Remarks
						Lymphocytic		Monocytic		Polynuclear		Eosinophilic		Mast Cells		
						No.	%	No.	%	No.	%	No.	%	No.	%	
1	2	H ♂	65	6676000	4400	69.11	30.41	.21	9	25.91	11.40	3.84	17.1	.42	19	
2	2	J "	"	4818000	3585											
3	2	G "	60	5220000	2350	70.00	30.45	3.20	139	15.00	6.97	9.60	4.18	1.00	47	
4	4	J ♀	85	6000000	3444	57.36	19.75	.27	10	33.5	10.54	7.50	2.72	.80	28	25 days after parturition
5	6	J Sr.	"	5741200	3888											5 1/2 month of gestation
6	3	" "	57	6156000	4944	31.00	15.32	.60	30	42.80	2.16	24.40	2.06	1.20	59	7 1/2 week after parturition
7	2	" "	54	7520000	10610	65.00	68.96	1.40	149	21.00	22.25	2.00	127.3	.60	64	6 1/2 " of gestation
8	8	" "	55	5124000	6166	52.20	32.18	1.70	105	37.60	23.18	7.30	4.51	1.20	74	2 months after parturition
10	6	G Sr.	"	5117000	3349	76.10	17.87	1.50	36	13.20	3.10	8.10	1.90	1.10	26	" " "
11	4	H "	55	6748000	4858	56.00	27.37	1.50	73	30.00	14.66	12.00	5.87	.50	24	10 weeks " "
12	6	" "	57	5731000	6000	52.00	31.20	.50	30	36.40	2.184	10.50	6.54	.20	12	7 1/2 month of gestation
13	3	" "	62	6202000	3110	62.47	20.68	1.19	37	21.80	6.75	11.60	3.61	.70	23	5 1/2 month after parturition
16	9	J H. G.	"	5948000	6455	44.50	28.74	1.60	103	26.40	17.96	26.00	16.78	1.00	64	4 1/2 " " "
17	5	H "	65	6010000	7777	39.70	22.93	3.30	191	30.40	23.05	16.20	9.48	.70	40	3 1/2 " of gestation
18	4	" "	65	5632000	5700	44.10	30.87	.60	42	28.50	19.95	26.50	18.55	.30	21	" " after parturition
19	5	" "	67	6711000	10277	34.80	40.90	1.90	195	45.80	9.707	12.30	1.64	.20	21	" " "
21	7	" "	48	5504000	4777	48.10	22.95	1.00	47	39.10	18.68	11.60	5.54	.20	10	3 1/2 " " of gestation
22	4	" "	60	6764000	5666	43.00	24.36	2.90	164	41.60	23.57	11.90	6.74	.70	22	4 1/2 " " "
23	3	" "	65	6732000	5000	57.00	28.50	.80	40	20.00	22.30	17.30	8.65	.30	15	3 1/2 " " "
24	3	" "	55	6524000	5444	61.30	33.37	2.00	109	26.30	14.52	10.30	5.61	.10	5	2 1/2 " " "
25	2	Apr.	55	6353000	7110	59.50	42.30	1.80	128	28.50	20.27	9.90	7.04	.30	21	2 1/2 " " "
		Average		5975	6152619	54.22	29.92	1.47	86	30.40	17.86	13.15	7.72	.59	31	
				Pathological Cases												
9	J	♀	60	5274000	4666	66.00	30.80	.28	13	32.40	16.72	.85	40	.38	18	Joint Abscess
14	4	Dgr.	"	7048000	4732	53.20	25.72	3.90	154	30.10	14.21	12.40	5.86	.30	14	Rheumatism
15	H	"	55	5443500	7222	43.60	31.98	.36	26	53.10	38.85	2.27	16.4	.54	39	Actinomycosis on jaw (?)
20	5	G	"	5416000	5055	39.10	19.76	3.30	167	41.70	21.08	15.60	7.89	.30	15	Impaction of 3d stomach and a wire perforating wall of reticulum.
20	"	"	"	7196000	4110	67.60	27.78	1.40	58	25.70	11.80	1.90	7.8	.40	16	

SUMMARY.

(1) In the blood of the normal the red corpuscles were found to average 6,152,689 per cubic m.m.; maximum 7,920,000; minimum 4,818,000.

(2) The average percentage of hæmoglobin was 59.75; maximum 85; minimum 45.

(3) The average number of leucocytes was 5,486 per cubic m.m.; maximum 10,610; minimum 2,349.

(4) Of the five varieties of leucocytes the average, maximum and minimum numbers per cubic m.m., and percentages, were found to be as follows:

	Number.	Per Cent.
Lymphocytes, average	2,992	54.22
maximum	6,896	76.10
minimum	1,532	31.00
Large mononuclears, average	86	1.47
maximum	195	3.30
minimum	9	0.21
Polynuclears, average.	1,786	30.49
maximum	4,707	45.80
minimum.	310	13.20
Eosinophiles, average.	772	13.15
maximum.	1,855	26.50
minimum.	171	3.89
Mast cells, average	31	0.59
maximum	74	1.20
minimum	5	0.10

PATHOLOGICAL CASES.

No. 9. The cow was a Jersey, five years of age, and had been very lame for several days in right hind leg. At the stifle joint was an enlargement which later proved to be an abscess. At time of making the blood examination recorded, animal was somewhat emaciated.

No. 14. Grade Shorthorn cow, in good condition, but showing general stiffness and lameness. Case was diagnosed as rheumatism.

No. 15. Holstein grade cow, in good condition, with abscess on lower jaw, which was diagnosed as actinomycosis. Abscess had been present for some time, and at time of blood examination it had broken and there was some discharge. The total number of red and white cells is within the normal limits. There is a polynuclear leucocytosis with a marked decrease in the eosinophiles.

No. 20. A grade Guernsey cow, in fine condition, at about the eighth month of gestation. There was impaction of the third stomach: later the animal died and upon post-mortem a piece of wire was found penetrating the walls of the reticulum. Two counts were made, the second four days after the first, during this time purgatives had been administered. At the time of the first examination the number of leucocytes was not increased, but the numbers of the different varieties were not normal. The polynuclears showed both an absolute and a relative increase due to inflammation from presence of foreign body. At time of second count the increase in red cells shows concentration of blood due to action of purgatives. The lymphocytes show an increase, while all other varieties, especially the eosinophiles, show a decrease.

In conclusion, we desire to express our thanks and appreciation to Drs. V. A. Moore and S. H. Burnett for their advice and assistance in making these examinations. We also desire to thank Prof. H. H. Wing for the use of the animals of the dairy herd, and Drs. James Law and W. L. Williams for the use of the subjects in their clinics.

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DR. A. J. FARLEY, an inspector for several years at So. St. Joseph, has been transferred to San Francisco, Cal.

FAR FETCHED.—*Chicago, May 12.*—"Egyptology vs. Health" was the title of a monograph received at the headquarters of the Tuberculosis Institute of Chicago yesterday, in which it was alleged that the great spread of tuberculosis in Europe and America in the last 100 years found its causation in the disinterment and shipment broadcast over the land of the mummies which had reposed so long in the tombs of the Pharaohs. The monograph was written by Dr. Rafaelle Sorgnac, one of the lecturers at the Sorbonne in Paris, who was an interested visitor at the recent tuberculosis exhibit in this city. "That the disinterred mummies started the spread of the tuberculosis germs in Egypt cannot be doubted," says Dr. Sorgnac in his monograph. "These germs live for thousands of years, as has easily been proved, and the exhumation of the bodies, even the well preserved ones, caused an epidemic of consumption among the workmen and scholars who first exhumed the cases. It is also well known that the keepers of the mummy cases have been subject to the disease. The start of tuberculosis in France in a serious sense may be traced to the great importation of mummies."

THE OFFICIAL VETERINARIAN AT HORSE SHOWS.

By F. C. GRENSIDE, V. S., NEW YORK CITY.

Read before the Veterinary Medical Association of New York County, April, 1906.

Now that horse shows have become so widespread and numerous throughout this country, a new field has been opened to members of the veterinary profession to act as veterinary inspectors at these shows. Horse show executive committees appear to find it necessary to have one or more veterinarians in the ring to whom certain questions can be referred if occasion arises.

The reasons that they have found this necessary are twofold: one is that many men that act in the capacity of judges are not really competent when it comes to the question of size, age, the determination of practical soundness, or of hereditary unsoundness.

The other is that, even although the judges are thoroughly practical men, such as one would not be afraid to give the commission for the purchase of a show horse with the confidence that they would not be likely to make any serious mistake with regard to soundness, still, such men's opinion might not be accepted as authoritative on soundness, and if any important question arose a dissatisfied exhibitor may make the claim that the judge is not a recognized authority on the question of soundness from the fact that he is not a qualified veterinarian.

In order then to make their position unassailable, executive committees prefer to have a board of veterinary inspectors to refer disputed points to that come within their province.

The position of the veterinarian in the show ring is by no means always a pleasant one. Circumstances every now and then arise that make it extremely disagreeable, and if the official does not use good judgment he is apt to stultify himself, injure his reputation, and cause reflection upon the profession. The great thing is to be right in an opinion, for although it may annoy an exhibitor at the time to be decided against, he will respect the giver of the opinion all the more when he finds out

he was right ; in fact if he does not decide against him he will be apt to laugh at the veterinarian and crow at his cleverness in deceiving him. Not only will the exhibitor of the animal in question have his opinion lowered as to the judgment of the giver of the opinion, but the other exhibitors have just cause for complaint, which, as a rule, they are not slow to express.

Many exhibitors who are not practical horsemen are apt to form erroneous opinions as to the questions of lameness, practical soundness, or the height of an exhibit, and it is often difficult to prove to them, the correctness of an opinion given, as their prejudice is apt to be the other way. We have already stated that it is very important that an opinion given shall be correct, but it is by no means an easy matter if not sometimes impossible with the limited opportunities afforded in the show ring for examination, not to fall into error.

For instance if a judge suspects a horse of being lame and seeks the veterinarian's advice, the tactful official first of all tries to form an opinion without drawing the public's attention to the fact that an exhibit is under suspicion. Exhibitors as a rule are very sensitive about having the public's attention directed to the fact that a horse of theirs is under suspicion of being lame whether rightly or wrongly, so that the veterinarian tries to save their feelings all he can, and simply observes the horse being driven or ridden in the most undemonstrative manner he possibly can. It is sometimes possible to come to a conclusion in this casual way, but as a rule it is not, and the official veterinarian is foolish to take the chance of making a mistake in any doubtful case simply out of consideration for an exhibitor's feelings. No experienced veterinarian would take the chance of giving an opinion as to whether a horse is going sound or not in a case of examination for soundness for a client without seeing the subject jog in hand. This of course is not practicable in the show ring only in exceptional cases, hence one of the difficulties of the position. One then has to take advantage of available means to endeavor to form a correct opinion. In doubtful cases the bearing-rein should be unhooked, and the

horse driven with a loose rein at a slow pace, and it is often well for the inspector to take the reins in his own hands so that he can let the horse go in the way he wants him to. Sitting in the vehicle behind the suspected horse gives a more favorable opportunity to come to a correct conclusion than can be had standing on the ground, particularly if the lameness is thought to be behind.

We must not lose sight of the fact that horses "pulled together" with sharp bits, and borne up with tight bearing-reins often get sore mouths which sometimes put them off their balance, causing them to "hitch," or it may be to go irregularly in front, giving observers the impression that they are lame. Irregularity of the gait from this cause is intensified in small rings with sharp turns.

Some people take the view that a horse that shows irregularity of his gait either in front or behind should be considered as a lame horse in the show ring. If this view were accepted judges would often find themselves in embarrassing positions towards the end of the show when championship classes come on. I have seen at Madison Square Garden Show several of the candidates for championship honors out of a small class of three or four, "hitch" most of the time. They were "stirred up" to the highest pitch, "pulled together" by the driver to show all the action and style there was in them.

This being a little overdone is apt to put them off their balance and cause them to "hitch" especially if their mouths are sore.

A judge noticing irregularity of the gait of a horse is very apt to turn to the veterinarian and ask for a decision as to whether the subject is lame or not. If the Inspector cannot satisfy himself one way or the other when the horse is given a loose head, and driven at a slow trot, he is justified in giving the Exhibitor the option of having his horse unhitched and tried in hand, and if he will not submit to that, he must be excluded as a lame horse. No fault can then be found with the veterinarian as he has given the exhibitor a fair chance, and

has not committed himself beyond giving the opinion that the case is a suspicious one.

It is very embarrassing to an official acting in this capacity to have condemned a horse as lame in the ring, shown to him going sound, on the outside, in hand. If a horse is not lame when jogged in hand, he can hardly be considered a lame horse. Irregularity of the gait if it cannot be determined as arising from unsoundness is for the judge to pass upon, not the veterinarian. If a horse's way of going is defective and is not the result of unsoundness, it detracts from his merit, but does not exclude him from competition as lameness does.

The rules of nearly all horse shows only call for practical soundness. This is generally conceived to mean that a horse is not the subject of any diseased condition likely to interfere with his usefulness. It really means with many judges that if the horse does not go wrong in the ring, his soundness is not questioned.

Many judges never ask the veterinarian's opinion unless they think a horse is going lame, is wrong in the wind, or is not within the limits of height called for. As a matter of fact it is not so very common for horses to go on taking prizes month after month, and sometimes year after year, that would not go sound on the halter, on a hard road, and if they did any regular work would soon be used up; but they are game horses, usually with speed, and when they are stirred up, and pulled together, they will not show lameness of which they may be the victims, unless it is fairly pronounced. Many members of the veterinary profession do not recognize the fact that there is such a thing as lameness resulting from soreness of the mouth. Thirty years' experience has taught me that there is such a thing, and that it is not so very uncommon, especially in the show ring.

Some may take the view, that if a horse goes lame, even if it is from the mouth, that it renders him ineligible to a prize. However, this may be it is important for the veterinary inspector to discriminate between lameness, the result of disease of a

limb, and lameness due to discomfort in connection with the mouth. If he does not do so, he is apt to be confronted with an irate owner who insists upon him going to see his horse jogged in hand, outsid of the ring. If the horse previously condemned in the ring, as lame, goes sound in hand, it is very embarrassing to the veterinarian, and is apt to be confusing to the laymen witnessing the case, unless the veterinarian is ready with an explanation. A horse may strike himself in the ring causing him to go temporarily lame, so that it is well to give a suspected exhibit a little time to recover from the injury before condemning him, or the veterinarian may be able to determine and point out the seat and evidence of a self-inflicted injury; so that the judges would have the responsibility of deciding whether they would reject a horse for a temporary trouble originated in the ring.

In the case of a saddle horse suspected of lameness, it is not wise to condemn him without taking the saddle off, as a tender spot under it will make some horses show irregularity of the gait. The veterinarian for his own protection should see that the party who jogs the horse, only has hold of the bridoon rein, and makes the horse carry his head straight. I have seen a saddle horse thrown out as unsound from no other reason than that the man who led him in jogging took hold of the rein attached to a sharp curb bit, causing the horse to nod his head. I have recently seen a horse go lame near hind from a crupper sore. Why he showed it near hind and not off I cannot explain, but as soon as the crupper was taken off he went sound.

To revert to the question of mouth lameness and as an illustration of its illusiveness, I may describe the behavior of a horse that undoubtedly was the victim of this form of lameness. He was shown to me by a dealer, for sale. I liked the horse on the halter, he jogged sound, so I asked the owner to hitch him. On driving he showed lameness forward, which the dealer could not help acknowledging. I noticed he had an unsteady, unmade light mouth, which I thought accounted for the irregularity of his gait, but cooled him out for half an hour, and

then had him jogged again in hand when he went sound, so I bought him for a comparatively low figure. I soon had him driving sound in single harness with a stiff rubber Mullins Mouthpiece Liverpool Bit, and won ribbons with him. I never succeeded, however, in getting him to go sound when driven on the near side in double harness, but he would go all right on the off side. Had I kept him longer, worked him steadily, and gotten his mouth in perfect condition, I think he would ultimately have driven sound on near side as well as off.

When we come to think over and review these somewhat exceptional cases and contemplate the limited opportunities a Horse Show Veterinary Inspector has for determining their true merits, we begin to realize the difficulties of the position. If we err it is better in doubtful cases to give the exhibitor the benefit of the doubt. We should remember that show horses are hard to get, very difficult to keep in show shape, and some are subjected to some very trying ordeals during a week's show, in exhibiting in a great many classes, so we should make some allowance if possible.

The question of a horse's height often gives rise to trouble. One would think it a comparatively easy thing to determine pretty accurately the height of a horse, but we have a report from a prominent Western show of a veterinarian measuring a fifteen hand horse fifteen three. One would think there must be some exaggeration about this statement, but it was never contradicted, and I had it substantially confirmed by a reliable eye witness. If the veterinarian allows a crafty exhibitor to stand a horse just as he likes, he may put him a couple of inches out.

The question of the soundness, or unsoundness of a horse's wind often causes debate in a show ring, but judging from what one frequently hears from the ring side a considerable degree of liberality is shown exhibitors. Doubtless a great deal of the roaring one hears is due to compression, from pulling, and sometimes to gagging from high checking, but not infrequently a horse gets away with a ribbon that few veterinarians would

pass if they were examining him for a client, and it would be interesting and useful if this association would lay down a rule to guide one in determining what to accept or reject for practical soundness of wind in the ring, and also, as to whether any medicinal agent can be given to successfully stop roaring temporarily, so as to mislead the inspector.

TOPEKA BARS "MUCK RAKE" BOOKS.—*Topeka, June 29.*—Upton Sinclair's book, "The Jungle," that caused the investigation of conditions in the packing houses of the country, has been barred from the Topeka public library. The committee in refusing to order the book reported that its general repulsiveness made it unfit to be read. Hereafter all "muck rake" publications will be under the ban of the library committee. There have been many requests for the book since the investigations were begun.

THE GOVERNMENT INTRODUCES INDIAN CATTLE.—A large herd, principally bulls, of Zebu cattle have been brought from India to cross with Texas cattle with the object of improving the latter. Forty-nine bulls, several heifers, and a few cows are now at the United States Quarantine Station in New Jersey, and when their probation has been completed will be sent to their destination. Some years ago a single bull of this breed was sent to Texas, and his impression was so marked upon the native stock that a renewal of the experiment has been undertaken upon a larger scale.

"THE JUNGLE."—To get at the gist of the condemned meat industry facts recently published, it becomes necessary to read the visceral production of modern fiction, "The Jungle." A socialistic effort, portraying the worst side of a foreigner's attempt to provide for a family of ten or more souls at Chicago abattoir wages. The book is safe for the optimist, but it is not fit for children to peruse; horrible depictions, vile language and many vilifications entitle its suppression; it can, however, still be secured in the open market. *Everybody's Magazine* for May and the *Saturday Evening Post* during the same month, have been the mediums through which some interesting controversy passed, but only between the parties directly concerned. The Beveridge Bill having become a law opens another field for the veterinarian. "It's an ill wind that blows no good." Has "The Jungle" anything to do with it?—(*L. E. Willyoung.*)

ABORTION IN COWS.

BY DR. DAVID ROBERTS, CATTLE SPECIALIST, WAUKESHA, WISCONSIN.

Read at the Annual Meeting of the Wisconsin Society of Veterinary Graduates,
February 8, 1906.

Abortion in cows exists in all parts of the United States, Canada, Mexico and Europe. It is exceedingly prevalent in the United States, where there are at present over seventeen million milch cows, and a large per cent. of these are thus afflicted yearly.

The damage done to a cow thus afflicted amounts to from \$12.00 to \$25.00 per annum. Thus the loss to breeders throughout the United States is a tremendous one.

Abortion in cows may be due to three general causes:

(1) Abortion in cows may be due to accidents of various nature, but the loss brought about by the small per cent. of abortion due to this cause would scarcely be noticed by the breeders of this country.

(2) Abortion may be due to a physical weakness of the genital organs of either cow or bull or both.

The loss caused by this condition is much greater than by accident and has a greater tendency to lead on to a more serious nature of the disease; but all cases of abortion have a tendency to lead on to the infectious form. It should not be understood by the term physical weakness of either dam or sire that they must necessarily be thin, weak and emaciated, but on the contrary they may be the picture of health and still be physical wrecks as far as breeding is concerned. While this is a serious condition of breeding animals it does not begin to be as serious a condition as the third and last cause of abortion in cows, which is due to infection.

Abortion due to physical weakness and infection can be positively prevented and cured.

Infectious abortion in cows is due to a germ. This germ is contained in the mother's blood, the afterbirth and the bowels of the fetus. It is for this reason that the afterbirth is so often

retained, and prematurely born calves usually die of scours or diarrhoea. It has repeatedly been noticed that a calf thus afflicted when taken into a healthy herd invariably causes infectious abortion, the germ being carried in the excrement of the calf. Again, infectious abortion may be the result of chronic uterine catarrh.

This may be and often is due to retention of the after-birth, which is due to the physical weakness referred to.

If the afterbirth is allowed to remain until it sloughs away it is in this way converted into matter of which a part is expelled from the vulva and the balance absorbed by the cow.

This condition leaves the womb and vagina to act as a hot bed for the germs of abortion to propagate and multiply. If a healthy bull be allowed to serve a cow in this condition he will become infected, and if bred to a healthy cow or heifer he will then infect them and they will not only be in condition to infect other bulls which may be bred to them, but are very liable to abort at any stage of pregnancy. The period at which they are most liable to abort is between the fifth and seventh months.

If a calf be prematurely born, and lives, it will be noticed to be very quiet and sleepy most of the time until it reaches the period at which time it would have been born had it been carried full time. It will then undergo a noticeable change as if to awaken from its drowsiness. These cases are known as living abortions.

The only noticeable difference between a calf of this kind and one which has been carried full time, would be its under-size, sunken eyes and enlargement of the glands of the throat.

A cow afflicted with the germs of abortion may be bred, and conceive, her calf may be carried for a period of about three months, at which time the naval cord may become so diseased by the collection of germs as to shut off circulation from mother to fœtus, thus causing the death of the latter. This may occur at any stage of pregnancy.

But as nature has not provided for contraction of the womb upon so small a body as the fœtus is at this stage of pregnancy,

the fœtus may be carried in a mummified condition for many months to the full period of gestation, and even longer.

The only noticeable symptoms later on will be a protrusion of a small portion of the afterbirth, and on examining the cow the mummified fœtus may be found usually forced into the vagina. On removing same it will be noticed that the fœtus may have taken on a perfect shape, being well preserved, having no disagreeable odor.

The only thing indicating the age of the fœtus and the length of time it has been carried will be its empty eye sockets.

