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AMERICAN VETERINARY REVIEW

EDITED MONTHLY BY

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AMERICAN VETERINARY REVIEW,

APRIL, 1893.

EDITORIAL.

CASTRATION OF RIDGLINGS.—With this first number of our seventeenth volume we have begun the publication of the translation of a small pamphlet on the castration of cryptorchids, from the pen of Prof. F. Mauri, of the veterinary school of Toulouse. The subject is one which possesses, we think, sufficient interest to justify the labor of translation and reprinting, and will well repay the time bestowed on its study.

In the first or introductory part, the attention of the reader is called to a sufficiently complete and comprehensive history of the operation on the European continent; and it is to be regretted that a similar history of the operation for our own continent cannot as yet be written, and is waiting for the accumulation of materials before it can be undertaken. If "Farmer Miles" is, as we believe him to be, the father of this operation on this continent, his method and his wonderful success ought to be fully recorded in our veterinary journals for the instruction and enlightenment of our rapidly growing army of young veterinarians.

In his introduction, Professor Mauri does more than to merely write this history. It also contains hints of immense value to the professors of surgery in our various colleges. The

method he has adopted for insuring to his students the benefit of what we may be allowed to call his own education in the *modus operandi* of the operation, by demonstrating the parts to his class and requiring them to operate on artificially prepared, and afterward on true cases, is thoroughly judicious and practical. Is not this, indeed, the only proper way to teach operative surgery in every case, and has it been adopted in any of our colleges?

We fear that the answer to the latter query must be in the negative, but the sooner such a mode of education is adopted the better. The day should be considered as passed, not to return, for young veterinary graduates to receive their diplomas from their alma mater without having ever performed the simplest operations, or witnessed any of the difficult ones.

TUBERCULINE—MALLEINE — PNEUMO-BACILLINE. — One of the strongest of the reasons urged in favor of the most thorough requisition and improvement of the faculties of observation and discrimination in diagnosis on the part of the veterinarian is the fact that our patients are mute animals unable to define their sufferings by words, and that their examination is therefore sometimes very difficult, and for that reason a correct diagnosis of their ailments must in many instances become a most uncertain and unsatisfying proceeding.

While this is true of many of the internal diseases, it is emphatically so in respect to certain forms of contagious disease in which the apparent lesions are so slight that the general organism does not seem to be affected by their presence; and again, when they are so peculiarly situated as to elude identification, and to exist only as matters of suspicion or surmise. With what satisfaction then, must the veterinarian recognize the value and take advantage of the means which of late years have been brought to his attention, and that of the medical world, by such discoveries as those of Koch, Hellman, Kohing, Prusse and others, who have introduced the means of detecting phthisis, with its smallest lesions, by the use of tuberculine, and latent glanders with malleine.

It is true that the use of these agents is still in a tentative stage, and is a matter of investigation. They must be sub-

jected to much further close observation; but, nevertheless, the numerous reports published in veterinary periodicals all over the world seem already sufficient to have established beyond doubt their positive value, and to show that the day has certainly arrived when errors of diagnosis in these two diseases should be considered things of the past.

In the February issue of the *Journal of Zootechnie*, published in Lyons, there is a paper from the pen of the great investigator, Director S. Arloing, which brings us the good news of the discovery of a new preparation in pneumo-bacilline, by which, judging from results already obtained, the diagnosis of incipient contagious pleuro-pneumonia may be rendered as positive as that of either of the diseases already mentioned.

The new product, to which Director Arloing gives the name of *pneumo-bacilline*, is said to have been already subjected to experiment, and to have exhibited detective and revealing properties which, by the evidence of special reactions, promises to be of great advantage to the embarrassed investigator. The article of Director Arloing, of course, treats only of the discovery and its results in the light of present developments, but it promises additional information when fresh observations shall have been followed by more knowledge. Those who best know by actual practical experience how the true location of a small peri-pneumonic spot may be determined will be the first to understand and appreciate the value of the discovery of the properties of pneumo-bacilline, and most carefully watch for reports of further results.

It would certainly be an interesting fact if it should so occur that the disagreement which exists between certain American and English veterinarians as to the exact nature of certain pulmonary lesions, and whether they are of a true pleuro-pneumonic type, should be decided by this discovery of Arloing.

ORIGINAL ARTICLES.

CASTRATION OF CRYPTORCHIDS.

BY PROFESSOR F. MAURI, of the Veterinary School of Toulouse, France.

INTRODUCTION.

Cryptorchidy in horses, as an abnormal condition, becomes a serious matter by reason of the great depreciation in money value of the animals which are affected with it. It is accompanied with an ugly disposition, which at times renders their temper uncontrollable, and becomes the cause of great difficulties and serious dangers for those who have them in charge. Excited by the presence of other animals of their own species, either male or female, the ridgling becomes nervous and noisy, rears and kicks, resists control, makes violent attacks upon other animals, and exposes himself by his excitement to numerous accidents. Unable to satisfy his sexual desire, he often vents his rage upon his driver, who cannot always protect himself, attacking him with foot and tooth, and ordinarily in the most treacherous manner. At times it is sufficient for his keeper to have merely touched other horses or mares before approaching him, to excite him suddenly into a copulative rage. He snorts fiercely, jerking himself, and whinnying with the peculiar and characteristic tone of the animal under sexual desire, bends his neck convulsively, strikes out with his fore feet, and often, unless he be held firmly and shortly in hand, rushes furiously upon his keeper. It is true that sometimes he can be kept under control by excessive work and low diet, but he is always to be held under suspicion, and his intermittent and sudden outbreaks of aggressive temper are always to be feared after the enjoyment of a few days of rest or liberal feeding. Horses in the south of France are peculiarly dangerous on account of their force and energy, and the quickness and suddenness of their movements. Hence their comparatively low value, and the difficulty met with in disposing of them by sale. The fact of the testicular ectopia depreciates a horse by an aver-

age of three-quarters of his proper value. I once knew two cryptorchids, three and four years old respectively, which could not be disposed of at three and four hundred francs, but when castrated were sold, one for twelve, and the other for thirteen hundred and fifty francs.

It thus appears that in the business of raising horses, aside from other causes, so uncertain in pecuniary results, this incident is to be included as a source of doubt and fluctuation, and is to be charged with no small share of the losses always accompanying industrial ventures; and still the remedy for this state of affairs is in the hands of all veterinarians, and it is to be regretted that it has not yet entered into general practice. Indeed, castration of cryptorchids seems to have been systematically ignored by even the most expert surgeons and those most favorably situated for making it familiar to all. Even H. Bouley ignores it entirely in his article on castration in the *Dictionnaire Pratique de Medecine et de Chirurgie Veterinaire*.

Gourdon in his *Traite de la Castration*, published in 1860, treats extensively of the historic aspects of cryptorchidy, of the growth and migration of the testicle in the normal state of the foetus, of the external characters of ridglings, of the causes of this abnormality, and the inconvenience attached to it; but when he reaches the question of operation he says: "Before proceeding to the castration of a ridgling, the essential point is to be sure that it is practicable. Indeed, it is plain that the extirpation of the testicle, which has not come down to its normal position, is not always equally possible, whatever may be the position it occupies, and evidently all operations must be contra-indicated when the organ has remained entirely in the abdominal cavity."

M. Van Haelst was the first to show the inconvenience of an operation in such circumstances, saying that "the securing of the testicle in such a case cannot be obtained without an excessive dilatation of the ring, which would necessarily be followed by an inguinal hernia which would be irreducible."

Goubaux is also of the same opinion, adding, in support

of his theory, that "on account of the absence of a vaginal sac one would be obliged, after dilating the inguinal canal, to make an opening in the peritoneum in order to reach the gland, a step which offers almost insurmountable difficulties, besides the danger which is always present in cases of traumatism of the peritoneum. The operation, however, becomes easier when the testicle is engaged in the ring, and the difficulties are still lessened as the gland drops down more and more in the inguinal tract, and is therefore more easily reached by the operator.

"In any case, one must be sure beforehand by rectal exploration of the position of the testicle. The operation may be attempted, even if not to be completed, if the testicle is too deeply situated to permit its being removed without danger to the life of the patient. But if the organ is found to be engaged partly or entirely in the ring, castration may be attempted, as it always offers some chances of success."

As shown, Gourdon positively declares that "inguinal cryptorchidy alone may be performed usefully and with a chance of success, while abdominal cryptorchidy constitutes a case of *noti me tangere*. Castration in this case is an operation of so hazardous a character that one may well be excused for declining to recommend it."

Serres, in his *Guide Hygienique et Chirurgical de la Castration*, has a special chapter on cryptorchidy, which he studies from the point of view of anatomy and physiology. As to the surgical side of the question, he agrees with Gourdon. He says, "It is not to be doubted that cryptorchids may be rendered useful by castration, but is this operation practicable in all cases and all species?" "No; for solipeds, when the testicle has not passed the superior opening of the canal, rightly answer Van Haelst and Goubaux." The indication to ignore the operation is, with the first author, when it is necessary to enlarge the ring. The second author adds, "especially when, on account of the absence of the vaginal sac in the inguinal tract, it becomes necessary for the incision to reach the testicle. It is then only as an experimental means that castration can be attempted."

Serres affirms, however, according to Hering, that "Danish veterinarians do not hesitate to dilate the ring sufficiently to introduce the hand and pass it through the peritoneum; to feel for the testicle and bring it outward, and to apply a clamp or a ligature upon the cord." He also relates successful cases occurring in Belgium, but nevertheless concludes: "These are not sufficient to authorize us to undertake or to advise an operation which may be considered as very dangerous." And, besides, I have never seen the operation performed at the veterinary clinic of Toulouse by Lafosse or Serres.

In 1887, Messrs. Peuch and Toussaint in their *Precis de Chirurgie Veterinaire*, like the preceding author, make a complete study of cryptorchidy. In the surgical part they merely allude to the various modes of operation described and practiced by M. Degive. Nothing in this chapter indicates that they have themselves ever performed the operation. Still, the castration of cryptorchids has been practiced for many years in Belgium, Holland, Denmark, Germany and else, where, not only by veterinarians, but by empirics. I may specially mention the names of Van Seymortier, Van Haelst-Dieriex, Degive, Nielsen, Ostertag, Smidt and others, who since 1845 have successively published most interesting papers on the subject.

Marrel reports a case in France in 1838, and in 1847 two others, but gives no precise description either of the position of the testicle or of his *modus operandi*. Serres in his *Guide Hygienique Chirurgical de la Castration* reports that in 1840 a gelder operated successfully by an incision through the supero-posterior part of the left flank in a case which he had himself declined to undertake. But these two practitioners have had no imitators.

Director Degive deserves special mention for the manner in which he has endeavored to popularize the operation in Belgium and in France. Shortly after his nomination to the clinic of the veterinary school of Brussels, he formed a connection with Dieriex, who for years had successfully castrated ridglings. In 1864, this practitioner published a paper in which he minutely described its *modus operandi* and the re-

sults obtained. M. Degive, who followed his teachings, soon put them in practice, and in 1875 published an excellent paper in which he minutely described his method. In 1887, after numerous observations, he introduced a new *modus operandi*, to which he now gives preference, and in 1886 he gave a public demonstration of the operation before a large number of veterinarians and physicians. In 1889, on the occasion of the International Veterinary Congress, he castrated two animals in order to demonstrate the operation before French veterinarians.

At the Saumur Cavalry School the operation is now admitted in general practice, thanks to the initiative of M. Capon, who in 1878 found among the horses sent there a collection of subjects of all breeds affected with the various forms of cryptorchidy, upon which no operation had been tried. Many of these animals were disposed of because of their wild disposition, and ten of the others were subjected to the operation, of which three became post-mortem subjects, one from lesions of peritonitis, one from hernia and one from lockjaw.

Yet notwithstanding this, the castration of ridglings has not been accepted in civil practice, and this must not be considered very surprising, for it is not ordinarily practiced in the veterinary schools, and as a consequence young graduates do not dare to undertake it, considering it to be too delicate and serious an operation for beginners, while the older practitioner refrains from fear of its results upon his reputation—and who can be blamed? It is in this condition of the question that I have recently undertaken the task of supplying a neglected part of our surgical teaching.

In an operation of this kind, one or a few theoretical demonstrations are not sufficient for the thorough initiation of the students, with a rational hope that at a later period they will venture upon an undertaking involving such hazard in even the most expert hands. It will be necessary for them to see the operation performed by their teacher, and also to perform for themselves an imitation or rehearsal of the necessary surgical steps on animals reserved for surgical experiments, following it with a regular post-mortem, showing the

errors committed and the means of avoiding them. It is with this view that I have undertaken the introduction of this branch of instruction among my students.

The first ridgling was operated on in 1891 at one of our clinics, and we were soon furnished with plenty of subjects, and in one year we had operated upon twelve without a single fatal result. This is sufficiently encouraging. These twelve included seven unilateral abdominal, three on the right and four on the left side; and five inguinal, one double and three simple, one on the left and two on the right. The case of double cryptorchidy was treated in two operations three months apart.

On the occasion of the first operation I showed the students the very simple preparation of the subject. A specimen, dissected for that purpose, exhibited the anatomy of the inguinal region so far as to include the parts interesting to the surgeon and involved in the operation, and on its conclusion the students were allowed to watch the result. Each of the subjects presented some peculiarities of its own, and this gave me good opportunities for subsequent clinical demonstrations.

I feel it to be my duty to publish my observations, and I do so with the hope that they may prove to be of benefit to my colleagues. A true knowledge of the actual dangers attending this act of surgical interference, and of the ways of avoiding them, should give confidence to timid practitioners, and stimulate and encourage them in undertaking one of the most brilliant and useful operations of veterinary surgery.

(To be continued).

SO-CALLED SPINAL MENINGITIS.

BY G. C. FAVILLE, D.V.M., Baltimore, Md.

(A paper read before the Maryland State Veterinary Medical Association.)

The case which I shall report this evening, proved to be of so much interest to me, that its interest must be my excuse for presenting it.

On November 19th, Dr. Barron received a call to see a bay horse six years old. The doctor being busy at the time,

requested me to take the case in hand. We found the horse down in a large box-stall, unable to rise, and presenting symptoms which upon a cursory examination were those of azoturia. In order to sling the horse, it was necessary to move him from the stall where he was to another box-stall, which was accomplished by "main strength and awkwardness." We finally succeeded in raising the animal, and after continued friction over the posterior extremities for half an hour, he could in part support himself upon them. The use of the fore limbs was at all times apparently perfect. After the horse was raised, we found the following symptoms presented: temperature 102° F.; pulse full and soft; respiration somewhat accelerated, but not more than would naturally result from the excitement of slinging; almost complete loss of motion in the posterior extremities with no tenderness over the region of the loins; rectum filled with somewhat hardened balls which were naturally evacuated within an hour from the time the animal was raised. We directed that the animal be left alone as much as possible, and prescribed, tr. hyoscyamus ʒss. every three hours.

In the afternoon I saw the animal again. His temperature had risen to 103°, and there seemed to be a rather more excited condition than in the morning. He would be standing in a perfectly listless manner and suddenly would start as if frightened. This was immediately followed by a return to the lethargic condition. I then prescribed bromide of soda in connection with tincture of belladonna every three hours giving:

℞ Soda bromide, ʒiij,
Tr. bellad. rad., ʒss.

M.

Sig.—At one dose.

The next morning the nervous condition was very greatly improved. During the night of November 22d, the horse was attacked by a severe rigor accompanied by extremely cold extremities. The first chill occurred about midnight. Whiskey in three ounce doses, as required, soon brought a reaction, which was followed by another chill. This was controlled in the same way.

Upon my next visit I found the patient with a temperature of $105\frac{3}{5}^{\circ}$ F.; respiration accelerated; pulse quickened and wiry. A highly hyperæmic condition of all the visible mucous membranes was exhibited, and a distressing mucous "rale" in all the upper air passages accompanied by a soft cough was observed. The glands in the pharyngeal region were swollen and tender.

We prescribed tr. bellad. ʒss. every two hours, to be alternated with quiniæ sulph. ʒss. and Brown's Mixture ʒj every two hours. A good mustard blister was applied over the throat and extra blankets ordered.

November 23d there seemed to be but little change except that there was a slight discharge from the nose, and that the fœcal balls were covered with a glairy mucus, in some cases amounting to almost an enveloping membrane. The appetite, which had been almost completely gone, was now fairly good, and the temperature $102\frac{3}{5}^{\circ}$.

There was evident inability to urinate, although there was a continual dribbling of urine from the penis, which was partially protruded. I passed the catheter and found the bladder filled with rather thick, slightly acid urine, in which I could detect no albumen. Continued the treatment last mentioned to November 26th, when I stopped the quiniæ and began the use of nux vomica in fifteen minim doses of the tincture.

On the 27th of November there seemed to be no perceptible change in the condition of the animal, except the entire absence of the throat complications first noticed. When, however, we passed the catheter, we found the bladder distended with urine of a very strong ammoniac odor, thick and ropy in character, and we also found a large quantity of blood, and blood clots which clogged the catheter. There seemed to be an extensive exfoliation of the mucous membrane of the bladder; at times large patches would adhere to the catheter or be sucked into it, completely clogging it. For several days the treatment consisted in thoroughly washing the bladder with carbolized water, and the administration of fifteen minim doses of tincture nux

vomica, alternating with 3ss. doses of fl. ext. ergot every two hours. This continued from November 27 to December 10, when the bleeding had ceased, and the bladder was evidently not so painful as it had been. At this time the horse was able to pass his urine without the aid of the catheter, and was able to move about his stall, still in the slings, with a considerable degree of certainty in his movements.

On December 12 I removed the sling and walked him out of the stall. Naturally there was considerable weakness in his movements, but I allowed him to lie down, and he was with very little assistance able to get up.

A peculiarity of his gait is a halting drag of the toe in his hind foot in bringing it forward. This appears as if from weakness, but I am inclined to think that it is a peculiarity of the diseased condition.

This evidently was not azoturia, but was the same condition as existed in a number of cases that we had in the city about a year ago, and which was diagnosed as "so-called spinal meningitis." A large proportion of those attacked last year are reported to have died. This case is the most severe one that has come under my notice that has lived. The animal was a very valuable one, and received most excellent nursing, which naturally aided materially in his recovery.

In the *Journal of Comparative Medicine and Veterinary Archives*, for August, 1892, Dr. Clement records the clinical history of some similar cases as furnished by Dr. Dougherty. While there are some variations in the symptoms manifested as described there and in this case, they are no greater than I have seen in such cases. This horse was kept in a stable where numerous other horses are kept, and all fed and cared for in practically the same way, but no other such cases as this occurred. Dr. Clement, in his report, seems to incline to the opinion that this is the same as Dieckerhoff's "corn-cockle disease." It may be that it is, but the mere fact that we failed to find corn-cockle in either feed or bedding does not prove anything; and besides the same poisonous substances may develop in other plants. Is it not possible that

this is one of the multitudinous forms of so-called influenza?

Now a word as to treatment. Without attempting to make a differential diagnosis, we followed the plan advocated by our homeopathic friends of treating symptoms as they develop, without caring what name the disease producing them has. I desire to particularly call your attention to the use of bromide of soda in these cases. It has been my fortune to treat several cases of this kind, and I have found that in those in which I used the bromide of soda, I had no trouble in controlling those extremely nervous conditions which seem peculiar to this disease. In no other cases have I seen such hemorrhage from the bladder as in the case under consideration, and the action of ergot in controlling this was satisfactory, since its beneficial results were seen after the first dose.

Its action, however, seemed to be fully as much that of a general tonic as any other. In all those cases I have seen, I have noticed that there is great difficulty in securing control of the posterior extremities. For some weeks, and often months, the animal will drag his toes and seem to be unable to control his movements. Nerve tonics like strychnia and arsenic seem to have but little effect, even if their administration is long continued. In three cases that came under my observation, it was nearly a year before complete recovery took place. In such cases there is almost sure to be an atrophy of the muscles in the region of the flank, which is often lasting.

It has been my desire to bring this subject before the Society in such a way that we may discuss it with profit to all. A comparison of observations is the best possible means of acquiring knowledge. Theory and practice should always go hand-in-hand, but theories should always be based upon practical observations. Theoretically, we should begin treatment by removing the cause of the diseased conditions; practically, we are more often compelled to treat the varying symptoms as they develop with less regard to causation than we like perhaps to acknowledge. The case under consideration illustrates this point.

DISINFECTANTS IN VETERINARY PRACTICE.

By W. B. NILES, D.V.M.

(Read before the Iowa State Veterinary Medical Association.)

I call your attention to this class of drugs, not because they are not generally used by veterinarians, but because through some fault in their application good results do not in many cases follow their use.

Disinfectants are especially indicated in two classes of cases, viz.: 1st, in operative surgery for the disinfection of instruments, hands of operator, and parts to be operated on; and 2d, in the treatment of suppurating wounds. In regard to the first, it may be said that while it is not as easy for us as it is for the M.D. to perform an aseptic operation, we can in many instances do so. To operate, however, in this way the utmost care is necessary. While we know that suppuration does not depend alone upon the presence of pus microbes in the tissues, we also know that this process will not occur without they are present. To exclude them we must disinfect our instruments, hands, and in fact everything which comes in contact with the wound, as well as the skin covering the seat of operation.

For the disinfection of instruments, nothing is better than a few minutes boiling in water, to which has been added a little carbonate of soda, to prevent rusting. Lister, the father of antiseptic surgery, still adheres to the use of carbolic acid, and disinfects his instruments by placing them in a twenty per cent. solution of the acid. The hands of the operator can be prepared according to the method of Dr. Welch, of the Johns-Hopkins University, *i.e.*, by washing in a saturated solution of per-manganate of potash, then decolorizing in an oxalic acid solution, and lastly washing in a bi-chloride solution 1 to 1,000; or, in place of the bi-chloride solution, carbolic acid or lysol can be employed. A thorough scrubbing with soap and water should precede the per-manganate wash, particular attention being paid to the space beneath the nails. The skin covering the seat of operation should be

scrubbed with soap and water, the hair shaved or clipped close, and then washed and kept wet for at least ten or fifteen minutes, with a good disinfecting solution. For this purpose a two per cent. carbolic solution, a two per cent. lysol solution, or a bi-chloride solution can be used—I prefer the two first to the latter. Experiments made in my laboratory by two of our graduating students, have demonstrated that a two per cent. solution of either lysol or carbolic acid, will destroy the staphylococcus pyogenes aureus within five minutes, while recent experiments made elsewhere show that corrosive sublimate has been much overrated as a disinfectant.

During the operation I would not advise keeping the exposed tissues wet with strong disinfecting solutions, but would remove the blood by wiping gently with a piece of antiseptic gauze. We know that all chemical disinfectants interfere with the vitality of the tissues, and thus retard the healing process. Two things, should be borne in mind, viz.: to introduce as few pus microbes into the wound as possible, and to preserve as nearly as is possible the normal condition of the tissues operated upon,

As was indicated at the beginning of this paper, I believe the reason why so few wounds heal by first intention, is because sufficient care has not been taken to prevent the entrance into the wound of pus organism. The methods of disinfection are not thorough enough. The instruments are merely placed in a solution of carbolic acid, containing many times less than one per cent. of the acid, the hands are simply washed or wet for a few seconds in the same kind of a solution, and the seat of operation disinfected in much the same way. Then because suppuration follows we lose faith in disinfectants, and say that suppuration is bound to follow all operations. When experiments in the laboratory show that it requires from five to ten minutes contact of the disinfectant with the germ under the most favorable conditions, how can we expect to disinfect our hands, or the seat of operation, in a less time where the conditions are not nearly as favorable?

A mistake some make is that of contaminating the wound, after disinfection has been thorough, by using unclean sponges,

or allowing their instruments to come in contact with objects which are not sterile, for example, wiping the scalpel on a dirty cloth during the operation.

You may ask if it is practicable and advisable to attempt to carry out asepsis in our operations. I would answer it is both practicable and advisable in many cases, but not in all. Many operations can be performed and the wounds made to heal by primary union, if we are sufficiently careful. In many instances incised wounds accidentally inflicted can be made to heal in the same way. Even if some pus does form, in many instances we have prevented worse complications by our aseptic methods. For example by disinfecting our instruments and hands, we may have eliminated septicæmia, pyemia and erysipelas, as possible sequelæ.

In the treatment of the second class of cases mentioned, disinfectants play an important role, *i.e.*, in the treatment of suppurating wounds. Here the disinfectant is applied in solution, or in the form of a powder. We wash the wound with a disinfecting solution for the purpose of destroying the pus organism, and thus lessen the suppurating process. The length of time which a wound should be irrigated with such a solution depends upon circumstances. The mistake is often made of not "washing" long enough. Merely keeping the surface wet long enough to remove accumulated pus, in many cases, does little good. I accomplish much in the way of disinfection. The wound should be irrigated at least ten minutes, and preferably longer. I have several times irrigated unhealthy looking wounds for several hours with the best of results. As a solution for this class of wounds, I can recommend very highly the per-manganate of potash solutions—it is effectual and cheap. Irrigating with the bi-chloride solution has not in my hands given as good results. It combines with the albumen on the surface of the wound, which retards its disinfecting action, and also destroys a thin layer of tissue on the surface, which is unfavorable to rapid cicatrization.

Carbolic acid or lysol can also be used. Pyoktanin, one part to three hundred of water, is an effectual disinfectant, and as it does not produce superficial necrosis, can be used to

advantage in the disinfection of wounds. It is somewhat objectionable, however, as it stains everything with which it comes in contact. I will digress slightly here, to say that the non-irritating properties of this drug render it a valuable eye medicine for certain cases. We have used it at the hospital in cases of suppurative ophthalmia with good results. For those who desire to give this drug a trial, I will say that experiments which I have made show that a 1 to 200 solution is equal to a two per cent. solution of crystalline carbolic acid.

The treatment of wounds by the application of a powder is an excellent way to treat many suppurating wounds. You are all aware that many wounds must be treated, which cannot be bandaged, and that some wounds which can be bandaged, will do better without. What powder shall we apply to such cases? To determine the action of some preparations in this way, I have made several experiments in the laboratory, besides the use of different agents, on cases under observation. In my opinion, a powder dusted over the surface of a suppurating wound should serve two purposes: it should prevent, or at least retard, the growth of organisms, and combine with the secretions to form an artificial scab. To make the conditions somewhat similar to those existing when we apply powder to a wound, I dusted the powder over surface inoculations made on agar agar with the pus organism, *staphylococcus pyogenes aureus*, and placed them in the incubator; I used iodoform (common and resublimed), iodoform and calomel mixed, pyoktanin, iodol, salycilic acid, boracic acid and aristol all in the form of powder, iodoform (both preparations) iodoform and calomel, pyoktanin, boracic acid, salycilic acid, prevented all growth; but iodol and aristol did not apparently retard growth in the least.

In applying to wounds, I have noticed that powders not soluble in the wound secretions remain much longer on the surface, preparations being washed away; consequently iodoform remains longer on the surface than most of the others. We conclude that iodoform is entitled to the high place which it occupies as a dry dressing for wounds, but that as a dry

dressing for wounds left unbandaged, it is improved by the addition of calomel, which makes a very firm, hard scab.

My treatment for most suppurating wounds is to irrigate thoroughly once daily, until the suppurative process is partially controlled, with one of the solutions previously mentioned, and follow each with an application of iodoform and calomel; the irrigation to cease entirely as soon as a scab can be induced to form over the surface. The powder should be applied two or three times daily when it can be conveniently done. This treatment has in my hands given the most excellent results.

To sum up, we may say that disinfectants are a valuable class of agents in veterinary practice; that their use is varied, but especially indicated in operative surgery, in the preparation for operations and the treatment of wounds; that the benefit derived from their use depends largely upon the skill of the surgeon using them. With the increase of knowledge regarding diseases and their causes, the field for the use of antiseptics and disinfectants will also increase, and as their action and the proper way of application become better understood, better results will be more often obtained by their use.

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."—VETERINARY RECORD.

THE USE OF ACETANILID AND DIGITALIS COMBINED IN SPECIFIC FEVERS.

BY PROF. ROSCOE R. BELL, D.V.S., Brooklyn, N. Y.

The subject of antipyretic medicines must of necessity be an inexhaustible one to active veterinary practitioners. Many febrile diseases of specific origin occurring in the soliped are characterized by such an extreme degree of pyrexia, as to be almost the sole indirect cause of dissolution;

its presence is such an alarming symptom to the physician, and so materially jeopardizes the capacity of his patient's organism to withstand the complications or lesions that may ensue, that he searches diligently for a drug that will lower the abnormal amount of animal heat that is being generated, without lowering any vital function. Within the memory of most existing practitioners there have been introduced to the medical and veterinary professions many new antipyretic medicines, such as antipyrin, antifebrin, antikanmia, etc., but I believe it is becoming popular now to decry these preparations, by ascribing to them mysterious deleterious influences upon the heart. I have recently had such good experience with one of this group, that it can do no harm to make a plain recital of the action of acetanilid in two cases from which I have just emerged with a great deal of satisfaction, especially as they follow immediately in the wake of two other cases with a fatal termination, which were treated by what we like to call our "good old reliable treatment," quinine and whiskey.

The disease specifically we will term influenza, though that designation really conveys to the mind nothing. We have a number of fevers of a typhoid nature grouped under this heading which are as different as though they possessed no symptoms in common. What we commonly designate pink-eye is a febrile disease having local lesions in the conjunctiva, and lids of the eye, along with swelling of the extremities. Influenza will include this class of disease, and yet the specific fever of which I now speak has none of these lesions nor symptoms; neither is it accompanied by catarrhal conditions of the air passages, but expends itself at first in extreme hyperpyrexia, and whatever lesions may subsequently make their appearance are depended upon, and not occurring as an accompaniment of fever. After a careful study of this disease I have found more resemblance between it and that disease occurring in the human patient euphaneously termed "La Grippe," than exists between it and any other affection to which horses are subject; the same cyretic state, the muscular weakness, and the expenditure of the attack upon the heart.

But I simply started out to narrate my experience with certain of the agents which are used to reduce and control these fevers. I said that I had just emerged from two fatal cases, which I had treated with quinine and stimulants, and I will qualify that by saying that those cases began with temperatures of 107° , that quinine was administered in two drachm doses every four hours, and this was reinforced by two and three ounce doses of alcohol between the doses of quinine. Later, as debility succeeded, nutrients, (such as milk and egg, oatmeal gruel, hay tea, etc.,) were freely administered; and when the heart began to show an enfeebled and threatening character, digitalis and counter irritation were resorted to and persevered with. Not only were my own resources exhausted, but two other veterinarians were consulted at various times during the disease, and, despite all our efforts, both animals died after a sickness of about ten days each, during the whole of which the thermometer kept up a register of between 105 and 107. They were very valuable road horses, and their loss was much regretted. Scarcely had the contractor removed their bodies, when two new cases, presenting the same characteristic symptoms were presented to me for treatment. One of these was the off horse of a peculiarly marked team, whom it would be next to impossible to replace, and valued very highly; the other a pacer with the capacity to go a mile close to :20. With my past experience I naturally assumed control of these two cases with many misgivings, and with a determination to reduce the temperature, and keep it down if possible. A learned friend, whose name would be recognized by every reader of the REVIEW, should I write it, cautioned me against the too free use of acetanilid, and good naturedly advised me to stick to "quinine and whiskey," and "whiskey and quinine." To distinguish the two horses, I will call the carriage horse No. 1, and the pacer No. 2. They both began with a temperature of $106\frac{1}{2}$, and I administered to each 100 grains of quinine at 10 A.M.; at 1 P.M. No. 1 had risen to 107, pulse 66, respiration 22; at 7 P.M. $107\frac{1}{5}$. I now decided that I should place No. 1 under acetanilid and digitalis (the latter to over-

come any real or fancied heart depression), and consequently I administered at this hour two drachms of acetanilid and half a drachm of digitalis. As a test, I kept No. 2 under 80 grain doses of quinine every four hours, and two ounces of alcohol every two hours; and resolved to keep No. 1 under acetanilid and digitalis according to indications for its use. Throughout No. 1 received three ounces of alcohol every four hours. The following is a correct register of the temperature, pulse and respiration rates of the carriage horse (No. 1) during the attack, with side notes of the date of each antipyretic dose of the acetanilid:

MONDAY.

	Temperature.	Pulse.	Respiration.	Medicine.
10 a.m.	106 $\frac{1}{2}$	60	24	100 gr. quinine,
1 p.m.	107	66	22	
7 p.m.	107 $\frac{1}{5}$	65	23	Acet. 3 ij, Dig. 3 ss.
9 p.m.	105	58	22	
11 p.m.	104 $\frac{3}{5}$	56	23	“ “

TUESDAY.

9 a.m.	105 $\frac{4}{5}$	60	20	“ “
2 p.m.	102 $\frac{3}{5}$	50	26	

[I here thought the temperature was sufficiently low, and withheld the medicine.]

7 $\frac{1}{2}$ p.m.	106	60	20	Acet. 3 ij, Dig. 3 ss.
11:30 p.m.	104 $\frac{2}{5}$	56	28	
3 a.m.	103 $\frac{4}{5}$	56	27	“ “

WEDNESDAY.

8 a.m.	104 $\frac{1}{5}$	50	20	“ “
2 p.m.	104	54	30	
5 p.m.	103 $\frac{1}{2}$	50	27	

[Patient appeared so well that I again left off the antipyretic, and never gave another dose of it, keeping simply to the alcoholic stimulant.]

11 p.m.	105	54	23	
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THURSDAY.

8 a.m.	105 $\frac{2}{5}$	58	26	
2 p.m.	105	58	30	
6 p.m.	105	57	32	

FRIDAY.				
	Temperature.	Pulse.	Respiration.	Medicine.
8 a.m.	104 $\frac{4}{5}$	56	34	
7 p.m.	104 $\frac{3}{5}$	54	40	
SATURDAY.				
8 a.m.	103 $\frac{1}{2}$	50	36	
8 p.m.	103 $\frac{1}{5}$	50	32	
SUNDAY.				
10 a.m.	101 $\frac{4}{5}$	46	30	
8 p.m.	100 $\frac{1}{2}$	44	28	
MONDAY.				
9 a.m.	100 $\frac{1}{2}$	44	28	

The horse is now fast convalescing, and all functions are normal. Pneumonia of a slight degree developed on Wednesday, and received the additional treatment of a Berns Fomentation Jacket. A feature of some importance was that when the fever rose, depression was marked, the appetite lost, and when the mercury descended, his ears rose, eyes were brighter, appetite better, and every indication present that he felt relief. The table above will show the effects of the antipyretic upon the pulse rate, and I will remark that I never detected the absence of a single beat, nor was it irregular or jerky at anytime; but was especially strong and steady during the lower ratings of the thermometer.

In the case of No. 2, whom I had determined to treat with quinine, his temperature gradually ascended, his strength waned, and his appetite disappeared, until it was evident that a different form of treatment must be adopted if his life was to be saved. Consequently, at nine o'clock on Wednesday, quinine was discontinued, and he was placed under the same doses of acetanilid and digitalis that No. 1 was receiving, with the result that the temperature was lowered, his pulse became steadier and stronger, and his appetite and spirits showed a decided improvement. This statement cannot be credited to the fact that his disease was nearing its termination, because on Friday, when I sought to discontinue the antipyretic, the fever gradually returned until it reached 106°, when the drug was again administered, the patient at this time relapsing into a state of lassitude and indisposition to

eat, with a pulse mounting from 50 to 62. The doses of acetanilid were now given every six hours, until Saturday at 9 A.M., at which hour he received his last dose, when his temperature was $102\frac{1}{5}^{\circ}$. At 7 P.M. of that day it had risen to 104° , but never passed this mark, afterwards gradually descending until on Tuesday it had become normal. At the time of greatest depression in the fever, under the use of the drug, when it had dropped from $106\frac{2}{5}^{\circ}$ to $103\frac{1}{5}^{\circ}$ in a few hours, the pulse was remarkably full, steady and strong, more nearly approaching the normal pulse in feel and rhythm than I had ever seen it after the same number of days of extreme pyrexia. At this point I had a fellow practitioner give me his opinion of the pulse, and he unqualifiedly pronounced judgment in about the same terms as I have expressed it. Below will be found a careful table of the functions throughout the attack, or until convalescence was well under way :

	Temperature.	Pulse.	Respiration.	Medicine.	
MONDAY.					
10 a.m.	$105\frac{4}{5}$	54	23	80 grains of quinine every four hours. 2 drachms acetanilid and half a drachm of digitalis every six hours.	
9 p.m.	106	55	24		
TUESDAY.					
11 a.m.	$105\frac{4}{5}$	54	24		
10 p.m.	$105\frac{2}{5}$	52	22		
WEDNESDAY.					
8 a.m.	105	56	24		
10:45 a.m.	$105\frac{1}{5}$	54	22		
2 p.m.	$105\frac{4}{5}$	55	23		
3 p.m.	$106\frac{2}{5}$	56	25		
5 p.m.	$107\frac{1}{5}$	57	26		
9 p.m.	$106\frac{2}{5}$	56	26		
THURSDAY.					
8 a.m.	$103\frac{1}{5}$	50	26		
10:30 a.m.	$103\frac{4}{5}$	50	24		
3 p.m.	104	50	24		
5 p.m.	$103\frac{4}{5}$	50	26		
FRIDAY.					
8 a.m.	$103\frac{1}{5}$	46	28		

FRIDAY—*continued.*

	Temperature.	Pulse.	Respiration.	Medicine.	
11 a.m.	103 $\frac{3}{5}$	50	25	Received nothing but stimulants.	
6 p.m.	105 $\frac{2}{5}$	56	28		
7 p.m.	106	62	32		
9:30 p.m.	104 $\frac{2}{5}$	54	34		
SATURDAY.					
2 a.m.	104 $\frac{2}{5}$	52	33	Acetanilid and digitalis every six hours.	
6 a.m.	103 $\frac{1}{5}$	52	32		
9 a.m.	102 $\frac{1}{5}$	46	32		
4 p.m.	103 $\frac{2}{5}$	46	28		
7 p.m.	104	48	28		
11 p.m.	103	48	28	Nothing but stimulants.	
SUNDAY.					
9 a.m.	102 $\frac{4}{5}$	50	26		
4:30 p.m.	103	47	40		
MONDAY.					
8 a.m.	102	44	30		
8 p.m.	102 $\frac{1}{2}$	44	36		
TUESDAY.					
9 a.m.	101	44	32		
WEDNESDAY.					
10 a.m.	100 $\frac{1}{2}$	44	28		

From the above two cases, I am convinced that this drug, at least in combination with digitalis, does not possess a deleterious action upon the heart or the digestive organs in this class of cases; and I shall continue to use it with confidence, and will keep a careful record of its workings in my hands, and will be obliged to other physicians if they will give the results of a systematic use of it in their practice to the readers of the REVIEW, to the end of discovering whether we really possess a harmless and powerful antipyretic, and therefore a most valuable drug, or whether, as many claim, a dangerous heart depressant that works more evil to the system than the increased combustion of tissue could do.

SUCESSFUL OPERATION FOR VENTRAL HERNIA.

BY JOHN T. UNERTT, D.V.S., Milwaukee, Wis.

The case I wish to report was that of a three-year-old brown mare, standard bred, property of Mr.———, druggist. Animal had hernia for one and a half years, and during that time was treated by seven veterinarians. On being called I advised, and a few days later performed the following operation :

Hernia was in the left side, a little above the stifle joint, the rend in the abdomen being about three and one-half inches. It could be easily reduced by manipulation.

Animal was prepared in usual way for casting, hair was clipped over the rupture and for some space around it, then washed with a solution hydrarg chlor., and instruments sterilized in a solution of carbolic acid. As the stifle covered the seat of operation after animal was cast, it was necessary to straighten the leg and secure it in position. A four per cent. solution cocaine was injected at various points, an incision about six inches long made through the skin, and dissected back somewhat. On examination it was found necessary to scarify the edges of the muscles, which were then brought together with silk sutures. "The catgut I intended to use proved to be of inferior quality," the ends of which were left long and brought through the opening of the skin, which was stitched with interrupted sutures with drainage below. Iodoform and pulv. acid borici was introduced once daily with an insufflator, thus keeping the wound thoroughly aseptic. A pad saturated with a solution carbolic acid was placed over the wound and kept in position by a many-tail bandage, *tightly* applied around the abdomen. Animal was kept standing, and fed on crushed oats with no hay stall.

After two weeks I found the muscles had united, so a curved probe-pointed bistoury was introduced and sutures severed and removed, the bandage and pad being continued for two weeks more, and in six weeks the animal made a nice recovery.

I would state that in my opinion the bandage around the

abdomen *tightly* applied, as *well* as operating under thorough antiseptic rules, is absolutely necessary for a successful operation. I will not hesitate to perform the same operation again as soon as the opportunity presents itself.

PUNCTURED RECTUM—RECOVERY.

BY C. BURDEN, D.V.S.

On December 3, 1892, at 5 P.M., I was called by the F. F. Co. to see a bay gelding, eight years old, weighing about 1,500 lbs. I found him breathing rapidly, pulse 70, almost imperceptible, membranes blanched, continually shifting his position. The history of the case was as follows: he and his mate were attached to a large truck and were driven through the street not far from the curb, when a grocery wagon tried to pass but struck against the hub of the front wheel, and that caused the shaft to strike this horse; they at once took him out of harness and sent him home, though they could not see that he was injured; this was at 1 P.M.

When I saw him, in addition to the symptoms already described, I found a slight swelling of the inferior part of the anus, also traces of blood; the driver said the shaft might have entered the rectum, but he did not know.

I therefore thought it best to make a rectal examination. I at first explored the superior and lateral parts but could find no lesion; I then pressed my fingers along the inferior surface, and about eight inches from the anus I found a puncture, large enough to put my fingers through; I took them out and put them through a second time, to be sure my diagnosis was correct.

I at once reported the case to the owners. My prognosis was that he would die from hemorrhagic shock within twenty-four hours.

4th. Still alive, anxious countenance, pulse about the same, temperature 100°, refuses all food, breathing more labored.

5th. Pulse a little stronger, otherwise about the same; laid down several times through the day.

6th. Peritonitis set in through the night; temperature 103; pulse 75, wiry; respiration rapid, patches of perspiration over the body, tongue dry, constant pain, up and down, pawing continually, occasionally takes a swallow of water.

7th. Symptoms aggravated, pain more intense; from this time on until the 12th inst. there was little change; up or down he pawed continually, but to-day he is more easy; took a few mouthfuls of mash, also a little water; temperature 101°, pulse 55.

13th. Stands up two or three hours at once, when down lies quiet; at my first examination, I took a few small dung balls from him, but he has passed no fæces since, I therefore put my hand into the rectum, and beyond the puncture I found a large amount of hardened fæces which I carefully removed; the next day he defecated freely, appetite is improving, but the animal is covered with abrasions, and lost more flesh in the same length of time than I ever saw before.

From that time recovery was rapid; he is now at work as well as ever, though not in as good flesh.

The only treatment I resorted to was hypodermic injection of morphine, and spraying the rectum daily.

A TEDIOUS CASE OF GRANULAR DERMATITIS—GOOD RESULTS FROM PEPSIN WHEN OTHER TREATMENT FAILED.

BY ALBERT SHELDON, D.S.V., House Surgeon to the A.V. Hospital.

On July 25, 1892, there was admitted to the hospital a chestnut gelding with a large ulcer on the near hip. The history of the case was that for some time past the horse had a great desire to rub himself, and had so irritated the part that on the point of the hip a surface as large as a man's hand was entirely raw, looked angry and unhealthy.

We dressed the wound with a solution of creolin, after removing all sloughing skin, cauterized it lightly with silver nitrate, and replaced the light blanket, first putting an oakum pad over the wound. It progressed very well and was closing nicely, when on August 13th the horse broke his

halter and bit the wound severely, putting it quite back to where we started. We then tied the animal securely in a large box stall, discontinued the blanket and oakum pad, and used a tonic powder of zinc oxide, fuller's earth and carbolic acid. It granulated slowly for a few weeks, and then assumed a very indolent character.

On October 31st we practiced skin grafting, placing thirty-six little islands of skin on the ulcer, and keeping the parts sprayed with salt solution several times a day.

We placed the animal in slings for support and to prevent his rubbing the wound again. The grafts remained firm for four days, when about half of them came off. Gradually they all loosened and came away, but the wound looked in better condition.

We then used a collodion dressing, beginning on December 27th. The wound made good progress with this treatment until January 13th, when the horse broke the slings during the night and lacerated the wound in an ugly manner.

We were pretty thoroughly disgusted, as can well be imagined, but having gone thus far, we decided to see it through. We replaced the slings and kept him in them all the time except about thirty minutes a day, when he was taken out to be exercised. We next tried quinine sulphate and got a very rosy, healthy wound with it, but at the end of a week it did not improve as well as under collodion, so we returned to that treatment.

One day, when in conversation with Prof. Roscoe Bell, of Brooklyn, we mentioned our case, spoke of how many drugs we had tried, and how discouraging treatment seemed to be. He said that he had obtained good results with pepsin and suggested that we try it.

Beginning the pepsin treatment on January 29th, we could see improvement in three days, and a week later the wound was cicatrizing nicely. It continued to granulate rapidly and steadily until March 10th, when it was perfectly healed and covered by solid cicatricial tissue.

EXTRACTS FROM GERMAN PAPERS.

BY RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

MATURITY OF THE CALF FOR SLAUGHTERING PURPOSES.

Redner emphasized the great importance attached to the question of maturity in the calf, and the difficulty of formulating any specific rule respecting the age at which the same should be slaughtered. The views upon this point are multitudinous, and indicate the several opinions of the oldest inhabitants of each locality.

This same subject received consideration in the Mosaic laws. We read in Moses, Bk. II, Chapter xxii, a command which in substance states that the calf must remain seven days by its mother, and on the eighth day it is eatable. As a criterion of the requisite age, the law given furthermore says the umbilical cord must be dry and cicatrized and the claws hard.

The Talmud, of a more ancient origin, contains similar directions. The Romans also passed a well-defined code of rules upon the consumption of young animals. Pliny relates in Book V, chapter xxix, and in Book VIII, chapter xlix, that the matured calf, and one eligible for offspring, must have passed its thirtieth day of existence. Sheep must be at least six days old.

Young animals are considered unclean in Greece and Italy.

From the year 1582 there has existed in Kuopfalz a law which prescribes three weeks as a reliable age at which to slaughter, or when the calf reaches a weight of twenty-four pounds.

Not much dependence may be placed upon the age at this time as evidenced by the teeth. According to Gerlach (*Fleischkost*, Seite 154), the calf is born with six incisor teeth, and at the expiration of the first five days it acquires the corner incisors; the gums must lie smooth upon the teeth until the tenth day, when the crown becomes well exposed. Prac-

tical observers, however, assert that the latter is already visible with the seventh day of age.

For the more accurate judgment of the youth and fitness of the animal, the condition of the umbilical cord furnishes the most reliable factor; on the third or fourth day this dries, and commonly falls from the abdomen between the eighth and twelfth days.

An umbilicus concealed by a scab is healed in four weeks: diseased conditions of the cord modify the course of perfect cicatrization.

The morphological character of the hoof is of like significance; the cushion upon the sole of the extremities, with which the animal enters the world, has left no vestige at the seventh or eighth day.

The development of other portions of the organism, muscular and fatty tissue, follows naturally the course of feeding pursued, and depends thereon for its rapidity. Under normal circumstances these tissues will have so far proceeded in their advancement that by the tenth day the subject may be designated as fit for consumption.

In animals of tender age the myology is pale, moist and adhesive, not to say clammy; the adipose tissue possesses an oily glance similar to that of the embryo; this sort of veal is capable of rapidly developing the bacterium terms of decaying. This attribute of the flesh disappears with every day of age and abundant nourishment until the eighth day.

Now the proper interspersion of fatty material has rendered the muscle fibers distinct from each other, and gives the whole a more compact consistency. This perfected is capable of becoming more pronounced, but Schmidt-Muhlheim maintains that the quality ceases to improve after the fourth week, and further adds, that from this time on the surplus sebaceous material accumulates beneath the skin, upon the kidneys and in the mesentery.

In this district minimum live weight was primarily eighty, then seventy, then sixty pounds. The retrogression of the lawful weight is due to the fact that in other neighboring districts the prescribed weight was but fifty pounds, which

made calves of so great weight too scarce to supply the popular demand for veal.

Computation of the avordupois is evidently not difficult, but its utility is questionable. What, may be asked, has the excellency of the meat in common with the quantity of the same?

Obviously, from the law of transmission, the weight of the offspring depends upon the race and general conformation of the parent stock, and varies from twenty to one hundred and twenty pounds at birth.

If the injurious character of the immature meat cannot be proven, the fact that the milk of the mother, when used previous to the eighth day after parturition, is prejudicial to the health, may be adduced in support of the theory. That this lacteal secretion acts as an irritant to the digestive tract has been abundantly substantiated.

Were we to conclude the discussion by stating the flesh to be mature in the period of time above given, we should then also consider the numerous difficulties lying in the path of the administration of such a law as would reach this point.

Dairymen possessing cows for the milk they yield, are of the opinion that they can obtain more for the fluid as such, than when the young is permitted to drain it from the mam-mæ and incorporate it in their frames; for this reason they endeavor to realize upon the calves at the earliest possible moment. Only the most imperative coercion could compel the owner to feed his veal a milk diet. Albert Iserlohn reports the abattoir rules of his district to be as follows: "For the preservation of the public health, it is urgent that the age of the calf be noted. Animals under fourteen days old must not be brought to slaughter." He observes that a good indication of the age is the umbilicus. The calf whose navel is not perfectly cicatrized may not be used for human consumption.

Koch stated that in Mecklenburg and Holstein only the heaviest and fattened calves are brought to the slaughter-houses; it may have been otherwise in Reuter's time. He says the coloration of the kidneys and consistency of the adi-

pose tissue surrounding the superrenal capsules may be taken as a criterion of the age. As the calf advances in life, the dark red and clouded color of the latter tissue bleaches and disappears. Vilmar-Lennep relates a code which prohibits in Schwarzburg-Rudolstadt the killing when under ten days old. This ordinance he finds to serve the additional purpose of a safeguard in that it gives infectious diseases incidental to calves an opportunity to develop.

At the close of the debate the meeting expressed its thoughts in the following resolution :

“The veterinary inspectors of abattoirs present are of the opinion that, generally speaking, eight days are sufficient to bring the calf into a condition suitable for slaughter, except when some have suffered from deficient nourishment or debilitating disease.”—*Thier. Woch.*

BRADYCARDIA IN CANIDÆ.