The cow during the entire period of gestation takes on every appearance of barrenness except that she does not come in heat.

However, this is not a common occurrence, but is mentioned as an illustration of how the fœtus may be destroyed by the germs of abortion without any apparent discomfort to the mother.

The germs of abortion may lie dormant in the vagina and womb of a cow for months and even years. For instance, a cow may abort at any stage of pregnancy and then be kept from being bred even nine months or longer, and then, if bred at that period she may conceive, but as soon as conception takes place the germs of abortion, which have been lying dormant in the womb, will be revived, and soon get in their deadly work, causing her to abort again at a very early stage of gestation.

The difference between an immune herd of cows afflicted with abortion and a herd that has received the proper treatment is this: any herd of cows, regardless of breed (as abortion seems to afflict all breeds of cows), may be afflicted with infectious abortion one after another. They will abort usually until each one has aborted from one to four times, but usually a few cows carry their calves full time, while in the midst of others that abort. They seem to be very little inconvenienced, but they are at the same time much afflicted with the germs.

Possibly the most noticeable damage done to them is a shortage of milk, and oftentimes barrenness. After one of these cows has aborted several times she apparently becomes

immune. She may carry her calf full time. It may, and often does live, unless afflicted with scours, which is often the case in an immune herd. The cow's milk may be short in quantity and poor in quality, thus being a non-profit producer.

Any new cows added to the herd will become infected from the herd ; will abort the usual number of times, and then become immune like the balance of the herd.

The heifers that grow up and conceive will become infected and will abort the usual number of times, and will then become immune.

If cow, heifer, bull or calf be sold out of a herd thus afflicted it will carry the disease to a healthy herd regardless of distance.

If a new healthy bull be purchased and placed at the head of a herd thus afflicted, he will upon being bred to any of the cows in the herd become infected, and then be in a condition to infect all heifers of the herd or cows brought in from neighboring herds.

In this way abortion may continue indefinitely.

A cow should properly clean after calving. She should come in heat at regular intervals and get with calf when bred. The calves should not be afflicted with scours and can be sold and shipped to any part of the world absolutely safe and without danger of infecting other herds.

The proper treatment will destroy the germs of abortion ; it will by so doing put a cow in a perfectly healthy condition, making her a profit producer, enabling her to give birth to a strong, healthy, live calf at full time, also give a natural flow of milk, which a cow afflicted with the germs of abortion cannot do.

It matters not what breed of cows may be afflicted, how large a herd may be, how many head have aborted, or how long they have had abortion, among them, it can be prevented and cured.

Abortion is a premature expulsion of a foetus at a stage when it has not attained sufficient development to live external to its

mother, and is caused by an interruption of the natural condition of pregnancy.

In the modern way of thinking, disease is a disturbance of the natural play of one or different parts of the body: the reaction of an unaccustomed influence, and according to the germ theory, the foreign influence producing this disturbance is the existence of a germ in the interior of the animal body.

When germs vegetate or multiply in the animal's body there occurs a struggle for life between the germs and the animal cells.

In abortion this battle produces outward symptoms, such as swelling of the udder and vulva, which is an evidence that the struggle exists within the body, and it must result in the victory of one or the other. If the battle is won by the animal cells the disease is checked and the animal is restored to health and the symptoms, such as swelling of the udder and vulva, will disappear, while if the germs win the animal will remain diseased and the symptoms will be noticeable, and unless interfered with the cow will abort.

Abortion is due to a germ, and therefore infectious, and can be easily proven by any one who wishes to make the experiment, such as soaking a wad of cotton in the fluid of a cow that has recently aborted, then placing it in the vagina of a healthy pregnant cow, allowing it to remain five minutes. It will be noticed that she will become infected and show symptoms such as swelling of the udder and vulva and will abort in a certain number of days; while if a cow meets with an accident or receives an injury which would cause abortion, a wad of cotton may be dipped in the fluid from her and taken to an uninfected herd and placed in the vagina of an uninfected cow, allowing same to remain five minutes, without bad results.

With similar experiments it has been positively proven beyond all doubt that abortion in cows is due to a germ and therefore must be treated as a germ disease. From valuable information and experience gathered from bright and intelligent veterinarians, and stock raisers throughout the United States

and Europe, a positive knowledge has been reached as to how this disease should be handled in order to wipe it out.

When a herd becomes infected with the germs of abortion cows and heifers are liable to abort at any stage of pregnancy, but the largest per cent. aborts from the 4th to the 7th month; some aborting as early as the first month of pregnancy, and are at the same time liable to come in heat the following day, indicating a congested, irritated, abnormal and diseased condition of the genital organs.

Bulls bred to such a cow or heifer invariably become infected and are then in condition to spread the disease through the entire herd.

As soon as the symptoms of abortion, such as swelling of the udder and vulva, manifest themselves, the cow should be removed and isolated and given prompt attention and treatment until the symptoms of abortion, such as swelling of the udder and vulva, have disappeared; she may then be returned to the balance of the herd.

In case she aborts the fœtus and the envelopes should be burned or buried deeply. The stables and stalls and premises where this cow has been or is at present should be thoroughly disinfected with a powerful germ destroyer. The roots of the tail and vulva and hindquarters should be thoroughly disinfected daily.

The vagina should be thoroughly washed with a non-poisonous, non-irritating, soothing and healing antiseptic solution. This washing should be continued once daily, until all discharges cease.

No cow or heifer should be bred until it would be time for them to give birth to a calf had they carried it full time and not then unless they are free from any discharge and in a strong, healthy, breeding condition.

Clip the hair from the point of the sheath of the herd bull and wash out the sheath once a week and after each service with a non-irritating, soothing and healing antiseptic solution, in this manner preventing the spread of the disease.

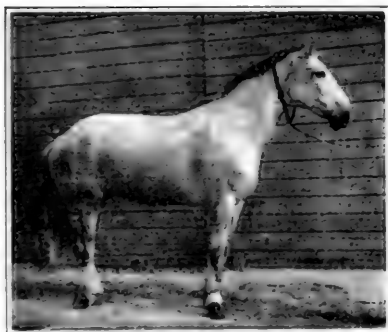
REPORTS OF CASES.

"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."

PARALYSIS OF THE PERONEUS NERVE.

By C. M. HARING, D. V. M., University of California, Berkeley, Cal.

Dollar, in his translation of Möller's "Operative Veterinary Surgery," says that no accurate observations have yet been recorded of paralysis of the peroneus nerve. In view of this the following case may be of some interest:



A Percheron gelding, aged about fourteen years, had been employed for a long time at heavy drafting in a lumber yard. Without apparent cause, he began to lose the use of the off hind leg. The first that was noticed of the trouble, according to the owner, was an occasional knuckling over while walk-

ing. The frequency and severity of the knuckling gradually increased, the leg sometimes giving way so that the lower end of the cannon bone and anterior of the fetlock would strike the ground.

On June 10th., when first called to see the horse, the knuckling was very marked, the animal being unable, without assistance, to extend the pedis sufficiently to plant the sole on the ground. While at rest the hock remained extended and the fetlock flexed as shown in the photograph. In stepping he rested on the toe, and after going a few paces walked on the coronet and lower end of the cannon bone. The power to flex the hock was not as great as in the other leg although there was some movement. Perhaps this was produced by the flexing of the stifle. The control of the stifle and femero coxygeal joints seemed perfect and there was power to strike or kick backward and to draw up the leg. In walking the quarter was not lifted abnormally high, which Möller says would be a result of paralysis of the nerve. No atrophy of any of the muscles could be detected. An unfavorable prognosis was given. As the animal

was useless and failed to improve, he was killed about five weeks after the appearance of the first symptoms. A careful dissection of the leg failed to reveal any lesions.

IDIOSYNCRASY OR OVERDOSE.

By W. E. A. WYMAN, M. D. V., V. S., Covington, Ky.

Subject, running horse, aged 4; cryptorchid.

Diagnosis:—Double catarrhal pneumonia. Temperature 105.3 to 106.2 for first four days, gradually returning to normal on ninth day.

Treatment:—Antiphlogistine to chest. Heroin hydroch., gr. iv; fl.-extr. ipecac, $\bar{\text{v}}$ i, and ammonium carbonate, $\bar{\text{v}}$ iv, in $\bar{\text{v}}$ x acacia emulsion. One tablespoon every four hours. Quinine sulphate, with strychnine, one powder three times daily. Once daily nuclein, 20 c.c., intravenously. Feed: Oats, hay, grass. Appetite fair.

From the beginning on the animal was somewhat costive. For that reason he got within twenty-four hours, starting June 27, calomel $\bar{\text{v}}$ iss, with sodium bicarbonate $\bar{\text{v}}$ iij, in powder form. Also clysters of pure water, about one gallon, every four hours, about bloodwarm. On June 28 the animal salivated profusely, smelling very foul, lips and cheeks swollen some, palate very pale with hæmorrhagic streaks at intervals over the bars; mucous membrane above upper incisors and below lower incisors, œdematous and brick red. Tongue stiff, contracted, very pale; region of frænum œdematous and dark red brick color. At no time did the gums bleed easily nor loosening of teeth. July 4, case sufficiently advanced to be discharged. Treatment:—Hypodermics of atropine and strychnine, swabbing three times daily for three days with adrenalin, 1:10000; H₂ O₂ (25%) irrigation, followed by copious and very frequent iced water irrigations. June 29, 30, and July 1 the animal could not drink nor eat and was satisfied by œsophageal intubation. Began to eat fairly well July 2. The writer has employed calomel a great many times in such cases as the above, but this has been the first untoward effect, the first case of mercurialism, encountered.

DOUBLE IMPREGNATION BY DIFFERENT SPECIES.

By C. H. GAINES, D. V. S., Chilhowee, Mo.

I was called to the farm of Mr. G. Mullins, four miles north of this town, on April 14 last to see a mare with suspected inversion of the uterus. Upon arrival I found a small gray mare,

14 or 15 years old, which had just foaled two colts, and had adherent placenta, which had caused the owner to suppose the womb had turned inside out.

The remarkable point about this case is that one of the foals was a mule, and two days before term. It breathed a few times and died. The other was a horse colt, 38 days before term. The horse colt was dead at birth. The dates at which the colts should have been born are estimated from the dates of the two breedings. There were 36 days between breedings.

THE death from accidental diseases of two famous Hackney stallions in one month, owned by Elsinore Stock Farm (Harvey S. Ladew, proprietor), Glen Cove L. I., is extremely unusual and unfortunate. "Moncrieffe Vengeance," champion Hackney stallion at the last Madison Square Horse Show, died early in June of strangulated scrotal hernia, and at the end of the month "Sancton Squire," by the American champion heavy harness horse, "Forest King," succumbed to intussusception.

THE annual meeting of the Missouri Valley Veterinary Association, held in Omaha, June 18th and 19th, was largely attended and enthusiasm marked the proceedings. Many members were prevented from attending owing to the large volume of practice being done this season, which is greater than ever before. All present were initiated into the mysteries of the "Ak-Sar-Ben" on the evening of the first day. The meeting continued for two full days and was terminated by a banquet. The semi-annual meeting will be held in Kansas City in October.

THE RECORD FOR TUMORS.—*Springfield, Mass.*—A most unusual surgical operation was performed last Thursday at the Springfield hospital upon Mrs. Annie D. Hodgerny. A cystic tumor, the weight of which was greater than the normal weight of the woman, was removed as a last resort to save the woman's life. The effort proved unavailing, however, death following the day after the operation. The tumor taken from the woman weighed about 190 pounds, of which 156 was fluid. It is believed that the cyst had its beginning six or seven years ago. The woman weighed then about 180 pounds and her weight gradually increased until she developed the most remarkable growth of the kind which history records. So far as is known, the largest tumor before known weighed from forty to fifty pounds less than this one.—(*Brooklyn Times.*)

SURGICAL ITEMS.

BY DRs. LOUIS A. AND EDWARD MERRILLAT, CHICAGO, ILL.

ON THE ETHICS OF HORSE DENTISTRY.

In an address delivered before the Pennsylvania State Veterinary Medical Association, published in the June number of the REVIEW, Prof. Williams tells us what's what in horse dentistry. He takes a deliberate aim at the author, the book and the teacher of dentistry, makes a few errors that procreate distrust in the accuracy of the deductions as a whole, and tinges the subject matter with a dash of ridicule that depreciates the grace of the discussion from the ethical standpoint. The oration, true enough in many places, is evidently born of a desire to correct some real and some fancied abuses to scientific veterinary surgery. It appears that the orator has information anent the practice of horse dentistry in America that leads him to question the judgment of the American veterinarian. According to Williams, the whole system of dentistry as practiced to-day is wrong, that the only demand of dental surgery in domestic animals is the diseased tooth and its sequelæ and that the filing or rasping process so commonly practiced is inimical to the well-being of animals in almost every instance. These conclusions are not without fault and are too radical to be taken seriously by the veterinary practitioner of to-day. Some will assent, some will dissent and the controversy, already old, will go on forever. Some veterinarians may even be so rude as to claim that they are equal to the task of judging the right from the wrong dental operation. Others may even decide after consulting their rusty knowledge of physiology and pathology that the whole problem is not such a brain-racking one after all and that a little common sense, as heretofore, will henceforth dominate their actions in dealing with their dental operations. Collectively, we are no worse nor no better in dealing with dentistry than with any of the other problems daily encountered in practice. If we are ignorant here we are ignorant there. If we are dishonest in dentistry we are probably also dishonest in other matters as well. It is not fair to use the lash of horse dentistry on the American veterinary practitioner. Whip with the whole subject if a chastisement is due. The *tooth-filing controversy*, old as the hills, touches a subject as well understood as any part of veterinary surgery. Every sensible practi-

tioner knows the limitations, the indications and the contra-indications of the tooth-filing operation, and there are, or at least soon will be, enough sensible veterinarians to protect it from abuse. It is only the professional horse dentist who urges the operation too frequently, and fortunately this creature is less numerous than formerly. Now-a-days, the general practitioner is consulted in the matter of dentistry on the animals under his charge and his decisions to operate or not to operate are based upon the same scientific principles that would govern his actions in dealing with any other treatment. Veterinary surgery is improving, advancing, progressing, and dentistry will not lag behind. It is only reasonable to suppose that the progress of the future will not fall behind that of the past few years. Horse dentistry is pretty safe in the hands of a progressive profession in a progressive country. The *tooth-filing specialist* is passing rapidly, as the horse-owning public under the instruction of the educated veterinarian, is learning gradually what Prof. Williams would have it learn at one stroke, thanks to the specially instructed student. Here and there, we may expect to see some so-called qualified veterinarians adopt dentistry as a specialty, and others over-recommend the art as a panacea for all ills, because of the inviting field it offers for faking a handsome monetary remuneration, but this circumstance is no ground whatever for trouncing a whole profession, a whole method, a whole branch of veterinary surgery. Are not the best medical colleges sometimes stigmatized by graduates who enter lines of practice or adopt methods of treatment that violate the laws of the medical profession? The fault here is that of the individual, not of the instruction.

The "*sharp-tooth-mania*" is not so very "deeply rooted," and it is not the "Most disgraceful feature of veterinary practice to-day," as Williams would have us believe, even though we do admit that much of the dentistry performed on horses is useless or, if you will, harmful. That the "Wholesale rasping and cutting away of horses' teeth" is senseless, useless and harmful, is not denied, but that the operation is practiced by the representative members of the profession in America, to the extent implied by this expression, we desire to flatly contradict. The veterinarians of the West, Middlewest and Northwest (the only ones with whom we have an intimate acquaintance, are not wholesale tooth-raspers. They are sensible, fairly well educated, professional men who learned as freshmen students that the sharp teeth found on all molars of all horses are a part

of the normal grinding apparatus and not universally harmful. Later in their college course they have learned that under certain circumstances "sharp teeth" require surgical interference, and this much no sane man will deny and all conservative veterinarians will concede.

The fact is, tooth-filing is often so strikingly effectual in correcting or preventing certain conditions that horsemen are easily led to believe that the operation is a universal necessity. The veterinarian who stands stubbornly to the position that the operation is always unnecessary drives the horseman to the blacksmith, the coachman, etc., to have the rasping done, as Ostertag admits is the case in Germany. Pshaw, the way we are becoming prey to the "foreign-made" theory is as sickening as it is an exemplification of our weakness. The way we swallow, digest, quote, and defend any old expression from over the water must make us appear as weak imitators in the eyes of our foreign colleagues. The American has taken time by the forelock and has demonstrated, not only the method, but also the good results of horse dentistry, and our foreign colleagues, slow to accept and always ready to snub or condemn American ideas, have never accepted tooth-filing as an operation worth teaching to the student.

Under certain circumstances tooth-filing is little less than an absolute necessity. For example, in "schooling" a *young coach horse* filing the first molars is a real help, a real necessity, otherwise the mouth becomes sore and prevents further training until healed. The second attempt wounds the mouth again and so on until the tough resulting scars afford adequate protection. The same might be said of the *roadster*, the *hunter* and the *park hack*. Men experienced in managing this class of horses know too well the value of tooth-filing to be deceived by any statement to the contrary. Imagine, if you can, the untenable position of a veterinarian who would attempt to prove the harmlessness of enamel points that repeatedly wound the seat of the bit, and imagine the success of a practitioner who would insist upon healing up these sores without removing their cause as a protection against future injury. True enough, as Williams suggests, these wounds will heal and leave harmless scars, but what is the behavior of the youngster while the mouth is being wounded over and over, and while nature is vainly attempting to lay down a tough sclerotic surface on the cheek to protect it against further injury, and what has been the result of the training? What might have developed into a fine

gaited saddle horse or a good "mouthed" coach horse has instead become a crazy-headed idiot. For this class of horses dentistry needs no defensive arguments among the experienced, and the novice soon learns its value. The veterinarian, practicing dentistry among running horses, whom Williams interviewed and from whom he wrung a confession of being a confidence man, is precisely like all men of his class. The same man would have been content with a bottle of colic medicine without knowing its contents or the method by which it brought results. If he had studied his art, if he had been properly taught, he would have been saved the humiliation of condoning his course upon any basis other than that his operations made it possible for the trainer to get the best possible speed out of his charges. In the race where competition is keen, the slightest abrasion in the mouth of a horse is a matter of no small moment. The thoroughbred horse is generally so sensitive, so fussy, so obstinate that his successful training is impossible until every sharp point capable of irritating or wounding the seat of the bit is removed. The self-confessed confidence man whom Williams calls a veterinarian was as ignorant of the good he did as he was of the harm he was capable of doing by filing the teeth too much and too often. The existence of this class of veterinarian shows plainly the need of better and more instruction in horse dentistry, instead of a campaign of education against the art. There is absolutely no danger from a man frank enough to make such a confession, were he properly educated.

The tooth-filing operation recommended above is, of course, a limited one. It consists of filing the buccal borders of the first and possibly the second superior molars and the anterior table angle of the first inferior molars. Its object is simply that of preventing the abrasions or simple irritations of the buccal mucosa which are so manifestly harmful to the class of horses above enumerated. It is generally unnecessary in the *farm horse*, the *dratt horse*, *delizery wagon horse*, the *family horse* or any class of horses not closely bitted and rigged. Only occasionally a fiery horse of these classes will pull heavily enough to wound the cheek upon the jagged enamel points, and thus make the operation necessary.

Filing the enamel point on the back molars is another subject. Williams claims that the wounds upon the cheeks of horses are trivial affairs that will heal without dental interference. He compares them to the accidental biting of the cheek

of the human being. In this his error is palpable. Accidental wounding of the cheek of horses by biting up the folded mucous membrane between the molars never occurs. The accident would be quite a physical impossibility. The wounds of the horse's mouth other than those caused by the bit generally occur at the level of the fifth molar, and are caused in a gradual manner by the action of the masseter muscle upon the enamel points, which are always specially prominent at this point. These wounds, sometimes trivial, are not infrequently the causes of considerable discomfort. In size and gravity they vary from mere erosions of small dimensions to large excavations the size of a silver dollar. Often the mucous membrane is so completely destroyed that considerable time elapses before its epithelium will regenerate sufficiently to re-cloth the breach. The scientific treatment of such a condition is plain. Either the cause must be removed or else the subject must be allowed only a soup diet for a few weeks to allow the wound to heal.

If we grant that tooth-filing is essential in the treatment of the buccal abrasions caused by the bit, and the more aggravated ones caused by mastication, can wholesale, universal tooth-rasping be defended in the guise of preventive treatment? Herein lies the solution of the controversy. By drawing a line between the sharp teeth that do or will at some near future time cause abrasions and those that never wound the mouth the *indication* and the *contra-indication* for the tooth-filing operation is determined. It is by drawing this line that the *ethical* dental operation is separated from the *non-ethical*. In making the decision the veterinarian, knowing that the entire removal of the enamel points diminishes the grinding capacity of the teeth, will select only the aggravated case and will sacrifice only the sharp points of the protruding enamel, and that only at points where they are capable of creating wounds. These, we believe, are the tenets of the thinking veterinarians of the day, which if true should pacify the disturbed minds of the few who foresee naught but calamity for the American veterinarian unless a great campaign of education is immediately inaugurated to stay the impending havoc of the horse dentist.