Bradycardia—abnormal retardation of cardiac activity and pulse number—occurs not infrequently in encephalic affections—immobility, and may be explained by an increase of the local blood pressure influencing the vagus center. Bradycardia may also originate from toxic materials and in icterus. The same symptoms may also appear as an idiopathic affection, as was the case of a dog housed in the Berlin veterinary hospital.

This instance was a bull-dog nine years old having but twenty contractions of the pulse per minute. Heart tones and beats not observable; temperature 99.8° F.; animal well nourished but without appetite; visible mucous membranes anæmic; respiration 44; general dullness and great weakness possessed the patient; death occurred some two days after admittance.

Autopsy exposed enlargement of the aorta above the semi-lunar valves approaching a dollar in size, and which was in a state of chronic inflammation; other pathological observations were absent. Frohner finds only two cases recorded in literature. One in the *Zeitschr. f. Vet. Kunde*, 1890, described

by Nordheim, that of a horse having a pulse of fourteen per minute became unconscious several times during the day. Enlargement of the auricular-ventricular opening was the only lesion found post-mortem.

A similar case was observed by Vogel, and is elaborated in Hering's "Repertor." of 1888; the horse had but one heart tone and a pulse of 15 to 19, likewise suffering from fainting spells. Hypertrophy of the left auricle and ventricle were discovered after death.—*Mtsh. f. prakt. Thierheilk.*

TRANSMISSION OF MALADIE DU COIT IN CANIDÆ.

As is known, this affection is indigenous to the equine species, and after a course of several months of emaciations and paralytic symptoms leads to a fatal termination.

The autopsy upon these animals shows invariable localities of softening in the spinal cord. By inoculating the latter substance, the disease may be transmitted from one horse to another.

Nocard was successful in producing the malady in dogs through injections of the same softening herds into the anterior chamber of the eye. These animals succumbed in from six to eleven weeks, the train of symptoms being precisely as in the horse. This same investigator found the contagion to be conservable in neutral gelatine.—*Thier. Woch.*

BACTERIOLOGICAL STUDY OF BUTTER.

Adopting the Lafar method of examination it is to be seen that the bacteria of butter are in no wise identical with those of milk. The residuary milk secured from the centrifugal separator is extraordinarily rich in its microbic constituents. Since the butter cannot be sterilized as milk may be, it sequentially is to be premised that the former must needs contain numerous animate bacteria. Lafar finds the experiment to be variable, and their results to depend upon extraneous circumstances incidental to the commercial manipulation of the article.

For his purpose of experimentation the author took fresh natural butter in pieces weighing 2 to 5 grains, and placed it with 100 grammes of sterilized water in small dishes; he then heated the latter to 100°-104° F. By continuous agitation a fine emulsion was secured with which he inoculated prepared soils.

This procedure yielded from 10 to 20 million germinating centers to every grainure of butter. In a similar manner Lafar investigated cheese; he found 850,000 centers in the Emmenthaler (a better class of Swiss cheese), and 560,000 in cottage cheese.

By the butter tests two species of more prominent bacteria were brought to light. First, an immobile, irregular and gelatinous bacterium—*bacterium butyri colloideum*. Second, a fluorescent bacillum—*bacillus butyri fluorescens*. Besides those, a fungus, and the bacillus of Hueppe—*bacillus acidi lactici*; occasionally also that of Escher—*bacterium acrogenes lactum*. In no case did the mould fungus develop in the samples of butter.

Subjecting to a cold of 16° F., the germinating centers increased 15 per cent. in fourteen days, but later diminished one third, which at a temperature of 32° to 34° F. continued steady for four weeks.

At the ordinary room temperature the centers propagated until the butter became rancid, and then diminished.

A heat of 95° F. for four days diminished the colonies one half, and in thirty-four days to 5 per cent. of the initiative number.

The addition of cooking salt likewise decreased the bacterial contents; by the addition of more salt the latter were not proportionally lessened.

The trials of the butter respecting the disseminating power, etc., in vessels exhausted and practically devoid of atmosphere, yielded positive results after thirty-seven days, anærobic bacteria being present.

Churned butter, i. e., butter containing pigment substance, salt, etc., gave only 747,000 bacteria to the gramme of butter—only one fifth of the natural butter. This substance—churned

butter—also evidencing the mould fungus—*mucor mucedo*, and another immobile bacteria.

A series of later experiments developed the fact that a winter's cold of 16° F. for fourteen days and the addition of a 13 per cent. sodium chloride solution, were unable to influence the germinating colonies.—*Allgem. Med. Central Zeits.*

CULTURES OF ACTINOMYCOSIS.

M. Wolf and Dr. J. Israel were successful in obtaining an artificial colony of this micro-organism, and in transplanting the same upon animals.

The cultures grow well upon agar, under the usual precautions, and manifest a decided disposition to nodule formation; the latter appearing on the third or fifth day.

The collections flourish best in a temperature of 95° to 98° F. the growth being independent of the presence of oxygen—being, therefore, an anærobic organism.

The actinomyces fungus under the microscope is of various size and form; short and long single lengths and articulated or compound threads being in the field of vision; there may also be detected a spiral formation and numerous cocci.

The characteristic and notable form of this fungus, to wit, that of an Indian club, *does not appear in the cultures.*

The number of experiments upon animals amounted, in all, to twenty-two; 18 rabbits, 3 guinea pigs and one sheep. The two former species gave positive results, but the inoculation upon the sheep failed.

Upon post mortem the infected animals exhibited the characteristic new formation which in turn yielded the typical club-shaped bodies, single and radiating. These, when placed upon various soils gave the results above mentioned, losing their shape incidentally.

Previous to this success of Wolf and Israel, it was not possible to cultivate the actinomyces fungus.—*Virchow's Archiv.*

COLLEGE COMMENCEMENTS.

KANSAS CITY VETERINARY COLLEGE.

The second annual commencement of this institution was held in the lecture room of the college on the 17th of March, and the following gentlemen graduated :

Messrs Onesimus G. Atherton, William G. Hawkey, Joseph Pott and Charles Saunders.

NEW YORK COLLEGE VETERINARY SURGEONS.

At Chickering Hall the closing exercises took place, and the following gentlemen received their degree of V.S. (Veterinary Surgeon) :

Henry Amling, Jr., Long Island, N. Y.; Ira K. Atherton, Arrowsmith, Ill; William Cook, New York City, N. Y.; Charles Doerrie, Salisbury, Mo.; William T. Finn, Brooklyn, N. Y.; Herbert B. Hamilton, Boston, Mass.; Robert C. Helmer, Scranton, Pa.; Alexander Johnson, N. Y.; Robert E. Jones, New York City, N. Y.; James H. Kelley, New Haven, Ct.; Harry W. Koenobis, Brooklyn, N. Y.; Dennis F. McAuliffe, New York City, N. Y.; Albert Mehrof, Little Ferry, N. J.; Irwin C. Newhard, Allentown, Pa.; Thomas T. O'Dea, Ghent, N. Y.; Edward A. Paul, Brooklyn, N. Y.; W. L. Sturgis, North Norwich, N. Y.; Isaac White, New York City, N. Y.; Fraley E. Winslow, Whitestown, N. Y.; Louis J. Walford, St. Louis, Mo.; Addison R. Wiley, Windsor, N. J.

CHICAGO VETERINARY COLLEGE.

The tenth annual commencement exercises of this institution were held on the 24th of March, in the Grand Opera House. Prof. R. J. Withers, M.R.C.V.S., conferred the degree of Doctor of Veterinary Surgery on the following eighty-three gentlemen: John H. Adamson, Fred. W. Anderman, G. E. Armstrong, Albert Babb, Daniel Barrett, C. E. Baxter, Geo. N. Bennett, Sidney Binger, Jas. A. Bovett, W. A. Bruette, Adolph M. Casper, W. H. Casserly, Wm. G. Clark,

Geo. H. Cobb, Jr., W. H. Cole, C. M. Crane, T. H. Davis, C. G. Deenis, N. H. Downs, Otto G. Draper, John D. Durack, Roderick D. Eaton, Milo C. Eckley, J. H. Eddy, Chas. G. Everton, Geo. F. Faulkner, G. H. Fay, Otis Goodale, Jas. N. Gould, John W. Gould, Wilber T. Gwinn, Robert Gysel, Geo. L. Hagadone, Ed. Herzer, R. A. Higgins, Geo. C. Hill, M. V. Hill, Fred. A. Tistrup, Jas. M. Kaylor, David Ker math, Frank D. Ketchum, Chas. Koehne, Fred. G. La Mont, Fred. J. Leith, A. C. Longnecker, J. H. McAllister, Jas. I. McDonald, E. F. McGraw, C. S. McKenna, Tink S. McNair, G. P. McNay, Chas. H. Merrick, A. E. Metzger, Edwin L. Morgenroth, John H. I. Mullett, Murray C. Newbury, Edmund H. Newton, Joseph J. Oberst, H. A. Pressler, R. G. Rich, T. O. Richmond, F. Rimmer, Thos. Rimmer, A. M. Roek, W. A. Rushworth, F. N. Lawyer, Bismarck Schoedde, John A. Scott, J. W. Sheppard, Osmon W. Stanley, Corvin W. Stevens, Jacob Sutzin, J. A. Thornborrow, R. E. Troxell, Francis J. Ulm, R. D. Van Aken, Chas. A. Wasson, Geo. A. Waterman, E. G. Wheeler, Stephen J. White, N. J. Weisen, F. O. Wright, A. F. Ziegenhorn.*

AMERICAN VETERINARY COLLEGE.

The commencement exercises of this institution took place on the 24th of March, at Chickering Hall, before a large audience of friends of the institution, graduates and alumni of the college.

The hall was handsomely decorated, and the band of the Seventh Regiment enlivened the evening with appropriate musical selections. The platform was occupied by members of the Board of Trustees and Faculty of the College, together with prominent public men of the city, or belonging to the profession, among whom were Hon. D. F. Martin, Jos. Biglin, Dr. J. W. Gadsden, Hon. E. F. Bush, and Prof. F. Osgood, M.D., of Harvard. His Honor, Mayor Gilroy, excused himself on account of previous engagements.

* We regret that we have not received the addresses of these recent graduates.

After an invocation offered by Rev. T. B. Morse, the degree of *Doctor of Veterinary Surgery* was conferred by Dr. F. D. Weisse, President of the Board of Trustees, upon the fifty-two successful candidates of the graduating class, viz.:

M. McWilliam Alexander Atfield, Brooklyn, N. Y.; Leo Edward Buckley, New York City, N. Y.; Charles Reuben Biederman, Brooklyn, N. Y.; Harry H. Bear, Mount Joy, Pa.; Alexander Joseph Burkholder, Staunton, Va.; Grantly Willoughby Bickell, Haverhill, Mass.; Charles Edward Clayton, Waltham, Mass.; Charles Henry Doepel, Mamaroneck, N. Y.; Frank P. Dorian, Yonkers, N. Y.; William Freeman Davies, Washington, Ohio; John Archie Eadie, New Brighton, N. Y.; William C. Ferguson, New York City, N. Y.; Charles Edgar Garman, Nora Springs, Iowa; Samuel Glasson, Jr., New York City, N. Y.; John Henry Gardner, Jr.; Norwich, Ct.; Louis Henry Hempelman, St. Louis, Mo.; Gottfried Leonhard Hagenburger, Hettenheim, Germ.; Harry Newell Hall, New Haven, Ct.; Mark Edward Johnson, D.V.M., Red Oak, Iowa; Leander Young Ketcham, M.D., Woodbury, Ct.; Samuel Erdman Lloyd, Govanstown, Md.; Edward Bedell Metcalf, Albany, N. Y.; Albert Francis Mount, Jersey City, N. J.; Charles Henry Martin, Dobbs Ferry, N. Y.; John J. Marshall, New York City, N. Y.; Henry Joseph McClellan, Bryn Mawr, Pa.; William Townsend McCoun, Jr., Oyster Bay, N. Y.; John Peter Nestler, Jersey City, N. J.; Charles Allen Parkerson, New York City, N. Y.; John Vernon Prather, Troy Centre, Pa.; James A. Peed, New Castle, Ind.; William Avin Porter, Dunksburg, Mo.; Rudolph Bertram Plageman, Brooklyn, N. Y.; Joseph Bennett Quinn, Cincinnati, Ohio; Charles Albert Raque, West Nyack, N. Y.; Napoleon Bonaparte Rhodes, Brooksville, Fla.; John Edward Rowe, Jr., Newark, N. J.; Warren Lawrence Rhoads, Westtown, Pa.; Raymond Brook Smith, Montclair, N. J.; Harry Frank Steele, Titusville, Pa.; Thom. Enoch Scripture, Frankford, Ind.; Harry Edward Styer, Medina, Ohio; Charles Schroeder, Brooklyn, N. Y.; William Frank Stranghan, Jewett, N. Y.; Shirley Bruce Staples, Alexandria, La.; Robert Smith Todd, Waterbury, Ct.;

Howard Stanton Usher, Hollis, Me.; Ernest Lewis Volgenau, New York City, N. Y.; Charles Lucian Van Schaick, Brooklyn, N. Y.; Samuel Adam Wright, Long Island City, N. Y.; Richard Milton Weightman, Utica, N. Y.; Frank Potts Williamson, Raleigh, N. C.

The following prizes were then delivered by Professor Doremus:

To Dr. Louis Henry Hempelman, the gold medal of the Board of Trustees, for the best general examination.

Dr. Samuel Adam Wright received a set of books from the Alumni Association for second best general examination.

Dr. Samuel Erdman Lloyd received the gold medal of the Faculty, for the best practical examination, as recommended by the committee appointed for that purpose, consisting of Dr. G. Berns, of Brooklyn, and Thomas Giffen and Eugene Burget, of New York.

The anatomical prize of the senior class, offered by the Professor of anatomy, consisting of a set of instruments, for the best anatomical preparations, was gained by Dr. G. L. Hagenburger.

The junior anatomical prize for the best examination was given to Mr. W. Siegmund, of that class.

The prize offered by the President of the College Association, for the best defended paper presented before that body at one of the meetings, was awarded to Dr. E. L. Volgenau of the graduating class.

The valedictory address was delivered by Dr. W. L. Rhoads, and proved to be one of the most interesting ever delivered on such an occasion.

Hon. Judge C. P. Hawes followed, with some remarks of a very interesting character, embodying some most excellent counsel to the graduates and other students.*

The ceremonies closed with the benediction pronounced by Rev. T. B. Morse, and the company dispersed to their homes to joyful strains from the band, greatly gratified by the enjoyment of a happy and profitable evening.

* Will be published in our next issue.

BIBLIOGRAPHY.

MANUAL OF OPERATIVE VETERINARY SURGERY. BY A. LIAUTARD, M.D., V.M. Sabiston & Murray, Publishers, New York.

Under the foregoing title Prof. Liautard, Principal of the American Veterinary College, has rendered an unusually valuable service to English-speaking veterinarians by contributing a volume which, from the important field it covers, the author's intimate practical knowledge of the subject under consideration, which is clearly impressed on every page; his equally evident familiarity with the experience and deductions of leading veterinarians throughout the world; the ample illustrations, which often serve far better than words; the ease of style, clearness of expression, and convenience of arrangement, will be cheerfully accorded a high and enduring place among standard English veterinary writings, and should win a place in the library of progressive veterinarians.

Professor Liautard is already well known as a writer on veterinary science through his less pretentious but admittedly valuable volumes: "Vade Mecum of Equine Anatomy," "How to tell the Age of Domestic Animals," "Animal Castration" and "Lameness of Horses," and as translator of Bouley on "Hydrophobia" and Zundel on "Diseases of the Foot."

The author very appropriately dedicates the volume to Dr. A. Chauveau, the illustrious anatomist and scientist, who has done so much for veterinary science in general, and has through his "Anatomy of Domestic Animals" contributed especially to that department of veterinary learning which directly forms the essential foundation for scientific operative surgery. The field covered is a wide and important one, hitherto unoccupied in English veterinary literature, although some of Prof. Liautard's above mentioned writings have to a degree touched upon a part of the present work, and Dr. Fleming published as early as 1884 his first part of "Operative Veterinary Surgery," which remains unfinished.

The work consists of 786 compactly written pages, the arrangement of the subject matter is in every way convenient

and natural, the language and style above criticism, and the illustrations, of which there are about six hundred, are well executed and admirably designed to elucidate the text and render the writer's meaning clear.

The initial chapter, devoted to the various modes of restraint, is exhaustive and replete with valuable suggestions. The various methods of restraining animals by distracting the attention of the patient by means of pain from the operation in progress or contemplation ; the confining and controlling of the animal's movements by mechanical means, included in side-lines, casting apparatus, stocks and operating tables ; the removal of the sense of pain by general or local anæsthesia, are all considered in detail from economic and humanitarian standpoints, and the advantages, disadvantages and dangers of each method carefully considered ; an especially timely plea is made for the more general use of local anæsthetics for both surgical and diagnostic purposes. The various accidents following the use of anæsthetics, and the different forms of restraint are carefully brought out, and means for their prevention suggested. Then follows a brief and suggestive chapter on surgical diagnosis, followed by a more extensive one on therapeutics in which the means for applying and retaining dressings, etc., on various parts of the body are ably discussed.

The following chapter devoted to elementary operations ; operations on the skin and cellular tissue ; on bones and on muscles and their annexes are all that could be desired, while the chapter devoted to operations upon the digestive system is exhaustive, detailing the great variety of operations upon this apparatus in an excellent manner.

The chapter devoted to operations on the respiratory apparatus is chiefly interesting on account of the subject of arytenectomy, a procedure which has led to much comment during the past few years from the very contradictory reports of results, a subject which the author considers fully and fairly.

The chapter devoted to neurotomy is one of special worth, giving very minute and excellent details for this operation, and recording very favorable results.

Other chapters are devoted to operations on the circulatory system, the genito-urinary apparatus, the foot, the eye and ear, the withers and poll, etc., all of which are full of interest, and in keeping with the great importance of the subject as a whole.

The work is destined to meet with the generous reception it so well deserves at the hands of the English-speaking veterinary profession, and will doubtless specially appeal to the pride of American veterinarians, as it is by far the most extensive, useful and scientific contribution yet offered by an American veterinarian, and we trust its success will be sufficiently great to stimulate further endeavors of a like character.—W. L. W.

SOCIETY MEETINGS.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The annual meeting of the Indiana Veterinary Association was held at the New Clinton House, Kokomo, Ind., January 10th and 11th, 1893.

The meeting was convened at 1.30 P.M., the President, W. L. Williams in the chair. There were present, Drs. F. A. Balser, C. F. Bell, G. H. Roberts, M. J. Schaffer, W. L. Williams, J. H. Honan, J. C. Rodger, A. J. Thompson, T. B. Pote, A. B. Carter, O. L. Boor, P. Justice, J. W. Watson and C. M. Stull.

The minutes of the previous meeting read and approved. The Treasurer, Dr. Galbraith, being absent on account of sickness, presented his report through the Secretary, showing the Association to be in an improved financial condition.

The following names were proposed for membership: J. W. Reed, R. L. Chamberlain, Fred. Braggington, E. T. L. York, J. D. Sturm, T. B. Sturm, T. B. Pote, A. B. Carter, O. L. Boor, P. Justice, J. W. Watson, C. M. Stull, S. Fitch and A. G. Whitestone.

On motion of Dr. Roberts, the Secretary was instructed to cast the ballot of the Association in favor of all the applicants.

A communication was presented from Dr. E. F. Diggs, tendering his resignation as a member on account of engaging in the preparation and sale of secret "specific" medicines, which upon motion of Dr. Roberts, was accepted, and the Secretary was instructed to notify Dr. Diggs accordingly.

On motion of Drs. Bell and Roberts, a committee of three, consisting of the President, Vice-President and Secretary, was created to revise the constitution and by-laws, with power to print the same at the expense of the Association, and have it ready for presentation to the Association at its next meeting.

Dr. C. F. Bell then presented his paper on "Amputation of the Penis," in which he detailed several cases of more than ordinary interest occurring in his own practice. The paper was followed by an interesting discussion participated in by almost all members present, during the course of which many instructive cases of this operation were related, and numerous useful suggestions brought out, chief of which were that direct amputation, through urethra and corpus cavernosum was likely to be followed by urethral stricture, and that this was preventable by dissecting out the urethra and allowing it to project beyond the corpus cavernosum, etc.

The Association then adjourned to re-convene at the Elk's Hall at 7.30 P.M., to which the general public had been invited, but owing to the inclement weather the audience was small though appreciative.

The Vice-President, Dr. Bell, presided, and the President delivered his annual address, entitled, "The Relation of the Veterinarian to the Public," in which the speaker showed that these relations had become so important that the veterinarian constituted an essential factor in the progress, prosperity and health of the people.

This was followed by a well-prepared paper by Dr. A. J. Thompson, entitled "Homeopathy in Relation to Veterinary Science," after which the meeting adjourned to the Clinton House, and fully discussed it.

The President then called the attention of the Association to the approaching International Veterinary Congress to be

held at Chicago, September, 1893, and urged that the veterinarians of Indiana should fully waken to their opportunities and responsibilities in this, which will doubtless prove the most important veterinary meeting so far held in America. He detailed the many courtesies extended to visiting veterinarians at Boston last September, and suggested that equally good entertainment should be provided at Chicago for all attending veterinarians.

On motion of Dr. Thompson, the President appointed Drs. Boor, Stull and Balser a committee to confer and act with like committees already appointed by the State Associations of Illinois and Iowa, for making arrangements and providing entertainment for the International meeting.

The Association then proceeded to the election of offices for the ensuing year, with the following result: President, W. L. Williams; First Vice-President, Dr. C. F. Bell; second Vice-President, Dr. C. W. Stull; third Vice-President, Dr. G. W. Roberts; Secretary, J. E. Cloud; Treasurer, F. A. Balser; Trustees, A. J. Thompson, T. B. Pote, O. L. Boor, M. Y. Schaffer, J. W. Watson.

On motion of Dr. Bell, it was decided to hold the next meeting of the Association at Newcastle in July.

The Association then adjourned to meet at 8 A. M., on the 11th, when, through the courtesy of Dr. Bell, the members visited the Kokomo Plate Glass Works, one of the largest concerns of the kind extant, where the members had the pleasure of observing hurriedly the various departments in active work. The members then proceeded to Dr. Bell's infirmary, where Dr. Balser demonstrated in a neat manner the method of castrating cryptorchid horses, after which the meeting was called to order at the New Clinton House, and an interesting paper presented by Dr. Honan, on "Inversion of the Uterus," which was followed by a spirited discussion, engaged in generally by members present, the discussion turning largely upon the question of the necessity of retaining-sutures, truss or pessary after replacement, the general opinion seeming to be that they were at least useless in most cases, especially if care be taken to straighten out the invaginations of the

cornea and properly replace them, and then withdraw the same slowly and cautiously after the lapse of several minutes after replacement.

A paper by Dr. W. B. Wallace was then presented by Dr. Bell, entitled, "A Fracture of the Os Pedis," in which a rather remarkable case was reported, which, according to the views of most members present, was due to osteo-porosis.

On motion of Dr. Stull, it was determined to secure necessary funds for assisting in entertainment of the International Veterinary Congress by subscription.

Hearty good will prevailed throughout the meeting; the papers submitted were very good, the discussions were unusually spirited and instructive, the attendance was larger than at any previous meeting, and the additions to membership also exceeded in number and value those of any prior meeting, so that on the whole those present felt greatly encouraged, and considered this the best meeting in the history of the Indiana Veterinary Association.

The meeting was then adjourned, to convene at Newcastle early in July.

J. E. CLOUD, *Secretary.*

WESTERN IOWA VETERINARY MEDICAL ASSOCIATION.

The sixth meeting of the Western Iowa Veterinary Medical Association met at the office of Dr. J. J. Miller in Sioux City, on Friday evening, January 20, and was called to order by Vice-President G. C. Williams. Upon roll-call, the following members were present: G. A. Johnson, G. C. Williams, J. J. Miller, L. U. Shipley, and the following gentlemen as visitors, Jas. M. Smith, of Cherokee; R. R. Hammond, of Lemare; D. C. McCapes, of Vermillion, S. D.; and J. F. Smith and John Aerth of Sioux City.

The minutes of the previous meeting were read by the Secretary and approved. Under the order of communications and correspondence, letters were read from President J. G. Gibson, expressing regrets of absence, and communications from the Secretary of the Northeastern Iowa Association.

Upon motion of Dr. Johnson, seconded by Dr. Miller, the rules were suspended and the above named visiting doctors were enrolled members of the Association.

Under the order of new business the subject of veterinary legislation was discussed by all present. The first paper was the President's address, which was read by the Secretary, and was well received, and contained much in the way of professional ethics, and very forcibly expressed the sense of the Association upon legislation; this was followed by an interesting discussion, at the close of which it was moved by Dr. Johnson, and seconded by Dr. J. M. Smith, that the Chair appoint a committee of three to be known as the Legislative Committee. Accordingly the Chair appointed Drs. G. A. Johnson, Jas. M. Smith and R. R. Hammond.

Dr. G. A. Johnson then presented a paper on the use of a stomach tube in acute indigestion, which was discussed by all present. Dr. McCapes then presented a paper on "Bottom Disease," which was very interesting and was fully discussed. This followed the election of officers, which resulted as follows: For President Dr. G. A. Johnson, for Vice-President, Dr. J. J. Miller, for Secretary and Treasurer, L. U. Shipley. The newly elected President then took the chair, after which the meeting adjourned to meet at the call of the Secretary.

L. U. SHIPLEY, *Secretary*.

THE MARYLAND STATE VETERINARY SOCIETY.

The annual meeting of this Society was held at the Hotel Studio on Monday evening, February 20th, 1893. The following members were present: Drs. T. F. Barron, Wm. Dougherty, A. W. Clement, Daniel R. Hoffman, George C. Faville and W. H. Martenet. Dr. Martenet, President, in the chair, and Dr. Faville being Secretary pro tem.

General routine business was transacted, and in addition it was resolved to purchase an ambulance for the recumbent position for addition to the one for standing position already owned by the Society. Election of officers for the following year resulted as follows: President, Dr. Wm. Dougherty;

Vice-President, Dr. G. C. Faville ; Secretary and Treasurer, Dr. W. H. Martenet.

An interesting paper was then read by Dr. Faville on "So-called Spinal Meningitis." The annual dinner followed in the dining-room of this cosy hotel, and was heartily enjoyed.

GEORGE C. FAVILLE, D.V.M.,

Secretary pro tem.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The notice of the annual meeting of this Association, which took place on the 7th of March, reached our office too late for publication in our March number. We regret it so much more, as the meeting must have been one of unusual interest. We hope that, more fortunate than in the past, we may be honored with a report of the meeting to present to our readers. The work done by the Pennsylvania Association is too important for not receiving the largest publicity.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meeting of the Connecticut Veterinary Medical Association was held in the office of Dr. E. C. Ross, New Haven, on Tuesday evening, March 7th, at 8 P.M.

Dr. Beckley, President, called the meeting to order. Members present were : Drs. Ross, Bland, Whitney, Smith, Beckley, Storrs, Towne, and the Secretary ; also Dr. Potter, who through Dr. Ross, made application for membership. His name was referred to the Board of Censors to be acted upon at the next meeting.

There were interesting notes on every day practice given by all present, and a number of specimens were shown, among which one by Dr. Beckley exhibiting a large white kidney as described by Williams.

After a pleasant evening spent in discussing the subjects it was moved that the meeting adjourn, and that the next one should be held in the office of Dr. Bland, of Waterbury.

H. E. BATES, D.V.S., *Sec.*

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The eleventh annual meeting of the Michigan State Veterinary Medical Association was held at the Wildermuth House, Owasso, Michigan, February 7th, 1893.

The meeting was called to order at 2 P.M. by the President, Dr. J. W. Ferguson, of Bay City.

Secretary Dr. Wm. Jopling, of Owasso, called the roll, the following members answering to the call: Dr. J. Hawkins, Detroit; Dr. J. A. Dell, Ann Arbor; Dr. S. Brenton, Detroit; Prof. E. A. A. Grange, Lansing; Dr. J. W. Ferguson, Bay City; Dr. C. W. Stowe, Saginaw; Dr. W. J. Byers, Charlotte; Dr. J. C. Whitney, Hillsdale; Dr. Wm. Jopling, Owasso; Dr. Geo. C. Moody, Mason; Dr. W. W. Thorburn, Lansing; Dr. Geo. W. Dunphy, Quincy; Dr. J. W. Brodie, Pontiac; Dr. F. G. Gilbank, Detroit; Dr. T. G. Duff, St. Louis; Dr. Jas. Ritchie, Alpena.

The minutes of previous meeting were read and approved.

Dr. J. A. Dell, of Ann Arbor, was appointed to assist the Secretary at this meeting.

The President delivered his annual address, which was replete with encouraging remarks and good advice.

Moved by Prof. Grange, and supported by Dr. Jopling, that Dr. J. Hawkins take the chair in order that we may take action on the President's address. Carried, and Dr. Hawkins took the chair.

Moved by Prof. Grange, and supported by Dr. Dunphy, that the President's address be attached to the minutes of this meeting, with commendatory remarks. Carried.

The following applications for membership were presented: Dr. J. F. Smith, Ont. Vet. College, '83, Adrian, Mich.; Dr. Wm. L. Drinkwater, Ont. Vet. College, '86, Mt. Clemens, Mich.; Dr. R. E. Reycraft, Ont. Vet. College, '87, Detroit, Mich.; Dr. W. A. Mann, Ont. Vet. College, '90, Clio, Mich.; Dr. L. D. Le Gear, Ont. Vet. College, '92, Imlay City, Mich.; Dr. Wm. Routledge, Ont. Vet. College, '90, Sebewaing, Mich.; Dr. W. A. Giffen, Ont. Vet. College, '87, Detroit, Mich.; Dr. S. W. Van Sickle, Ont. Vet. College, '88,

Holly, Mich.; Dr. W. M. Burdick, Ont. Vet. College, '91, Chesaning, Mich.; Dr. H. Rupright, Chicago Vet. College, '90, Sturgis, Mich.; Dr. W. A. McLean, Ont. Vet. College, '88, Greenville, Mich.; Dr. J. W. Waters, Ont. Vet. College, '87, Jackson, Mich.

The Secretary reported that all the applicants were properly vouched for, except Dr. J. W. Waters, of Jackson.

Moved by Dr. J. Hawkins, and supported by Prof. Grange, that the applications be voted on collectively, excepting, Dr. J. W. Waters. Motion carried.

Moved by Dr. Hawkins, and supported by Dr. Jopling, that the Secretary cast a unanimous ballot. Carried.

The Secretary thereupon deposited said ballot, and the applicants were declared duly elected.

Moved by Prof. Grange, and supported by Dr. Hawkins, that the Secretary notify the gentlemen balloted for, that they can become members by paying the admission fee. Carried.

Moved by Dr. Dunphy, and supported by Dr. Hawkins, that the Secretary notify Dr. J. W. Waters, of Jackson, that action on his application was deferred until properly vouched for. Carried.

Drs. J. F. Smith ; W. L. Drinkwater ; R. E. Reycraft ; W. A. Mann ; L. D. Le Gear and Wm. Routledge being present and waiting in an adjoining room, were called in and fulfilled the requirements of membership by paying the fee, after which they were introduced by the President.

The Secretary read several letters from members of the profession, expressing regret at not being able to be present.

Dr. C. W. Stowe, conveyed regrets from Dr. D. G. Sutherland, of Saginaw, that sickness prevents his attendance.

Dr. G. W. Dunphy called the attention of the Association to the death of Dr. E. W. Bartram, of Paw Paw, Mich, ex-Secretary of the Association.

The President called on Dr. Jopling, who presented articles in memoriam on the death of Dr. Bartram, and also resolutions of condolence and respect.

Moved by Prof. Grange, and supported by Dr. Hawkins, that the resolutions presented by Dr. Jopling, be signed by

the President and Secretary, that they be spread on the records, and that a copy be sent the bereaved family, and that the Secretary cause it to be printed in the Paw Paw newspaper. Carried.

Dr. Hawkins, of the committee on by-laws presented a proposed revision, containing several amendments found necessary to have them conform to the articles of incorporation. He also presented a code of ethics similar to that adopted by the United States Veterinary Medical Association.

Moved by Prof. Grange, and supported by Dr. Brenton, that the report be accepted and the committee discharged, and that the Secretary have one hundred copies printed and distributed among the members. Carried.

Dr. Hawkins, chairman of Committee on Legislation, made a report which was accepted, and the committee discharged.

Dr. Jopling, chairman of Committee on Programme, made a report, which was accepted and the committee discharged.

Moved by Dr. Hawkins, and supported by Dr. Dunphy, that the President appoint a committee to draft a bill to present to the Legislature for the regulation of the practice of veterinary medicine and surgery in Michigan, said committee to report at the evening session. Carried.

Drs. Thorburn, Hawkins and Dunphy were appointed as such committee.

The Secretary submitted a report of his work as Secretary for the past year.

Moved by Dr. Hawkins, and supported by Dr. Drinkwater, that the report of the Secretary be accepted and placed on file. Carried.

The Treasurer's report showed that receipts were \$109.95, and expenditures \$25.48, leaving a balance of \$84.47.

The report was referred to the auditing committee, who reported that they found it correct, and on motion the report of the auditing committee was accepted and ordered filed.

Moved by Prof. Grange, and supported by Dr. Brenton, that the Secretary be allowed twenty-five dollars for his services for the ensuing year. Carried.

The meeting then adjourned to meet again at 7:30 P.M.

The evening session was called to order at 8 o'clock, the President in the chair.

The Committee on Legislation made their report.

Moved by Dr. Smith, and supported by Prof. Grange, that the report be accepted. Carried.

Considerable discussion arose as to the adoption of the bill as drafted, after which it was moved by Dr. Dell, and supported by Prof. Grange that it be taken up by sections. Carried.

After the necessary amendments were made, it was moved by Dr. Hawkins, and supported by Dr. Dell, that the bill be adopted as a whole as amended. Carried.

Drs. W. W. Thorburn, E. A. A. Grange, J. Hawkins and G. W. Dunphy were appointed a committee to attend to and endeavor to secure the passage of the bill by the Legislature. The committee were authorized to draw on the funds of the Association not to exceed one hundred dollars.

The election of officers resulted as follows: President, Dr. Geo. W. Dunphy, Quincy; 1st Vice-President, Dr. W. W. Thorburn, Lansing; 2d Vice-President, Dr. J. C. Whitney, Hillsdale; 3d Vice-President, Dr. R. E. Reycraft, Detroit; Secretary and Treasurer, Dr. Wm. Jopling, Owasso.

Board of Directors: Drs. J. Hawkins, Detroit; S. Brenton, Detroit; J. W. Ferguson, Bay City; J. F. Smith, Adrian; J. W. Brodie, Pontiac; and C. W. Stowe, Saginaw.

Dr. G. W. Dunphy took the chair, and thanked the Association for the honor it had conferred upon him.

Prof. E. A. A. Grange, under the title of "Recent Therapeutic Experiments in Treating Ringbones and Spavins," gave a short history of some experiments he had made.

With the hypothesis that exostoses were deficient in the normal constituents of bone, and that this deficiency accounted somewhat for the difficulty found in treating successfully many cases of bone disease, he had administered the salts of bone in the proportion in which they occur in bone, and with very satisfactory results, and although it could not be claimed a specific, the success attained so far warranted a continuance of this line of treatment.

Dr. J. A. Dell, of Ann Harbor, read a very instructive paper on "Ompholibis."

Dr. W. W. Thorburn, of Lansing, a paper on "Electricity and its Use in Veterinary Practice."

An animated discussion followed the reading of each paper.

Moved by Dr. Hawkins, and supported by Dr. Ferguson, that a special meeting be held some time during the summer, at the discretion of the President, as occasion may require. Carried.

Moved by Dr. Hawkins, and supported by Dr. Reycraft, that a vote of thanks be tendered host and hostess. Carried.

A vote of thanks was given the retiring President, for his untiring efforts in behalf of the Association.

A vote of thanks was also given the Secretary, for the faithful manner in which he had conducted his duties.

The meeting adjourned at 2 A.M. to meet in Lansing next year.

WM. JOPLING, *Secretary.*

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual Meeting of the Illinois State Veterinary Medical Association, was held at Peoria, Ill., February 17th.

Meeting called to order by President S. S. Baker. The following members responded to their names: Drs. A. G. Alverson, S. S. Baker, G. Z. Barnes, G. W. Browning, Geo. Ditewig, C. E. Hollingsworth, C. D. Hartman, J. T. Nattress, J. W. Parkinson, John Scott, N. I. Stringer, H. Thompson, M. Wilson.

Minutes of the previous meeting were read and approved.

Committee on Legislation reported through its chairman, Dr. Baker, on the work done in drafting a bill to be presented to the legislature, and the sending of letters and petitions to representative live stock men in this and surrounding states and receiving their indorsement to such bill.

Committee on form of certifitate of membership, was given power to act in selecting and having printed an appropriate certificate.

The following gentlemen's names were proposed for membership: Dr. W. S. Wingate, Ch. '92, Farmington, Ill.; Dr. R. P. Steddom, Ont. '86, Galesburg, Ill.

On motion of Dr. Stringer, seconded by Dr. Hollingsworth, the rules were suspended for the time being, and the above named gentlemen elected by acclamation.

It was moved by Dr. Scott, seconded by Dr. Barnes, that the Secretary be instructed to notify all members in arrears, asking for their dues. Motion carried.

AFTERNOON SESSION.

Meeting was called to order at 2:00 P.M.

Dr. W. W. Giles, Ch. '92, Eureka, Ill., was proposed for membership and elected by acclamation.

Dr. Ditewig then read his paper on "Remarkable Cases in Practice." Discussion closed on motion.

Dr. Stringer then read his paper on "Strongylus Tetracanthus." Discussion was closed on motion.

Dr. Thompson then presented a paper on "Case Reports," discussion of which was closed on motion.

Dr. Scott was then called on for his paper on "Castration," and was followed by Dr. S. S. Baker on "Typhoid Fever in the Horse."

Meeting adjourned until after supper.

Members called to order at 7:30 P.M.

After some further discussion of Dr. Baker's paper on "Typhoid Fever in the Horse," a vote of thanks to the essayists was proposed by Dr. McDonnell, and responded to by Drs. Baker and Stringer.

A vote of thanks was also presented the proprietors of the hotel for their accommodations, and the meeting adjourned to come together at the call of the committee in Chicago next November. MATTHEW WILSON, M.R.C.V.S. *Secretary.*

MENDOTA, Ill.

NOTICE.

To Members United States Veterinary Medical Association :

I have the pleasure of announcing to the members of the Association and the profession in general, at home and abroad, that there will be two valuable contributions offered to our Association at its International Meeting, which should attract the attention and interest of the entire profession of the world. They are the result of several years' investigation on the subject of "Swine-Plague" and "Hog-Cholera," and "Contagious Pleuro-Pneumonia."

The first paper will be offered jointly by Dr. A. W. Clement and Dr. Wm. Welch. The second paper will be offered by Dr. A. W. Clement, and it will be accompanied by the most exhaustive collection of pathological specimens which have ever been gathered together in the world.

W. HORACE HOSKINS, *Sec.*

OBITUARY.

Dr. T. W. Apeldorn, graduate of the American Veterinary College, died at his home in Philadelphia, October 16th, 1892, of acute tuberculosis.

NEW MEDICAL AGENTS.

COLCHICINE AND METHYL SALICYLATE in the treatment of rheumatoid affections. This is a new combination, which, after giving excellent results in human practice, has since been tried with animals. The drugs are administered in capsule, and produce no bad gastric effects. They are reported as giving relief in a few hours, especially if combined with alkaline treatment.

KRESIN.—A new disinfectant and antiseptic.—This new preparation is reported as specially adapted for use in barns and stables, the solutions being readily and accurately made

by ordinary stablemen. It requires for the development of its valuable disinfectant properties some special conditions of cleanliness of the floor, walls, etc. A tablespoonful of kresin to a quart or two of water is the strength ordinarily used. Other indications, pertaining to its antiseptic qualities, are also presented in the treatment of foul ulcers or wounds of an ugly nature. When used medicinally, the solution is made with warm or hot water. It is never used undiluted.

A pamphlet in our possession contains the following statement:

By far the strongest bactericide substances among the innumerable combinations containing carbon are the cresols, which belong to the class of the phenols. It has been shown by the investigations of Jaeger and Ohlmuller, of the Imperial Health Board in Berlin, and of Frankel, of the Berlin Hygienic Institute, that all the known bodies belonging to the aromatic series are superseded in regard to power of disinfection by solutions of the cresols in acid. All the successes heretofore observed of the power of acting on the spores of the anthrax-bacillus have been eclipsed by these acid solutions of the cresols.

Commercial crude carbolic acid, so-called, consists in greater part of these cresols, and therefore it would certainly be one of the best disinfectants, if it was as soluble in water as pure carbolic acid. But both crude carbolic acid and the cresols are almost insoluble in water, and according to Laplace are almost worthless as disinfectants if used in this form.

In conformity with the investigations of the excellent authorities above referred to, the Chemische Fabrik auf Actien, formerly E. Schering, has produced a new article called kresin. This liquid contains twenty-five per cent. of cresol, the strong antiseptic and germicide, and, as a means for dissolving it, an equal amount of sodium cresoxylacetate is added, a substance which has the same properties.

Kresin is a brown liquid, smelling like cresol, entirely free from carbolic acid; it forms a clear neutral solution when mixed with water.

It has a number of advantages for use in surgery, etc., in comparison with the other antiseptic remedies, viz.:

As against *carbolic acid*:

Kresin is of more energetic and reliable action, less poisonous and less caustic.

In testing *kresin* pharmacologically it was found that half-a-drachm (2.0 grammes) of *kresin* given internally to a rabbit did not interfere at all with the health of the animal.

From the foregoing it is evident that *kresin* is not only an ideal disinfectant and antiseptic for surgical use, as one-half to one per cent. solutions are sufficiently strong for antiseptic purposes, but even weaker solutions are able to neutralize disease-germs, and those products of decomposition which afford a ready nidus to germs in decaying animal and vegetable matter.

Kresin is very little poisonous, and it may therefore be employed, when sufficiently diluted, as a gargle, for inhalations, and principally in the treatment of wounds.

CHLORO-PHENIQUE IN DIPHTHERIA.—Dr. W. N. Bahrenberg, No. 919 Wash Street, St. Louis, Diseases of the Throat and Nose, in a letter dated October 31, 1892, says:

“In twelve cases of scarlatina accompanied by diphtheritic sore throat, treated by me recently, I used a spray composed of equal parts of Chloro-Phenique and water as a topical application. It caused an immediate cessation of fetor and gave great relief to the patient. Convalescence was rapid in every case. I have also used Chloro-Phenique as a gargle and mouth-wash, and as a spray in otorrhœa and ozoëna, with uniformly good results.

FOR SALE.

Veterinary practice (established four years) in city of forty-five thousand (45,000) in farming country. Only one other graduate within one hundred and ten miles (110). Frequent calls to neighboring towns. Cool summers. Good climate. Will be sold cheap for cash. For price, reason for leaving, etc., apply,

TF

DR. POE, V. S.,

Knoxville, Tennessee.

AMERICAN VETERINARY REVIEW,

MAY, 1893.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—
The great event of this year, and that which interests all branches of science, art and industry on this Continent, is the World's Fair. The opening is taking place this month, and naturally the veterinary profession, young as it is on the Continent, will endeavor to be represented to its best advantage at this great exhibition of American advancement.

Upon the United States Veterinary Medical Association will devolve, by right, the greatest part of the work in this undertaking; and it will certainly be gratifying to all veterinarians at home to see how well aware the officers of this national body are of the importance of the responsibility placed in their hands.

Among some of the new and important facts connected with the next annual meeting is the first notice of the regularly appointed dates for the great occasion, which has just been made public. It reads as follows:

To the members of the U. S. Veterinary Medical Association, and all members of the veterinary profession in the United States and throughout the world :

The United States Veterinary Medical Association has selected the dates of October 17th, 18th, 19th and 20th for their International Congress, to be held on the grounds of the World's Fair, at Chicago, Ill., in conjunction with the World's Fair Auxiliary Congresses; and all national, state and local associations throughout the world are hereby extended a most cordial invitation to send delegates to the Congress, and to take part in the deliberations of the same.

Every arrangement that is possible will be made in the interest of all those who desire to attend, and information as to railroad rates, hotel accommodations and all other conveniences will be cheerfully afforded by addressing the Secretary of the Association.

By order of the President,

W. L. WILLIAMS.

W. HORACE HOSKINS, *Secretary*,

12 So. 37th St., Phila., Pa.

The dates selected differ from those which are laid out by the Constitution and By-laws of the Association, and they will no doubt interfere with the obligatory duties of some of the members; but no matter, the interests of the Association and those of the profession are at stake, and they must take precedence of everything.

That the meeting will be of more than usual interest is evidenced by the information that the indefatigable Secretary, Dr. Hoskins, asks us to publish:

To Members United States Veterinary Medical Association:

I have the pleasure of announcing to the members of the Association and the profession in general, at home and abroad, that there will be two valuable contributions offered to our Association at its International Meeting, which should attract the attention and interest of the entire profession of the world. They are the result of several years' investigation on the subjects of "Swine-Plague and Hog-Cholera," and "Contagious Pleuro-Pneumonia."

The first paper will be offered jointly by Dr. A. W. Clement and Dr. Wm. Welch. The second paper will be offered by Dr. A. W. Clement, and it will be accompanied by the most exhaustive collection of pathological specimens which have been gathered together in the world.

W. HORACE HOSKINS, *Sec*

And as all the preparations, notices, receptions and publications, etc., will incur extra expense, the Comitia Minora has wisely provided for it with the following resolution:

JANUARY 1, 1893.

Notice to all Members U. S. V. M. A.:

Upon recommendation of the Comitia Minora, the following resolution, approved by the Association, carrying with it the power of levying an assessment, was adopted at Boston, September 20th, 1892:

Resolved, That a special assessment of \$5.00 be levied on each member to defray the extraordinary expenses that will be incurred by the International Meeting at Chicago in 1893.

Said assessment is now due, and may be sent to the Secretary's office by check, money order or draft.

W. HORACE HOSKINS, *Secretary*.

W. L. WILLIAMS, *President*.

Of course these are but preliminaries, and we will on more than one occasion before the meeting have to present the subject to our readers.

But there is another which is already pretty well settled; that is, the subject of the prizes which are offered by the Association and the veterinary press. The following communication, received from the Prize Committee, will be of interest to those who may entertain the idea of entering the competition:

The Committee on Prizes of the United States Veterinary Medical Association desires to call the attention of its members to the following announcement: It is the purpose of the Association to give the sum of fifty dollars, to which the editors of the AMERICAN VETERINARY REVIEW and *Journal of Comparative Medicine* have each added twenty-five dollars, as a first prize for the best paper that may be submitted to them on any professional subject.

In addition to this, the editors of the AMERICAN VETERINARY REVIEW and the *Journal of Comparative Medicine* will each give plate to the value of twenty-five dollars, making a total prize of fifty dollars, for the second best paper, as above.

Papers for this competition must be legibly written, and in the hands of the committee by August 1st, next.

In compliance with an order of the Association, the prize papers must be read and defended at one of the regular meetings. The successful papers in this competition will probably be called up at the coming annual meeting in Chicago, at which time and place the prizes will be awarded, the final award being made by the committee. The article is then to become the property of the Association.

Competitors shall use a *nom de plume*, retaining in their own way the means of after identification.

Papers should be addressed to Charles P. Lyman, Chairman, 50 Village St., Boston, Mass.

C. P. LYMAN, <i>Chairman</i> , 50 Village St., Boston, Mass.,	}	<i>Committee.</i>
W. H. LOWE, 190 Ellison St., Paterson, N. J.,		
L. McLEAN, 14-16 Nevins St., Brooklyn, N. Y.,		

It is hoped that the arrangements above-mentioned will work well, and remove the objections and difficulties which were encountered some years ago when prizes were offered before the Association. The only objection, we think, that is likely to interfere with the smooth execution of the work of the committee is the request that the "prize papers must be read and *defended at one of the regular meetings*," and "the successful papers in this competition will probably be called up at the coming annual meeting in Chicago." This seems to

us rather difficult. However, the Prize Committee has laid down the conditions of the awarding of the prizes—of course their preparations are not final; but what is, are the prizes offered by the Association, with the various additions made by the two periodicals of veterinary medicine published in New York.

IS IT, OR IS IT NOT?—That good veteran pioneer of veterinary practice in the United States, Dr. John W. Gadsden, is well known by every practitioner in this country. After several years of lucrative practice, which has permitted him to accumulate sufficient wealth to retire from active work, he has found nothing better to employ his time than taking advantage of every opportunity to investigate the presence of pleuro-pneumonia, and is always ready to spend his time and his money to more fully add to his already extensive acquaintance with everything connected with that scourge of bovines on this side of the Atlantic.

At the last banquet of the Alumni Association of the American Veterinary College, Dr. Gadsden discussed at length the subject of the presence of pleuro-pneumonia among American cattle exported to England, and asked if the question as to whether the disease detected in the American steers was or was not pleuro-pneumonia could not be settled.

The answers, "*It is*," of some, and "*It is not*," of others, Dr. Gadsden considers a disgrace to the profession, and very properly suggested the propriety of having the question settled by an international committee of pathologists and veterinarians. It certainly seems very strange that this question has not been solved, and that there should be such difference of opinion as expressed by such authorities, English and American, on pleuro-pneumonic lesions as there is to-day.

A letter from Dr. Wray, who has been in England for several years as the representative of the Department of Agriculture (Bureau of Animal Industry), which he wrote a while ago, and which was presented at the meeting of the Alumni Association of his Alma Mater (the American Veterinary College), throws some light on the question, and presents some

interesting facts in connection with the controversy. It reads as follows :

LONDON, England, Feb. 21, 1893.

DR. J. F. RYDER, *Foreign Correspondent Alumni Association of the A. V. C. Liverpool, England:*

MY DEAR SIR :—In reply to your letter requesting a line from me in reference to our work in London, and anything else that I thought would be interesting to the Alumni Association of the American Veterinary College, I take pleasure in sending you the following, with a hope that some portion of it may interest some of the members.

For several years previous to 1890, the U. S. Department of Agriculture received several reports from the English authorities stating that cattle affected with contagious pleuro-pneumonia, were being landed at the ports of this country.

Previous to 1878, American cattle were admitted to this country, and allowed to enter the interior without restraint, but owing to the prevalence of contagious pleuro-pneumonia in the United States at the time, a law was passed by the Parliament of 1878 that compelled all cattle from the United States to be landed at ports designed and arranged for their reception, and to be slaughtered at these ports within ten days after their arrival, also that not a single live animal was to be allowed to leave any of these ports.