It is not denied that a great many conditions existing in horses are erroneously attributed to the teeth by the layman, and the veterinarian failing to detect the real cause, files the teeth in lieu of a rational treatment or as expectant treatment pending the development of phenomena that reveal the actual causative factor. Sometimes in some communities horses are

submitted to the veterinarian with the unqualified instruction to file the teeth without previous consultation as to its advisability, leaving the honest practitioner to choose between performing the operation or else preparing to deliver a lecture on the physiology of mastication. That is, either the teeth must be filed or the client told flatly that it is unnecessary and harmful. Leaving aside the tendency to decide in favor of performing the operation on account of the monetary gain, it is the plain duty of the veterinarian to abide by the client's wishes. It is not expected of a practitioner to attempt single handed to correct impressions held for generations. The remedy must come from the profession as a whole. "We must begin a campaign of education among ourselves," as Williams puts it, is hitting the nail on the head. The veterinarian is either a diplomat or a pauper. He must yield to the popular prejudices of his community to a certain extent and for a time at least. Since time immemorial the successful therapist has yielded to the "popular prejudice." The physician, the surgeon, the dentist and the veterinarian have yielded to it and probably always will. The accepted treatment of to-day is the "popular prejudice" of to-morrow. What we do to-day in the name of science will be the "popular prejudice" of the next generation. The scientist leads the layman. To succeed in practice the "popular prejudice" *must* be respected a great deal more than the pharmacopœia. Men who ignore it seldom live to see the good that results from their theories. A second or third generation may admire their epitaphs, but living they were laughed off the stage. The veterinarian of to-day in certain communities who would trouble to lecture the owner of a horse on the harmlessness of wolf teeth, when his antecedents, himself and his children are all positively convinced of their harmfulness, runs some risk of being called an idiot besides losing a patient and a client. These actions on the part of professional men, might better be winked or whispered instead of written, in spite of the fact that they play no small part in a practitioner's success. Of course such recommendations have their bearable limitations. There must be a distinction made between them and faking, pure and simple. In this connection, it can be truthfully mentioned that horse dentistry offers no greater opportunity for faking, for dishonest methods, for unnecessary therapeutics, than any other part of the healing art. The unscrupulous will perform any kind of unnecessary operations, knowing them to be such, while the honorable practitioner limits his unnecessary

therapeutics to harmless treatment. Is there living to-day a practitioner of wide experience who has never administered treatment, for strategical reason, that could be of no possible service to the patient? We dope, we cut, we advise in the manner to best serve our patients, our clients and ourselves, disregarding scientific principles, as seldom and as little as possible, but as surely as the welfare of all concerned demands. To claim that successful practitioners, either human or veterinary, do less, is a gross misconception of the facts, and to attempt to change this attribute of practitioners is as foolish as it is impossible until such time as all mankind has materially changed its tactics in the struggle for existence. What Prof. Williams would have us believe is debasing to science might easily be interpreted as an effort towards self-preservation. If a horse is brought to my hospital with inflamed eyes I would extract its wolf teeth. If asked as to their effects upon the eyes I would tell the truth. If a horse is submitted with instructions to extract its wolf teeth, out they come without further comment. This is but one of many similar situations met every day in a busy professional life. They might be enumerated *ad infinitum*.

We read elsewhere in Prof. Williams' oration of two veterinarians who filed and filed and filed the molars of a horse that later proved to be suffering from an inflammatory condition of a single tooth. These two tooth-rasping vets. failed to locate the real seat of irritation, true enough, and they erred in filing the molars much more than men of better judgment would have done, but in the matter of diagnosis they did no worse than many of us frequently do. Dental inflammations in their incipient stages are not so very easily discovered from the cursory examination we are generally compelled to depend upon. A veterinarian in practice is usually expected to make the dental diagnosis in the standing position by palpation and inspection, without much ceremony. The conclusions must be based upon speculation largely. It is only when the horse is cast and placed in position for operation that the exact diagnosis is made possible. It is often impossible to convince a client that a horse must be cast for no other purpose than that of making an examination of a suspected tooth. Witness the case reported by Williams himself in his article entitled "Empyema of the Facial Sinuses of the Horse" (*AM. VET. REVIEW*, Vol. XXX, No. 2). A four-year-old mare was presented for treatment February 6th, 1900, and the diagnosis was made

March 2, 1903. Here is a case of dental inflammation in which three years elapsed before Prof. Williams was able to make an accurate diagnosis. The mare was trephined twice previously, and each time was presumably placed in position specially appropriate for making the most careful examination of the oral cavity. Still the poor mare went on and on, until the face bulged and the decayed tooth was "split into numerous fragments." Then the appropriate treatment was given, and the mare, after three years of suffering, was promptly and permanently cured. What a pity it is that a poor animal must suffer so long before it becomes possible for the veterinarian to afford relief. Is this not a beautiful exemplification of our deficiencies? Here is a mare brought to the "*Mecca of Science Veterinary*," and was twice forced to go away disappointed with human ability to relieve pain. Why? Incompetency? No. No one would charge Prof. Williams with incompetency. His work along this very line is too well known and, yes, too well appreciated, to make good any such insinuation. It is the difficulty of making the dental diagnosis at this stage that prolonged the poor mare's suffering, and the reiteration of the history of the case here is made frankly without intent to belittle or ridicule, but for the chuckling satisfaction it must be to other poor devils who have bumped the same bumps over and over, in places where deficiencies count for much more than they do in the free clinic.

As to bishoping.—Bishoping is a fraud. No veterinarian should perform the operation under any circumstances. It is not professional services. It is unprofessional services. I confess to having performed the operation a number of times in years gone by, but fortunately for myself I have reformed. In those years I performed the operation at the request of men whose minds were admittedly stronger than my own. I learned to do it well, so well that many a veterinarian was deceived by my work. In writing my book "*Animal Dentistry, etc.*" I carefully considered the advisability of describing the operation, fearing the criticism it must surely arouse from some source or other. After deliberate consideration it was decided to give the operation a place on the grounds that the student or veterinarian should know the *method* as well as the *crime*, in hope that the former may assist in disclosing the latter. If the volume "presumably dedicated to scientific dentistry," has been debased, the loss is my own, but if scientific horse dentistry is the sufferer I promptly apologize for my

shortsightedness. It is very doubtful if any harm has been done, however. Our students and the members of our profession have been so many years out of the kindergarten that it is very doubtful if their set minds could be poisoned so easily. The man who would proceed to commit any given crime upon learning the method of committing it, would sooner or later have learned the method, if not in one way then in another. Bishoping for generations had been performed with very crude hand instruments, and the results obtained deceived no one who possessed the least knowledge of horses' teeth from the standpoint of determining age. The work was always so "raw" that it was always detected in advance of the other changes by which age is determined. The bishoped mouth, in fact, was not intended to deceive any one except the unsuspecting novice. Now-a-days, things have changed. Bishoping is done so well, under favorable circumstances, that no expert will detect it, unless a very careful and special examination is made. This new departure, this new danger into which we have frequently seen members of the profession fall, renders its publicity particularly defensible, even in a scientific (?) book.

Every real valuable *operation, medicine or method*, has been abused at some time after its introduction into the medical professions. The professions are prone to run riot with every new acquisition. The new remedy is always overdone for a time. So it was with tooth-filing. A valuable operation and an easy method of performing it was introduced into the veterinary profession. The manifest benefit, here and there, was heralded as an argument in favor of its universal application. To-day, in our sober senses, we are learning its real worth, its real indications, and we are engaged in teaching our new recruits this knowledge, which time alone could have evolved. The danger point has been passed. Prof. Williams should have delivered his oration on "The Ethics of Horse Dentistry" twenty years ago.

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A FEW SURGICAL SUGGESTIONS.

1. *In suturing* the skin always so adjust the stitches so as to bring only raw surfaces into apposition. Infolded edges will not reunite.

2. Never draw sutures too taut in tying the knots after the edges are brought together and always preserve enough skin in an operation to render apposition possible without stretching

the skin. Taut stitches are seldom effectual; the tissues caught within them becomes strangulated; a favorable field for infection is created; and they always leave an indelible blemish. In short, always avoid tension whenever possible.

3. *In removing stitches* after the edges of a wound have united cut them near the skin so that no part of the exposed portion of the thread is drawn through the stitch tract. A well healed wound is sometimes infected in this manner.

4. An English surgeon is earning the reputation of leaving no scar after his operations, by making *bevelled incisions* through the skin instead of cutting directly through it at a right angle with the surface as is usually done. The slant or bevelled incision heals without leaving any visible scar tissue at the surface of the skin. Primary union of the epithelium occurs before the underlying connective tissue blocks its prompt regeneration. In the legs of horses where the skin is thick the method has given exceptionally flattering results.

5. *In castrating horses in the standing position* always make an extra effort to place the emasculating instrument as high up as possible before crushing off the cord. The one bane of "standing castration" is the great difficulty of removing enough cord with the testicle. Some have recommended cutting of the cremaster muscle to let the testicle fall well out of the scrotum, but this is not always easily accomplished and it always prolongs the operation somewhat. There must be no delay in castrating horses in this manner. The operation to be successfully done must be promptly executed and finished before the horse has gotten into the fighting mood. The operation is always marred if there is any delay.

6. *In trephining the skull* it is not necessary to excise a piece of skin. A straight incision, dilated with retractors to admit the trephine, is sufficient and it leaves a much smaller hairless scar. The removal of a piece of skin the size of the circular trephine has been abandoned by the best practitioners.

7. *In repulsing superior molars* of old horses always make preparations to prevent a permanent channel between the alveolar cavity and the sinus. A large hole in such an osseous environment especially after the reactive forces have been greatly diminished by age, will only heal under the most favorable conditions and often will refuse to heal at all. A very satisfactory plan is to wedge a piece of gutta percha between the crowns of the two teeth bounding the vacant alveolar cavity, without forcing it into the depths of the cavity. The wedge is applied

on the second day after the operation when no blood clot will accumulate beneath it.

8. If it is divine to prevent surgical pain it is still more divine to prevent discomfort, shock or even death from the loss of blood. All surgical operations should be made as near bloodless as possible. Every possible drop of blood should be preserved to the patient. The loss of blood, especially when combined with pain, diminishes the vital forces to the minimum and thus retards healing and favors fatal or harmful infections.

9. In performing long, painful, sanguinary operations, a thermo-cautery in the hands of a third assistant is very useful to touch up the bleeding spots as they appear. Oozing places and spurting vessels can be promptly closed without interrupting the operator and thus greatly decrease the duration of the dissection.

THE MISSOURI VALLEY VETERINARY ASSOCIATION has appointed a committee, of which Dr. Sesco Stewart is chairman, to again invite the A. V. M. A. to meet in Kansas City, in 1907.

ON account of continued illness, all the show horses of Mr. Eben D. Jordan, of Boston, are to be sold. This announcement will be received with genuine regret by all devotees of horse shows, for he stood for all that was best and loftiest in the gentleman's sport. Most, if not all, the splendid Hackneys which he exhibited were of his own breeding.

WE regret to announce the death of the wife of Dr. W. A. Thomas, late State Veterinarian of Nebraska. In the June REVIEW it was stated that after 25 years' residence in Lincoln, he would remove to Weaubleau, Mo., to engage in stock farming. It was while he was preparing to leave for his new home that Mrs. Thomas was taken ill, and after a short sickness died. The Doctor and his three daughters have the sympathy of the profession in their great bereavement.

KANSAS MULES TO ALASKA.—The Kansas mule will be used by railroad and grading contractors in Nome, Alaska. A carload of twenty-four Kansas mules left Kansas City recently for Seattle. There they will be loaded on a steamer and sent to a point near Nome, where they will be transferred to a small boat which can enter the shallow harbor at Nome. The mules were bought in Kansas and shipped by Robertson & Co.'s mule buyer at the stock yards.

EXTRACTS FROM EXCHANGES.

BELGIAN REVIEW.

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

VERMIFORM ANEURISMS AND CONSECUTIVE THROMBOSIS [*Zroaenepoel*].—A colt, aged 18 months, was brought to the author for treatment, presenting the following symptoms: Having walked about 8 kilometres, the animal seemed exhausted; his pulse was weak, quick and irregular, heart beating strongly and could be heard all over the chest. The visible mucosæ were pale and anæmic; respiration slow and regular—all the signs of an animal in miserable physiologic condition. There was diarrhœa, which appeared after a protracted constipation; it was liquid, yellowish and fœtid. In three weeks it brought the horse to the condition of a skeleton. Tuberculinization gave negative results. A treatment of naphthaline, tincture of iodine, tannin, arsenious acid, and milk *ad libitum* was prescribed, and the animal placed under observation. After ten days it was found one morning that the colt had struggled much during the night. Standing up his body balanced upon his legs, and he had to be supported to avoid falling. Made to walk, the staggering increased, and the left diagonal biped refused to move forward; the left fore and right hind legs had to be dragged with ropes to make them advance. Returned with difficulty to his stable, the horse dropped, exhibited symptoms of violent colic, and died. At the post-mortem the lesions were found on the spleen, digestive canal and arteries. The spleen weighed ten kilogrammes; in its centre there was a sequestrum as big as a man's head; the splenic artery was obstructed in its centre. The organ was adherent to the diaphragm, stomach, small and large intestines. The stomach, atrophied, showed the lesions of chronic gastritis. The small intestines, congested and ecchymosed, had its mucous membrane thickened. The colon had a mucous membrane black, friable, and engorged with venous blood, and the cæcum was covered with numerous little tumors, lodging the larvæ of sclerostoma. The arterial lesions were immense, and all of thrombotic nature. In the great mesenteric it was old, adherent, and softened here and there. In the aorta the clot was recent. The axillary, humeral, and radial of the left fore leg, as also the

femoral and popliteal of the right hind leg were completely obliterated. The clot extended also into the renal and the hepatic arteries. The splenic is entirely closed by an old clot, partly purulent. As complications of these conditions there were: cardiac hypertrophy, stasis of the kidney, cirrhosis of the liver and pulmonary emphysema. (*Annales de Bruxelles, Jan., 1906.*)

OBSERVATIONS OF AN ENZOÖTIC OUTBREAK OF PERIODIC OPHTHALMIA IN THE HORSE [*Mr. Rigaux*].—The infectious nature of periodic ophthalmia has been demonstrated by Dr. Dor, who has found a micrococcus resembling the pyogenes staphylococcus in the exudate of the anterior chamber of a diseased eye, and his observations were confirmed by Tchoubarowsky, who also found a staphylococcus in the same condition, and succeeded in reproducing the disease experimentally. The causes of the affection, according to writers, vary: lymphatism, heredity, stables ill ventilated, dark and badly kept, age of dentition, damp or marshy ground, etc. The influence of soil seems to be a serious cause, since emigration has protected horses from the disease. The following observations may throw light on this. It occurred on a farm where some twenty horses were kept. Since fifty years no periodic ophthalmia had been there. The stables were clean, well ventilated, and white-washed twice a year. Stock kept in best condition. *Case I.*—End of January, 1904; two-year old gelding; right eye bathed with tears, conjunctiva injected, contraction of the pupil, hypopion. Left eye taken day after. Treatment by iodide of potassium. Recovery in a week. Relapse two months later in both eyes. One of them is lost. *Case II.*—March 19, with this colt, a stallion of 29 months is placed for companionship. Nine days later he has suspicious symptoms in the right eye, which was pronounced periodic ophthalmia by a professor of the Veterinary School of Brussels. The left eye is soon affected also. Both eyes were the seats of relapses. *Case III.*—Three-year-old mare; left eye diseased; cured with same treatment; relapse a month after. *Case IV.*—Thirteen-months-old colt, taken in May, has other attacks in June and July, and became blind. *Case V.*—Filly of ten months, affected in May in the left eye first and the right eye after; has relapses in July and August; blind in the end in both eyes. *Case VI.*—Mare of ten years, has an attack at the farm in May in the right eye. Sold, she has since had nothing abnormal with her eyes. *Case VII.*—Mare of eleven years, attack in right eye in June, is sold in October apparently sound. *Case VIII.*—Two-year-old colt

has never had anything at the farm; is sold at a fair in February, 1905, and a few days after reaching his new owner has periodic ophthalmia. *Obscure Cases*.—From time to time lachrymation and contraction of the pupil have been observed among the horses of the farm. For the author the outbreak was evidently one of periodic ophthalmia, in which the influence of contagion cannot be denied.—(*Annales de Belgiq., Jan., 1906.*)

FATAL HÆMORRHAGE FROM GENITALS IN A SOW—PECULIAR ABNORMALITY OF THE PAVILION [*Mr. Gueldu*].—Outside of those that occur before or after delivery, those kind of hæmorrhages are not frequent. They are more commonly observed in cows and in dogs, where their uterine organ is easily detected in the discovery of myomas or fibromyomas of that cavity. There are, however, cases where their origin is situated more deeply, as the present case indicates. A sow had well delivered in October last, and the author was called to see her on Jan 3. He found her lying, indifferent to what was going on around her, the skin slightly cyanotic. She refuses all food, has had no passage for some time; her rectal temperature is normal. Constipation is suspected, and purgative ordered. Three days later she seems better; appetite is improving, but has passed a large quantity of blood by the vulva. Her temperature is low, the ears drooping; mucous membranes and skin are very pale. Hæmorrhages returned and the sow died. Post-mortem: Carcass almost bloodless. Liver and hepatic glands full of tubercles. Genital apparatus free from disease, except on one of the ovaries, where there is a tumor as big as a large egg, smooth and shining on its surface. It is red in color. It is attached to the fallopian canal, which dips into it with the broad ligament through an elliptical orifice. The borders of this are hard and look natural. The tumor is formed of clotted blood, arranged in concentric layers, and surround the ovary, which is apparently sound. Evidently the hæmorrhage came from the ovary.—(*Annales de Belgiq., Feb., 1906.*)

FRACTURE OF THE RADIUS AND CUBITUS IN A PREGNANT HEIFER [*F. Hermans*].—Fractures are not any more rare in cattle than in horses and if their treatment is not recommended it is more to the point of view of general economy. The following case shows that very good results are sometimes obtained. This heifer was eight months pregnant. She has superior milking qualities. One morning she is found resting on three legs, the left fore leg unable to carry its share of the

weight of the body. There is a large swelling on the left forearm, involving the elbow joint, and less marked on the inside of the leg. The animal is in great pain. On manipulating the leg crepitation is manifest; there is a transversal fracture of both bones of the forearm on a level with the radio-cubital arch. Cold water compresses were applied for a few days to obtain a reduction in the swelling, and then a permanent adhesive bandage with plaster of Paris strips was applied. The general condition improved immediately. The appetite returned, and the local pain having subsided the animal stood up now and then, with her injured leg slightly flexed and her toes gently touching the ground. She calved three weeks after the accident at term. The dressing was left on for fifty days. There remained a very long callus on the posterior face of the forearm, which was the cause of a little knuckling at the fetlock. With time, however, the callus was resorbed, and after four months the animal walked perfectly straight on all of her legs.—(*Annales de Bruxelles, March, 1906.*)

GERMAN REVIEW.

By J. P. O'LEARY, M. D. V., Bureau of Animal Industry, Buffalo, N. Y.

PLACENTOPHAGIA [*T. Wieland*].—There appeared a short time ago in the *Berliner Tierärztliche Wochenschrift*, an article concerning the eating of the placenta. W. quotes Dr. Quinet's views on this subject (*Chasse et Pêche, 21 Annéi, No. 43*) translated into German. The Belgian author says: "It has been said that rabbits and guinea-pigs have revolting habits and cannibalistic tendencies and that they conceal a bad character, perverse instinct, and so on, under this seemingly good nature." He says that the males of the young rabbits fight and pester the little females shortly after they are born; however, these are slight offenses common to all animals which must fight for their existence and try to break the monotony because they obey their instinct. However, rabbits and guinea-pigs have been charged with killing their offspring and even of eating them. We have long believed, with an appearance of justification, that even in the human family, the wretched and debauched are induced to acts of murder and infanticide, but that is a false interpretation of a natural phenomenon which is not peculiar to this species. Animals kill their young against their will. They are instinctively compelled to eat their placenta only, and all

mammalian females eat their own placental membranes. This is a dominant physiological necessity, as we will see. The newly born yet enveloped in the placenta lying motionless within it and completely saturated by special nutritive juices, it is no wonder that they slight these poor animals having no midwife nor obstetrician to instruct them, they eat up everything heedlessly. But as soon as they feel that the newly born move or are alive, they are no longer deceived; they show on the contrary the greatest concern for their offspring. And this eager desire, this necessity to devour their placenta is peculiar to all mammalian females, carnivora as well as herbivora, and it is even common among tribes of people in Asia, Africa, and Oceanica, who are even at the present day placentophagists. Since the labors of Brown-Sequard we have studied and tested the potency of the organic juice and we have long recognized that the placental juices have great effect upon the health of the parturient and upon certain functions which stand in relation to it—for example, lactation. However, the influence of the placenta upon the organization of lactation is dependent upon other symptoms of pregnancy, which I shall try to summarize briefly for amateur breeders and others. The thyroid gland secretes iodine, arsenic and phosphoric bases, which play an important part in the formation of the skin and its appendages, hide, feathers, brain, genital organs, and the embryo. The excess of these substances is excreted in the form of menstruation in those females which have little hair upon the skin, and as long as there is no fœtus to consume them. The monthly catanemia in the human species is only a means of emptying the thyroid secretions, which are abundantly discharged during the menstrual period, in the unimpregnated uterus. Men are not subjected to it, because their hair system is a sufficient drainage for the products of the thyroid glands, which after puberty is constantly growing and renewing itself. The females of animals which are well clothed with hair, at the time of heat do not suffer any loss of blood, while those animals which have little hair, menstruate. We have noticed for a long time, that in the case of certain animals, a very close relation exists between the activity of the organs of reproduction at the time of heat, and the evolution of certain parts of the body which undergo changes periodically, as the antlers of the deer, the hoods of fowls, the nuptial feathers with which certain birds are adorned at the mating season. Moreover he has given an explanation of this strange phenomenon of the relation be-

tween apparently so remote and to a certain extent strange organs, in which he says, that a special epithelium plays the principal rôle in the fœtal evolution of the ovaries and testicles and that the feathers and hair are of a simple epithelial nature. To-day these anatomical analogies are strengthened by the functions of the thyroid glands; so that we can state with certainty, that each moult, in the case of animals covered with hair or feathers, is only a means of drainage for the secretions of the thyroid gland, which are eliminated in excessive quantities at the time of menstruation. Every moult, every new production of hair or feathers, stops as soon as the reproductive organs and their accessories, that is the mammary glands, begin their functions. Now additional organic juices flow together into the placenta and accumulate there for the development of a new being. Everything that the female body can produce, it stores up in the placenta. Fortunately at the moment of delivery the contractions of the uterus press the placenta slowly together, to some extent to facilitate the absorption of a part of this stored up supply, which later would be useless. In any case a great portion is wasted at the time of delivery, which is a great loss to the body. This natural instinct becomes a benefit. It impels the mother to make use of this valuable source of nutrition, which is created from her own body, even if she belongs to a species to which flesh foods are usually abhorrent. Since it has an especial value for her at this moment; it creates a strong desire to eat and digest the afterbirth. Every female which can eat all or a part of her placenta, recovers more quickly from her confinement and the milk secretion makes its appearance more rapidly and more plentifully. And it is especially true and striking in the case of rabbits and guinea-pigs. We take pains to prevent these animals from eating their afterbirth, and when we do, their offspring never attain full growth; the flow of milk makes its appearance late and scantily; the physiological formation of milk does not take place, and their young ones perish.—(*Berliner Tierärztliche Wochenschrift*.)