Owing to the passage of this law, which reduces the price of American cattle landed in this country from ten to fifteen dollars per head, and to prevent the spread of that insidious disease, contagious pleuro-pneumonia, to the vast cattle ranges of the West, led Dr. D. E. Salmon, the efficient and worthy chief of the Bureau of Animal Industry, to make a vigorous attack on this disease, by having very stringent laws passed by Congress, whereby the movement of cattle throughout the United States could be controlled, and the disease eradicated.

Through the manner of work outlined by Dr. Salmon, the veterinarians connected with the U. S. Department of Agriculture were successful in eradicating contagious pleuro-pneumonia from several sections of the United States; and reports still continuing to be received from England "that contagious pleuro-pneumonia was being landed here," caused the authorities of the United States to doubt the accuracy of the diagnosis of the English veterinarians and so Drs. Melvin, Ryder and Wray, were sent to this country and stationed at the ports of Liverpool, Glasgow and London respectively, for the purpose of ascertaining what form of palmonary disease the English veterinarians were calling contagious, also if any contagious disease was landed in this country from the United States to immediately report its charater, with a description of the animal affected, so that the proper measures could be adopted for the eradication of such disease.

The American inspectors arrived at their respective ports and commenced work on August 31st, 1890.

The system of inspection by the English authorities consisted, at that time, of standing on the pier and watching the cattle as they ran off the ship, if any animal appeared sick or lame, he was immediately singled out from the herd and driven off by himself for a future and more critical inspection. Very often a

ship arrived when the English inspector was not present, in that case the cattle were driven in a certain lairage and there kept under lock and key, in charge of the customs officials, and no one allowed to enter the lairs until the cattle were inspected, which consisted in the cattle being driven from pen to pen in as near single file as possible.

This system of inspection was kept up until October 1st, 1892, when it was substituted for a system whereby all lungs taken from American cattle were collected and carried to a house set apart for the purpose of receiving them, for the veterinarian's inspection, in addition to seeing the cattle when they were unloaded, or very soon after.

Owing to the expense, this latter system was abolished and the old system renewed on the first day of February, 1893. As the expense was only fifteen dollars a week, there is an apparent queer circumstance connected with the system of inspection that was established on October 1st, 1892, as follows: There had not been a case of alleged contagious pleuro-pneumonia found in American cattle between February 17th, and October 13th, 1892, a period of very nearly eight months. During that time the United States Minister had made several demands for the raising of the restrictions against the American cattle; he was invariably met with the reply from the English authorities: "We are not satisfied whether contagious pleuro-pneumonia exists in the United States or not." On the 26th day of September, 1892, the Hon. J. M. Rusk issued a proclamation that contagious pleuro-pneumonia was totally eradicated from the United States. As soon as the news of this proclamation reached this country, the new system was established and continued during the fall and winter; now that spring and good weather is approaching they have abolished the system, showing very conclusively that the English authorities do not expect to find these so-called cases of contagious pleuro-pneumonia during good weather.

The system of inspection that I have followed since my arrival, is to inspect the cattle on arrival, again in the lairs when they are tied up and previous to sale, besides seeing a great many slaughtered.

The American veterinarian will compare very favorably with his English cousin, notwithstanding the fact that American Veterinary diplomas are not recognized in this country. I cannot compare the veterinarians of America and England any better than to quote the old phrase of "by their works ye shall know them," and describe the actions of the official veterinarians connected with the American and English governments, in connection with the cases of alleged contagious pleuro-pneumonia that has been landed in this country.

On February 4th, 1890, a dead bull, per steamer Sorrento, from New York, was landed at Deptford. The following day a post mortem examination was held, which revealed interstitial pneumonia of the posterior lobe of the right lung. As this case was diagnosed by the English experts as a very well marked case of contagious pleuro-pneumonia, sections were immediately taken to Professor Williams, of Edinburgh, who, with his son, upheld the opinions of Drs. J. E. and J. F. Ryder, Melvin and myself, that the disease was not contagious pleuro-pneumonia. These same sections were subsequently shown to Professors Bowhill and Hunter, who coincided with the diagnosis made by the American veterinarians and Professor Williams.

Since then several cases have been found which were claimed by the English veterinarians to be contagious pleuro-pneumonia. In the majority of cases, sections have been sent to Professor Williams and to Professor Nocard, who both, in every case submitted to them, decided they were not contagious, but other forms of pneumonia, non-contagious in character.

Although some of these cases are, to a certain extent, marbled in appearance, they are not, in my opinion, contagious pleuro-pneumonia, for the following reasons: First, since my arrival I have not seen a single animal assume the characteristic position of contagious pleuro-pneumonia; all that is noticeable is dyspnoea and accelerated respiration, moist and not painful cough, with a temperature varying from 102 to 104 degrees Fahrenheit. As the animals are not used to being handled, auscultation and percussion is out of the question. There is very little, if any, protruding of head and neck, no aching of the back, very little turning out of the elbows, no knuckling of the hind ankles, no rigidity or unhealthy appearance of the skin, and no stertorous breathing or grunt, as in contagious pleuro-pneumonia.

Second. The exudation into the pulmonary lobules is of a much lighter color, showing the red blood corpuscles are present in large numbers. The lymph does not appear so coagulative, gray hepatization is present, fatty degeneration and effusion and absorption of serum with a dilatation of the lymphatics to a very large extent is also present; pleurisy of the pleura-pulmonalis is present over the diseased area; not in a single instance has the pleurisy extended to the pleura-costalis. There is no plugging of the bronchial tubes and pulmonary arteries; no infarction; in only one case was there any necrosis, and then only a section about the size of a quarter dollar was so affected; there is no circumscribed area of the affected portion of the lung; there is no effusion into the thoracic cavity as in contagious pleuro-pneumonia. There has not been a so-called chronic case of contagious pleuro-pneumonia found since we commenced work.

Third. The diagnosis of the American veterinarians stationed in this country has been upheld by such eminent authorities as Professor Nocard of France, Williams, Hunter and Bowhill of Edinburgh, Salmon of Washington, and J. E. Ryder of New York, also by other disinterested and distinguished veterinarians of this country.

Fourth. Cattle from the same districts in the United States are shipped to the ports of London, Liverpool, Glasgow, Hull and Bristol; not a single suspicious case has ever been reported from the three latter ports, showing conclusively a difference of opinion between the inspectors located there and those at the ports of London and Liverpool.

Fifth. In not a single instance have the inspectors of the United States Department of Agriculture been able to find a single case in the United States where the origin of the alleged cases were traced by the efficient system now in force for export cattle, and for the movement of cattle throughout the union.

I think, gentlemen, from the overwhelming evidence here quoted, every word of which can be substantiated, that you will be convinced of the correctness of the diagnosis made by the American veterinarians stationed in this country, two of which, I am proud to say, are graduates of the American Veterinary College and members of your honored Association.

For several years the Department of Agriculture and the Agricultural Societies of Great Britain and Ireland have been doing their utmost to prevent live cattle coming to this country; disease has been the main excuse, while cruelty to animals has been brought up from time to time.

Since the regulations passed by the United States Department of Agriculture March 2d, 1891, for controlling the movement of export cattle, the loss of cattle at sea has been reduced from over six per cent. to less than one-half of one per cent. It is an unusual thing for a vessel to lose any cattle, or to land in crippled condition even during the winter months.

The object in shutting out the live cattle is to assist the British farmer and breeder. The question of competition from dressed beef and mutton has not been brought up until this session of Parliament, where a bill is now pending for the marking of all foreign meats; if this bill becomes a law, I presume it will be a common thing to see at some of the butcher shops; meat labelled "made in the United States of America," as the law will apply to the live as well as the dead meat imported.

I don't think the English authorities are half so afraid of disease in foreign animals as they are of competition. The United States of America is the only country in the world that is sending cattle to this country at the present day.

It may interest some of you gentlemen to know that between December 27th, 1891, and January 2d, 1893, there has been 130,530 head of live cattle shipped to London, 149,782 to Liverpool, and 35,811 to Glasgow, making a grand total of 316,123 cattle shipped from the different ports of the United States, while thousands of quarters of dressed beef are shipped every week from the ports of New York, Boston, Philadelphia and Baltimore.

When you come to consider what amount of food is necessary to feed the 37,795,400 inhabitants of Great Britain, you can readily see that this is a consuming country, and not a producing one as far as food is concerned. There is no doubt if England were thoroughly besieged that the inhabitants would be in a starving condition in less than two weeks. The value, in pounds sterling, of the food imported during 1891, is as follows: Live animals 9,244,589; meat, butter, cheese and eggs, 43,329,207; wheat and flour, 39,901,197; grain, hops and sugar, 47,882,979; fruits, nuts and vegetables, 9,997,844; making a total of 150,355,816 pounds sterling, or three pounds, 19 shillings and 6 pence per head. In addition to this there is a vast quantity of fish, poultry and game imported.

The prevailing diseases in London at the present day are pulmonary complaints and glanders. The law for the proper control of glanders only provides for quarantine, and not for slaughter at government expense, I believe some of the parish authorities do slaughter and pay for horses so diseased.

The English authorities claim that contagious pleuro-pneumonia has been thoroughly eradicated; but as only four months of cold weather has elapsed since the finding of the last case, and as they wait for cases to be reported instead of hunting them up, I think hardly time enough has elapsed to be sure that isolated cases will not turn up in the future.

Notwithstanding the fact that no live animals are allowed to enter this country, and have not been for more than a year, foot-and-mouth disease breaks out at short intervals in different sections of the country remote from each other.

The English authorities have always claimed, heretofore, that every outbreak of foot-and-mouth disease in this country was directly caused by the importation of foreign animals.

With many wishes for the success of the Alumni Association of the A. V. C. and their Alma Mater.

Very sincerely,

W. H. WRAY, D.V.S.

Chief U. S. Veterinary Inspector for Great Britain.

VETERINARY LEGISLATION.—It is some time since we had occasion to call the attention of our readers to new attempts made to regulate the practice of veterinary medicine in some of our States. To-day New York State is once more in the field. It seems that, notwithstanding the laws and amendments passed by the Legislature in Albany in 1886 and 1887, the practice of our art is not yet sufficiently protected or regulated; and to that effect a new bill has been presented to the New York Legislature as an amendment.

The question of the necessity of such a law is rather doubtful. Of what advantage can it be when we consider the nullity of its predecessors, and the ignorance displayed in their enforcement? By the New York State Veterinary Society, we are told, the present project is fathered. We can scarcely believe that such an honorable body would urge the passage of an act which would bring us back to the time when Societies were granted the privilege—so shamefully abused—of qualifying men to register by the granting of a certificate of membership. The law, as it is, seems to us but an extension of the privileges offered by that of 1886 and its amendment of 1887; and when it is considered that our veterinary schools are improving their curriculum and increasing the length of time of studies at college before graduation, it must necessarily be evident that there is no necessity for its support; but, on the contrary, that of its defeat before the Legislature.

With the steps taken in improving the education given at our schools, the only thing which is now imperative is the enforcement of the laws already in existence, and the prosecution of those who, not having complied with their requirements, are still, in defiance of them, practising our art. It belongs to the New York State Veterinary Society to imitate

her sister societies in other States by seeing that the existing law is not a dead letter.

The newly projected law reads as follows :

AN ACT to amend section three of chapter three hundred and thirteen of the laws of eighteen hundred and eighty-six, entitled "An act to regulate the practice of veterinary medicine and surgery in the State of New York," as amended by chapter one hundred and sixty-six of the laws of eighteen hundred and eighty-seven.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

SECTION 1. Section three of chapter three hundred and thirteen of the laws of eighteen hundred and eighty-six, entitled "An act to regulate the practice of veterinary medicine and surgery in the State of New York, as amended by chapter one hundred and eighty-six of the laws of eighteen hundred and eighty-seven, is hereby further amended so as to read as follows :

§ 3. Any person who has been practicing veterinary medicine and surgery as a profession in this State for a period of not less than three years preceding the passage of this act, without having obtained a diploma or certificate from a legally chartered or incorporated veterinary school or society, as provided for in section two of this act, must register on or before January first, eighteen hundred and ninety-four, after the passage of this act, upon making and filing with the clerk of the county in which he resides an affidavit stating that he has been so practicing veterinary medicine and surgery for the period hereinbefore prescribed.

§ 2. This act shall take effect immediately.

AMERICAN VETERINARY COLLEGE.—If there ever existed in the minds of the officers of this institution any fear or hesitancy in the propriety of making the changes which have been considered for some years back, decided upon some eighteen months ago, and going into effect this year, viz., the reorganization of the entire curriculum and the lengthening of time of studies at college, they must have vanished at

presence of the numerous congratulations and words of approval which are received every day, from all parts, relating to the new departure of that universally known institution.

Among the most hearty and sympathetic ones is that which emanates from her Alumni Association, expressed by the resolution presented at the last meeting of the Association, and so touchingly worded to express the devotion of all those who unanimously voted for it.

The publication of this resolution is but a modest expression of the feelings of thanks entertained by the Trustees and Faculty of the institution at the reception of this expression of love and devotion from a body of Alumni towards their Alma Mater. Should the institution be in need of stimulus in the perfect execution of her calling, where could she find it better than in the following lines :

Ever faithful to the trust imposed by the obligations of a college, whose work was to be in a new field and among a people whose wants and needs were but little known, the American Veterinary College, ever desirous of giving the best education, and knowing no step backward in her lofty career, has fully sustained the hope and wishes of her many friends throughout the entire world ; and

Whereas, In the further completion of her high aims and purposes, she has again placed herself foremost in the ranks of colleges peculiarly equipped for successful work, by adopting an obligatory three years course.

Whereas, We, her Alumni Association, assembled to-day from many parts of our country to again renew our loving devotion and allegiance to our Alma Mater, do most heartily rejoice in this new step, and an added joy comes to greet us to-day as we more fully realize the importance of this movement.

We most heartily congratulate our Alma Mater on this wise step on her part, and in so doing we pledge to her a renewed interest in her welfare, a more earnest support for her in the future, and an added zeal in our labors to promote the good work she has so well done in the past ; and we prophesy for her a future of such merit that will rank her in history as the pioneer of a higher veterinary education, a loftier standard for our profession, that shall grow brighter and better as the clearer light of to-morrow may cast upon her its penetrating vision.

W. HORACE HOSKINS,)
 W. B. E. MILLER,)
 WM. HERBERT LOWE,) *Committee.*

ORIGINAL ARTICLES.

ADDRESS DELIVERED BEFORE THE AMERICAN VETERINARY COLLEGE.

Mr. Chairman and Gentlemen of the Graduating Class :

There is a beautiful legend of Arabia which is referred to by the author of "Ben Hur," but which is as old as Arabia itself. It describes in charming manner the origin of the horse, and indicates the kindly love which the Arab bears him. God gave the Arab, it says, a measureless waste of sand with treeless mountains and bitter water. The poor man complained, and God pitied him and said: "Be of good cheer, for I will twice bless thee above other men." The Arab heard and gave thanks, and started out to find the blessing. He travelled all the boundaries first and failed; then he made a path into the desert and went on and on, and in the heart of the waste there was an island of green, very beautiful to see, and in the heart of the island, lo, a herd of horses! He took them joyfully, and kept them with care for what they were—best gifts of God. And from that green isle went forth all the horses of the earth, even to the pastures of Persia and to the dreadful vales that are chilled by the blasts from the Northern seas. Such is the story of their origin, and we all know how the Arab, the Persian, and, in fact, all the Eastern nations have a tender regard for their horses; they are members of their family, naming them after the stars, which are their guides at night, "borrowing their names in gratitude and giving them in love," and the horse of Arabia has responded to this affection by beauty, loyalty and intelligence, for it is a tradition in the East that the horse by long association finally unites the soul of its master to its own sense, until they come to feel all we know of ambition, love, hate and contempt, so much so that it has come to be a saying that "in war they are heroes, and in trust faithful as women." Now, you will say that this is sentiment and fancy. Yes, I will admit it. But have you ever thought what comes

of sentiment? For centuries the English-speaking people in their greed for wealth abused and maltreated their horses in a way that shocked every sensibility of human nature. In 1866 Henry Bergh appealed to the sentiment of the country, and he himself was startled at the response. Public sentiment, asleep for a hundred years, was aroused as if by magic, and his appeals went ringing around the world. I hold in my hand the last report of the American Society for the Prevention of Cruelty to Animals, and in it I find reports from every State of the Union—from Canada, from Mexico, from South America, from Brazil, and from the far-off islands of the sea. Working on the line of pure sentiment, Henry Bergh has unconsciously achieved what may almost be called immortal fame.

I knew Henry Bergh in his lifetime—a silent man, a unique man, a thoroughly unselfish and noble man. For him and his work we are truly thankful, but his work was but the beginning; it was negative and looked only to protection. What we now want and must have, and I truly believe *will* have in the near future, is a positive sentiment which will not only save our dumb animals from abuse, but will insist that they shall be looked after in trouble, protected from disease, and cured in sickness. We cannot in the nature of things have for them the same care as does the Arab of the desert; but we can do something in that direction, and our horses will not only respond to this treatment, but we will find that it will *pay* in every sense of the term. Do not despair of public sentiment if the purpose is high. Shyer than gravitation and stealthier than the growth of a forest are the movements which create public opinion in the life of man.

Henry Bergh might well have despaired, as he was maligned, abused and sneered at as no other man ever was before. These facts have passed from the memory of most men, and now many are glad to do him honor.

Gentlemen of the Graduating Class, your time is coming—probably it has arrived—when even sentiment will see to it that a sick *horse*, equally with a sick *man*, shall be cared for by educated and intelligent physicians, and this I say with

the utmost confidence, for if human nature and human kindness fail to respond to it, human cupidity will.

It is, therefore, a source of great pride that I can refer to your college as a pioneer in this field of endeavor—in fact, it stood alone for many long years performing its duties modestly and faithfully.

In 1875 this college was organized, and pursued the even tenor of its way during this period without attracting any special attention, but carrying on its work with faithful zeal and high professional character. Yet there was a silent education of public sentiment in behalf of such a school. In 1885 Mr. Lippincott donated \$50,000 for the establishment of a veterinary department in the University of Pennsylvania, and to-day, by generous contributions, there is a large, well-appointed department, which is reflecting credit upon that university. Harvard University and the University of Minnesota have also established similar departments, Harvard as early as 1883, Minnesota only of late years, and they are fostered by liberal contributions and supplied from the college funds. Schools in Washington, Baltimore, Cincinnati and also in Chicago, became followers of this school after long delays; but through all these years Dr. Liautard has stood faithfully by his work, and has carried on his enterprise without help and without aid, for the college is in every sense self-supporting. All honor, I say, to Dr. Liautard and his associates for their courage and fidelity, and may they all live long enough to see their full hopes realized in this high and worthy undertaking. Nearly five hundred graduates from this college are now pursuing their vocation in this country—in the army, on the frontier, in various schools and hospitals, conducting medical journals and occupying official positions abroad. But while I am commending the American Veterinary College and other educational schools of the country, what shall I say to the attitude of the Government toward this important branch of education? What shall I say of our much vaunted and expensive Department of Agriculture and its Bureau of Animal Industry? The governments of Europe have their corps of educated veterinary sur-

geons, and all of them hold official rank with corresponding salary, having equal positions with the medical staff—in fact, constituting a medical staff by themselves. In France, in Germany, in Italy, in Austria, in Russia and, I think, in Turkey, the veterinary colleges are Government institutions, paid from Government funds, and controlled by Government officials. In all these countries the colleges are of a higher grade, and at Berlin and Hanover they have been raised to the position of universities. The students who graduate from these schools secure recognized positions in the army, in the quarantine and health boards, and in other official stations. In England, although the schools are not conducted by the Government, yet they are under Government control in a modified form, and their graduates are all eligible to official positions.

In this country, however, these colleges are not only not controlled or patronized by the Government, but their graduates are scarcely recognized in any way, and that, too, in a Government that boasts of a Department of Agriculture and a Bureau of Animal Industry! The Government, for example, employs in the army a graduate of a veterinary college thoroughly equipped for his duties, and if he humiliates himself enough to accept the position he appears on the pay-roll as a day laborer, and is paid the extravagant price of seventy-five dollars a month! What service could you expect under such conditions, and what right-minded student would subject himself to such degradation? We export millions of dollars' worth of beef and hogs abroad every year, and what can I say of the education and training of the inspectors employed by the Government without being charged with disloyalty. That the inspection is incomplete and imperfect is notorious, and what else could be expected if the Government degrades the profession and pays day laborers' wages to the graduates of our veterinary schools and colleges. Do you wonder that Germany prohibits the importation of American pork, or that England in every possible way keeps out American beef? We, of course, attribute it to base and selfish motives, but behind it all there is another and different reason, and a right good reason, too, in my judgment.

This state of things will continue until the Government lends its moral support to veterinary science by a recognition of our graduates as men bearing professional rank and worthy of professional compensation.

The great Department of Agriculture expends large sums of money in sending correspondents over the country and publishing volume after volume of letters about the number of horses and sheep in different counties and States, and republishes, with much commendation, the statutes enacted by the different States tending to prohibit the introduction of diseased cattle and urging strict quarantine regulations, but not one dollar does it give towards the education of men who can successfully meet these startling difficulties, and not one word does it lend to their encouragement or help. I sometimes think that there will be no real substantial progress in veterinary science in the United States until the country is devastated by such terrible epidemic plagues among horses and cattle as have visited Europe and India and Australia. The animal loss in India alone has reached more than thirty millions of dollars. It has been even worse in Australia and South Africa. Once let the dreaded Russian typhus, that sweeps off the cattle from the Russian plains by the thousands in a single day, make its appearance, not only the Government, but the farmer and the cattle raiser and the cattle owner the country over would wake up to the necessity of encouraging veterinary education, and would be only too glad to make generous contributions for liberal veterinary culture and veterinary research. And what shall I say of individuals who own stables in this city alone of the value, in some cases, of half a million dollars—horses that they admire and care for, in some respects, as they would their own children, and yet they do not turn their hand, nor contribute a single dollar, nor encourage in any shape or form the upbuilding of a worthy veterinary college in this city. Where are the lovers of horses, who are not only patrons of the turf, but are liberal and generous givers to all worthy objects?

New York City doubtless has the finest horses and the best bred dogs in the world, and it has more of them. It also

has the best hospitals, and the best medical schools, and in general the most advanced culture in scientific study in the world. The most expensive cattle are found within the borders of the State, and yet this great center has no endowed veterinary school. Why should not the City College, or the City University, or Columbia College do what Pennsylvania, Harvard, Iowa and the University of Minnesota have done? Why will not our public-spirited citizens take it in charge and establish departments in some of these schools? The time is opportune, the occasion is urgent. A new and earnest interest, a general endowment, and an open-handed support would give a return that we cannot even now conceive. The American Veterinary College has no mean envy, and will welcome any help to the general cause. Whether it comes to our own school or to some other is a matter of no great moment, provided it comes, and comes soon, and comes to the City of New York, where, of all places in the country, it is most needed. Emulation may exist, but never jealousy, in the common pursuit of science and of truth.

Is it that I misapprehend the subject, or has not public attention been aroused to it? Your child can tell you his or her trouble—the diagnosis is not difficult, and the remedy and the treatment are relatively simple—but if the dumb animal in your care falls ill, and by its beseeching, piteous face and speechless pleading asks for help you call a stable boy and leave it to its fate, or what, perhaps, is worse, you send for a worthless charlatan, with his traditional medicine, a so-called “horse doctor” who has received no education whatever and knows nothing of his duties, and in a majority of cases adds brutality to ignorance. These gentlemen, having done this, think they have done all they should do. If they discover an ignorant driver beating his horse in the street they become violent and hasten to make complaints to the Society for the Prevention of Cruelty to Animals. This is well, but he has committed as great a cruelty. Yes, a *greater* cruelty in allowing his horse to be agonized by internal suffering, and refusing to furnish intelligent and educated relief. Better, far better, beat your horse in the street than to allow

him to die ignorantly cared for. Do you tell me that Nature provides proper remedies? Is not the argument equally true of your child? Besides, you have taken him out of Nature and his life is artificial, and you are bound in all honor to meet this changed condition and see that he is intelligently treated by men who are properly educated and are fitted to act in such an emergency. The body of the horse, as of all domestic animals, is but the body of the man, and is subject to all his ills and sicknesses, and, in my judgment, his cure involves greater knowledge and greater skill on the part of the physician, for he cannot assist himself nor in any way aid his doctor, and yet you lend no hand and give no encouragement towards changing the condition of these schools or assisting them by your money or your presence.

Did you ever think what interests are at stake in this matter and how much money is also involved in a proper consideration of the questions before us? It seems to me at times that I must be under some misapprehension about this whole question, for I cannot conceive that there should be such indifference to proper veterinary education as seems to exist the country over, if we take into consideration for a moment the terrible sanitary interests involved, touching as they do our homes and our families. The Department of Agriculture has as its most important bureau the Bureau of Animal Industry. \$500,000 was appropriated by Congress and expended by this Bureau, in 1887, for the extirpation of pleuro-pneumonia among cattle, and I assume that similar amounts are used every year for this and kindred purposes. Congress has enacted a wide-reaching statute for the suppression of contagious and infectious diseases among live stock, and has established strict quarantine laws in so far as it has the power. The State of New York has passed equally strict laws on this subject, and authorizes the Governor to employ competent veterinary surgeons to maintain quarantine. Ohio, Oregon, Missouri, Indiana, South Carolina, Massachusetts, Nevada, and, in fact, all the States, in one form or another, have enacted stringent laws to prohibit the bringing of diseased animals into the State, and for the restraint and sup-

pression of contagious and infectious diseases among cattle and other live stock, authorizing the expenditure of large sums of money for this purpose, and yet to-day in the State of New York, with its millions of inhabitants and its millions of investments in horses and cattle, there is not an endowed veterinary college, and but for the unaided efforts of yourself, Mr. President, and your associates, there wouldn't be a single educational school within its borders. The life and health of the community is involved, and we may well ask ourselves what it means. But aside from the questions of health and self-preservation suggested by a proper cattle quarantine, proper oversight and protection from diseased and infectious meat used in daily consumption, has it ever occurred to you what tremendous financial questions are at stake? Have you any conception of the amount of money invested in the domestic animals of the country that need surgical and remedial care—care beyond shelter, food and water—yes, care greater and more scientific than that which is given to the human family, if you would save them from widespread disease and ultimate death? In the State of New York to-day there is invested in milch cows alone, the sum of \$47,002,116, and the milch cows and other cattle of the United States, as estimated by the Department of Agriculture, amount in value to the enormous sum of \$977,972,693. In the presence of such amounts of money, when a correct dietetic treatment is necessary for its proper preservation, is it strange that we express surprise at the supineness and indifference of the owners of this vast wealth in regard to the right education of men who can protect it? The new State of Colorado has invested in live stock the sum of \$29,199,149, and even the mining State of Wyoming has \$12,359,355, and the mind becomes dazed if an attempt is made to estimate the aggregate capital in all the live stock of the country, including horses, cattle, sheep and swine. Billions of dollars would constitute the unit of calculation. Now, this indifference to the protection of our wealth has arisen, no doubt, from the prejudice of the farmer to “book learning,” as they choose to call it, although they insist upon the education of their family

physician. But what shall be said of the educated man who can reason upon the subject and who knows that his horse really requires more capable skill than his child, if he would effect a cure? This may seem a broad statement, but it is true and will soon be recognized. The world moves, and what Henry Bergh did for the temporary amelioration of the brute creation, some other man will do for their permanent protection and safety, as well as for the protection and safety of the community. It may be a life-work, as it was in his case, but that it is coming, and coming soon, is as sure as the rising of the sun in the morning.

Now, Gentlemen of the Graduating Class, this discussion of the great subject may seem a digression, but I think it fraught with deep import to you. You belong to a very old and honored profession; as old as that of human medicine.

The Egyptians were thoroughly versed in veterinary medicine and veterinary surgery. Four hundred years before Christ, Hippocrates wrote essays on the subject, and two hundred years before Christ, Mago, of Carthage, compiled and published twenty-eight volumes—a veritable library of information and learning. The Greeks and the Romans had their schools of veterinary medicine, so to speak, and the veterinary surgeon held recognized rank in the Roman armies. In modern Europe, as I have already said, the profession is honored and respected, and you are called upon to see that in this country its high reputation is maintained. Upon you rests the responsibility of educating the community to the great importance of these things. To do that you must first be educated yourself—educated to the baptismal sense of the dignity and importance of your profession, and this shall come to you all, and to the community in which you may reside when you deal with your business on a high professional plane. Thomas Arnold says that a teacher should be first a Christian; second a gentleman; third a scholar. If this ideal is in any sense realized, the horse doctor will no longer bear a stigma, but he will soon be recognized as the protector of the health of the community and the conservator of its invested wealth.

And not only a high purpose and an honorable ambition are essential to success, but I also beg to remind you of the necessity of assiduous continuance of your studies for which your work in the College has laid a substantial foundation. In many senses, knowledge is power, and in your case it is especially so if you would overcome prejudice and establish a new order of things, and create throughout the country a new and respected profession—a profession that deserves more credit than it has heretofore received, but which, in my judgment, awaits it by honest hard work, high intelligence and worthy ambition. Remember that there is no such thing as genius. Hogarth says that “genius is nothing but labor and diligence” Lend your influence to the establishment and endowment of veterinary departments in our universities, colleges and veterinary schools. Your President and the Faculty have maintained, single-handed, in this city a school of a high order, and they have borne the burden too long already. See to it that they have needed support by additional funds and by added facilities in order that they may meet the growing demands which the increased number of pupils and the lengthened term requires. And not only here, but wherever your lot may be cast, be vigilant that the proper encouragement is given to the upbuilding of a popular sentiment in favor of veterinary culture. Secure, if possible, substantial gifts of money and influence for its growth, and, above all, do not forget that your profession is in very truth a profession which implies, in all your relations, gentle courtesy, forbearance and a demeanor that knows no reproach. Finally, remember that the reward of a thing well done is to have done it.

In Athenian sculpture is the continued appearance and reappearance of the weird figure of the Centaur. It is a startling picture, half man, half horse. To most people it seems a crude creation—the result of an idle fancy—a kind of barbaric phantasm; but scholars know that Grecian Mythology and Grecian Art are too profound to admit of such a solution. Its grand lesson of the mutual dependence, the mutual fealty and the mutual obligations between man and

his nearest and best friend, tells more than volumes what our duties are and what our relations are. The peculiar and further fact is that a descendant of this fabled race, Chiron, was claimed to be the founder of medicine and the teacher of Esculapius. A strange fable you will say—weird, unique and unaccounted for; but as it moves down through the ages, embodied in stone, in picture and in song, it shall tell you and me of the great blessing which the Arab sought and found, and also of our own great personal duty to care for and protect him.

One gracious fact emerges from a conscientious discharge of your duties, and that is that there is underlying all the movements of time and society a progress towards something better and nobler and truer in our lives.

In all material things, the pulse and pace of the world has been marvellously quickened. Manufactures, travel, electricity, and all the other concrete forms of progress are well known. In 1847 it took eight months to go from New York to Oregon. Now one goes in six days. When the battle of Waterloo was fought all haste delivered the announcement in London in three days, but the news of the battle of Gettysburg was known in London in three minutes. In the beginning of the century the human hand performed all the work that was done. Now the human hand unaided does nothing. If such progress, however, was all that we could boast of, we might well despair, and we have reason to thank God that it is not all. Greater and far nobler is the progress that has been made for humanity—shall I not say the humanities—benevolence, kindness, tenderness and all the nobler charities. In the last fifty years we have been making a grand fight for the humane side of life, and prominent, and above all, stands the conscientious care we are giving to dumb animals and helpless children. There is no grander evidence to-day of the real progress of modern civilization than the movement of this beneficent principle.

You, gentlemen, may thank your good fortune that you can participate in this worthy conflict for justice and kindly treatment to the helpless creatures that serve you. My last

and parting advice to you is to agitate, agitate, and continue to agitate this great question until victory comes, as come it surely will, for, as an old writer says, "Truth is like a torch; the more it's shook, the more it shines."

The genius of humanity, believe me, is moving in right lines. As an able writer has said: "The destiny of organized nature is amelioration, and who can tell its limits. It is for man to tame the chaos; on every side whilst he lives to scatter the seed of science and of song, that climate, animals and men may be milder, and the germs of love and benefit may be multiplied."

"Man is his own star; and the soul that can
Render an honest and a perfect man,
Commands all light, all influence, all faith:
Nothing to him falls early or too late.
Our acts our angels are, or good or ill,
Our fatal shadows that walk by us still."

In this grand march of events you, gentlemen of the graduating class, have a very serious and a very important task to perform, unique in its character, noble in its purposes, and grand in its results.

May it be by you honestly and conscientiously performed.

CASTRATION OF CRYPTORCHIDS.

BY PROFESSOR F. MAURI, of the Veterinary School of Toulouse, France.

(Continued from page 9.)

PREPARATION FOR THE OPERATION.

As in all operations of fashion, so called, or such as are not necessarily urgent, or of absolute necessity, the rule is imperative which forbids its performance on animals whose state of health is not perfect. A strong, well-fed horse, in good condition, enjoys almost perfect immunity from septicemic accidents, and requires only the simplest care for the prevention of all surgical complications. Every surgeon is aware of the surprises which he is likely to encounter in

operating upon an organism already under the influence of a morbid predisposition, whatever its nature may be. The accidents consecutive to castration are principally encountered in debilitated animals, or those which are under the influence of distemper, or other communicable affections, such as typhoid fever, even under the most benignant form. The pyogenic tendency inherent in the special constitution of the horse is evidently increased under such conditions, as are, also, as a consequence, the chances of septicemic accidents. We do not ignore the fact that a few years ago the too exclusive adepts of microby had cast a doubt upon the theory of this serious tendency in horses, and were inclined to overlook the wounded, and confine their attention exclusively to the wound and its microbes, as alone necessitating antiseptic precautions. For example, in a moment of enthusiasm, a celebrated bacteriologist once went so far as to declare publicly that "Equine pyogeny was dead." But I am convinced that this celebrated clinician would not to-day pronounce such a dictum in so confident a manner, nor affirm that old practitioners are in error in attributing a special susceptibility to the serous membrane of solipeds.

The horse suppurates very easily, or if the phrase is preferable, possesses a peculiar receptivity for the micro-organisms of pus. The most vigorous antiseptic methods are very commonly powerless to obtain a cicatrization by first intention, such as may be so readily secured in other species of animals.

An open serous membrane in the horse becomes inflamed with the most despairing facility. These are undeniable facts, based on clinical observations, as well as proved by experiments. However their existence may be explained, they must not be overlooked, and cryptoid patients are not to be operated upon at random; the surgeon must be sure of its healthy condition, unless he is working to assume all the chances of a bad case and a bad result.

A question of great interest from a practical point of view here presents itself. Is it possible to diminish by internal medication, the disposition of solipeds for the development of the

septic micro-organisms by internal medication? Mr. Degive answers in the affirmative, saying "Before performing the castration of a ridgling, I prescribe the following preparatory regimen: good straw, unlimited; four to five kilograms of oats a day; slightly saline water to drink; a tablespoonful three times a day of a mixture of three hundred grams of tincture of arnica, and fifty grams of crystallized phenic acid. This regimen is observed for five or six days, with absolute diet on the day of the operation."

Several of his colleagues, and among them Mr. Jacoulet, adhere to the opinion that the previous medical operation is altogether useless. Mr. J. has both given and omitted the tincture of arnica, without any changes in the febrile reaction in his patients.

"I am somewhat surprised," says Mr. Degive, "to see such appreciation of a preparation which I considered of serious importance. I can admit that a healthy patient, free from any morbid predisposition, and placed in the best hygienic condition, may be successfully operated upon without the slightest preparation. But who can be certain that all animals will possess such satisfactory conditions, especially those that are first seen only at the moment of the operation?"

To obviate the many objections which may present themselves, either in the constitution of the patient, or in the hygienic agencies to which he has been exposed, I think it prudent to avoid any measures which may prove to be of a seriously objectionable nature, such as feeding with all kinds of food indiscriminately, and also to administer agents which are likely to diminish the receptivity of the organism for the development of germs, or of such factors as are essential to the inflammatory and febrile phenomena, which are likely to occur after all bloody and delicate operations.

Tincture of arnica and phenic acid have seemed to me to possess this preventive effect, and to their action I attribute the ordinary absence of all febrile symptoms in patients on which I operate. It is only in very exceptional cases that I have observed what Mr. Jacoulet refers to, as a rule, in the appearance of a severe fever, with great depression, reaching

its maximum by the evening of the day after the operation, and lasting for several days.

As can be seen, Mr. Degive is thoroughly convinced that by the administration of salted drinks, arnica and phenic acid, an internal asepsia is produced, which is favorable to the sequelæ of the operation. *A priori*, it seems difficult to admit that a microbic substance which impregnates the organism to such an extent as to prevent the entrance and assimilation of micro-organisms, should remain innocuous as respects the anatomical elements, and one may fear that the proverb "one shoots at the microbe and strikes the patient," may prove correct. But in view of the favorable and important results already obtained, the hope is a legitimate one that science will soon discover some remedial agents which, while harmless to animal cells, will yet prevent the development of septic elements in the organism. Indeed, we see already that mercury cures syphilis, quinine stops paludean fever, salicylate of soda jugulates climatistmal affections. Still, in the actual state of science, this special question remains yet in the domain of empiricism.

In about a dozen cases of castration of cryptorchids upon which I have operated, I have entirely ignored any preparatory medication, and yet in every case the operation has been most successful, and the sequelæ favorable; none have presented the slightest febrile symptoms. They were performed in very different hygienic conditions: seven were treated in the hospital of the school, and were retained until entirely recovered; three on the farm of their owners, and one with a double cryptorchidie, in the barracks of the regiment to which he belonged. In none of them did I observe "the severe fever and great depression, reaching its maximum on the evening of the next day," as described by Mr. Jacoulet.

These facts have justified me in adopting an opinion varying from that of Mr. Degive, as to the advantage to be gained by the administration of arnica and phenic acid.

The only preparation to which we have subjected our patients is the following: Half diet (straw and mashes) for three or four days previous to, and absolute diet on the day

of the operation, the administration of an enema a short time before casting the animal. With these simple preparative measures, of easy application, we have looked only for a single, and what may be termed a mechanical result, to wit, the depletion of the digestive tract, which necessarily facilitates considerably the manipulation of the operation.

(To be continued).

AZOTURIA.

By DR. DAVENPORT, V.S.

(A paper read before the California State Veterinary Medical Association).

Mr. President and Gentlemen :

I will endeavor to describe to you a disease as it has come under my notice, a disease that is well known to the profession, one also that is of great importance to the horse owner, as it invariably attacks well-conditioned and valuable mares, and sometimes geldings, viz., "azoturia." The name is very significant of the state of affairs in this disease, nitrogenous urini. It has been described by various authors under different names, such as hysteria hemæturia and strain of psoæ muscles, etc. All descriptions of such diseases appearing identical to the disease azoturia.

SYMPTOMS.—The attack comes on very suddenly, generally after the animal has been standing in the stable for a few days, the time of year seeming to have an effect upon it, it appearing to be more frequent during the fall and spring months, I presume due to the farmers endeavoring to put on flesh on their horses after working them down or saving them for the spring season, feeding them on a high and nutritious diet without proper exercise; the bowels are costive, and nervous excitability is very marked; there is more or less paralysis of motor power of hind extremities, sometimes attacking both hind limbs, others only one, generally as far as I have noticed the near hind; profuse perspirations; visible mucous membranes injected, of a brown tinge upon passing the catheter, which I always find necessary and safer,

even if the attendant should tell me that the animal had mic-turated all right a short time before my arrival; the characteristic dark coffee-colored urine of a syrupy consistency; the gluteal region hard and swollen; the pulse is more or less accelerated, due to the excessive exertions of the animal endeavoring to gain its feet fruitlessly; sometimes the swelling and paralysis of the muscles is situated in the scapular region, tense and hard, similar to when situated in the gluteal, with great difficulty in moving the forward extremities. I may mention here that this disease is sometimes mistaken by owners of horses for dislocations of one of the hind limbs; to verify this I will describe a case that came under my notice a few months ago: I was called through the telephone to go to Healdsburg, sixteen miles from Santa Rosa, to a mare, the owner desiring me to bring all necessary tackle to return a dislocated thigh. I must confess upon receiving such message I was rather puzzled just how to act; nevertheless I took, as far as I could imagine, what I should require in such a lesion. Upon my arrival I found a large bay mare down in her stall, pulse 60° F., respirations slightly increased, and she had evidently been sweating profusely; she was able to rise, when she showed great lameness in the near hind leg; the appearance of the whole of the near side of the hind extremity was as though the hip had been knocked down; she could use it quite briskly, so I came to the conclusion that there was no dislocation or fracture. Upon inquiry I found she had been suddenly taken that way the day before, I then suspected azoturia; upon passing the catheter I found the bladder empty, but got sufficient urine to tell the character of same, which was of a dark coffee color, whereupon I had no hesitation in pronouncing it azoturia; the owner and teamsters were very much surprised when I told them there was no dislocation; the animal has since made a good recovery; has a rather bad lameness and atrophy of the external muscles of the thigh. It is also not a very hard matter for members of the profession to mistake this disease for a sudden seizure of colic, acute rheumatism, and excessive strain of muscles of hind extremities if great care be not taken in a mi-

nute examination, that is when there is no marked discoloration of the urine, as is sometimes the case.

Azoturia is described by various authors as affecting geldings only; others mares only; some saying that it affects mares only during the period of *œstrum* but I must say that, as far as my experience goes, it affects both mares and geldings at all periods, but more frequently mares. Since I have been practicing in Santa Rosa, a little over three years, I have treated a great number of mares for azoturia. Out of about sixty cases, I have had only eight or ten geldings, three only living, it appearing to be more fatal in geldings than mares, for what reason I am unable to account; some breeds of horses seem more liable to it than others. Round the vicinity of Santa Rosa there are a great number of Norman draft-horses and farm animals, and I may add that nearly all of those that I have treated in this disease are full-blooded or half Normans. In fact I have heard a great many farmers remark that they would not have a Norman on the place on account of their being so liable to go wrong in their waterworks, as they describe it. Whether there is anything in hereditary predisposition or not I do not know, but from what I have seen and heard I am inclined to think there is.

The diet, of course, has a great part to play in this affection, as it appears to affect only those that are highly fed and properly exercised. I cannot remember seeing it in a poor horse. It appears to be more prevalent in this State (California) than in any other part I know or have heard of, I presume on account of so much wheat and barley hay that is put up and fed, it appearing to be too nutritious for the equine requirements.

The English authorities speak of azoturia as being rather rare in that country; possibly this is due to their not feeding foods so rich in albuminoids, such as barley and wheat, etc. Professor Law, F.R.C.V.S., says in one of his papers on diseases of the urinary organs, that, like diabetes, this is rather a disease of the liver and blood-forming functions than of the kidneys. It is a complex affection directly connected with a plethora in the blood of nitrogenized constituents. He also

goes on to say: It seems as through the aspiratory power of the chest under the increased exertion and accelerated breathing speedily draws from the gorged liver and abdominal veins (portal) the accumulated store of nitrogenous matter in an imperfectly oxidized or elaborated condition, and as if the blood surcharged with these materials was unable to maintain the healthy function of the nerve centers and muscles. A peculiar anatomical feature of the horse's liver doubtless contributes to this, viz., the persistence throughout life of several considerable veins leading directly from the veins of the stomach and intestines into the posterior vena cava and heart. This condition, common to foetal mammals, persists through life in solipeds only among our domesticated animals; in all others the portal vein has no communication with the vena cava except through the capillaries of the liver. With the direct channel, the rich, crude blood coming from the intestines is drawn at once into the general circulation, unchanged by the secretions in the liver and the chemical changes therein affected. Hence this disease is peculiar to solipeds; it has been noticed rather more frequently in mares than in horses, attributable, perhaps, to the nervous excitement attendant on heat, and to the fact that the unmutilated mare is naturally more excitable than the docile gelding.

The exact nature of this disease is imperfectly understood, although a good many solutions have been advanced for years. There is no inflammation of the kidneys, no specific organisms are charged with its production; the condition of the urine throws some light upon its pathology; the color of the urine would seem to a casual observer as though it contained blood, but it has been well established that such is not the case. Law says the color is due to hæmoglobin and other imperfectly elaborated constituents of the blood. It is scanty in quantity; the specific gravity is not much altered; it retains its normal alkalinity, but invariably it contains albumen from the first, which gradually diminishes toward the third or fourth day; it also contains a great excess of urea, and occasionally traces of sugar.

With regard to the treatment of the disease there is very

little to be said ; the principal rule is to keep the various excretory organs open, and to keep the animal as quiet as possible ; generally after the primary perspiration a shivering fit sets in ; in such a case the animal should be well clothed, and hot blankets (not wet, on account of the usual carelessness of the attendants allowing the water to run on to the bedding and wetting it, thereby causing very bad sores to form on the animal, the bedding should be kept as dry as possible on this account)—should be applied to back and loins, which will greatly relieve the cramped muscles. A great many recommend slings if the animal is able to stand at all, but my experience is that it is not a good plan to use them, as they invariably fight and plunge round in them so ; the best plan is to keep the animal turning from side to side every few hours, and not any efforts made to get it on its feet for three or four days, when if the disease is terminating favorably the animal with a little assistance, say two or three men each side to balance him, will generally rise and stand for a little while, and so on till the animal is able to stand alone.

In medical treatment I generally differ a little from the general outline of treatment set down. Authorities do not recommend aloes on account of it being secreted by the kidneys, but as it is one of the great things to get the bowels in good action as quickly as possible, I give large doses of aloin, say three to four drachms, combined with a little ginger and whiskey, and I must say I have had good results ; also copious warm water enemasshould be given every few hours, as they greatly assist in promoting the action of the torpid bowels, they also relieve the muscular cramps to a large extent. One other great remedy I have found in the treatment of this disease is the hyposulphite of sodæ. It was recommended in this complaint by Dr. Shepherd in his paper on "Hyposulphite of Sodæ" in the *Journal of Comparative Medicine and Archives*. It seems to have a great effect in clearing up the urine after the first two or three doses, its change to a clearer color being very marked. I also give, if there is great pain and distress from the onset, small doses, hypodermically, of morphine, say two grains, according to the size of

the horse, which has the good effect of keeping them quiet without causing constipation to any extent.

The *diet* should consist of easily digested and not too nutritious food (as the idea is to remove the cause and the disease will cease), such as green grass, when procurable, warm bran mashes and thin gruel; and I have had no bad results from allowing them to have a liberal supply of cold water to drink. After convalescence has set in, tonics, and I should especially mention nux vomica, it assisting to tone the greatly debilitated muscular system; exercise should be given in moderation and gradually, and an animal that has once been attacked with this disease should not be allowed to stand in the stall any length of time. With regard to the hyposulphite of sodæ I should like to make a few remarks. Dr. Shepherd in his paper says: "And again in azoturia, although my experience is here limited, I am becoming more and more convinced that it is worthy of a more thorough trial. Undoubtedly the whole line of symptoms in this disease is caused by the action of poisonous products upon their nerves and their centers."

Thus through the condition of the blood we are sure to get our several results. Urea is one of the natural constituents of the urine excreted from the blood by the kidneys. In this disease immense quantities of it are excreted, showing an unnatural action of the kidneys, or an inestimable quantity of it in the blood, which, from its nitrogenous character, is without doubt. The hyposulphite of soda acts directly to diminish urea and increase uric acid, the sulphates, sugar and other non-nitrogenous constituents, a condition certainly necessary to the recovery of the patient.

PROGNOSIS.—The prognosis is favorable in the majority of cases, especially if the veterinarian should treat the patient shortly after being first taken down. Finlay Dun gives the recoveries at about fifty to eighty per cent., and according to my experience the recoveries have fully reached eighty per cent.

With regard to post-mortem appearances, I have never made one on such a case, and I can only quote Professor Williams. He says: "Post-mortem examination reveals the blood

dark-colored, having an ammoniacal smell, and semi-fluid congestion of lungs, clots of dark blood on both sides of the heart; the bladder filled with dark coffee-colored urine, and sometimes softening of the liver and kidney."

Congestion of the sheaths of the great gluteal nerves has been present in some cases in which the spinal cord at the lumbar region has been found red, congested and softened, but in others these appearances have been absent, the spasm and the loss of power being due to the effect of the altered blood on the muscular tissue.

Thanking you, Mr. President and gentlemen, for your kind attention, I trust you will make all due allowances for discrepancies and errors, only hoping that I have advanced some new idea in the pathology and treatment of this important disease.

Bibliography.—Professor Williams's "Veterinary Medicines"; Dr. Shepherd on "Hyposulphite of Sodæ," and Finlay Dunn.

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."—VETERINARY RECORD.

ENTERO-PERITONITIS DUE TO ASCARIS MEGALOCEPHALA.

By CLARENCE MILLS, V.S., Mt. Palatine, Ill.

I herewith send a report of a case which proved quite interesting to me, and although I have reason to believe that such cases in a milder form may not be *very* rare, yet it surpassed anything of its nature I have witnessed in a post-mortem. If you think it worthy, you may publish it.

The case was one of entero-peritonitis, induced primarily by the presence, in a large section of the small intestine, of multitudes of the parasites, ascaris megalocéphala. The history of the case, as I got it from the owner, was as follows:

The patient was a ten-months-old standard bred filly,

and very promising. She was allowed her freedom in a small pasture in the daytime, and at night was housed in a warm box-stall and fed what grain she would eat up by morning, as she had been used to do since she was old enough to eat grain.

On the evening of the 29th the colt was treated as usual, and was to all appearances well as usual. The owner had noticed, however, for some little time that the colt was not in as good condition as it should be from the feed and care he was giving it, but noticed nothing about her to cause him to suspicion any trouble.