BEEF MEASLES IN MILK AND SUCKING CALVES [*Dr. Stroh in Augsburg*].—The author gives a preliminary *résumé* of the literature on this subject, to which he appends a description of the cases observed by himself. The author likewise reviews the various notes compiled, regarding the discovery of measles in calves, according to the age of the host and in relation to the anatomical conditions of the parasitic nodules. With regard to the latter, it is particularly interesting that the

measles are already found in a caseous condition; but upon more careful examination of the cheesy detritus enclosed in the measles sac, in spite of the youth of the parasites he was able to discover complete and intact cystocerci. This caseous detritus is not to be considered as a degenerated mass of measles themselves, but as the remains of an accompanying exudation process which later disappeared through absorption. With regard to the probable infection of the calves, Stroh excludes an intrauterine infection as a cause, but rather, that an early feeding of green food and straw as well as the transmission through the manure covered hands of tapeworm infected attendants. It is well known that those persons who teach the calves to suck furnish prolific sources for infection. The notably large numbers of measly sucking calves found by Stroh himself, he attributes to the thorough inspection and particularly to the close examination of the hearts of these animals. The author compiles the results of his interesting investigations as follows: (1) Spontaneous cattle measles discovered in sucking calves are less rare than was supposed. The measly formations appear, as a rule, as hard, lengthy and various sized nodules which usually enclose similar variously large developed cystocerci, which are completely intact, sometimes with a slight bloody serous fluid, and at other times of a more or less rich, yellow, green or brownish colored and frequently with bloody crowded detritus mass and further is surrounded with a very strong enveloping membrane. (2) In older spontaneously infected so-called milch calves, we frequently meet with measles originating usually in the customary form in the first period of life, as bladder-like formations with more or less thinned capsules and correspondingly transparent head-hooks. (3) The changes which take place in the measly formations in the course of several weeks, may happen as shown under paragraph 1, and under paragraph 2. (4) That with the observations in our cases and in those of Messner and others there occurs a special intense local tissue reaction, which must be regarded as a consequence of the delicate and slight irresistible power of the tissues in sucking calves. The physical condition of the animal is in no way impaired. (5) That the highly infected heart was regularly the primary seat of invasion in sucking calves. (6) The intrauterine infection of calves with tapeworm eggs, is not probable, and would account for an exceptionally small number of cases.—(*Zeitschr. für Fleisch und Milchhyg.*, XVI Jahrg., S. 8 und 40.

THE NEW MEAT INSPECTION LAW.

For the purpose of preventing the use in interstate or foreign commerce, as hereinafter provided, of meat and meat food products which are unsound, unhealthful, unwholesome, or otherwise unfit for human food, the Secretary of Agriculture, at his discretion, may cause to be made, by inspectors appointed for that purpose, an examination and inspection of all cattle, sheep, swine, and goats before they shall be allowed to enter into any slaughtering, packing, meat-canning, rendering, or similar establishment, in which they are to be slaughtered and the meat and meat food products thereof are to be used in interstate or foreign commerce; and all cattle, swine, sheep, and goats found on such inspection to show symptoms of disease shall be set apart and slaughtered separately from all other cattle, sheep, swine, or goats, and when so slaughtered the carcasses of said cattle, sheep, swine, or goats shall be subject to a careful examination and inspection, all as provided by the rules and regulations to be prescribed by the Secretary of Agriculture as herein provided for.

POST-MORTEM INSPECTIONS.

That for the purposes hereinbefore set forth the Secretary of Agriculture shall cause to be made by inspectors appointed for that purpose, as hereinafter provided, a post-mortem examination and inspection of the carcasses and parts thereof of all cattle, sheep, swine, and goats to be prepared for human consumption at any slaughtering, meat-canning, salting, packing, rendering, or similar establishment in any State, Territory, or the District of Columbia for transportation or sale as articles of interstate or foreign commerce; and the carcasses and parts thereof of all such animals found to be sound, healthful, wholesome, and fit for human food shall be marked, stamped, tagged or labeled as "Inspected and passed; and said inspectors shall label, mark, stamp, or tag as "Inspected and condemned," all carcasses and parts thereof of animals found to be unsound, unhealthful, unwholesome, or otherwise unfit for human food; and all carcasses and parts thereof thus inspected and condemned shall be destroyed for food purposes by the said establishment in the presence of an inspector, and the Secretary of Agriculture may remove inspectors from any such establishment which fails to so destroy any such condemned carcass or part thereof. And said inspectors, after said first inspection shall, when they deem

it necessary, reinspect said carcasses or parts thereof to determine whether since the first inspection the same have become unsound, unhealthful, unwholesome, or in any way unfit for human food, and if any carcass or any part thereof shall, upon examination and inspection subsequent to the first examination and inspection, be found to be unsound, unhealthful, unwholesome, or otherwise unfit for human food, it shall be destroyed for food purposes by the said establishment in the presence of an inspector, and the Secretary of Agriculture may remove inspectors from any establishment which fails to so destroy any such condemned carcass or part thereof.

The foregoing provisions shall apply to all carcasses or parts of carcasses of cattle, sheep, swine, and goats, or the meat or meat products thereof which may be brought into any slaughtering, meat-canning, salting, packing, rendering, or similar establishment, and such examination and inspection shall be had before the said carcasses or parts thereof shall be allowed to enter into any department wherein the same are to be treated and prepared for meat food products; and the foregoing provisions shall also apply to all such products which, after having been issued from any slaughtering, meat-canning, salting, packing, rendering, or similar establishment, shall be returned to the same or to any similar establishment where such inspection is maintained.

INSPECTION OF FOOD PRODUCTS.

That for the purposes hereinbefore set forth the Secretary of Agriculture shall cause to be made by inspectors appointed for that purpose an examination and inspection of all meat food products prepared for interstate or foreign commerce in any slaughtering, meat-canning, salting, packing, rendering, or similar establishment, and for the purposes of any examination and inspection said inspectors shall have access at all times, by day or night, whether the establishment be operated or not, to every part of said establishment; and said inspectors shall mark, stamp, tag, or label as "Inspected and passed" all such products found to be sound, healthful, and wholesome, and which contain no dyes, chemicals, preservatives, or ingredients which render such meat or meat food products unsound, unhealthful, unwholesome, or unfit for human food; and said inspectors shall label, mark, stamp, or tag as "Inspected and condemned" all such products found unsound, unhealthful, and unwholesome, or which contain dyes, chemicals, preservatives,

or ingredients which render such meat or meat food products unsound, unhealthful, unwholesome, or unfit for human food, and all such condemned meat food products shall be destroyed for food purposes, as hereinbefore provided, and the Secretary of Agriculture may remove inspectors from any establishment which fails to so destroy such condemned meat food products : Provided, That, subject to the rules and regulations of the Secretary of Agriculture, the provisions hereof in regard to preservatives shall not apply to meat food products for export to any foreign country and which are prepared or packed according to the specifications or directions of the foreign purchaser, when no substance is used in the preparation or packing thereof in conflict with the laws of the foreign country to which said article is to be exported ; but if said article shall be in fact sold or offered for sale for domestic use or consumption then this proviso shall not exempt said article from the operation of all the other provisions of this Act.

LABELLING OF FOOD PRODUCTS.

That when any meat or meat food product prepared for interstate or foreign commerce which has been inspected as hereinbefore provided and marked "Inspected and passed" shall be placed or packed in any can, pot, tin, canvas, or other receptacle or covering in any establishment where inspection under the provisions of this Act is maintained, the person, firm, or corporation preparing said product shall cause a label to be attached to said can, pot, tin, canvas, or other receptacle or covering, under the supervision of an inspector, which label shall state that the contents thereof have been "inspected and passed" under the provisions of this Act; and no inspection and examination of meat or meat food products deposited or inclosed in cans, tins, pots, canvas, or other receptacle or covering in any establishment where inspection under the provisions of this Act is maintained shall be deemed to be complete until such meat or meat food products have been sealed or inclosed in said can, tin, pot, canvas, or other receptacle or covering under the supervision of an inspector, and no such meat or meat food products shall be sold or offered for sale by any person, firm, or corporation in interstate or foreign commerce under any false or deceptive name ; but established trade name or names which are usual to such products and which are not false and deceptive and which shall be approved by the Secretary of Agriculture are permitted.

INSPECTION OF SANITARY CONDITIONS.

The Secretary of Agriculture shall cause to be made, by experts in sanitation or by other competent inspectors, such inspection of all slaughtering, meat canning, salting, packing, rendering, or similar establishments in which cattle, sheep, swine, and goats are slaughtered and the meat and meat food products thereof are prepared for interstate or foreign commerce as may be necessary to inform himself concerning the sanitary conditions of the same, and to prescribe the rules and regulations of sanitation under which such establishments shall be maintained; and where the sanitary conditions of any such establishment are such that the meat or meat food products are rendered unclean, unsound, unhealthful, unwholesome, or otherwise unfit for human food, he shall refuse to allow said meat or meat food products to be labeled, marked, stamped, or tagged as "inspected and passed."

NIGHT INSPECTION.

That the Secretary of Agriculture shall cause an examination and inspection of all cattle, sheep, swine, and goats, and the food products thereof, slaughtered and prepared in the establishments hereinbefore described for the purposes of interstate or foreign commerce to be made during the nighttime as well as during the daytime when the slaughtering of said cattle, sheep, swine, and goats, or the preparation of said food products is conducted during the nighttime.

TRANSPORTATION OF UNINSPECTED PRODUCTS PROHIBITED.

That on and after October first, nineteen hundred and six, no person, firm, or corporation shall transport or offer for transportation, and no carrier of interstate or foreign commerce shall transport or receive for transportation from one State or Territory or the District of Columbia to any other State or Territory or the District of Columbia, or to any place under the jurisdiction of the United States, or to any foreign country, any carcasses or parts thereof, meat, or meat food products thereof which have not been inspected, examined, and marked as "inspected and passed," in accordance with the terms of this Act and with the rules and regulations prescribed by the Secretary of Agriculture: Provided, That all meat and meat food products on hand on October first, nineteen hundred and six, at establishments where inspection has not been maintained, or which have been inspected under existing law, shall be examined and labeled under such rules and regulations as the Secre-

tary of Agriculture shall prescribe, and then shall be allowed to be sold in interstate or foreign commerce.

COUNTERFEITING OF LABELS PROHIBITED.

That no person, firm, or corporation, or officer, agent, or employee thereof, shall forge, counterfeit, simulate, or falsely represent, or shall without proper authority use, fail to use, or detach, or shall knowingly or wrongfully alter, deface, or destroy, or fail to deface or destroy, any of the marks, stamps, tags, labels, or other identification devices provided for in this Act, or in and as directed by the rules and regulations prescribed hereunder by the Secretary of Agriculture, on any carcasses, parts of carcasses, or the food product, or containers thereof, subject to the provisions of this Act, or any certificate in relation thereto, authorized or required by this Act or by the said rules and regulations of the Secretary of Agriculture.

INSPECTION OF ANIMALS AND CARCASSES INTENDED FOR EXPORT.

That the Secretary of Agriculture shall cause to be made a careful inspection of all cattle, sheep, swine, and goats intended and offered for export to foreign countries at such times and places, and in such manner as he may deem proper, to ascertain whether such cattle, sheep, swine, and goats are free from disease.

And for this purpose he may appoint inspectors who shall be authorized to give an official certificate clearly stating the condition in which such cattle, sheep, swine and goats are found.

And no clearance shall be given to any vessel having on board cattle, sheep, swine, or goats for export to a foreign country until the owner or shipper of such cattle, sheep, swine, or goats has a certificate from the inspector herein authorized to be appointed, stating that the said cattle, sheep, swine, or goats are sound and healthy, or unless the Secretary of Agriculture shall have waived the requirement of such certificate for export to the particular country to which such cattle, sheep, swine, or goats are to be exported.

That the Secretary of Agriculture shall also cause to be made a careful inspection of the carcasses and parts thereof of all cattle, sheep, swine, and goats, the meat of which, fresh, salted, canned, corned, packed, cured, or otherwise prepared, is intended and offered for export to any foreign country, at such times and places and in such manner as he may deem proper.

And for this purpose he may appoint inspectors who shall

be authorized to give an official certificate stating the condition in which said cattle, sheep, swine, or goats, and the meat thereof, are found.

And no clearance shall be given to any vessel having on board any fresh, salted, canned, corned, or packed beef, mutton, pork, or goat meat, being the meat of animals killed after the passage of this Act, or except as hereinbefore provided for export to and sale in a foreign country from any port in the United States, until the owner or shipper thereof shall obtain from an inspector appointed under the provisions of this Act a certificate that the said cattle, sheep, swine, and goats were sound and healthy at the time of inspection, and that their meat is sound and wholesome, unless the Secretary of Agriculture shall have waived the requirements of such certificate for the country to which said cattle, sheep, swine, and goats or meats are to be exported.

That the inspectors provided for herein shall be authorized to give official certificates of the sound and wholesome condition of the cattle, sheep, swine, and goats, their carcasses and products as herein described, and one copy of every certificate granted under the provisions of this Act shall be filed in the Department of Agriculture, another copy shall be delivered to the owner or shipper, and when the cattle, sheep, swine, and goats or their carcasses and products are sent abroad, a third copy shall be delivered to the chief officer of the vessel of which the shipment shall be made.

PENALTY FOR VIOLATIONS OF LAW.

That no person, firm, or corporation engaged in the interstate commerce of meat or meat food products shall transport or offer for transportation, sell or offer to sell any such meat or meat food products in any State or Territory or in the District of Columbia or any place under the jurisdiction of the United States, other than in the State or Territory or in the District of Columbia or any place under the jurisdiction of the United States in which the slaughtering, packing, canning, rendering, or other similar establishment owned, leased, operated by said firm, person, or corporation is located unless and until said person, firm, or corporation shall have complied with all of the provisions of this Act.

That any person, firm, or corporation, or any officer or agent of any such person, firm, or corporation, who shall violate any of the provisions of this Act shall be deemed guilty of

a misdemeanor and shall be punished on conviction thereof by a fine of not exceeding ten thousand dollars or imprisonment for a period not more than two years, or by both such fine and imprisonment in the discretion of the court.

APPOINTMENT AND DUTIES OF INSPECTORS.

That the Secretary of Agriculture shall appoint from time to time inspectors to make examination and inspection of all cattle, sheep, swine, and goats, the inspection of which is hereby provided for, and of all carcasses and parts thereof, and of all meats and meat food products thereof, and of the sanitary conditions of all establishments in which such meat and meat food products hereinbefore described are prepared; and said inspectors shall refuse to stamp, mark, tag, or label any carcass or any part thereof, or meat food product therefrom, prepared in any establishment hereinbefore mentioned, until the same shall have actually been inspected and found to be sound, healthful, wholesome, and fit for human food, and to contain no dyes, chemicals, preservatives, or ingredients which render such meat food product unsound, unhealthful, unwholesome, or unfit for human food; and to have been prepared under proper sanitary conditions, hereinbefore provided for; and shall perform such other duties as are provided by this Act and by the rules and regulations to be prescribed by said Secretary of Agriculture; and said Secretary of Agriculture shall, from time to time, make such rules and regulations as are necessary for the efficient execution of the provisions of this Act, and all inspections and examinations made under this Act shall be such and made in such manner as described in the rules and regulations prescribed by said Secretary of Agriculture not inconsistent with the provisions of this Act.

BRIBERY OF INSPECTORS A FELONY.

That any person, firm, or corporation, or any agent or employé of any person, firm, or corporation who shall give, pay, or offer, directly or indirectly, to any inspector, deputy inspector, chief inspector, or any other officer or employé of the United States authorized to perform any of the duties prescribed by this Act or by the rules and regulations of the Secretary of Agriculture any money or other thing of value, with intent to influence said inspector, deputy inspector, chief inspector, or other officer or employé of the United States in the discharge of any duty herein provided for, shall be deemed guilty of a felony and, upon conviction thereof, shall be pun-

ished by a fine not less than five thousand dollars nor more than ten thousand dollars and by imprisonment not less than one year nor more than three years; and any inspector, deputy inspector, chief inspector, or other officer or employé of the United States authorized to perform any of the duties prescribed by this Act who shall accept any money, gift, or other thing of value from any person, firm, or corporation, or officers, agents, or employés thereof, given with intent to influence his official action, or who shall receive or accept from any person, firm, or corporation engaged in interstate or foreign commerce any gift, money, or other thing of value given with any purpose or intent whatsoever, shall be deemed guilty of a felony and shall, upon conviction thereof, be summarily discharged from office and shall be punished by a fine not less than one thousand dollars nor more than ten thousand dollars and by imprisonment not less than one year nor more than three years.

INSPECTION DOES NOT APPLY TO FARMERS AND RETAIL BUTCHERS.

That the provisions of this Act requiring inspection to be made by the Secretary of Agriculture shall not apply to animals slaughtered by any farmer on the farm and sold and transported as interstate or foreign commerce, nor to retail butchers and retail dealers in meat and meat food products, supplying their customers: Provided, That if any person shall sell or offer for sale or transportation for interstate or foreign commerce any meat or meat food products which are diseased, unsound, unhealthful, unwholesome, or otherwise unfit for human food, knowing that such meat food products are intended for human consumption, he shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding one thousand dollars or by imprisonment for a period of not exceeding one year, or by both such fine and imprisonment: Provided also, That the Secretary of Agriculture is authorized to maintain the inspection in this Act provided for at any slaughtering, meat-canning, salting, packing, rendering, or similar establishment notwithstanding this exception, and that the persons operating the same may be retail butchers and retail dealers or farmers; and where the Secretary of Agriculture shall establish such inspection then the provisions of this Act shall apply notwithstanding this exception.

\$3,000,000 APPROPRIATED FOR INSPECTION.

That there is permanently appropriated, out of any money in the Treasury not otherwise appropriated, the sum of three

million dollars, for the expenses of the inspection of cattle, sheep, swine, and goats and the meat and meat food products thereof which enter into interstate or foreign commerce and for all expenses necessary to carry into effect the provisions of this Act relating to meat inspection, including rent and the employment of labor in Washington and elsewhere, for each year. And the Secretary of Agriculture shall, in his annual estimates made to Congress, submit a statement in detail, showing the number of persons employed in such inspections and the salary or per diem paid to each, together with the contingent expenses of such inspectors and where they have been and are employed.

DR. C. J. MORROW, of Shelby, Ohio, has again entered the meat inspection service and reported for duty at So. St. Joseph in June.

DRS. PLUMMER and TEMPANY, of the U. S. Artillery post at Fort Riley, Kansas, attended the Missouri Valley meeting at Omaha.

DR. WILLIAM SWAN, of New York, has moved his office to the American Horse Exchange, Dr. Ryder having transferred his office to Twenty-fourth Street.

DR. E. A. A. GRANGE interested the members of the Veterinary Medical Association of New York County very much at the June meeting with his paper on "Motor Stimulants in Horses." He has conducted a number of experiments with the most popular formulæ for this purpose, and the details of their actions were very interesting.

THE CIVIL SERVICE EXAMINATION for meat inspectors held in April did not yield enough eligibles to meet the demand for the public service, hence a special examination was held on June 25th. If sufficient inspectors could not be secured under normal conditions, where will the supply come from for the much larger number now needed?

THE LAST ROUNDUP OF WILD HORSES.—*Wilson Creek, Wash., May 4.*—The last big roundup of horses in Eastern Washington has been in operation the past ten days, and about 3,000 of the wild equines have been brought into the corrals. The country ridden thus far has mostly been broken and mountainous. Shipping will begin about May 14. While a roundup is always an exciting incident, there has been little of accident or much out of the ordinary, considering the large number of riders engaged.

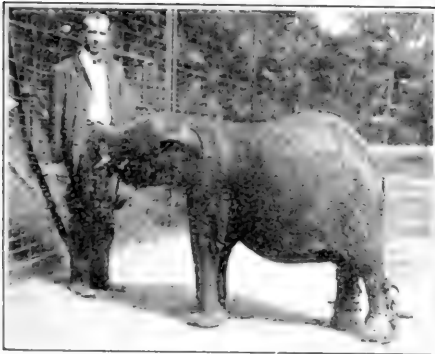
CORRESPONDENCE.

NEWSPAPER VS. SCIENTIFIC RECORDS—THE CASE OF OOM PAUL
(EVEN HIS NAME WRONG.)

NEW YORK ZOOLOGICAL PARK, NEW YORK, June 30, 1906.

Editors American Veterinary Review:

DEAR SIRS:—Your letter enclosing clipping from the newspaper relative to the Lorenz operation on our small elephant has just reached me. You will always be safe in placing



but little confidence in the many sensational stories about the Medical Department at the Park. I used to feel called upon to deny many of the "wonderful" operations performed by me (in the newspapers), but most of them are so utterly ridiculous that I have paid little attention to them of late.

I am very glad you did not reproduce the clipping in the REVIEW, as it is a badly exaggerated version of a very simple incident. This story with numerous variations (according to the fertility of the reporter's brain) has been published and republished all over the country, as well as in some of the papers in Europe (clippings having reached us from Paris newspapers).

The facts of the case are these: Several months ago our young African elephant developed very weak ankles behind, and they got so bad that I found it necessary to provide some artificial support for them. The Crown Surgical Co. made two stiff braces reinforced by iron and with adjustable straps so that the position of the ankles might be altered gradually. Besides the braces for the ankles, calcium phosphates in milk is being given daily, with the result that the little fellow has greatly improved during the past two months, and I have every reason to believe that the treatment will be entirely successful.

I intend keeping the braces on the ankles for perhaps a year longer. They have been taken off several times lately and I find the ankles practically straight, but do not think it advis-

able to leave them off for some time yet. The elephant was captured very young, which probably accounts for the weakness.

You will see by these few notes that the story is not very startling. I enclose photograph of the braces on the young elephant, whose name, by the way, is "Congo," not "Oom Paul."

He did not fall out of the feed trough. The braces do not weigh anywhere near 40 pounds. He was not knock-kneed in the hind legs. Paralysis was not apparent to me. While a close observer of animal nature, I have not been able to detect any unusual demonstration of Congo's love for his benefactor.

Sincerely yours, W. REID BLAIR.

LEGAL TEST OF A VETERINARY CORRESPONDENCE SCHOOL'S
STANDING—AN INTERESTING CASE FROM
THE NATIONAL CAPITAL.

WASHINGTON, D. C., June 21, 1906.

Editors American Veterinary Review:

DEAR SIRS:—Here in the District of Columbia we have no law regulating the practice of veterinary medicine and surgery, and consequently any one desiring to do so can announce himself to the public as a veterinarian.

During March a colored man by the name of Kennedy brought a horse to our office affected with fistulous withers, stating that he had had the horse treated by one Dr. John W. Price, also colored, who claimed to be a qualified veterinarian.

Kennedy informed us that he had made an agreement with Dr. Price to the effect that he (Price) was to cure the horse or receive no compensation. The fee was to have been \$8.00. Kennedy informed us that the horse had been operated on by Price, he using a razor to make the incision.

There was a long cicatrix, perhaps six inches in length. The fistula was not cured, as it was discharging profusely.