Upon going to the stable upon the morning of the 30th he found this favorite colt sick. From appearances he judged it to be colic or something of that nature, and thought it would soon recover. He gave her some medicine which he had, and thought it would do her some good, but did nothing except to relieve the pain for a short time. Colt would at times throw itself violently and evince severe pain, get up and lie down and roll; threw itself so violently at times that it was dangerous to its own life, and required some one to watch her all the time. Thinking still that it might not be so very serious, and having no help, the owner did not send for medical aid until about two o'clock in the afternoon, when I was sent for, but was away at the time the messenger arrived visiting another patient, and did not arrive in answer to the call until 4 P.M., when upon entering the stall I found the patient lying prostrate upon the floor apparently lifeless. Upon closer examination I found that life was not extinct, but that death would very soon result. The only chance being to administer a stimulant immediately, and try to prolong life until the patient could be examined and ailment ascertained. Such was prepared at once, although with no hope of being effectual, but was not administered, as by the time it could be prepared for administration the colt was dead. She had not made a struggle, and breathed but twice after I entered the stable. On this account I was unable to get but very little information from personal observation, but from what I could learn from owner I diagnosed the trouble as

enteritis with probable peritonitis. Permission was obtained for a post-mortem examination immediately, with the following results:

Upon opening into the abdominal cavity a large quantity of fluid was present, showing evidence that ascites had existed, for a few days at least, before death. The peritoneum was very much inflamed, and many parts of the intestines, both large and small, showed evidence of severe inflammation, and the remainder badly congested. Two or three large worms were noticed immediately upon the outer surface of the small intestines, and at first thought perhaps the knife had accidentally touched an intestine sufficiently when opening the colt to open it and the lumbracoid had come out in that way while I was engaged in examining other parts. But examination proved this not to be the case.

Pushing the intestines aside I soon came across particles of corn, oats, hay and other food particles. Now I looked for a rupture. Following the duodenum from the stomach backward, I finally came to a small rupture about large enough to admit one's little finger, through which the food and parasites had found their way. On either side of this aperture for several feet there were parasites by the hundreds, singly and matted together. The largest of these rolls of parasites was located about six inches below the aperture. It was a very large roll of *ascaris megaloccephala* from five to nine inches in length completely filling the canal. The rupture in the intestine had, as near as could be judged, occurred at least ten days before, as its edges were thickened and healed over, leaving the round aperture. But little food was found in the small intestine and not a great deal in the large ones. The stomach, however, was full to the extent of its capacity, and fermentation of this food had to some extent taken place.

Other cases have come under my notice during my three years' practice, upon which, I am sorry to say, I could not hold a post-mortem, owing to distance at the time of death. I am fully convinced that death has been produced by these parasites inducing enteritis, and, as in the above, peritonitis also.

Cases have also come under my notice very frequently of serious trouble and death from *strongylus tetracanthum*, but as that is well treated in an article in the January REVIEW I will say nothing in regard to them at this time.

CONSTRICTION OF THE RECTUM.

(Reported to the Maryland Veterinary Medical Association, by W. H. Martenet, D.V.S., Philadelphia, Pa.)

The subject was an aged bay horse which I was called to see on the 18th of January, 1893. I found him presenting the ordinary symptoms of constipation, constant stretching, anorexia, dullness and visible evidence of the passage of but little or no fæces.

Treatment was recommended and given in the administration of a liberal dose of linseed oil, followed by mild doses of tincture of *nux vomica*. Clysters of warm water, twice daily, were ordered with the admonition to exercise care in introducing the nozzle of the syringe into the rectum.

I saw the patient on January 23d, and was told that he had done better for a day or two after I had first seen him, but was now straining worse than before, and, according to the owner's statement, passed very small quantities of urine at frequent intervals. Noticing this condition myself, he was put on diuretic treatment. The owner visited me in a day or two, and informed me that no improvement was noticeable in the animal.

I visited him again on the 28th, and found him weaker than before, from having taken but little nourishment, and constantly stretching and straining at ineffectual efforts to void fæces.

Having determined to make a rectal examination, on introducing the hand into the rectum found it could be passed but about six inches from the anus. The obstruction consisted of a fibrous constriction occluding the rectum to such an extent that only two fingers could be passed through it, and then but with much difficulty. The constriction was very firm, but the mucous membrane toward the anus was

granular and bleeding easily from the manipulation. A fetid, sanious discharge, small in amount, exuded from the anus, which was swollen, and its mucous membrane highly congested. The animal was ordered to be destroyed. Was this condition the result of violence in introducing the syringe, or was it a pathological condition "per se"?

The necessity of an early examination of the rectum where there is the least indication for it is obvious.

SOCIETY MEETINGS.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The ninth annual meeting of the Pennsylvania State Veterinary Medical Association was called to order at 10:30 A.M. at the Hall of the College of Physicians, 13th and Locust streets, Philadelphia, Pa., President Hoskins in the chair. On roll call thirty-six members were present.

As visitors, Dr. John Marshall, Dean of Veterinary Department University of Pennsylvania, Dr. W. B. Atkinson of State Board of Health, Dr. Jas. McAnulty, Dr. John Adams, Dr. E. Mayhew Michener, Dr. Wm. J. Hinds, Dr. M. E. Conard, Dr. W. H. Fry, Dr. W. B. E. Miller and a number of students of the Veterinary Department University of Pennsylvania.

The minutes of the semi-annual meeting were read and with a slight correction adopted.

The President's address followed, reviewing the work of the Association for the past nine years and congratulating the members on the volume of work performed, the high place attained and the bright promises of the future for the Association.

The election of offices resulted in the election of President W. Horace Hoskins; 1st Vice-President, Dr. Leonard Pearson; 2d Vice-President, Dr. Jas. B. Rayner; 3d Vice-President, Dr. Zeno S. Keil; Recording Secretary, Dr. Robert Gladfelter; Corresponding Secretary, W. H. Ridge, Treasurer, Dr. John R. Hart.

Board of Trustees: Drs. S. J. J. Harger, Jas. Sallade, J. C. Michener, W. S. Kooker, Leonard Pearson.

The following list of applicants was then read and referred to the Board of Trustees :

B. S. J. Bear, V.M.D., Vet. Dept. University of Pennsylvania, York, Pa.; Voucher, W. H. Ridge; A. O. Cawley, D.V.S., Am. Vet. College, Milton, Pa.; Voucher, W. H. Ridge.; M. E. Conard, V.M.D., Vet. Dept. University of Pennsylvania, West Grove, Pa.; Voucher, W. H. Ridge; Chas. M. Cullen, V.M.D., Vet. Dept. University of Pennsylvania, 4317 Lancaster Ave., Phila., Pa.; Voucher, W. H. Ridge; Chas. A. Dohan, V.D.M. Vet. Dept. University of Pennsylvania Darling, Delaware Co.; Voucher W. H. Ridge; R. A. Dunn, D.V.S., Am. Vet. College, Titusville, Pa.; Voucher, W. H. Ridge; Harry D. Entrekin, V.M.D., University of Pennsylvania, Kennett Square, Pa.; Voucher, W. H. Ridge; R. J. Fox, V.S., N. Y. College, Bryn Mawr, Pa.; Voucher, W. L. Nunan; W. H. Fry, V.S., Pine Grove Mills, Pa.; Guildin Hartman, V.M.D., Vet. Dept. University of Pennsylvania, 2130 North 4th St., Phila., Pa.; Vouchers, W. H. Ridge, John R. Hart; J. Heckenberger, V.S., Ont. Catasaqua, Pa.; Vouchers, W. H. Ridge, J. C. Foelker; Wm. A. Heckenberger, V.S., Ont. Catasaqua, Pa.; Vouchers, J. C. Foelker, W. S. Kooker; Joseph Houldsworth, V.M.D., Vet. Dept. University of Pennsylvania, Phila. Pa.; Voucher, W. H. Ridge; F. M. Kain, D.V.S., Am. Vet. College, York, York Co., Pa.; Voucher, W. H. Ridge; Horace P. Keely, V.M.D., Vet. Dept. University Pennsylvania, Schwenksville, Pa.; Voucher, W. H. Ridge; S. D. Larzalere, V.M.D. Vet. Dept. Univ. of Pa., Jenkintown, Pa.; Voucher, W. H. Ridge; C. Lintz, V.M.D., Vet. Dept. Univ. of Pennsylvania, Chester, Pa.; Voucher, W. H. Ridge; Jas. T. McAnulty, V.S., Phila., Pa.; Voucher, W. Horace Hoskins; F. J. McCarthy, V.S., Ont. Pottsville, Pa.; Voucher, J. W. Sallade; John J. Maher, V.M.D., Vet. Dept. University of Pennsylvania, 1514 Marshall St., Phila., Pa.; Voucher, W. H. Ridge; David Martin, V.S., McKeesport, Pa.; Voucher, Jas. A. Waugh; E. Mayhew Michener, V.M.D., Vet. Dept. University of Pennsylvania,

Colmar, Pa.; Voucher, W. H. Ridge; W. B. E. Miller, D.V.S., Am. Vet. College, Phila., Pa.; Vouchers, W. Horace Hoskins, Thos. B. Rayner; Frank L. Smith, V.M.D., Vet. Dept. University of Pennsylvania, 2027 North 13th St., Phila.; Pa.; Vouchers, John R. Hart, W. H. Ridge; Geo. A. Smith, V.M.D., Vet. Dept. University of Pennsylvania, 16th and Bainbridge Sts., Phila, Pa.; Vouchers, W. H. Ridge, Leonard Pearson; Wm. J. Tomlinson, D.V.S., Am. Vet. College, Williamsport, Pa.; Vouchers, W. Horace Hoskins, Robt. Gladfelter.

A recess was then taken that the Board of Trustees might convene to examine the applicants.

On re-convening the Board recommended for favorable action Drs. Dunn, Bear, Geo. A. Smith, Michener, Dohan, Cullen, Maher, Conard, Keely, J. Heckenberger, Entrekin, Larzalere, Lintz, Kain, Frank L. Smith, Hartman, Houldsworth, Miller and McCarthy.

The Board unfavorably recommended Drs. Fry, Martin, and McAnulty, and laid over for further consideration the applications of Drs. Tomlinson, Cawley and Fox.

A motion to dispense with the by-laws and elect by acclamation was carried, and those favorably recommended were on motion declared elected.

The President introduced the new members present.

The Secretary's report followed, containing much information relative to the work of the past six months, calling brief attention to the new local Veterinary Society in the Wyoming Valley, and among many other valuable points, jogging the faulty memories of many of the members for their negligence in not replying to and acknowledging communications from the Secretary's office.

The Treasurer's report showed exceedingly heavy expenditures for the year, and though the balance was on the wrong side, a large income from the members had been received, and never in the history of the Association were there so few delinquents as at present.

Under unfinished business the following amendment was adopted:

1st. That on and after the year 1893 the annual dues of this Association shall be two dollars, to be made in semi-annual payments.

2d. Any member in arrears for his initiation fees or dues for a period of eighteen months shall receive two quarterly notices of said arrearage, and in failing to liquidate, the same shall be reported to the Association by the Treasurer for expulsion.

Under the head of new business, after thorough consideration, the Association decided to appoint the following Committees: One for the purpose of aiding the work of the International Association looking after the interests of the members in connection therewith and making arrangements for any members of the Association who proposed to attend the International Meeting. The President appointed on this Committee, Chairman S. J. J. Harger, W. S. Kooker, L. O. Lusson, Alex. Class, Jas. B. Rayner, C. T. Goentner, J. C. Foelker, Robert Formad and J. B. Irons.

The second, Committee on Entertainment of Foreign Delegates who may visit our meeting, and who will be taken charge of during their passage through our State, en route to Chicago, the following members were appointed to serve on this Committee: Chairman, Leonard Pearson, Thos. B. Rayner, W. L. Zuill, W. B. E. Miller, J. Timberman, Jacob Helmar, Jas. A. Waugh, J. C. McNeil, Chas. Schaufler.

Reports of committees being in order, the first one called for being on Legislation, Chairman Kooker reported results of prosecutions at Washington, Pa., under the veterinary act, together with the proposed act to secure a pure, wholesome and unadulterated milk supply, and to provide for licensing milk producers and milk venders, and for the appointment of milk and dairy inspectors in the State, together with several amendments to existing acts pertaining to the milk and meat supply of our commonwealth.

The report of Chairman Weber on Intelligence and Education was one of the most suggestive and important reports that have ever been read before the Association. His criticisms of matters pertaining to the veterinary profession were

the most opportune and caustic, associated with which were many wise suggestions as to the probable means of remedying many of the evils with which we have to deal.

Chairman Harger of the Committee on Sanitary Science and Police presented a brief report, noting many new discoveries, and referring to the present experiments in detecting glanders and tuberculosis, and the growing theory in the contagiousness of tetanus.

The Committee of Arrangements then announced that the Philadelphia veterinarians had procured sufficient seats at the Broad Street Theatre for all those in attendance and were very anxious to have all present. After some minor business the meeting adjourned until 10 A. M. on the following morning.

The second day's session was convened at 10:15 A. M. President Hoskins in the chair. On roll call forty-four members were present.

As visitors, Dr. Wm. Dougherty, Baltimore, Md., of the Maryland State Veterinary Medical Association, Dr. H. P. Eaves, Wilmington, Del., Delegate from Keystone Veterinary Medical Association, Dr. E. O. Shakespeare, late of the City Board of Health, Dr. Jas. McAnulty, Dr. Leo Breisacher, Dr. M. W. Drake, Dr. N. M. Drake and a number of students from Veterinary Department University of Pennsylvania.

The President appointed the following delegates to the various veterinary associations in adjoining States. To the New Jersey State Veterinary Medical Association, Dr. L. O. Lussan, R. G. Webster and Walter R. Hart. To the Veterinary Medical Association of New Jersey, Drs. Jas. B. Rayner, W. S. Kooker, P. M. Minister. To the New York State Veterinary Medical Association, Drs. J. H. Timberman, C. C. McLean, J. B. Irons. To the Maryland State Veterinary Medical Association, Drs. S. E. Weber, W. H. Ridge and Leonard Pearson. To the United States Veterinary Medical Association, Drs. J. C. Foelker, Geo. B. Rayner and John R. Hart.

Under discussion of reports, Dr. E. O. Shakespeare was called upon by the Chair to consider that part of the Legisla-

tive Committee's report, pertaining to milk legislation. He addressed the Association at some length, answering every argument that had been advanced against the proposed law; touching upon the standard of quality as to solids; as to reduction by water and separator slop; the penalties of violation; the question of milk supply and the unfairness of many analyses; the wisdom of allowing the sale of skim milk and many other well taken points; handling them all in an earnest, careful and familiar manner, gratifying and encouraging all who were present. After extending him a cordial vote of thanks for his interest and attendance, the milk bill and proposed amendments to other laws on the food question were unanimously indorsed.

On the discussion of the report of Committee on Intelligence and Education it was on motion approved that a committee of three be appointed to draft suitable resolutions condemning the new two years' school at Washington, and extending congratulations to the American Veterinary College for its adoption of an obligatory three years' course. The Chair appointed the following Committee, Leonard Pearson, S. E. Weber and J. C. Michener. Said Committee subsequently reported the following draft of resolutions:

Whereas, Some of the officers of the Bureau of Animal Industry have established a veterinary school in Washington, which is poorly equipped, and requires but two years' attendance upon instruction, and

Whereas, It is the opinion of this Association that all colleges awarding the degree of Veterinary Surgeon should give a course extending over at least three years, be it

Resolved, That we greatly regret the action of these officers, and feel that they are doing the veterinary profession of this country an injury, and are retarding the progress of veterinary education; be it further

Resolved, That a copy of these resolutions be sent to the Honorable Secretary of Agriculture and to the Chief of the Bureau of Animal Industry.

SECOND RESOLUTION.

Whereas, Certain veterinary colleges have, to their own financial injury, adhered to three year courses of instruction, and others have discarded the old two year course and now require of their students three years' attendance, and

Whereas, It is only through self-sacrifice of this sort that the cause of veterinary education can be advanced; be it

Resolved, That we commend these colleges having a curriculum covering three years, and also the American Veterinary College, which has recently lengthened its course to this standard.

LEONARD PEARSON,	}	<i>Committee.</i>
S. E. WEBER,		
J. C. MICHENER,		

These resolutions were adopted by the Association.

At this point letters of regret were announced from Drs. C. P. Lyman, Isaiah Michener, D. C. Stanton, A. Liautard, C. R. Good, J. C. Foelker, Thos. J. Edge and many others.

Under discussion of the Secretary's report, he was directed to remove from the roll, Dr. C. J. Blank, of Buffalo, on the ground of non-residence, and Dr. J. C. Thompson. Also to procure two hundred copies of constitution and by-laws.

It was further recommended that the Board of Trustees be requested to convene an hour earlier, so that the bulk of business may be disposed of before the regular session convenes.

The Secretary was requested to comply with the desire of Dr. A. H. Dorney, a non-resident, who wished to recall his name.

Under discussion of the Treasurer's report, it was decided to have the following names stricken from the roll: Drs. C. A. Millar, S. K. Hoffman and A. F. Schrieber. Subsequently, on payment of initiation fee and dues, Dr. Schrieber was reinstated.

All bills of Secretary and others were referred to an Auditing Committee, consisting of Thos. Rayner, W. S. Kooker and S. J. J. Harger, after which the Association adjourned for lunch.

The first paper presented to the Association was by Prof. R. S. Huidekoper, of New York City, entitled "Agricultural Shows, Judges and the Veterinarian," which was listened to with most intense interest and edification, and proved to be a paper of exceptional merit, strength and importance, and sug-

gested a new field of labor for the veterinarian to fill that gives great promise of strengthening them as a profession in the eyes of our people throughout the entire country. So carefully and thoroughly was this paper prepared, and so wholly new its character, that its completeness forbid its discussion, and the Association could only most generously thank the author for his kindness in preparing it for the meeting with the desire that our Association should give it the publicity it should command.

The second paper read, by Dr. J. Curtis Michener, on "Open Joints," proved a short, terse article on this topic, specially considering his plan of treatment. The paper was afterward discussed, and many questions asked in regard to the result of the plan of treatment outlined.

This paper was followed by one on "Fungus Hæmatodes in Cattle and Horses," by Jas. A. Waugh, who being absent from the meeting the paper was read by the Secretary.

This was followed by a paper on "Acute Toxic Anæmia," with the reports of some animals dying from this cause, by Dr. Jacob Helmar, of Scranton. This paper proved to be one of exceptional interest, and was listened to with a great deal of pleasure. His investigation of his cases had been one of the most thorough character, and the entire history of the development, progress, results and probable origin of the disease was prepared to a state of completeness that won for the author the admiration and approval of all who had the pleasure of listening to his paper.

This paper was followed by one by Dr. Leonard Pearson, continuing the subject of "Tuberculosis," and the results obtained by the use of tuberculin as a diagnostic agent. Some very important and valuable statistics were thus added to what he had placed on record some six months before, and all pointed to the increased evident value of tuberculin for the detection of tuberculosis in the bovine species. He exhibited in conjunction with his paper several specimens that had been obtained from cattle where the symptoms had been peculiarly interesting and somewhat obscure. His paper elicited much interest, and brought forth many inquiries that

exhibited the general interest shown by the veterinarian in the consideration of this important subject.

As a contribution in connection with the paper of Dr. Pearson, Dr. W. B. E. Miller, of the Bureau of Animal Industry, chief examiner of cattle for foreign shipment at the port of Philadelphia, and who with his corps of assistants were continually seeking for evidences of the existence of tuberculosis among the animals slaughtered for consumption as food in Philadelphia, reported the results of these investigations for the past year, which shed much light upon the healthfulness of the beef supply at this center.

This closing the list of papers, the remaining short time was thrown open for reports of cases ; one of which, reported by Dr. W. Horace Hoskins, was a case of enormous calculi of both kidneys of a great Danish bitch. The entire structure of one kidney had become entirely broken down, and the walls of the organ greatly distended, had simply become the surrounding of an enormous cyst containing the calculus deposits. The other had still to a certain extent maintained its shape and normal size, but contained within an extremely large deposit. The animal had died from uræmic poisoning, indicated principally by great depression of all the vital forces, profound loss of appetite, great lethargy, but never evincing any evidence of acute pain and suffering.

The place for holding the semi-annual meeting was then brought up, and resulted in the selection of Scranton.

A hearty vote of thanks was then tendered to all those who contributed to the interest and pleasure of the meeting through the papers and reports which had been submitted. The seating of the newly elected officers then took place, and a vote of thanks to the officers for the past year was accorded, after which the meeting adjourned.

ROBT. GLADFELTER, *Sec.*

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

A regular meeting of the California State Veterinary Medical Association held at the Baldwin Hotel, San Francisco, March 8th, 1893.

The meeting was called to order by the President, Dr. W. F. Egan.

Upon roll call the following gentlemen responded: Drs. Egan, Burns, Spencer, Sr., Spencer, Jr., Wadams, Maclay, Fox, Davenport, Pierce, Lord, Orvis, Neif and Archibald. Visitor, Dr. Ruth.

Minutes of the previous meeting were read and approved.

Dr. Maclay's resignation was then read and discussed. Upon motion by Dr. Burns it was not accepted.

Letters of regret were read from absent members.

Under the head of admission of new members the Secretary moved that Dr. Rowland Lord, M.R.C.V.S. (L.), and Dr. W. Carmichael, V.S. (Toronto), be elected members of the Association. Carried.

The reading of papers and discussions brought Dr. Davenport on his feet with an excellent paper on "Azoturia."

The essayist portrayed very vividly the different pathological changes which an animal affected with the disease undergoes. He described his mode of treating the same; he also cited the different aspects which the disease had presented to him.

The paper was followed by a very lengthy discussion. In regard to the treatment there seemed to be a great diversity of opinion. Some favored cathartics, others condemned them; some favored slings, others never used them; but the unanimous opinion seemed to be that the most beneficial treatment of azoturia is good nursing and hot packs to the congested muscles, and the administration of a mild diuretic.

Dr. Neif brought up the subject matter of sanitary regulations in San Francisco and other large cities. The matter was discussed by most of the members present, and upon motion of Dr. Spencer, Sr., the chair appointed Drs. Maclay and Neif to prepare papers on the subject to be read at next meeting.

The members requested Dr. Neif to invite some of the San Francisco Board of Health to be present at the next meeting. The subject matter of legislation was brought up and discussed for a short time by Dr. Maclay. On motion a vote

of thanks was given the essayist for the able manner in which he had entertained the meeting.

On motion the meeting adjourned to meet in San Francisco, June 14th, 1893.

R. A. ARCHIBALD, *Sec.*

KANSAS VETERINARY MEDICAL ASSOCIATION.

The Kansas Veterinary Medical Association met at Manhattan, March 9th, 1893. The afternoon was spent visiting the State Agricultural College.

The meeting was called to order by President Pritchard. The minutes of the former meeting were read and approved. Drs. Young and LeMay signed the Constitution. Communications were read from Drs. Hunter, Wattles and Nott expressing regrets at being unable to attend the meeting.

Dr. Wattles reported an interesting case of an "equine hermaphrodite." Dr. Wattles also extended an invitation to attend the commencement of Kansas City Veterinary College.

Dr. LeMay gave an interesting talk on the treatment of gunshot wounds in horses, having had considerable experience while at Pine Ridge with his regiment (Seventh Cavalry). He found the most successful method was to treat the wound antiseptically locally, and wait until the ball becomes encysted, or set up suppuration, when it can be removed.

Dr. Welch, of Salina, reported an interesting case of artificial impregnation of a mare. The semen was caught in a receptacle mixed with warm milk, and by means of a small rubber tube and funnel was forced into the uterus. The mare was impregnated.

The treatment of hernia was also discussed thoroughly. Neurotomy was also discussed. The general expression was that the low operation, performed standing, was usually successful, no bad results following. Tenotomy, bulging soles, Dempsey pads and rubber tired shoes were also discussed.

Under the head of unfinished business the fee bill was brought up, amended and adopted as a general guide to equalize charges throughout the State, and for the general information of the practitioner and his client. The amended fee bill was ordered printed for the use of the members. Dr.

S. C. Orr's resignation as a member of the Association was taken from the table and accepted.

The Association then adjourned to meet at Topeka the Thursday evening of State Fair week, Oct., 1893.

N. S. MAYO, *Sec.*

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY
COLLEGE.

The sixteenth annual meeting was held in the lecture-room of the college on March 24th, 1893. There were twenty-two graduates of previous years present at the meeting. The class of '93, numbering fifty-two, were then elected to membership, making a total number of 489 members in the Association. The new class was welcomed by President Dr. Ryder, and introduced to the members present.

Treasurer's report showed a large balance, proving the Association had prospered during the last year.

Ten very interesting communications were read from resident State secretaries of as many States, among them being one from Dr. Wray, Chief United States Veterinary Inspector for Great Britain.

The alumni trustees reported progress on the subject of a new college building, stating that the "building fund" was rapidly accumulating, and that they hoped ere long to have a college building worthy of this great city of New York.

Resolutions read on deaths of Drs. Campbell, Kidd and Apeldorn, were ordered engrossed on the minute book.

Whereas, Almighty Providence has seen fit to remove from our midst our associate member, Dr. Theodore W. Apeldorn, a graduate of the class of 1887,

Resolved, That we, the members of the Alumni Association of the American Veterinary College, regret his early loss as a member of the profession and the cutting short of a career that held forth much promise; and be it further

Resolved, That a copy of these resolutions be spread upon the records of our Association, and the same be published in the AMERICAN VETERINARY REVIEW.

F. J. ALLEN,
WALTER L. HART,
W. HORACE HOSKINS, } *Committee.*

Whereas, In the death of Dr. Edward T. Campbell, it has

pleased the Almighty to remove from our midst a worthy and esteemed friend ; be it

Resolved, That by his death the class of 1889 loses a promising man and the veterinary profession a friend and valued member ; be it

Resolved, That, with deep sympathy with the relatives and friends, we express an earnest hope that even so great a bereavement may be overruled for their highest good ; therefore

Resolved, That a copy be engrossed in the minute book, and also published in the REVIEW.