Dr. Price, however, claimed that the horse was cured, and had entered suit against Kennedy for the recovery of eighteen dollars, for professional services rendered.

Kennedy failed to have proper testimony present when the case was called, and Price obtained judgment for the sum of eight dollars and costs.

Kennedy failed to pay the judgment, and on Saturday, April 21st, the horse was seized by a deputy marshall and placed in the hands of Price to feed and keep clean only.

On the following day Price, upon his own responsibility,

placed a seton in the animal. Kennedy, in the meantime, had satisfied the judgment and arrived at Price's place just as Price was finishing the operation. Kennedy immediately took the horse and showed him to the deputy marshal, and from there brought him to our hospital.

We made an exploratory examination and found that the seton did not follow the fistulous tracts, but ran through healthy muscular tissue only.

As Price had given a bond to the deputy marshal, for the safe-keeping of the animal, Kennedy immediately brought suit for damages.

We had, in the meantime, learned that Price was a supposed graduate of the Ontario Veterinary Science Association, also of the Detroit Dental College, another correspondence institution.

The evidence produced at the hearing of the case was sufficient to convince the judge that Price was an imposter and he quickly awarded Kennedy damages to the amount of \$25, Price appealing.

Mr. Morris, an agent of the Humane Society, was present, and thought there was sufficient cause to arrest Price for cruelty to animals. This was done, and at the trial Price produced the so-called diploma of the Ontario Veterinary Science Association, swore on the stand that he had attended the above named place *in person*, had made dissections, attended clinics, etc., and had received his degree as regularly and legally as any veterinarian.

Our Dr. Dunn's testimony was to the effect that the above named place was, to the best of his knowledge, not a regularly organized veterinary college, but merely a correspondence school, and that Dr. Price was not, as he claimed, a qualified veterinarian.

There being no other veterinarians present to corroborate Dr. Dunn's testimony, the Judge gave Price the benefit of the doubt and dismissed the case.

A few days later Dr. Dunn and Mr. Morris (the P. C. A. Society Officer) received a letter from a firm of colored attorneys to the effect that they had been instructed by Price to enter suit for damages amounting to \$5000 for libeling and slandering him in his profession as a veterinary surgeon.

The attorneys, however, were liberal enough to inform us that the matter could be settled without suit, if we felt so inclined. I wish to state, however, that we are not so inclined.

We are firm in our belief that Price has committed a per-

jury when he swore under oath that he had attended the aforementioned college in person, and, with the aid of the REVIEW and its readers, we think that it would be an easy matter to produce evidence that will bear out our opinion, namely: That the Ontario Veterinary Science Association, of London, Ont., and Dr. John Price, graduate of said college, are both frauds and impostors.

It seems to us a shame that an impostor of the above-mentioned type should be allowed to swindle the unsuspecting public, especially in the Capital of the United States.

We would state, however, that there is a bill pending now which will regulate veterinary practice in the District of Columbia. Yours respectfully, GRENFELL & DUNN.

VETERINARY PROGRESS.

COVINGTON, KENTUCKY, July 9, 1906.

Editors American Veterinary Review:

DEAR SIRs:—It is a good thing that all of us do not have the same opinion, because if we did, we all would love the same girl, and then———

Dr. Reynolds' contribution in the July number of the REVIEW contains among others two or three points which might be considered overenthusiastic. It is not my desire to belittle any of the many efforts, literary or otherwise, which the Minnesota veterinarian has made, but in his recent paper on page 434 he very plainly states that division of the motor branch from the 11th cranial nerve to the sterno-maxillaris muscle, etc., prevents a horse from cribbing and cures the habit. All of us who operate frequently know that the results obtained from such surgical interference are negative in the long run.

If the REVIEW was only read by experienced men, who are able to differentiate between right and wrong of what is given them in print, statements like the above would matter but little, but it so happens that young professionals read and accept them as facts, to be disappointed later on. For that reason the author of any paper cannot be too cautious before exhibiting his mental merchandise.

On page 435 one reads "Heaves is easily preventable." The term "heaves" covers a multitude of sins, and it is to be admitted that some of the diseases which—from a scientific point of view—constitute "heaves" are preventable, but to state that "heaves" is easily preventable is an overenthusiastic statement.

W. E. A. WYMAN.

ARMY VETERINARY DEPARTMENT.

ARMY NOTES.

EXAMINATIONS FOR ARMY VETERINARIANS.—An examination for candidates to the Army service, with a view of selecting qualified veterinarians to fill existing vacancies, was scheduled to be held at Fort Riley during May. No veterinarians appeared before the examining board.

AN ELECTRIC HEATER has supplanted the kerosene and alcohol lamp for small water-bath or like purpose, at the Fort Riley Veterinary Hospital.

THE rank of the Legion of Honor has been conferred personally by the President of France upon James McLaughlin, of the horse importing firm of McLaughlin Bros., Columbus, Ohio. Mr. McLaughlin lives chiefly in France. The title implies that its possessor has been of great service to mankind.

A RESOLUTION was adopted by the Missouri Valley Veterinary Association at its meeting held in Omaha, Nebraska, inviting the A. V. M. A. to hold its meeting for 1907 in Kansas City, Mo., and appointed a committee of three to present the invitation at the meeting to be held in New Haven, Conn.

DR. W. L. WILLIAMS visited Brooklyn in July and performed his operation for roaring on several subjects. His method is considerably different from any previously described, and he has had a sufficient number of favorable results to recommend it. He will describe the technic at the New Haven meeting of the A. V. M. A.

MAY HIS SHADOW NEVER GROW LESS.—"Honolulu Bill" Monsarrat is going to attend the American Veterinary Medical Association's annual convention in New Haven; coincidentally he will root for Hawaii. The genial doctor's promotion work, however, may be punctuated with enquiries as to whether all bills in Honolulu are as big as he.—(*Honolulu Advertiser, June 24.*)

A COMPLETE CHANGE will occur in the *personnel* of the official veterinarians at the next exhibition of the Horse Show Association of America, Drs. Sheppard, Sherwood and Ryder (who have held office for a number of years) retiring. It is rumored that Dr. E. A. A. Grange and Dr. H. D. Gill will be chosen in their stead, while the third member of the staff has not yet been selected.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.
FORTY-THIRD ANNUAL MEETING, AUGUST 21 TO 24, 1906,
AT NEW HAVEN, CONN.

PHILADELPHIA, PA., July 18, 1906.

Editors American Veterinary Review :

DEAR SIRS:—I take pleasure in submitting the following program for the Forty-third Annual Meeting of the American Veterinary Medical Association to be held in New Haven, Connecticut, August 21-24, 1906:

Headquarters.—The headquarters of the Association will be at the Tontine Hotel, 149 Church Street. This hotel is operated upon the European plan, rates \$1.50 to \$2.00 per day. An excellent café is attached.

There are good restaurants in the immediate vicinity.

Hotel Garde, 42 Meadow Street. American plan, with bath \$3.00; without bath \$2.50.

Hotel Davenport, corner Court and Orange Streets. American plan \$2.50.

New Haven House, 996 Chapel Street. American plan \$4.00 to \$5.00 per day.

The Local Committee has a list of other hotels and boarding houses in which accommodations may be had if desired. Reservations should be made in advance by writing Dr. J. H. Kelley, No. 70 Olive St., New Haven, Conn.

Place of Meeting.—The sessions will be held in Harmony Hall, No. 9 Elm Street. This is only two blocks from the hotel headquarters.

Special Committee Meetings.—Monday, August 20, 1906: Executive Committee at 1 P. M.; Publication Committee at 4 P. M.

Special Exhibit.—Dr. W. Reid Blair, of the New York Zoölogical Park, New York City, will make an exhibit of pathological specimens representing various diseases of wild animals. Others are expected to add to this exhibit.

PROGRAM.

First Day, Tuesday, August 21, 1906.

8.00 A. M. Meeting of Executive Committee.

10.00 A. M. Association assembles.

Address of Welcome, Hon. John P. Studley, Mayor of New Haven.

Response by Dr. J. G. Rutherford, of Canada.

President's address.

Roll-call.

Submission of the Minutes of the previous meeting as presented in the annual report and in the records kept by the Secretary.

Unfinished business.

Report of Executive Committee.

Admission of new members.

Reports of Regular Committees:

Intelligence and Education.

Diseases.

Finance.

Publication.

Local Arrangements.

Necrology.

Resolutions.

12.00 Noon. Adjournment.

2.00 P. M. Association assembles.

Reports of Special Committees:

Army Legislation.

Report of Secretary.

Report of Treasurer.

Report of Resident Secretaries.

Discussion of Reports.

Election of Officers.

5.00 P. M. Adjournment.

8.00 P. M. Reception to all members and visitors in the parlors of the Tontine Hotel.

Second Day, Wednesday, August 22, 1906.

10.00 A. M. Association assembles.

Reports of Committees.

PAPERS AND DISCUSSIONS.

1. "Some Surgical Operations on Bovines"—Dr. J. C. Robert, Mississippi.

2. "Arecoline Hydrobromide"—Dr. P. A. Fish, New York.

3. "The Agglutination Method of the Diagnosis of Glaucomata"—Drs. V. A. Moore, W. J. Taylor and W. Giltner, New York.

4. "Our Insect Enemies"—Dr. W. H. Dalrymple, Louisiana.

5. "The Angora Goat and Sheep Industry of New England in Danger"—Dr. J. B. Paige, Massachusetts.

6. "The Veterinarian as a Business Man"—Dr. D. Arthur Hughes, Illinois.

12.00 Noon. Adjournment.

2.00 P. M. Association assembles.

Reports of Committees.

PAPERS AND DISCUSSIONS (*Continued*).

7. "Eradication of Mange Among Cattle in the West"—Dr. A. T. Peters, Nebraska.

8. "Tuberculosis in Swine"—Dr. Richard Ebbitt, Nebraska.

9. "Symptoms and Gross Post-mortem Lesions of Hepatic Cirrhosis in Cattle"—Dr. W. H. Pethrick, Nova Scotia.

11. "The Veterinary Service of the United States Army and the Military Veterinarian"—Dr. Charles H. Jewell, United States Army.

11. "Practical and Applied Surgery"—Dr. C. C. Lyford, Minnesota.

12. "Sentiment a Factor in Meat Inspection"—Dr. S. Stewart, Missouri.

5.00 P. M. Adjournment.

8.00 P. M. Association assembles.

Reports of Committees.

PAPERS AND DISCUSSIONS (*Continued*).

13. "The City Milk Supply"—Dr. Austin Peters, Massachusetts.

14. "Notes on the Surgical Relief of Roaring"—Dr. W. L. Williams, New York.

15. "Practical Aspects of the Treatment for Roaring"—Dr. J. S. Anderson, Nebraska.

16. "Present Status of the Crusade against the Southern Cattle Tick"—Dr. Tait Butler, North Carolina.

17. "Recent Developments in Immunization against Southern Cattle Fever"—Dr. J. W. Connaway, Missouri.

10.00 P. M. Adjournment.

Third Day, Thursday, August 23, 1906.

10.00 A. M. Association assembles.

Reports of Committees.

PAPERS AND DISCUSSIONS (*Continued*).

18. "Encephalitis in the Horse"—Dr. M. Francis, Texas.

19. "The Negri Bodies in the Diagnosis of Rabies"—Dr. L. Frothingham, Massachusetts.



VICE-PRES. J. G. RUTHERFORD.



VICE-PRES. W. H. DALRYMPLE.



VICE-PRES. E. H. SHEPARD.



VICE-PRES. C. E. COTTON.



PRESIDENT WM. HERBERT LOWE.



VICE-PRES. R. P. LYMAN.



TREASURER G. R. WHITE.

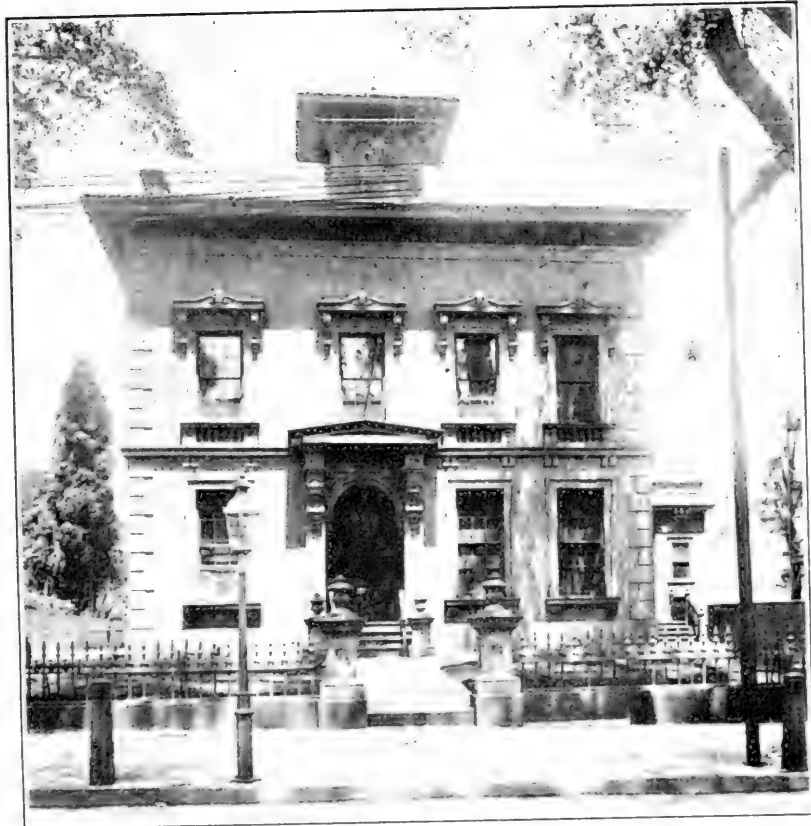


SECRETARY H. N. J. REPP.



LIBRARIAN W. L. WILLIAMS.

OFFICERS OF A. V. M. A., 1905-06.



CONVENTION HALL, A. V. M. A. - HARMONY HALL.



WOODBIDGE HALL, YALE UNIVERSITY.

20. "The Veterinary Schools of Europe"—Dr. Leonard Pearson, Pennsylvania.

21. "National Control of Hog Cholera"—Dr. M. H. Reynolds, Minnesota.

22. "The Management of Tuberculosis in Vermont"—Dr. F. A. Rich, Vermont.

23. "Veterinary Practice in the Logging Camps of Canada"—Dr. Thomas Thacker, Ontario.

24. "Veterinary Education in the United States"—Dr. D. S. White, Ohio.

12.00 Noon. Adjournment.

Fourth Day, Friday, August 24, 1906.

9.00 A. M. Surgical and Medical Clinic.

The Clinic will be held in a tent in the rear of Harmony Hall in which the sessions will be held. This is only two blocks from the hotel headquarters. Seats will be arranged so that all may witness the demonstrations.

The following will take part in the clinic: Dr. G. H. Berns, Brooklyn, N. Y.; Dr. W. L. Williams, Ithaca, N. Y.; Dr. A. H. Baker, Chicago, Ill.; Dr. G. R. White, Nashville, Tenn.; Dr. W. L. LaBaw, Boston, Mass.; Dr. R. C. Moore, Kansas, City, Mo.; Dr. L. A. Merillat, Chicago, Ill.; Dr. E. C. Beckett, Boston, Mass.; Dr. J. W. Adams, Philadelphia, Pa.; Dr. Leonard Pearson, Philadelphia, Pa.

Among the demonstrations will be operations for roaring, dentigerous cyst, schirrous cord, exostosis of the inferior maxilla, cartilaginous quittor and shoe-boil. There will also be demonstrations of anæsthesia, casting and restraint, diagnosis of lameness, neurectomy for the relief of lameness, and a number of medical cases.

JOHN J. REPP, *Secretary.*

* * *

ARRANGEMENTS FOR THE CONVENTION.

The Local Committee of Arrangements, composed of Dr. E. C. Ross (Chairman), Dr. J. H. Kelley, and Dr. H. Whitney, of New Haven; Dr. R. D. Martin, Bridgeport; Dr. H. E. Bates, South Norwalk; Dr. Thos. Bland, Waterbury; Dr. G. W. Loveland, Torrington, and Dr. R. P. Lyman, Hartford, have held frequent meetings, resulting in the compilation of a program sufficiently complete in detail to allow of publication, and which is furnished to the REVIEW by Dr. Lyman. It is as follows:

The headquarters of the 43d Annual Convention will be the Tontine Hotel, 149 Church St. There the meetings of the Executive Committee will be held, beginning Monday, August

20th. The convention hall, Harmony Hall, is situated at 9 Elm St., where also ample space is provided for the Clinic, August 24th. This building, only three or four minutes walk from headquarters, furnishes ideal accommodations for the sessions, committee rooms and also excellent opportunities for the display of exhibits; the latter without interfering with the business of the convention.

THE PROGRAM OF ENTERTAINMENT.

The program furnished for the entertainment of members and friends of the members comprises a visit, Tuesday afternoon, to the Yale Campus to inspect the various buildings, among which are Woolsey Hall, Dining Hall, Gymnasium, Museum and indeed many others.

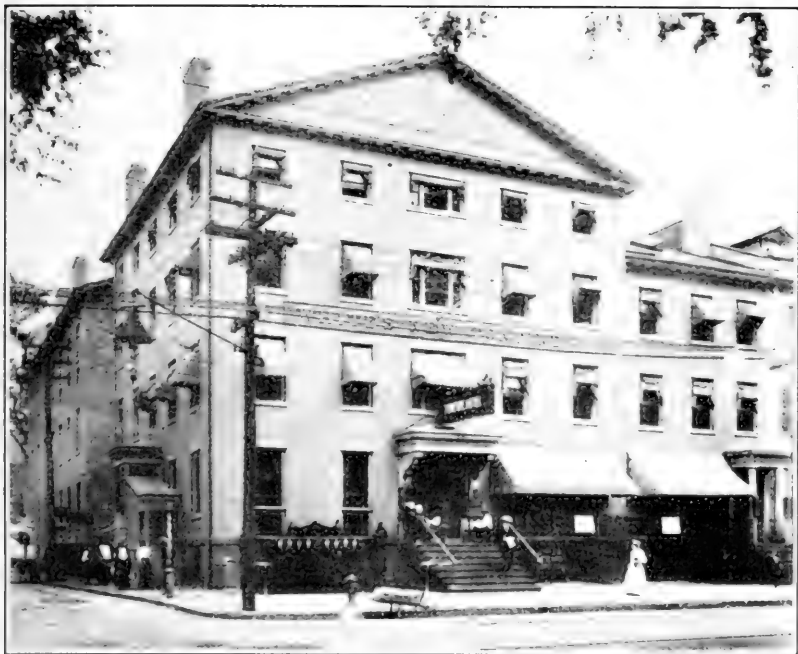
Upon Tuesday evening an informal reception will be held in the parlors of the Tontine. This will afford an opportunity for the ladies to renew former acquaintances and meet the many new ones that it is hoped will attend the annual A. V. M. A. gathering.

Tuesday morning at 10 o'clock the Convention will be opened in the presence of Mayor Studley, Mayor of New Haven, who has kindly offered to give the address of welcome.

On Wednesday morning the committee have arranged a trolley ride to Woodmont, skirting along the shore in a beautiful scenic trip, returning in time for luncheon. The afternoon will be devoted to a carriage drive around Lake Whitney, visiting Farnum and English Parks, and Soldiers' Monument. The evening entertainment will be a trip to White City, Savin Rock (certainly the Coney of Connecticut).

Another trip is planned for Thursday morning, visiting Light House Point. This trip offers a beautiful view of the sound, New Haven Harbor and Fort Trumbull. Thursday afternoon the members will take a breathing spell and are invited in company with their friends to an excursion upon Long Island Sound, this trip affording a view of the Connecticut shore, and the placid waters of the Sound furnishes a guarantee that all may fearlessly venture thereon. Returning, ample time will be allowed for resting and so prepare for the famous annual banquet in the Banquet Hall of the Tontine, an occasion that it is hoped will be the cause of most pleasant memories for a long time to come.

Friday, during the time devoted to the A. V. M. A. Clinic, the visitors will be given an opportunity for sight seeing and shopping about the city.



HEADQUARTERS, A. V. M. A.—TONTINE HOTEL.



SCHOOL OF FORESTRY, YALE UNIVERSITY

THE CLINIC.

The Clinic will be held in rear of the convention hall and demonstrations will be made by many veterinarians prominent in the profession. Among those that have already offered to assist the committee are: Drs. Merillat, Baker, Beckett, LaBaw, Moore (R. C.), White (G. R.), Williams (W. L.), Berns, Adams, Pearson, and others.

The outline of the clinic as thus far completed will consist of a demonstration of various methods of casting and restraining animals for surgical purposes, by Dr. G. R. White, and operations upon animals for the relief of roaring, dentigerous cyst, scirrhus cord, exostosis of inferior maxillary bone, cartilaginous quittor, shoe-boil, and others. Cases for diagnosis are to be furnished by members of the local committee.

PATHOLOGICAL EXHIBIT.

Dr. W. Reid Blair, of New York, offers an exhibit of pathological specimens that will be on exhibition in a room adjoining the convention hall.

Dr. E. C. Ross, 11 Orange St., New Haven, is Chairman of the Local Committee, and will answer all inquiries in reference to local arrangements.

TRANSPORTATION.

Negotiations for reduced rate of fare have not at this writing been quite completed, but have progressed so far as to assure a rate of one and one-third fare for the round trip, certificate plan. Full details will be set forth in the official program.

MISSOURI VALLEY VETERINARY ASSOCIATION.

The twelfth annual meeting was held in the City Hall at Omaha, Nebr., June 18th and 19th, 1906, with Dr. J. S. Anderson, President, in the chair. The following members and visiting veterinarians were present:—Drs. J. D. Tempany, E. H. Biart, A. Plummer, C. J. Hinkley, L. A. DeCow, A. A. Munn, G. Springer, R. A. Huntley, A. W. Carmichael, I. W. McEachran, B. F. Kaupp, H. L. Ramacciotti, G. A. Kay, C. R. McCoppin, C. A. Swanson, G. J. Collins, E. E. Trabert, G. W. Merker, J. E. Strayer, H. Jensen, R. L. Rhea, V. Schaefer, C. E. Stewart, J. L. Hoylman, G. A. Meixel, E. O. Odell, H. Crandall, C. D. Wilson, C. Goodwin, J. Vincent, S. Stewart, J. S. Anderson, J. R. Ebbitt, S. T. Miller, D. H. Miller, W. R. O'Neill, R. Lovell, G. R. Young, F. L. O'Neill, H. C. Simpson, R. Gabler, J. W. Haxby, C. E. Baxter, C. D. Williams, T. W.

Gidley, C. K. Paine, B. Fisher, J. Berg, J. J. Drasky, W. H. Tuck, W. N. Van Nordheim, C. A. McKim, E. F. Stewart, H. L. Feistner, P. Simonson, A. Alexander, M. T. Bernard, J. C. Myers, D. C. Scott, J. A. Dresback, P. Juckniess, and others.

The Hon. J. C. Dahlman, Mayor of Omaha, made an interesting opening address, which was responded to by Dr. S. Stewart, of Kansas City. The President's annual address followed, after which the routine business was attended to. The President appointed Drs. W. R. O'Neill, H. Jensen and V. Schaefer on Board of Censors in place of absentees.

The following names, duly vouched for and favorably passed upon by the Board of Censors, were then elected to membership:

Missouri: Drs. D. B. Leininger, A. D. Knowles, J. K. Callicitte, J. P. F. Smith, J. Robards, E. S. Dickey, H. Robbins, S. F. Loffer, J. M. Mayes, J. Stafford, D. E. Warner, B. Deuell.

Kansas: Drs. J. V. Lacroix, E. F. Jameson, A. E. Amend, O. Emmitt, E. C. Cravens, E. J. Drake, C. J. Young, W. A. Lyons, H. R. Collins, L. R. Feuteck, R. F. Bourne.

Iowa: Drs. A. J. Abarr, W. Elery, R. D. Abarr, C. E. Stewart, B. Fisher, H. C. Simpson, C. E. Baxter, T. W. Gidley.

Nebraska: Drs. D. C. Scott, J. C. Myers, R. Lowell, E. Ebbitt, C. A. Swanson, G. Springer, J. A. DeCow, P. Juckniess, J. E. Strayer, H. Pew, C. R. McCoppin, G. J. Collins, E. E. Trabert, H. A. Reagor, D. F. Stouffer, R. Gabler, E. Van Nordheim, E. K. Paine.

Oklahoma:—Drs. M. H. Rhoades, W. B. McAlister, E. Pugh, E. D. Kennedy.

Texas:—R. L. Rhea.

Illinois:—Dr. F. L. Saunders.

The following officers were elected for the ensuing year:

President—Dr. S. Stewart, Kansas City, Mo.

First Vice-President—Dr. H. L. Ramacciotti, Omaha, Nebr.

Second Vice-President—Dr. S. T. Miller, Council Bluffs, Iowa.

Secretary-Treasurer—B. F. Kaupp, Kansas City, Mo.

Board of Censors—Drs. G. J. Collins, R. Ebbitt, Nebraska; C. E. Stewart, Iowa; Dr. E. H. Biatt, Kansas; Dr. G. W. Merker, Missouri.

Dr. John Tempany, who has spent the major portion of his life as an Army veterinarian, and who is now stationed at Fort Riley, Kansas, was elected an honorary member.

Dr. H. Jensen, of Weeping Water, Nebr., gave an interesting talk on the "Sequelæ of Castration." The subject was discussed by Drs. Hoylman, C. E. Stewart, Drasky, Vincent, Schaefer, Simpson, Young, Jensen, and others. There was a great variation in the methods of operating. Dr. C. E. Stewart stated that his method of operation was to cut off the cord as close as possible to the inguinal canal and preferred using an emasculator. Dr. H. Jensen believes that to cut the cord long, the dangling end becomes infected and contributes to the cause of schirrous cord. Dr. J. J. Drasky believed the cause of hydrocele or "water seed" was due to the tunic closing and healing at end, forming a sac receiving the peritoneal fluids through inguinal canal. Dr. J. Vincent stated that he slit the tunic as high as possible, then with the emasculator cut off cord, including tunic, as high as possible, being sure the slit in skin and tunic was 4 or 5 inches long. His experience was that schirrous cord involved both cord and tunic, or outer covering of cord; that he had not seen "water seeds" follow the method he has employed.

Dr. S. T. Miller gave an interesting talk upon the subject of periodic ophthalmia. After reciting the history of many of these cases he gave his methods of operating and results of same. A small incision is made in the cornea at the corneo-scleral juncture, allowing the aqueous humor to escape; frequently a small quantity of purulent material is found in the lower part of the anterior chamber. This operation relieves intraocular tension and rids the anterior chamber of the small quantity of pus and often gives relief for a long time.

Dr. V. Shaefer's treatment is as follows:—R Atropine sulph., 15 grs.; adrenalin, 1:1000, 1 oz. A few drops is injected into the eye twice or thrice a day, then a 1:1000 bichloride pack is placed upon the eye. If pus accumulates in the inferior portion of the anterior chamber, operation is advisable. A vertical incision is made in opening the chamber. Eighty per cent. of the cases are reported to recover if the treatment begins in the early stages. Dr. S. Stewart stated that in the first or forming stage he had good results by shading the eye and using a solution of atropine.

Dr. Miller's experience was that the lens in the advanced stages became irregular in shape. Oftentimes the capsule ruptures and the lens is displaced anteriorly.

Dr. J. S. Anderson noted adhesion of iris to lens, making the use of atropine advisable in the treatment of the disease.

He attributed the opacity of the lens due to the extension of inflammation from the iris by contiguity of tissue.

Dr. R. Ebbitt raised the question as to whether it was a constitutional disease or due, as some authors have stated, to certain climatic conditions that exist in certain localities, or from gas from manure, etc.

Dr. E. C. Hart not being present to offer his paper on pneumonia, the President called upon Dr. S. Stewart to open a discussion. Dr. A. Plummer stated that there was very little pneumonia found in the cavalry horses owing to their good treatment and stabling. One interesting case was reported in which "Tallianine" was used the second day; 10 c.c. was given intravenously; in all five tubes were used. The patient recovered.

Dr. H. Simpson then reported a peculiar case of lameness.

Next the subject of omphalo-phlebitis was discussed by Drs. Schaefer, Jensen, Anderson and others. Dr. Schaefer states that it was present in both colts and calves in Nebraska. Dr. Jensen's treatment when the infection becomes generalized was 5 grs. collagyrum and 60 c.c. water, given intravenously once a day and repeated for three days. Dr. Anderson has found in holding autopsies that the umbilical vein and ureter were filled with pus, which may rupture and cause a fatal peritonitis. It has been his plan to curette the umbilical vein by means of a long slender probe and gauze, gauze being preferred to cotton on account of the danger of leaving some particles of cotton in the vein, then swab out with carbolic acid and turpentine, equal parts. Dr. Simpson uses injections of creolin.

Before adjournment Dr. J. J. Drasky moved that Dr. S. Stewart, H. L. Ramacciotti and J. S. Anderson be reëlected to invite the American Veterinary Medical Association to meet in Kansas City, Mo., in 1907. Seconded and carried.

The Association accepted the invitation of the Ak-Sar-Ben to be their guests at their den at 8 P. M.

At 9.30 A. M., June 19th, the meeting was again reconvened, with President Anderson in the chair.

Dr. J. J. Drasky reported two interesting cases, one in which the animal breathed with great difficulty during both inhalation and exhalation. Upon examination the left arytenoid cartilage was found to be as large as three walnuts, partially ossified. The second case was that of a supernumerary eye, which was located in the supra-orbital fossa. An interesting discussion of operations on roarers and the results of same were participated

in. Dr. Miller asked how long after operation before recovery was complete. Dr. Anderson stated that his experience was that the results varied from a few days to three months. He also stated that he did not think that ossification or ulceration of incised laryngeal cartilage was as common as some writers would lead us to think.

Dr. S. Stewart gave an interesting talk upon the subject of vaccinating cattle against tuberculosis, which was freely discussed by Drs. Rhea, Ebbitt, Kaupp, and others. Dr. Rhea stated that in his experience in vaccinating calves that the bo-vovaccine would produce a reaction the same as follows tuberculin injection if the calf be infected.

At 1.30 P. M. a clinic was held at Dr. S. T. Miller's hospital, 29 Fourth Street, Council Bluffs, Iowa.

Case No. 1.—A case was presented in which to all appearances the corpora nigra were abnormally developed, almost entirely occluding the pupillary opening. Other parts of the eye appeared normal.

Case No. 2.—A cow with actinomycotic tumor in soft structures of the left side of face was presented. Removal of tumor was performed by Dr. D. H. Miller, of Des Moines, Iowa.

Case No. 3.—Cryptorchid; operator, Dr. J. W. Haxby, Villisca, Iowa.

Case No. 4.—Cryptorchid; operator, Dr. C. E. Stewart, Chariton, Iowa.

Case No. 5.—A case was presented in which there was considerable enlargement in the region of the right maxillary sinus. The animal was placed upon an operating table and operated upon by Dr. J. S. Anderson, of Seward, Nebr. Considerable new growth was curetted out, which afterwards was submitted to Dr. A. T. Kinsley, of the Kansas City Veterinary College, for diagnosis. Upon microscopic examination it was found to be a fibroma undergoing a mucoid degeneration.

Case No. 6.—A black gelding was presented with fistula of withers, which was operated on by Dr. P. Simonson, Fremont, Nebr.

Case No. 7.—Ovariectomy in bitch; operator, Dr. D. C. Scott, of Omaha, Nebr.

Case No. 8.—Cribber; operation, tenotomy of sternomaxillaris tendon; operator, Dr. B. F. Kaupp, Kansas City, Mo.

Case No. 9.—Cryptorchid; operator, Dr. J. Vincent, Shenandoah, Iowa.

Case No. 10.—A black dog of common breed, noticed twenty-four hours previous to show signs of incoördination of movements. At this time would continually roll from left to right, sometimes would whine. It was thought a slight fullness appeared over the left hemisphere. Ether was administered by Dr. Kaupp and operated on by Dr. Anderson. No injury was found to skull in that region, so it was decided to destroy the dog and make an examination to determine if possible the cause of action. A considerable clot was found in the region of the medulla, which probably caused the pressure on the parts that governed the powers of coördination.

Case No. 11.—Collie dog, which has just recovered from an attack of distemper, was presented. Diagnosis, chorea as sequela of distemper.

Case No. 12.—A bay gelding of about 1,000 pounds was presented.

Case No. 13.—A bay horse, weighing 1,200 lbs., was presented with an enlarged hock of the left leg. Diagnosis, spavin. Prognosis of any treatment, unfavorable, due to the fact that it involved the tibio-tarsal articulation.

Case No. 14.—A bull terrier pup was presented for the purpose of having ears trimmed. Operated on by Dr. D. H. Miller, Des Moines, Iowa.

Case No. 15.—A bay mare, weighing 1,100 lbs., was presented with a neoplasm involving the lid of right eye. Operated on by Dr. S. T. Miller, Council Bluffs, Iowa. The neoplasm was given to Dr. Kinsley, who made a microscopical examination, and pronounced it a fibro-sarcoma.

By vote of the Association, the semi-annual meeting will be held in Kansas City, Mo.

At 8 P. M. a banquet was held, which ended this interesting and instructive meeting.

B. F. KAUPP, *Secretary.*

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

(Continued from July number)

THE RELATION BETWEEN HUMAN AND BOVINE TUBERCULOSIS.

By DR. W. AMOS.

“The subject of my paper, ‘The Relation Between Human and Bovine Tuberculosis,’ has absorbed considerable interest of

late years and has been quite interesting to me for some time.

“There has been considerable discussion on the subject and it has received a great deal of attention from scientific experimenters. For the sake of clear understanding we can consider it from three different standpoints.

“First:—Direct experimental transmission of tuberculosis from man to animals.

“Second:—Clinical evidence of its transmission from animals to man.

“Third:—The theoretical considerations.

“The transmission of disease from man to animals is susceptible to direct experimental proof. As early as 1868 some of the French observers proved the possibility of infecting cattle with tuberculosis from man. The experiments were carried out on animals selected from localities where tuberculosis was unknown. In 1879 Bollinger succeeded in transmitting tuberculosis of man to cattle; and others have made similar experiments. We may mention Klebs, Kitt, Crookshank, and more recently Thompson, Nocard, Weslinhoffer, Max, Wolfe, Fibiger, Jenson and others. The most noteworthy were the experiments of Hamilton and Young. They began with twenty calves, of which nineteen were inoculated with human material, and of these fifteen developed tuberculosis, while four resisted inoculation. The diagnosis in all fifteen cases was made by microscopic examination as well as by reinoculation of guinea-pigs, which showed tubercular lesions. This gave conclusive evidence of transmissibility of human tuberculosis to cattle.

“The second phase of the subject and the one that interests us most is the transmission of tuberculosis from cattle to men.

“This is rather more difficult to prove as here we are deprived of the direct experimental evidence. We have, however, a number of cases reported in which accidental inoculation has taken place. Dr. Ravenel, of Philadelphia, reports four such cases, two of which occurred in assistants in his own laboratory. In both these cases the source of infection was known, without any doubt in his mind, to be bovine, which was proven by the excision of the lesion, inoculation of guinea-pigs, and the isolation of the bacillus in pure culture. Other cases have been reported by Pfeiffer, Hartzell, Muller, and Trautman.

“Froje reports the case of a young butcher in good health and with no hereditary tendency who cut his left fore-arm slightly while working on a tuberculous cow. The wound healed under treatment, but six weeks later showed signs of in-

flammatory action, a tubercle formed on the internal side of the elbow. There were two small fistulæ on the fore-arm and enlargement of the ulnar and axillary lymph glands; a month later the middle fore-arm was covered with granulations, which steadily increased in area and, in spite of treatment, at the end of two months more assumed the character of lupus. Histological examination at this point proved the tuberculous character of the disease. Two years after the injury Froje found an abscess which extended into the deep muscular layers. The pus contained tubercle bacilli and the tissues showed typical tuberculous lesions. In this case all possibility of infection from human source was excluded. This, of course, shows only the direct inoculation.

"We have still farther to consider inoculation by ingestion. There has been considerable controversy on this subject, some contending that there is a possibility of inoculation in that way, while others, and of good authority, claim the contrary, but gathering up the evidence from both sides we see that it is pretty conclusively proven that inoculation by ingestion is possible.

"It has been proven repeatedly by experiments that ingestion is an easy way in which to infect animals and we have evidence brought forward by good authority that in mankind this mode of infection occurs also. It must be admitted, however, that in the clinical cases we are liable to find in all of them some defect, as it is almost impossible to exclude positively all other sources of infection. The evidence that we have, however, is as good as that we have in many cases which we admit to be by inhalation. It is generally accepted by all who worked along these lines, that inhalation of dried sputum or infected air is the chief source of infection from man to man, yet if strict proof of this is demanded very little positive evidence can be brought forward. Of the cases of clinical infection I will cite the one reported by Dr. Gosse, of Geneva. His own daughter was infected and died of tuberculosis by drinking the milk from a cow with tuberculosis of the udder. The doctor performed a post-mortem and gave the results to the scientific world.

"Directly in line with infection by ingestion comes the consideration of post-mortem evidence of primary intestinal tuberculosis. In England we have a general average, as reported, of about 25 per cent. Prof. Kneppe, of Germany, says that the percentage of primary intestinal tuberculosis in that country is

from 25 per cent. to 35 per cent. of all children dying from tuberculosis.

“Perhaps the strongest evidence that we have of the infection of human beings by the bovine tubercle bacillus is the finding of bovine tubercle bacillus in the intestines of children who died of intestinal tuberculosis. The first of these cases reported was from the laboratory of the Pennsylvania State Live Stock Sanitary Board, the material having been sent by Dr. Alfred Hanet, of the Children’s Hospital of Philadelphia. In his pathological report he states that it was the clearest case of intestinal tuberculosis that he had ever seen. The organism was isolated in pure culture and found to respond in every way with bovine tubercle bacillus.

“It is stated that bovine tubercle bacillus has a pathogenic power greatly in excess of that shown by the human bacillus in all the experimental animals tried; the bovine tubercle bacillus, it is reported, shows this excess of virulence. In the different animals in which these experiments have been tried there is no case in the literature so far in which one single species of animal is more susceptible to the human tubercle bacillus than to the bovine, and farther this greater virulence of the bovine bacillus has been shown by whatever method of inoculation has been used. Now, then, if all other animals succumb more quickly to the bovine bacillus than to human, would it not be strange if man, one of the most susceptible beings, should show an immunity to the most virulent form of tuberculous virus known. I think we are safe in concluding that this increased virulence must hold good for man also, at least we can consider it as being possible and be guided accordingly, especially in the treatment and handling of all cases where the predisposing cause of the disease or, in other words, of the infection is hard to find, especially if there runs a very virulent course in human. In such a case, in my judgment, it would be advisable to investigate the food supply, such as milk, which by the way is considered by human practitioners as the best diet in all wasting diseases, also the meat used in feeding the sick. Right here I wish to say that it is not only for the benefit of the sick that we should be on the lookout for such a source of contagion in the food supply, but it will be of still more benefit to the rest of the family if they are warned of the danger where such a condition exists. Here, on a timely warning depends the future welfare of the rest of the family as well as the sick ones.

“In conclusion, I would say that I have written this paper

for the purpose of calling the attention of the members of this association to this form of contagion of the disease tuberculosis so that if any one of us should be so unfortunate as to have such a condition to deal with to make a thorough investigation of the case and make a clinical report to the society. Should I be successful in starting a fruitful investigation in this direction by the members of this association then this paper will have served its purpose."

DISCUSSION.

President Price: We have listened to Dr. Amos' most thorough paper on this much-discussed subject, and I look for a thorough discussion.

Dr. Amos: There is one question I would like to ask: What number of cases in calves do you find compared with cases in the grown-up animals? We have with us a number of Federal meat inspectors, who may be able to tell us.

It was suggested that Dr. Ketchum had a paper relating to this subject and that the discussion follow his paper.

Dr. Ketchum: The question was as to the percentage of calves that were found affected on post-mortem. My paper does not touch on that at all. It has altogether to do with the number of parts that are affected with tuberculosis. It might be well, perhaps, before giving my paper to state that the percentage of calves is not very large as compared with the number of cattle. I do not remember exactly what it is; we do not, however, find a great many calves as compared with the number of cattle affected with tuberculosis.

President Price: The result of investigations by the Hollanders, who have done it most thoroughly, has been that calves are very seldom born tuberculous and that by feeding them with healthy milk they can be raised absolutely free from tuberculosis, which would carry out Dr. Ketchum's experience.

Dr. Ketchum then presented his paper.

THE INCREASE OF TUBERCULOSIS AMONG SWINE.

By F. D. KETCHUM, M. D. C.

"The statement that tuberculosis of swine is prevalent and is showing a steady and rapid increase will probably be of interest to the members of this association.

"Writers on animal tuberculosis have taught that though this disease was quite common among cattle it was rarely found among swine. A few years ago this was undoubtedly true, as inspectors of the Bureau of Animal Industry did not observe,

until about the year 1900, that the number of hog carcasses condemned for tuberculosis showed a marked increase over previous years.

"During the fiscal year 1898 and 1899 there were slaughtered under Federal inspection 44,841,779 hogs, of which 4,021 were condemned for tuberculosis. That is, an average of one case of tuberculosis was found in about every 11,152 hog carcasses inspected.

"In the fiscal year 1900 there were inspected at slaughter 23,428,996 hogs, of which 4,379 were condemned for tuberculosis, or one in about every 5,350, which is an increase of more than 100 per cent. of the average for the two preceding years.

"Now, in order not to try your patience too much with statistics, it may be said that the disease has shown a steady increase since that time. In 1903, the last year for which complete statistics are available, one hog in each 1,076 was condemned for tuberculosis. The statistics for 1904-05 have not yet been published, but will probably show about the same rate of increase as did the years from 1900-03.

"It is interesting to compare the number of cattle found to be affected with tuberculosis during the same periods. In 1898 and 1899 there was one beef carcass condemned for tuberculosis in each 1,259 carcasses inspected. In 1903 one in each 717. In other words, the number of cattle condemned for tuberculosis increased approximately 75 per cent. during the six years from 1898 to 1903 inclusive, while the number of hogs condemned for that disease increased more than 1,000 per cent. during the same years. Or, to make the comparison in another way, in 1898 and 1899 an average of one beef carcass was condemned for each 1,259 inspected, while in 1903 an average of one and three-fourths carcasses were condemned for each 1,259 inspected. In 1898 and 1899 one hog carcass was condemned in each 11,152 carcasses inspected, while in 1903 nearly eleven carcasses were condemned for each 11,152 carcasses inspected.

"It is also worthy of note that the number of hogs condemned for tuberculosis in 1903 exceeds by more than 1,000 the number condemned for both hog cholera and swine plague.

"In commenting on tuberculosis the Secretary of Agriculture in his report for 1905 says: 'It is not uncommon to find herds of dairy cattle where 50 to 90 per cent. of the animals are affected with this disease, and in our meat inspection service there have been found in some large abattoirs nearly 3 per cent. of hogs with tuberculosis.'

"In looking for the cause of this extensive increase of the disease among swine, we naturally attribute the source of infection, in a large percentage of cases, to cattle. With the present knowledge of the transmissibility of bovine tuberculosis, it is readily understood that the feeding of milk from cows affected with the disease will cause infection in a large per cent. of the animals so fed. Creameries to which the milk is hauled, run through a separator, and all the milk gathered at one time or during one day is placed in a tank from which it is distributed to farmers and stock feeders for feeding purposes, are probably responsible, to quite an extent, for the spread of the disease. If there is one herd or even one cow affected among those supplying a creamery with milk handled in this way, then all the milk with which that from the affected cow or cows is placed is contaminated, and every pig or calf fed with it is exposed to infection.

"It would seem that the danger from this source might be almost entirely eliminated if the milk were thoroughly sterilized after being put through the separator. Some creameries are now sterilizing the milk before returning it to the farmers and stock feeders, but this innovation is too recent to show results.

"Another source of infection, and one which cannot be too much reprehended, is the practise of allowing hogs to eat the carcasses of animals which die a natural death or the viscera of those slaughtered for food. In allowing this there is danger of causing the spread of not only tuberculosis, but other contagious diseases as well.

"The yarding of cattle and hogs together in the same sheds and pens where the hogs eat food which has been picked over by the cattle and also their droppings, is another source from which hogs may become affected.

"In one instance which came under the observation of the writer fifty-four hogs out of a carload of 76 were condemned for tuberculosis. On investigating the origin of this infection it was found that more than 50 per cent. of the cattle owned by the man who raised these hogs were affected with tuberculosis; that these hogs had been kept in the same pen with the affected cattle, had eaten grain and food left by them, and that at least one of the cattle had died and the hogs had eaten the carcass.

"In the way of prevention nothing new can be suggested. The present methods seem to be inadequate, chiefly, perhaps, because of opposition on the part of a majority of the owners of

valuable herds of cattle, who do not have them tested on account of the loss which would follow if a number were found to be diseased. The only remedy now known is to test all cattle and slaughter those that react. Until this can be done sterilize the milk before feeding it and keep hogs and cattle separate as much as possible.

"Unless something effectual is done soon to better these conditions, the live-stock industry will receive a check from which it will not recover for years, and too much cannot be said to attract the attention of stockmen to this important subject and to bring about the adoption of measures which will tend to stop this rapid spread of tuberculosis."

DISCUSSION.

President Price: Dr. Ketchum's paper is now open for discussion. I think it is a subject in which we are deeply interested.

Dr. Beebe: I am quite a firm believer that there is a large number of cases of tuberculosis both in man and animals resulting from infected food, especially milk. Von Behring has done a large amount of work along this line and he claims that young animals are especially susceptible to tuberculosis because the intestinal mucosa is imperfectly developed at that time, which consequently allows the organisms to pass through the mucosa into the lymphatic system. He has shown further that infection in this way may result in a localization of the disease in the lungs. He also advances the theory that there is a large percentage of young animals that become infected that will not show lesions until a considerable length of time after the infection has taken place, but the lesions develop months afterwards. I think the majority of people who are authority on this subject do not agree with Von Behring that the lesions develop months afterward, but I am of opinion that in young animals there is a large percentage of them that become infected from the use of milk from tuberculous animals.

President Price: Dr. Beebe being our bacteriologist, I think will have to explain to us where the leucocytes originate, whether in the intestinal canal or elsewhere. Some of our most recent investigators claim that the intestinal mucosa generates the leucocytes, and it is in the intestinal mucosa that all obstruction or infection of parasites takes place. Where the intestinal mucosa is destroyed or weakened by invasion of imperfectly digested material, a toxemia results which destroys

the vitality of these cells which become leucocytes, consequently their activity is lessened and infection takes place.

Dr. Beebe: I do not know that I can say anything on that point. I think perhaps Dr. Price is better prepared than I am. He seems to be familiar with the production of the leucocytes and I will not attempt to discuss their production.

Dr. Gould: In speaking of the pasteurization of milk, I believe that we have a law regarding this, and I think the creameries should be called to account. I know in my own practise I find several outbreaks of hog disease, possibly due to milk from creameries, and I think the law is quite plain on it if it is carried out. Another thing I noticed in the *Breeder's Gazette* is an advertisement of a sale by Edwards & Co., and they advertise the fact that they have had the Bang system in effect for many years and can give a bill of health with every animal. I think it is a sign that breeders are looking into this fact, and it will only be a matter of time when every live-stock breeder of any account will have to assure his patrons that he can give a clean bill of health.

Dr. Amos: Regarding the pasteurization of milk, it is getting where the creameries only get the cream. I think I can say that in Steele County 25 per cent. of the farmers have their own separators and only take cream to the creameries.

Dr. Gould: The buttermilk is taken back to the farm.

President Price: I would like to ask Dr. Ketchum if in these cases of infection of hogs he has been able to trace it up to the milk supply.

Dr. Ketchum: Owing to the way hogs are usually handled at the large abattoirs it is impossible in most cases to locate the farm from which a certain hog or a certain lot of hogs originate. All the hogs bought during the day are thrown together and then sorted according to grade and are killed in lots as sorted. Hogs from one carload may be slaughtered in half a dozen or more lots, and as 25 to 50 carloads, each from a different locality, are frequently slaughtered in one day, it is impossible to trace any of them back to the farm. In only a few cases, the one mentioned in my paper and a few others where the disease was suspected, have we been able to trace hogs back to the farm where they originated.

IMMUNITY.

By DR. W. L. BEEBE.

"Inasmuch as in the last few years much work has been done

to elucidate the theory of immunity, it seems a fitting time to give a brief *résumé* of the result of some of the investigations.

“By immunity we mean the non-susceptibility to a given disease, or to a given organism, either under natural or acquired conditions. Certain species of animals are normally immune to certain infectious diseases; for instance, horses are immune to black-leg and cattle are immune to glanders. That is to say, when they are exposed to infection under natural conditions. From this fact, however, it does not follow that when the organisms of the respective diseases are introduced into the body by artificial methods of inoculation, pathogenic effects may not follow. This is exemplified experimentally by infecting a rabbit with swine plague, although they do not do so under normal conditions. Therefore, it follows that immunity is of varying degrees; such a thing as absolute immunity is scarcely known.

“It may be well to consider race immunity here, although it properly belongs to acquired immunity. This form of immunity is probably an acquired tolerance, due to natural selection and inheritance. If, for example, a susceptible species of animal is exposed to the ravage of some infectious disease, the least susceptible will survive and may bring forth young who will be likely to inherit this special character.

“The tendency to continuous or repeated exposure to the same pathogenic agent will eventually be to establish a race tolerance and there is reason to believe that such has been the effect in the case of some of the infectious diseases in man; e.g., syphilis and small-pox, which prevail with great severity when introduced to a population free from the disease. A very remarkable instance of race immunity is that of Algerian sheep against anthrax, a disease which is very fatal to other sheep.

“In addition to this general race immunity we have individuals differing in resistance to the action of pathogenic bacteria which may be natural or acquired. A very marked difference in susceptibility is shown in hog cholera: the most susceptible contract the disease early in the outbreak and die off rapidly, while in the more resistant animals the period of incubation and duration of the disease is longer.

“But these resources of nature upon which natural immunity depends may be neutralized by various agencies which demand consideration. It has been shown by experiment that animals normally immune may be infected by the addition of certain substances to cultures of pathogenic bacteria. Thus Arloing was able to produce symptomatic anthrax in animals

naturally immune by mixing with cultures various substances, such as carbolic acid, pyrogalic acid, etc. Further, certain foods or drugs in the food may reduce the resisting power of the host. Behring asserts that he has demonstrated by experiment that white rats lose their immunity for anthrax by feeding them on a diet exclusively vegetable in character, or upon the addition of phosphate of lime to their food.

“ Perhaps, therefore, the harmless parasitic organisms on the respiratory and digestive mucosæ identical in morphology and cultural characteristics to certain disease-producing germs, such as swine plague, hæmorrhagic septicæmia, etc., may become pathogenic under similar conditions. For instance, the resisting power of the host may become lower from dietetic, hygienic or other conditions, thus allowing the organisms to gain foothold in the tissues and acquire disease-producing properties.

“ Acquired immunity is that obtained by the introduction of organisms, or their products, in sufficient quantities into the system, or by an adequate amount of serum of another animal highly immunized against a specific organism. The former is called active, while the latter is called passive. Active immunity is obtained by (a) injections of the organisms either in an attenuated condition or in sublethal doses or by sublethal doses of their products; i.e., (using this term in a rude sense) of their toxins. By repeated injections at sufficient intervals the doses of organisms or of the products can be gradually increased; or, the same amount of an organism of greater virulence or a toxin of greater strength may be used. By this method a very high degree of immunity can be developed. An attenuated organism is used in black-leg, anthrax, and chicken cholera, vaccination, etc. Such a method as this is, however, only preventive, as the immunity must be developed before the onset of the disease.

“ Passive immunity is produced by introducing into the system serum from another animal that has previously been highly immunized against a specific organism by some one of the methods for producing active immunity. This serum when injected into the system produces immediate effect and can thus in many cases forestall the disease if infection has taken place, or if the disease has declared itself it has a decided therapeutic action. This is the form of immunity obtained when antitetanic or antistreptococcic serum is used. Notwithstanding its immediate action it has the drawback of being very transitory in its effects. If, for instance, it is necessary to produce immunity

immediately and have it effectual for a considerable length of time, it will be necessary to make injections at intervals.

"In the foregoing pages I endeavored to touch briefly upon the different kinds of immunity and how they are produced; but now let us consider why they are caused. It is the desire of the bacteriological workers to learn as much as possible about the cause of certain phenomena, the same as it is with the industrious veterinarian to endeavor to ascertain the cause of certain complicated cases. Therefore many bacteriologists have worked with untiring efforts for years on this phase of the subject and now offer the following quite plausible solution of the problem.

"If a pathogenic organism or its products are introduced into the body, the system at once begins to fortify itself against this unwelcome invader by throwing out atomic bodies into the plasma which join themselves to the poison molecule, on account of the great affinity they have for it, and thus make the toxin inert.

"The quantitative experiments of Ehrlich upon diphtheria toxin and the filtration ones by Martin and Cherry with the same, and also upon snake venom, seem to prove that the interaction between toxin and antitoxin is a chemical combination analogous to the combinations of an acid with a base; e. g., silver nitrate and H. Cl., an innocuous compound being formed. And it is thought that the rules of the interactions are the same as those in chemistry. Thus, cold retards, while concentration and warming hasten the combination and a lapse of time is required for the complete interaction to take place. A mixture of toxin and antitoxin kept in contact for a short time may still be toxic, but after a longer time becomes non-toxic. If a certain definite amount of diphtheria antitoxin, which may be termed one immunizing unit, be mixed with varying quantities of a given toxin, an amount of the toxin which is exactly neutralized by this amount of antitoxin—that is, by one immunizing unit—can always be determined. Ehrlich found, for example, on using one-tenth of an immunizing unit of antitoxin, that the quantity of a certain toxin which was exactly neutralized was .24 c. c. On making an analogous determination with one immunizing unit the maximum amount of toxin which could be given with it without producing any effect, that is, was exactly neutralized, was found to be 2.4 c. c., just ten times the previous amount. It was shown that antitoxin does not pass through a Chamberland porcelain filter that had been previously soaked

in hot gelatin, while bacterial toxin will pass through. As the toxin is not held back by the filter, whereas the antitoxin is, this provides a physical means of separating them, providing they have not reacted upon each other. Martin and Cherry mixed diphtheria toxin with sufficient antitoxin to make them completely neutralize all the toxin. This mixture was allowed to remain in contact at 30°C. for two hours, and was then filtered through the gelatin filter. The filtrate was found to be quite innocuous. If the toxin had remained unaffected it presumably would have passed through the filter. As it did not do so the conclusion is that it had entered into some sort of chemical combination with the large antitoxin molecule.

“Another method was employed with snake venom. One of the toxic constituents of snake venom may be heated to 90°C. without injury, whereas the snake venom antitoxin or antiserum is rendered inactive by heating to 68°C. for ten minutes. Martin and Cherry made mixtures of antiserum and venom and at stated intervals removed small portions, heated them at once to 68°C. to destroy the antitoxin and injected into animals. It was found that when the antivenin and venom were kept in contact for only a short time, two to ten minutes according to the amount of venom, death ensued; whereas when kept in contact for a longer period the animals in all cases lived, showing that as for all chemical combinations time is an important factor. These experiments seem to prove that the neutralization of toxin by antitoxin is due to a chemical union or combination. The toxic action of toxin *in vivo* would also seem to be due to a chemical union between the two; and Ehrlich assumes toxin made up of molecules that possess two different combining groups: one, which may be designated the heptophore group and unites with the heptophile group of the cell, while the other may be designated the toxiphore and united with the toxophile group of the cell. If toxophile group be absent, the toxophore group of the toxin is unable to act, and no toxic action follows. This union is similar to the way a key fits into a lock and only certain forms of toxophore and heptophore groups will fit certain forms of toxophile and heptophile groups. Ehrlich suggests that the heptophile and toxophile groups subservise normal functions in the animal organism, and that they only incidentally, and by pure chance, possess the capacity to unite with this or that toxin, for it is inconceivable that these atomic groups should exist simply for the purpose of fixing various toxins. Now if an animal be injected with a

sublethal dose of toxin, the toxin becomes united by its heptophore group to the heptophile group of the cell bioplasm that fits. The union is a firm and enduring one, and the heptophile or receptor involved cannot exercise their normal physiological functions while this union lasts. Now Weigart has worked out the theory that such a defect is replaced by regeneration. Therefore, new heptophile groups similar to those which have been thrown out of action by the union with the toxin, are reproduced, and if more toxin be injected, again unite with it and this union of receptor and heptophile, similar to those which have been thrown out of action by the union with the toxin, are reproduced, and if more toxin be injected, again unite with it, and the union of receptors with toxin and regeneration of the receptors be repeated again and again, and the cells become educated as it were to reproduce the necessary receptors in ever increasing quantity. This accounts for the immunity which may be induced by gradually increasing doses of toxin. Whereas at first the cells possess comparatively few of the receptors in question and a small amount of toxin would therefore create a serious defect or lesion, when these receptors have become very numerous much more toxin may be injected without injury; that is, an immunity exists. But Weigart has shown that simple replacement does not take place, the compensation proceeds far beyond the necessary limits until at last the receptors are produced in such excess that the majority are no longer capable of remaining attached to the cells, but become free in the blood. This excess of receptors in the blood is antitoxin. The antitoxin represents the receptors reproduced in excess during regeneration and therefore pushed off from the bioplasm of the cells and so coming to exist in a free state in the blood.

“These facts hold good for diphtheria and tetanus which seem to be different from most other infective diseases, such as anthrax, chicken cholera, hæmorrhagic septicæmia, etc. The former are essentially diseases produced by the absorption of soluble toxin, while the microorganisms remain for the most part localized. In anthrax, fowl cholera, etc., on the other hand the toxins are apparently to a large extent inherent in the bioplasm of the bacterial cells. If an animal is highly immunized to one of these organisms it is found that its serum has little protective properties when injected into another animal.

“Experimental evidence goes to show that there are two

substances at least which are concerned in this reaction: one a specific immunizing body different for each microbe are found in the serum only after treatment."

DISCUSSION.

President Price: We have all listened to Dr. Beebe's very interesting and explicit explanation of immunity, a subject which has puzzled all of us for a number of years and which he has explained very fully and thoroughly. It is a subject which has been heretofore in the dark to everybody, including the most scientific investigators. We would be glad to hear from some of those present.

Dr. Lyford: May I ask Dr. Beebe a question? He speaks of tetanus and I want it better brought out that the germ in tetanus is not in the blood, that it is simply localized; that is, the main poison that passes through the nerve medium. Dr. Merillat gave us a very nice paper on that in Chicago a few weeks ago. One of the things that was very interesting to me was the question of inability to kill the germ. The question of what was required to kill the germ, and the question of treating the germ in any other place except locally at seat of inoculation, and he claimed that even boiling 5 to 15 minutes would not kill the germ—that hydrochloric or carbolic acid, or any of the other antiseptics or escharotics were little better than water comparatively, and in killing a germ that there was probably no way of getting rid of it even with a hot iron thrust into it, unless very thoroughly seared. Many of these experiments had been tried, and it seemed very heroic treatment. He said that creolin and all of those things were just as good as nothing. I do not remember of his speaking of iodine, but said that extirpation was about the only way to get rid of it, as immediately around the wound the germs were localized, and he claimed that was about the only way to get rid of the toxic effect. If you cut it out early enough before the toxins have developed through the system, you stood a good chance of cutting off the supply. Of course, a very severe case of tetanus having generated, a good deal of the effects of toxin and toxin poisoning would be much more certain. If gotten at in time, your chances would be better. I thought Dr. Beebe might give us a few more points on it, and though not connected directly with his paper I would be glad to hear more of the tetanus germ if he could give it to us under that head.

Dr. Beebe: Tetanus is a disease in which the union of the

toxin and nervous matter is very well marked ; for instance, if we take a certain amount of nervous matter from the central nervous system and mix thoroughly with toxin that is produced by the tetanus germ and inject it into a susceptible animal the result is that the animal will live providing there is sufficient nervous matter to unite with all of the toxin present, whereas if the toxin was injected without the nervous matter the animal would die in a very short time from tetanus, thus showing that there is a sort of chemical combination or union between the two substances. As Dr. Lyford mentioned, the organism remains localized, while the toxin is supposed to travel along the nervous trunk. The toxin unites with the nervous matter very firmly ; for example, if the toxin had become united with the nervous matter it seems almost impossible to break this union. As I mentioned in my paper, this union resembles the way a key fits into a lock. When antitoxin is used it must be administered very early before this combination takes place, for after the toxin has become united with the nerve elements the antitoxin has no effect whatever. If it can be used early enough the antitoxin will unite with the toxin and thus make the toxin inert.

President Price : I will call on Dr. Gould. He has had success with probably the most rational treatment of this disease.

Dr. Gould : Since I read a paper here I treated a case, but it was one of those cases that might have gotten well any way. The animal could eat. The hip, back and neck muscles were quite hard, but the animal consumed quite a large quantity of acid. It was a case, as I say, that would probably have gotten well any way.

President Price : Sajons, of Philadelphia, has lately introduced a theory that the secretion of the ductless glands are essential to immunity. The ductless glands have always been looked upon as something strange. We did not know what they were there for. Sajons has introduced a theory that these ductless glands are entirely essential to life, that if you destroy these glands life's functions cease. In regard to tetanus he claims that the secretion of the adrenals is entirely essential to the oxidations that take place in the body. You can destroy the brain and remove it in sections from birds and life continues, but if you destroy the pituitary bodies you destroy life. These are small bodies in the human brain. The posterior is the smaller one, according to his theory. These glands control

the thyroids and the thyroids through their secretion control the activity of the adrenals. The one is entirely dependent on the other and through their activity and secretions life is continued. In tetanus, we have, as Dr. Beebe has explained, a chemical combination taking place between the toxin and the nervous matter which is indestructible, the same as you have between tannin and iron. Dr. Sajons' theory is to stimulate the adrenals and by their secretion stimulate the life processes, causing the destruction of bacteria and their toxins. How are we going to do this? He claims that carbolic acid is an active stimulant to the adrenals. Unfortunately we always try to give something to quiet the nerves; cannabis indica, bromide, quinine,—every one of which destroys the activity of the adrenals. Here we are giving antagonistic remedies, the action of one overcoming the other. If we are going to give carbolic acid treatment we have to stick to carbolic acid and give it alone, and nothing with it. Otherwise we are giving something that overcomes the stimulation that the carbolic acid produces, and we get no benefit from our "carbolic acid treatment."

Dr. Gould: I did not use carbolic acid with the intention of stimulating those adrenal glands, but since talking with Dr. Price I think the action is a great deal more reasonable than I first supposed it to be, because it does have a paralyzing effect on the nerves, especially to the muscles, and we get stimulating action in that way, where, if we used chloral hydrate, we would not get that stimulating effect on the adrenals, but would get a deadening effect at the time we get our paralyzing effect on the motor nerves. Reasoning along this theory that would be the ideal remedy for tetanus. This case I speak of was one of those slow cases. Of course, it had been showing symptoms of tetanus for probably a week before I saw it, just gradually getting worse, and even with the carbolic acid treatment the disease apparently did extend somewhat, gradually subsiding after that. Whether it was due to the action of the acid, of course I do not know. I did not get the animal to consume a great quantity of the acid.

The patient was about ten miles from home, and I had to trust the owner to give it, but the animal consumed some of the acid.

President Price: In regard to that, I would state, that you can overstimulate the adrenals, the same as you can overstimulate a person with alcohol. Remember that overstimulation always results in paralysis.

NEW YORK STATE VETERINARY MEDICAL
SOCIETY.

ANNUAL MEETING, SEPT. 11-13, BUFFALO.

The forthcoming meeting promises to be of very great interest. The literary program, not yet complete, is already highly attractive in the wide range of subjects and high character of the contributors. The papers on veterinary education in New York, one by a distinguished educator, the other by an equally prominent practitioner, with the relation of education to license and practice, will inevitably induce a discussion which will appeal to each member of the profession. A representative of the State Educational Department is expected to be present to participate.

Dairy and milk inspection are to be thoroughly considered and the program is rich in papers having a direct interest to veterinary practitioners. The list of papers is not complete and important additions are expected. The clinic, as has been the rule in the past, is to be made a very prominent feature. The local committee has secured suitable accommodations for the meetings and a complete announcement of the convention will be issued shortly. It is expected that the Genesee Hotel will be headquarters.

The program as far as completed is as follows:

"Veterinary Education in New York," Dr. James Law, Ithaca.

"Veterinary Education in New York," Dr. E. B. Ackerman, Brooklyn.

"Dairy Inspection," Dr. H. D. Gill, New York.

"Dairy and Milk Inspection," Mrs. C. H. Cocke.

"Municipal Milk Inspection," Dr. W. G. Hollingworth, Utica.

"Rabies: A Discussion of its Etiology, Diagnosis, Dissemination and Control," Dr. Veranus A. Moore and Mr. Cassius Way, Ithaca.

"A Supposedly Tuberculous Cow that Failed to Tuberculin," Dr. S. H. Burnett, Ithaca.

"One Way of Treating Toe- and Quarter-Cracks," Dr. Roscoe R. Bell, Brooklyn.

"Peculiar Fatal Cases with Post-Mortem Notes," Dr. Louis Juliard.

"Canine Toxæmia," Dr. P. A. Fish, L. S. Backus, and Ward Giltner, Ithaca.

"Influenza or Shipping Fever," Dr. W. G. Dodds.

"Influenza or Shipping Fever," Dr. E. E. Dooling.

"Typhoid Influenza," Dr. George H. Berns, Brooklyn.

"Eczema: Clinical and Post-Mortem Notes on 'Sysonby'," Dr. William Sheppard, Sheepshead Bay.

"Fracture of the Sesamoid Bones," Dr. J. L. Wilder, Brooklyn.

"Milk Fever," Dr. Wilson Huff, Rome.

"Observations on Colics, Volvulus and Intussusception," Dr. J. F. DeVine, Goshen.

"Local Anæsthesia," Drs. W. S. Eggleston and J. F. Miller.

Subject not yet stated, Dr. J. W. Corrigan, Batavia.

Exhibition of Pathologic Specimens, Dr. W. Reid Blair, New York Zoölogical Park, New York.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

This Association will hold its semi-annual meeting at Gettysburg, Pa., Sept. 18th, 1906. A good program has been arranged and a very enjoyable meeting is anticipated.

C. J. MARSHALL, *Secretary*.

AT the annual meeting of the Missouri Valley Veterinary Association, at Omaha, Neb., in June, fifty-five new members joined this flourishing organization. At its present rate of increase, it will be but a short time before it will outnumber the A. V. M. A.

A REPORT of an auction sale of branded horses at Portland, Ore., states that two carloads were recently sold at an average of \$35. Some years ago when salt horse was being barreled at the Linnton, Ore., cannery, the same sort of animals sold at \$1.50 per head.

"THE IOWA-NEBRASKA VETERINARY BULLETIN" states that Drs. Peter Simonson, E. F. Stewart, H. Jensen, J. S. Anderson, Richard Ebbitt, C. A. McKim, and A. T. Peters are making arrangements to attend the New Haven meeting of the A. V. M. A.

DRS. J. S. ANDERSON, H. Jensen, J. H. Gain, and C. A. McKim attended the Nebraska Stock Growers' Association at Alliance. They had a very large tent, 40 x 60, under which hundreds of stockmen were seated to witness operations performed by these gentlemen.—(*Iowa-Nebraska Veterinary Bulletin*.)

NEWS AND ITEMS.

BIRTH.—To Dr. and Mrs. Charles E. Clayton, New York, July 6, a daughter.

DR. WILLIAM H. MCINTOSH, veterinarian, died June 3, 1906, at Morristown, N. J.

FIVE VETERINARIANS took the civil service examination for meat inspectors at Chicago on April 18 and four did likewise on June 25.

DR. NELSON S. MAYO, Chief of the Cuban Bureau of Animal Industry, will be in attendance upon the New Haven meeting of the A. V. M. A.

DR. WM. HERBERT LOWE has been reappointed to the full term of three years on the New Jersey State Board of Veterinary Medical Examiners.

DR. ELISHU HANSHEW, of Brooklyn, has installed a new Humane Operating Table in his hospital at 125 Carlton Ave., supplanting an old-fashioned one.

DR. JOHN V. LADDEY, of Arlington, N. J., has bought the late Dr. McIntosh's practice at Morristown, N. J., and has moved to that place to practice his profession.

DR. WILLIAM HERBERT LOWE has passed the New Jersey State Examination for Sanitary Inspector of the first class and was licensed as such by the Board of Health on June 23.

RABIES has claimed many victims around New York this summer, not only dogs, but humans and large domestic animals. This should not be, where the Negri bodies can be so quickly discovered, and inoculation can so certainly prevent the development of the disease.

GLANDERS appears to be quite prevalent in New Jersey at present. Dr. Lowe was called from the Secretary's chair at the Asbury Park meeting of the Veterinary Medical Association of New Jersey to investigate an outbreak, where a comparatively large number of horses were found to be affected.

DRS. ROBERT W. ELLIS, George H. Berns, and Roscoe R. Bell, of New York, attended the Asbury Park meeting of the Veterinary Medical Association of New Jersey on July 12-13. Many of the members and visitors availed themselves of the opportunity to enjoy the delightful seaside resort by bringing along members of their families.

A VALUABLE KENTUCKY TROTTER MARE, owned by James McIntyre, an actor, summering at Bergen Beach, N. Y., was bitten by a mongrel dog, evidently suffering with rabies, was at-

tacked three weeks later with rabid symptoms, which rapidly developed until he struck, bit and chewed his fore-leg nearly off, seizing the wood work of his stall with his teeth, breaking them off down to the gums. After forty-eight hours of terrible suffering he was destroyed.

DR. S. H. GILLILAND, M. D., V. M. D., Bacteriologist for the State Live Stock Sanitary Board of Pennsylvania, is at present at Saranac Lake. As a result of hard work in connection with sickness and death in his family his health failed and he was compelled to take a much needed rest. His friends are pleased to learn that his health is improving and his physicians are hopeful that he will soon be restored to his usual good health.

HON. H. C. ADAMS, of Wisconsin, member of the House Committee on Agriculture, who was such a conspicuous figure in the recent fight on the Meat Inspection Bill, died at Chicago *en route* to his home. He had long hung to life through his indomitable will power, his health having been very bad for many years. He was the author of the "Adams Act," which doubled the annual governmental appropriation for the state experiment stations.

A WELL-KNOWN VETERINARY PATHOLOGIST is engaged in investigating azoturia, and has progressed sufficiently far to state that he has succeeded in reproducing the symptoms in large rabbits, including the characteristic paralytic knuckling in the hind legs, trembling of the flanks, dark-colored urine, and on post-mortem paleness of the gluteal muscular tissue. He has about passed his promise to give the profession a preliminary report upon his investigations at one of the early meetings of the Veterinary Medical Association of New York County. He is certainly advancing on a path that leads to glory, for practitioners will rise up and call him blessed if he succeeds in discovering the etiological factor, which will greatly aid in indicating both therapy and prophylaxy.

THE OFFICIAL VETERINARIANS OF THE HORSE SHOW ASSOCIATION OF AMERICA, who have held office year after year for more than a decade, were this year summarily removed and replaced by others. Those who were replaced are among the most prominent in this country, being men of high character and great experience. They are Drs. Wm. Sheppard, of Sheepshead Bay; Thomas G. Sherwood and J. Elmer Ryder, of New York City. No reason was assigned for the change, but rumor has it that it owes its occurrence to a difference of opinion between the veterinarians and a member of the Horse Show Com-

mittee, a layman, who placed his judgment against those of the official veterinarians, and took his revenge by securing their removal. It is said that the circumstances were as follows: A saddle horse called "Poetry of Motion," has a white face, and the skin was irregularly pigmented about the muzzle and nostrils, as is often seen in such horses. The official noticed this and called the attention of the veterinarians to it, suggesting that the animal was affected with variola, and should not be allowed to compete. Their decision was against him and the horse was shown and took one or more blue ribbons. Their places have been filled by the appointment of Dr. H. D. Gill and Dr. E. A. A. Grange, while the third member had not yet been decided on when this item was written. It is said that the position has been offered to Dr. Leonard Pearson, of Philadelphia.

\$94,000,000 IN AUTOMOBILES NOW ON THE SCRAP HEAP—80,000 CARS IN USE; 40,000 ABANDONED.—Statistics of automobile registrations published in the *Herald* a few days ago are full of interest to horsemen as throwing light on the lasting qualities of the latest mechanical substitute for the horse. These statistics show that up to June 1, 1906, 121,369 automobiles had been recorded in the United States since the laws compelling registration went into effect a few years ago. About forty thousand of these automobiles are now out of commission, according to the records of the Motor Directories Company, leaving something like eighty thousand in use if this estimate is to be relied on. It seems probable, however, that both the number registered and the number in use are overestimated, since it is a matter of common knowledge that very many machines—perhaps a majority of all those registered in some States—are registered in duplicate in two or more States, thus swelling the totals on the face of the returns far beyond the actual number existing. That the number "laid on the shelf" has been overestimated, or even fully estimated, by the automobile people themselves is not likely, to say the least. Taking the figures without question as they stand it must seem most surprising to disinterested observers of the development of the motor vehicle that out of 121,369 cars thus far registered 40,000, or practically one-third, are already on the scrap heap. When it is remembered that in New York, and probably in other States as well, the records show that nearly one-third of the whole number of cars registered have been running only about one year these figures become strikingly significant of the

short life of the average automobile. Registration figures in New York indicate that the selling price of the average automobile is about \$2,360. It will, therefore, be seen that the 40,000 machines thus far put out of commission represent something like \$94,400,000 in cost, if not in value, and this is exclusive of money paid out for repairs before the cars were finally abandoned. The American people are rich, and they have the name of being lavish if not extravagant in their expenditures, but it remains to be seen whether they will continue to foot the bills for automobiles at this rate after the novelty of the new toy has worn off. Expert horsemen and experienced carriage builders have all along maintained that the life of the automobile must be short, and the expense of keeping one necessarily very heavy, owing to the tremendous strain to which the delicate and intricate mechanism is subjected when driven at high speed over rough roads. They have predicted just what the records now seem to show, that the average automobile would not last more than one year, and that the cost of the machine, repairing it, keeping it and running it would prove to be too great for the general public to bear.—*(New York Herald, July 22.)*

WANTED—A GREAT VETERINARY SCHOOL.—Provision has been made in the packinghouse law for inspection that inspects. A very large force of capable inspectors will be required. We must have them. The eyes of the world are upon us, the international spotlight is turned toward us. The necessity exists for a great veterinary school in which men may be thoroughly qualified to inspect meats on the hoof and in the carcass—a school where all diseases common and uncommon among domesticated animals may be exhibited in the clinics and where students may obtain an education in animal husbandry such as they need to enable them to apply properly their knowledge of pathological conditions. The application of such knowledge has but half its use in the absence of a thorough accurate and extended knowledge of physiological conditions. We must have inspectors trained to their work. The Government calls for 400 of them now. Their work is in the stock yards of the country, and it is therefore plain that we should have men trained at the stock yards. The greatest stock yard plant in the world is in Chicago. It follows then that the place for this great veterinary school is at the Chicago yards. The Union Stock Yard & Transit Co. has ground to spare. It has funds. It has enterprise. It sees opportunities and grasps them. The

International is a monument to its interest in the welfare of stockgrowers and it is not difficult to believe that if the need of a veterinary college at the yards were properly presented to the stock yards officials the result would be a building for a veterinary school greater than any in existence to-day and a faculty the like of which the world can not show. It is not generally known that the greatest veterinary school so far built is in Calcutta. Everything that the wealth of the greatest empire in the world and the intelligence of the brightest minds in the veterinary profession could devise has been lavished on that school in India, but the new American school should be greater still. No secondary place will serve the United States. A world's trade is at stake. We must have the school commensurate with the needs of the whole round globe. Disease takes strange forms. This is a wide country and many very different conditions, climatic and otherwise, are included in it. For years it has been the custom of men in the country to use the big stock yard markets as a dumping ground for every animal that was of no farther use to them. Comparatively few veterinarians engaged in a general country practice have ever seen such a varied assortment of diseases as may be seen any Thursday—"canner day"—in the Chicago yards. When a man's hogs begin to die off in an alarming manner he gets the drove to market just as quickly as he can. The great yards are used as dumping grounds. It may be possible in time to force men to dispose of diseased stock in the country, but that time will come about when they quit taking a chance or when the knowledge is forced upon them that diseased animals must be condemned and tanked and that all the shipper will get out of them will be the privilege of paying the freight and commission charges. A force of inspectors educated to an acquaintance with every detail of this traffic in diseased cattle, schooled by daily contact with all the clinical advantages offered in this market, would quickly teach shippers that the local disposition of diseased cattle would be far more advantageous, and then the problem would be largely solved. It is a fact, well known throughout the country, that some kind of a price can be obtained for diseased cattle at the big markets, and the cupidity of human nature will surely lead to the risk of getting caught in unloading such stock, especially if it is thought that the inspection is inadequate from lack of inspectors or inefficient by reason of their ignorance or want of experience. A certain means of diminishing the traffic in diseased stock is to put on watchmen who

have been educated for the specific purpose of such examinations and trained in the very arena in which they are to operate upon the completion of their education. Independent of these considerations—which in themselves are sufficient to claim the favorable attention of the Union Stock Yard Co.—is the fact that the opportunities for general clinical work are far greater at the Chicago stock yards than at any other point in the world. A medical education without clinical work is very lame. It is an imposition on the public to put out medical graduates to acquire experience at the expense of the pocketbooks or perhaps the lives of their patrons. The most conscientious of our young doctors serve their time as hospital internes and thus acquire valuable experience under the very best training. The Chicago yards, with their daily run of diseased stock, in a year's time sounding almost the entire gamut of the non-contagious diseases and including some not in that category, such as hog cholera, afford opportunity even more extensive and valuable than falls to the experience of the ordinary hospital interne. Vast improvement has been made in our veterinary practice the past decade. The "hoss-doctor," too often an undesirable as well as a costly type in a community, has been giving way gradually to educated young men who have made use of all the available opportunities in acquiring an education in veterinary medicine, but it is only too well known that there is much room for improvement in the courses and instruction in our veterinary colleges. The leaders of the profession acknowledge and lament this fact. They have made much progress toward the amendment of this condition, but much work remains to be done. Such schools are not money-makers. In fact some of them have gone as far in the perfection of their courses and instruction as their funds will possibly permit. If such a corporation as the stock yards company would erect a suitable building and provide an endowment sufficient to command superior talent in the faculty, such a school would soon become the Mecca for students the world over, as nowhere else are such opportunities available. Surely argument should not be necessary. We content ourselves with the presentation of these facts, confident that they will receive the most earnest consideration. Beyond shadow of doubt the founding of a great veterinary school at the yards would most surely and quickly counteract in the eyes of the world the evil consequences of the unfortunate handling of the meat inspection measure. (*Breeders' Gazette*, July 11.)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

Secretaries are requested to see that their organizations are properly included in the following list.

Name of Organization.	Date of Next Meeting.	Place of Meeting	Name and Address Secretary.
American V. M. Ass'n.	Aug. 21-24, '06	N. Haven, Ct.	J. J. Repp, Phila., Pa.
Vet. Med. Ass'n of N. J.	.....	Jersey City.	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.	Call of President	New Haven.	B. K. Dow, Willimantic.
New York S. V. M. Soc'y.	Sept. 11-12-13	Buffalo.	G. T. Stone, Binghamton.
Schuykill Valley V. M. A.	Dec. 19	Reading.	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.	Monthly.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.	Call Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.	Monthly.	Boston.	F. J. Babbitt, Lynn, Mass.
Maine Vet. Med. Ass'n.	.....	.....	R. E. Freeman, Dexter.
Central Canada V. Ass'n.	.....	Ottawa.	A. E. James, Ottawa.
Michigan State V. M. Ass'n.	State Fair week	Detroit.	Judson Black, Richmond.
Alumni Ass'n N. Y.-A. V. C.	April, 1907.	141 W. 54th St	W. C. Miller, N. Y. City.
Illinois State V. M. Ass'n.	.....	.....	F. H. Barr, Pana.
Wisconsin Soc. Vet. Grad.	Call of Pres't.	Sheboygan.	S. Beattie, Madison.
Illinois V. M. and Surg. A.	.....	Decatur.	C. M. Walton, Rantoul.
Vet. Ass'n of Manitoba	Not Stated.	Winnipeg.	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n.	.....	.....	T. B. Carroll, Wilmington.
Ontario Vet. Ass'n.	.....	.....	C. H. Sweetapple, Toronto.
V. M. Ass'n New York Co.	Vacation.	141 W. 54th St	D. J. Mangan, N. Y. City.
Ohio State V. M. Ass'n.	.....	Columbus.	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n.	1st Wed. ea. mo	Pittsburgh.	F. Weitzel, Allegheny.
Missouri Vet. Med. Ass'n.	.....	.....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n.	.....	.....	J. H. Taylor, Henrietta, N. Y.
Iowa State V. M. Ass'n.	.....	.....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n.	.....	.....	C. A. Mack, Stillwater.
Pennsylvania State V. M. A.	Sept. 18	Gettysburg	C. J. Marshall, Philadelphia
Keystone V. M. Ass'n.	2d Tues. May	Philadelphia.	A. W. Ormeston, 102 Her- man St., Germantown, Pa.
Colorado State V. M. Ass'n.	1st Mon. in June	Denver.	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n	January, 1907	Kan. City, Mo	B. F. Kaupp, Kansas City.
Rhode Island V. M. Ass'n.	June and Dec.	Providence.	T. E. Robinson, Westerly, R. I.
North Dakota V. M. Ass'n.	.....	.....	J. A. Winsloe, Cooperstown.
California State V. M. Ass'n.	Mich. Je. Sep, De	San Francisco	C. H. Blemer, San Francisco
Southern Auxiliary of Califor- nia State V. M. Ass'n.	Jan. Apl. Jy, Oct.	Los Angeles.	J. A. Edmons, Los Angeles.
South Dakota V. M. A.	.....	.....	E. L. Moore, Brookings.
Nebraska V. M. Ass'n.	.....	.....	Hans Jensen, Weeping Water
Kansas State V. M. Ass'n.	Jan. 8-9, '07.	Topeka.	Hugh S. Maxwell, Salina.
Ass'n Médéciale Veterinaire Francaise "Laval,"	1st & 3d Thur. of each month.	Lect. R'm La- val Un'y Mon.	J. P. A. Houde, Montreal.
Alumni Association A. V. Col.	April each yr.	New York.	F. R. Hanson, N. Y. City.
Province of Quebec V. M. A.	.....	Mon. & Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.	.....	.....	D. A. Piatt, Lexington.
Washington State Col. V. M. A.	Monthly	Pullman, Wa	Wm. D. Mason, Pullman.
Indiana Veterinary Association.	.....	.....	E. M. Bronson, Indianapolis.
Iowa-Nebraska V. M. Ass'n.	.....	.....	A. T. Peters, Lincoln, Neb.
Louisiana State V. M. Ass'n.	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.	.....	.....	S. H. Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A.	.....	Cincinnati.	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n.	August, 1906.	Agricultural College	I. C. Robert, Agricultural College

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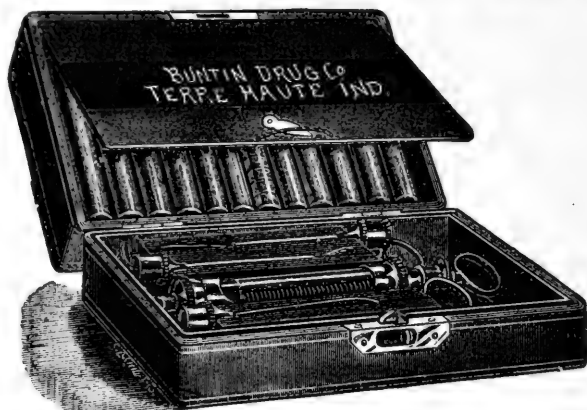
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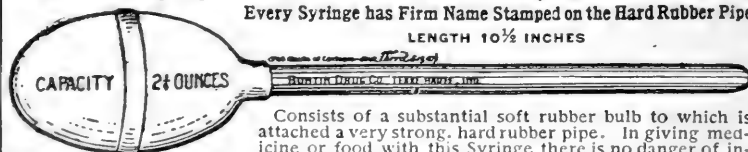
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117	Aconitine, Crystals.....	1-10 gr.	17
118	Aconitine, Crystals.....	1-6 gr.	22
119	Aconitine, Crystals.....	1-4 gr.	27
159	Arecoline Hydrobrom.....	1 gr.	1 00
160	Arecoline Hydrobrom.....	1 gr.	1 80
101	Atropine Sulphate.....	1-4 gr.	15
121	Atropine Sulphate.....	1-2 gr.	18
119	Atropine Sulphate.....	1 gr.	33
158	Barium Chloride Comp (Ellis).....	1 gr.	18
	{ Barium Chlor.....	7 grs.	
	{ Digitaline.....	1-12 gr.	
152	Cardiac Tonic.....		25
	{ Digitaline, Pure.....	1-10 gr.	
	{ Sparteine Sulph.....	1-5 gr.	
	{ Strychnine, Nitrate.....	1-8 gr.	
102	Cocaine Muriate.....	1 gr.	35
124	Cocaine Muriate.....	1-1/2 grs.	45
125	Cocaine Muriate.....	2 grs.	55
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103	Colchicine.....	1-4 gr.	60
126	Colchicine.....	1-2 gr.	1 00
127	Colic (Knowles).....		54
	{ Morphine Sulph.....	2 grs.	
	{ Atropine Sulph.....	1-4 gr.	
	{ Aconite Cryst.....	1-20 gr.	
104	Coniine Hydrobromate.....	1-2 gr.	43
128	Coniine Hydrobromate.....	1 gr.	60
105	Digitaline, Pure.....	1-8 gr.	30
129	Digitaline, Pure.....	1-4 gr.	35
156	Ergotine.....	2 grs.	18
157	Ergotine.....	4 grs.	27
113	Eserine Salicylate.....	1-4 gr.	50
133	Eserine Salicylate.....	1-2 gr.	75
134	Eserine Salicylate.....	1 gr.	1 25
135	Eserine Salicylate.....	1/2 grs.	1 50
106	Eserine Compound.....		1 00
	{ Eserine Salicylate.....	1-4 gr.	
	{ Pilocarpine Muriate.....	1-2 gr.	
	{ Strychnine.....	1-8 gr.	
153	Eserine and Pilocarpine.....		1 50
	{ Eserine.....	1-2 gr.	
	{ Pilocarpine.....	1 gr.	
154	Colic (Forbes).....		2 75
	{ Eserine Salicylate.....	1 gr.	
	{ Pilocarpine Mur.....	3/4 grs.	
107	Hyoscyamine Sulphate, Crystals.....	1-8 gr.	85
126	Hyoscyamine Sulphate, Crystals.....	1-4 gr.	1 30
108	Morphine Sulphate.....	1 gr.	19
136	Morphine Sulphate.....	1 1/2 grs.	27
137	Morphine Sulphate.....	2 grs.	33
138	Morphine Sulphate.....	2 1/2 grs.	37
135	Morphine Sulphate.....	3 grs.	50
109	Morphine and Atropine.....		35
	{ Morphine Sulph.....	1 1/2 grs.	
	{ Atropine Sulph.....	1/2 gr.	
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	{ Morphine Sulph.....	1 1/2 grs.	
	{ Atropine Sulph.....	1/2 gr.	
140	Morphine and Atropine.....		40
	{ Morphine Sulph.....	2 grs.	
	{ Atropine Sulph.....	1-4 gr.	
141	Morphine and Atropine.....		45
	{ Morphine Sulph.....	3 1/2 grs.	
	{ Atropine Sulph.....	1-4 gr.	
142	Nitroglycerine.....	1-10 gr.	14
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111	Sodium Arsenite.....	1 gr.	19
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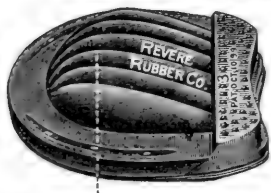
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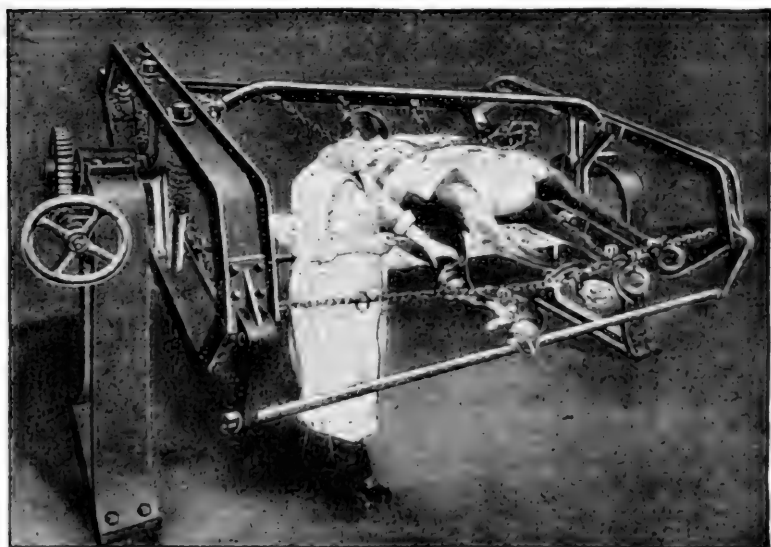
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