H. D. HANSON,
W. M. HERBERT LOWE, } *Committee.*
E. B. ACKERMAN,

Whereas, This Association, as well as the veterinary profession of Kentucky, has lost by death in the person of Dr. James L. Kidd a worthy and valued member ;

Whereas, It is fitting that we, as a corporate body, should express and record the esteem in which he was held by us, and the loss we sustain in his death. Therefore be it

Resolved, That in the death of our brother the profession has lost a valued member, and many of us a personal friend, who did much during his professional career to promote fraternal feeling among practitioners ; and be it further

Resolved, That these resolutions be spread in full upon the minutes of the Association as a token of the regard in which he was held by us.

W. M. HERBERT LOWE, }
E. B. ACKERMAN, } *Committee.*
H. D. HANSON,

Resolutions were read by Dr. Hoskins, congratulating the authorities upon the new three year course inaugurated by the American Veterinary College.

The following officers were elected for the ensuing year : President, W. H. Lowe, D.V.S.; Vice-President, H. D. Hanson, D.V.S.; Secretary, E. L. Volgenan, D.V.S.; Treasurer, F. J. Dodin, D.V.S.; Librarian, E. J. Nesbitt, D.V.S.

After the commencement, which was held in Chickering Hall, the Faculty, Alumni and invited guests repaired to Clark's, where the annual alumni dinner was served. The following toasts were responded to :

Prof. A. Liautard, M.D.V.M., Faculty of American Veterinary College ; Prof. F. D. Weisse, M.D., Board of Trus-

tees; Prof. A. W. Stein, M.D., Value of Physiology in Diagnosing; Prof. Chas. A. Doremus, M.D., Ph.D., New Remedies; Prof. James L. Robertson, M.D.V.S., Progress of Veterinary Science; F. H. Osgood, B.S., M.R.C.V.S., Our Sister Veterinary Schools; Prof. J. Elmer Ryder, D.V.S., Our Alumni Association; W. Horace Hoskins, D.V.S., Veterinary Societies; W. H. Lowe, D.V.S.; Fraternal Feeling; E. L. Volgenan, D.V.S., '93; L. H. Friedburg, Ph.D., Toast of Toasts.

The dinner was a very successful one, and was terminated by the drinking of a silent toast to the three members of the Association who had died during the last year.

E. L. VOLGENAN, D.V.S., *Sec.*

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION.

The Maryland State Veterinary Medical Association held its sixty-eighth regular meeting at the Studio, Baltimore, Md., on Monday evening, March 27th, 1893.

The following members answered the roll call: Drs. Dougherty, Meisner, Clement, Faville and Martenet. The minutes of the last meeting were read and approved.

Dr. Dougherty, as Chairman of the Ambulance Committee, presented a rough sketch of an ambulance for the recumbent position, which was discussed freely by the members in all its points in order to obtain plans for a perfect ambulance, and the matter referred back to the committee.

The matter of entertaining foreign visitors to the International meeting was again discussed and postponed until definite intelligence might be received from veterinarians of other States.

Ex-Secretary and Treasurer Meisner read his report, showing a balance on hand of \$53.72, and the report was accepted.

Dr. Martenet mentioned the desirability of increasing the membership, and recalled the fact that our charter embraces Maryland and District of Columbia, and stated his intention of communicating with eligible veterinarians.

The report of the Board of Censors for its meeting of November 21st, 1892, was read, and after much discussion was received and the charges dismissed.

The application for membership of Stuart E. Paulet (Chi-

cago), Cumberland, Md., was received through Dr. Meisner, and referred to the Board of Censors.

A report of a case of "constriction of the rectum" was then read by Dr. Martenet, and was freely discussed, as were other interesting reports.

The members then engaged in the pleasurable privilege of "chipping in" for the gold headed cane which the Society had the honor of presenting its esteemed member, Dr. Thos. F. Barron, on the occasion of his birthday anniversary. Adjournment followed.

W. H. MARTENET, *Sec.*

COLLEGE COMMENCEMENTS.

NATIONAL VETERINARY COLLEGE OF WASHINGTON, D. C.

Though this institution is of recent organization, and the first course of lectures only delivered this winter—the following gentlemen represent the graduating class: J. Payne Lowe, D.V.S., Orin C. Bradley, John W. Stewart, Gurdon G. Sill, Hollis Haydon, Thomas A. Barron.

The addresses of these new D.V.S. are unknown to us.

ONTARIO VETERINARY COLLEGE.

The closing exercises of session 1892-93 of the Ontario Veterinary College were held in the College building, Toronto, on Friday, March 24th. Prof. A. Smith, Principal of the college, presided, and seated beside him on the platform were his Hon. Lieutenant-Governor Kirkpatrick, Sir Casimir Czowski, Hon. John Dryden, Minister of Agriculture, J. J. Withrow, Esq., J. L. Hughes, Esq., Inspectors of Public Schools, Dr. G. S. Ryerson, M. P. P., G. B. Smith, M. P. P., and several other prominent gentlemen.

Speeches of congratulation and advice to the recent graduates and prize-winners were received with frequent bursts of applause. At the conclusion of the ceremonies, the Principal, Prof. Smith, was presented with a magnificent picture of the graduating class, by Mr. H. D. Martin of Buffalo, on behalf of the class.

Prof. Smith, in thanking the students for their gift, spoke

eloquently of the kindly feeling which always existed between the students and the different professors.

The following is the list of graduates :

Francis Abele, Jr., Boston, Mass.; A. M. Adams, Canal Dover, Ohio; Charles H. Adams, Stouffville, Ont.; William E. Adams, Stouffville, Ont.; James Airth, Port Elgin, Ont.; Albert E. Alexander, Strathroy, Ont.; L. A. Anderson, Cincinnati, Ohio; John Armstrong, Locust Hill, Ont.; Albert C. Baker, Courtland, N. Y.; Robert Barnes, Poplar Hill, Ont.; William C. Barth, Leavenworth, Kansas; John M. Boyles, Mongolia, Ont.; James Beath, Columbus, Ont.; F. M. Bertrow, Canisteo, N. Y.; Oscar Biehn, Jr., Coopersburg, Pa.; Frank M. Blatchford, New Hamburg, Ont.; Albert T. Bowman, Canton, Ohio; James L. Brooks, Fingal, Ont.; Edward W. Brumter, Wooster, Ohio; Albert Bryant, Lucan, Ont.; Robert Finlay Campbell, Whitby Ont.; Eugene M. Casey, New Milford, Pa.; Fred H. Cassels, Tacoma, Wash.; Robert Cassels, Wingham, Ont.; George R. Christian, Glenne Valley, Ind.; William E. Coleman, Toronto, Ont.; Robert E. Collins, Lovelton, Pa.; Henry L. B. Coote, Minnedosa, Man.; C. M. Culbertson, Durham, Ont.; William Davidson, Harriston, Ont.; William H. Derr, Wooster, Ohio; James D. Deyell, South Monaghan, Ont.; P. A. Dillahunt, Springfield, Ohio; Henry Domville, St. John, N. B.; Eugene E. Dooling, Syracuse, N. Y.; George W. Dunlap, Goodville, Pa.; Nelson D. R. Eakin, Toronto, Ont.; Edwin W. Emery, Maumee, Ohio; Fred Evans, Avoca, Neb.; Albert C. Ewart, Wyoming, Ont.; Harry V. Fenn, Colchester, Eng.; John A. Filsinger, Syracuse, N. Y.; Duncan Fisher, Grandin, N. Dakota; Michael J. Foran, Auburn, N. Y.; Charles B. Frederick, Freeburg, Ohio; Frank E. Freeman, Belfast, Me.; George D. Gibson, Brandon, Man.; Horace M. Gohn, Thornhill, Ont.; William F. Graham, Door Village, Ind.; Frank C. Grayson, Paxton, Ill.; Philip Harrison, Bad Axe, Mich.; William Harrison, Bad Axe, Mich.; John Halton, Glenboro, Man.; E. M. Herrington, Picton, Ont.; Charles J. Hinkley, Odebolt, Iowa; Charles W. Holley, Ralston, Pa.; E. J. Hopkins, Newboro, Ont.; Geo. Howell, Vernon, Ont.; Arthur M. Humphrey, Darien Centre, N. Y.; Edward Humphrey, Remington, Ohio;

Buoy R. Ilsley, Weymouth, Nova Scotia; Richard J. Jelly, Mossley, Ont.; Edward L. Kalb, Rochester, Minn.; Milton J. Kellam, Rainham Centre, Ont.; Daniel M. Kellogg, Reynolds-ville, N. Y.; Henry F. Kennedy, West Union, Iowa; William H. Kerr, Urbano, Ohio; Joseph Kime, Jr., Chatham, Ont.; Daniel R. Kohler, Kultztown, Pa.; Karl H. Kolbe, Napoleon, Ohio; Virgil Lathrop, Albany, N. Y.; F. E. Lawton, Paris, Ill.; Charles E. Leist, Circleville, Ohio; John P. Lemon, Cresco, Iowa; Frank M. Linscott, Holton, Kansas; Edwin D. Longacre, Longacre, Pa.; Charles B. McAndless, Ilderton, Ont.; W. J. H. McBride, Amherstburg, Ont.; George McCluskey, Orangeville, Ont.; James McGillicuddy, Walford, Ont.; James F. McGregor, Delaware, Ont.; Alex. M. McKay, Morewood, Ont.; Alex. H. McKellar, Washburn, Iowa; Arthur McKercher, Petrolea, Ont.; Ellis McLain, Nanticoke, Ont.; John A. McMaster, Guelph, Ont.; Harry T. Madden, Greenfield, Ill.; R. H. Madill, Streetville, Ont.; D. M. Mahorney, Ladoga, Ind.; George O. Manser, Linwood, Ont.; John H. Marbes, Syracuse, N. Y.; Harry Delos Martin, Buffalo, N. Y.; John William Mather, Rohrsburg, Pa.; W. H. B. Medd, Larchwood, Iowa; J. Harvey Mettlen, Wakefield, Neb.; Chester Miller, Ottumwa, Iowa; Albert W. Moore, Charlevoix, Mich.; L. G. Moore, Trenton, N. J.; W. J. Morgan, Kingston, Ont.; Bruce D. Monroe, Whitehall, Pa.; Thomas H. Murray, Medo, Minn.; Thomas W. Orme, London, Ont.; James W. Orr, New Hamburg, Ont.; Thos. Packwood, Goderich, Ont.; Charles E. Parker, Dexter, Mich.; John M. Pattison, Bentonville, Ind.; Romanzo Perkins, Hardys, N. Y.; Harry H. Post, Melville, Ont.; Edwin L. Price, Reynoldsburg, Ohio; C. K. Rhodes, Broadway, Va.; H. A. Rose, Selkirk, Ont.; Isaac A. Ruby, North Liberty, Ohio; William H. Salisbury, Phelps, N. Y.; Harry G. Sands, Welliversville, Pa.; Daniel E. Seller, Minden City, Mich.; Albert G. Shirley, Watford, Ont.; Elvin E. Shoebottom, Lucknow, Ont.; G. D. Showaiter, Broadway, Va.; Charles J. Sigmund, Minneapolis, Minn.; Septimus Marshall Smith, Moosomin, N. W. T.; Andrew Spence, Emerson, Man.; Oliver K. Steers, Midland, Ont.; John P. Stover, Shady Grove, Pa.; Elmer E. Sweeley, Warrensville, Pa.; Thomas J. Sweet, Mo-

dan, Man.; William B. Switzer, Williamson, N. Y.; H. Linwood Tower, North Adams, Mass.; John B. Turner, Butler, Ill.; Alexander S. Tweedley, Buffalo, N. Y.; Leunis Van Es, Steward, Neb.; Oscar Verschelden, St. Mary's Kansas; Jacob E. Walcott, Napoleon, Ohio; William H. Walcott, Napoleon, Ohio; Thomas Walden, Gore's Landing, Ont.; William Bert Washburn, Richfield Centre, Ohio; Thomas E. Watson, Nelson, Ont.; Henry J. Weld, Delaware, Ont.; George Howard Welliver, Bloomsburg, Pa.; T. Townsend Whitling, Island Lake, Minn.; Edward Wilkins, Camden, N. J.; Maurice E. Wilson, Estherville, Iowa; E. A. Wootton, Wellman's Corners, Ont.; Edwin C. Yoder, Kutztown, Pa.; George J. Young, Marshallton, Pa.; Charles C. Yule, Weston, Ohio.

MCGILL UNIVERSITY—VETERINARY DEPARTMENT.

The students of the Faculty of Comparative Medicine and Veterinary Science, in connection with McGill University, mustered in force on March 30th in the William Molson Hall, accompanied by their friends, to witness the conferring of the degree D.V.S. upon the graduating class of '93.

Mr. S. Finley presided, and accompanying him on the platform were Hon. H. G. Joly de Lotbiniere, Prof. Johnson, Vice-Principal of the university; Dr. McEachran, Dean of the Faculty of Comparative Medicine and Veterinary Science; Rev. Dr. Cornish, Professors T. Wesley Mills, Moyse, Penhallow, Adams, Drs. M. C. Baker, Girdwood, Ruttan, Brackenridge, acting secretary of the university; Mr. W. E. Deeks and Mr. N. S. Blackwood.

The proceedings were opened with prayer by the Rev. Dr. Cornish, after which the Faculty lists were submitted by Dean McEachran, who said that the duties of the session had been performed most earnestly both by the professors and the students, and, considering the many drawbacks which the Faculty labored under, the progress had been most satisfactory. There was every confidence that one and all who were about to receive their degrees had earned them, and that they would be a credit to the Faculty in the practice of their profession. He expressed regret at the illness of Sir

William Dawson, but rejoiced that he would soon return to Montreal restored to health. He concluded by giving the members of the veterinary class some sound, practical advice as to their conduct in practicing their profession, urging them to deal fairly and honestly with all men. He then read the sessional report, which showed that the number of students who attended the full course was 58, viz., from the United States, 18; Canada, 38; England, 1; Hawaiian Islands, 1.

Prizes and honors won by the students were then awarded :

PRIZES.

Veterinary Medicine and Surgery, Wilfred Plaskett. Anatomy, Cecil French. Cattle Pathology, Wilfred Plaskett. Zoology, Wm. Ingles. Botany, C. H. Zink, Jr. Physiology, Cecil French. Chemistry, Cecil French. For the best general examination on all subjects, Wilfred Plaskett. (Silver medal).

SCHOLARSHIPS.

For the highest aggregate obtained in first year subjects (fifty dollars), Cecil French.

EXTRA PRIZES.

The degree of D.V.S. was then conferred upon the graduating class as follows:—the newly-fledged “vets” being “capped” by Prof. Johnson—E. Brainerd, J. G. Campbell, A. S. Cleaves, H. E. Denny, H. B. Dunton, A. S. Lamb, James McDougall, W. C. McGuire, G. O. Orr, W. S. Plaskett, Jos. Stephens, T. Sturrock, S. W. Thayer, A. M. Tracy, M. C. Wylie.

This was followed by W. S. Plaskett delivering the valedictory, in which sound thought was judiciously mixed with sufficient lighter material to make the whole very pleasant.

Prof. Penhallow impressed upon those who had just received their degrees the great responsibilities they had undertaken. It was quite probable that the learning they had acquired might enable them to diagnose and treat disease in a skillful and successful manner, but from those who had received such a training the world had a right to expect something more than mere work for pecuniary reward. It was

only by persistent effort, wisely directed, that the standing of the profession could be advanced, and they had learned enough in their course of study to know that they were only standing on the threshold of that great region of light which lay beyond. He spoke of the brutality which was often practiced by drivers upon horses, and urged those about going forth to practice their profession to labor hard, by their counsel and example to bring about a better state of things, and to support those societies which had for their object the prevention of cruelty to animals. In conclusion he spoke of the pressing needs of the Faculty regarding more and better accommodations.

The Hon. H. G. Joly de Lotbiniere said it was no use pretending to enable farmers to better their position unless everything possible was done to improve the instruction given in our veterinary colleges, so as to meet the requirements of the improved agriculture. The time was now passed when the farmer sold everything that his land produced; now he tried to return to the land what he received from it, and the more this new agriculture policy prevailed, the more important to the farmer became the vocation of the veterinary surgeon. He wished the members of the graduating class all success in their future career, and expressed the hope that before anything else they would endeavor to make for themselves a good name.

Prof. Johnson spoke of the prejudice which existed in some quarters against the Faculty, because, as he thought, it was not generally known that it was a branch of the medical Faculty, which, with its broad shoulders, took upon itself the responsibility of the Faculty of Comparative Medicine and Veterinary Science. Looking at the history of other faculties and professions there was good reason to hope that when this becomes properly known the prejudice would disappear.
—*Montreal Gazette.*

AMERICAN VETERINARY REVIEW,

JUNE, 1893.

EDITORIAL.

FIRST VETERINARY CONGRESS OF AMERICA.—The officers of the various committees of the United States Veterinary Medical Association, we are happy to say, appear to be fully alive to the importance of the duty and responsibility devolving upon them in superintending the necessary preparations for the next meeting of the Association, or the First Veterinary Congress of America. This was illustrated at the meeting held in New York on the 20th of May. Several of the gentlemen of the International Committee and of the Comitia Minora were present, including Dr. Clement, the vice-president, the indefatigable secretary, Dr. Hoskins, and Drs. Robertson, L. McLean, Huidekoper, Pearson, R. McLean and Liautard, all having come prepared to report upon the work already accomplished, as well as to hear suggestions bearing on the organization of the work of the congress.

Reports were made by the Committee on Invitations on the proposal to make foreign veterinarians honorary members, and from those on Veterinary Education and on Tuberculosis. Some of these, it is true, were only in a crude form under the routine of "reporting progress," but were, nevertheless, accompanied by remarks from the heads of the various committees, which proved that they had been neither negligent or indifferent to the matters placed in their charge.

Communications were read by the Secretary from Dr. Williams, President of the Association, suggesting some valuable ideas and proposals of measures for making the sessions of the congress more attractive, not only to the profession, but also to the public. A letter from Dr. C. P. Lyman, Chairman of the Committee on Prizes, was also read, announcing, as has already been done in last month's REVIEW, the arrangements made by the Committee. The appointment of Dr. Niles, of Iowa, as a member of the Committee on Education in place of Dr. Stalker, of Iowa, who is unable to serve, was announced. Various other subjects were also discussed, and the committees were urgently recommended to continue activity in their work, as the time is rapidly growing short, and details yet remain to be completed before the definite programme of the work in Chicago can be satisfactorily arranged and announced. The meeting adjourned subject to the call of the Secretary.

Our colleagues in the profession will be glad to hear of the efforts made by the officers of the Association, and it is to be hoped that their example will stimulate the energy of all who take any interest in the success of this great and unusual occasion, which is one not likely to occur soon again. The veterinarians of the East must not be allowed to be the only ones to perform their share of the necessary labor, but those of the West have also much to do, and we trust that we shall be able at an early date to chronicle their activity and its results in forwarding the arrangements which that portion of the committee which reside in the West has undertaken, in order to render the coming congress all that can be desired as an enterprise resulting in great and lasting benefits to the profession, and to the public at large. We have received the following circulars from the Secretary :

To the Members of the United States Veterinary Medical Association and the Profession in General:

I have the pleasure of announcing that Prof. Olof Schwartkopff, of St. Paul, Minnesota, will offer a paper at the International Veterinary Congress in Chicago in October next, entitled "Comparative Psychology of our Domestic Animals." A paper, the outcome of studies, investigations and close attention given by the

author, and his recognized ability as a writer and teacher, makes the promise of this paper one of exceptional merit.

The reprint and papers of the last two meetings of the United States Veterinary Medical Association at Washington and Boston will be ready for delivery about the 20th of May. All those who are not members of the Association, but who are desirous of receiving the same, may obtain them through the Secretary at the cost of their publication.

The new application blanks are now ready, and may be obtained from any of the assistant State Secretaries, or from the office of the general Secretary upon application. All applications for membership must be filed in the office of the Secretary on or before the 1st of October next, in order to be insured consideration at the Chicago meeting.

By order of the President,
W. L. WILLIAMS,
Lafayette, Ind.

W. HORACE HOSKINS, *Sec'y*,
12 South 37th St., Phila., Pa.

To the Members of the United States Veterinary Medical Association:

The Comitia Minora of this Association will convene in Chicago on October 16th for the discussion of all preliminary business and the consideration of all applicants for membership.

The officers of the Association will arrange for headquarters at one of the leading hotels, where they may be reached at certain hours by all those who desire information or assistance of any kind.

The Illinois Association will tender to the members of the Congress an evening's entertainment on the lakeside, with a lunch, music, etc.

The members of the Local Committee of Arrangements in Chicago will place at the disposal of the members of the Congress one or more of their members during our stay in Chicago to guide them to any place of amusement and point of interest in the city or the surroundings.

The resignation of Dr. M. Stalker on the Committee of Veterinary Education has been accepted, and Dr. Niles, of Ames, Iowa, has been appointed in his place.

The officers have accepted a paper from Dr. T. D. Hinebauch, of Fargo, North Dakota, entitled "Millet Disease of Horses."

The local arrangements are rapidly being completed, and the Secretary will be glad to furnish information at any time to any members of the profession by forwarding their requests to his office.

By direction of the President,
W. L. WILLIAMS,
Lafayette, Ind.

W. HORACE HOSKINS, *Sec'y*,
12 South 37th St., Phila., Pa.

ORIGINAL ARTICLES.

HINTS.

BY A. H. CHAMPLIN.

(Address delivered at Commencement Exercises of Chicago Veterinary College).

Nature always speaks in hints. She never tells the whole of her story. This is true whether we accept her teachings as divine expressions and revelations of a Supreme intelligence and will power, or as manifestations of a ceaseless activity evolved from circumstance and chance, which are really other terms for designating law and condition.

In the evolution of her problems facts become fiction, and fictions, facts. Conjecture is the parent of both joy and despair.

Adhesion is the universal law of love. The crystal whose atoms are held in embrace by the force of cohesion typifies the cosmic structure of the universe; but the reflections of love from the diamond are as perplexing and tantalizing as they are dazzling. They illumine the eye, and, for the moment, fill the soul with ecstasy; but all efforts to grasp them are as futile as the strivings of the swallows to catch the dancing sunbeams on the waters. So, too, apprehension of universal truth must always fall short of comprehension.

The unfolding of the leaf for light and sustenance, the circulation of sap through the stems of the tree, the search of the roots for moisture in the soil, in short, all functional activity in the vegetable kingdom prefigure the tendency toward processes of nutrition and secretion manifested in the protoplasm and all other types and classifications of animal life; but the primordial impulse never offers us anything more than a suggestion of the law of similitudes.

The perfume of the crushed flower at our feet, the shrinking of the mimosa, the vibrations of color and heat, the clinging of the jelly fish to a rock, hint at the unfolding of a sense; but no one can tell where consciousness begins or where consciousness ends.

A Wonderful Sermon!

Time and space reproduce and remodify the modulations of environment. The caroling of the birds in woods, fields and meadows is a continuation of the refrain excited by the play of the wind in the tree-tops, and the rippling of the brooks ; and all of which are rephrased and re-emphasized in the harp of Æolus and the grander orchestrations of man. The wail of a Rachel, and the piteous outcries of a Job, and the moanings of a wounded soldier are a reflex of the minor key running through the throes of all existence.

The ingenuity and skill with which the beaver, with his trowel, plans and builds his lodges, reproduce themselves in the construction by men, of the pyramids, and an auditorium.

All substances, all matters, all thoughts, all intelligence, all sentiments, all superstitions, myths, growths, songs, all sciences, arts, precedents, heroisms, messiahships, all and every experience is illustrative of what is accomplished through the conservation and correlation of the forces in nature. Reproductions and re-embodiments whose trends are from the incomprehensible to the illimitable ! They are also the hints of what determines the degrees of development in the scale of being, and suggest the incompleteness of all things when measured in the balance of eternity.

Birth and cradle, death and the grave, are hints and shadows of the boundaries and limitations of entities.

They also suggest that in the absolute there is no first cause. Causation is a measure of time but not of eternals. Every atom and every energy is an activity of intellectuality ; an activity without beginning or ending. We cannot differentiate between the organic and inorganic, the chemical and the vital forces and conceive of mind without matter, or matter without mind. All forces visible or invisible to our senses embody substantiality. Nothing can be destroyed. What we apprehend as disease and death is the triumph of other conditions of vitality than we are led to ascribe to health, actuality and entity. Were the solar systems, or any other of the planetary systems, to be scattered by their convulsive agencies, they are capable through the substances composing them of reconstructing themselves somewhere in eternity.

The volition of man is not unlike the molecular actions of what we classify as the ethereal and the mineral, the vegetable and the animal kingdoms. Man was not planted as a separate individual on this globe; nor did he come here by chance or any reputed miracle. He is a product of the involvements and evolvments and expansions of limitations by cosmic forces, energized into higher individualisms, of which, so far as we know, except by inference and conjecture, he is a consummation in keenness of sense and freedom of intellectuality. All births and all deaths, with their joys and their sorrows, are assurances and certainties in themselves of immortality. Through these selfsame births and deaths he has emerged from lower to higher forms of life—from barbarisms to civilizations.

He can never comprehend his relations to the universe, but the enlarging of his vision will always beget larger capacity and responsibility and sweeter impulses toward the acknowledgment of the unity of the race, and brotherhood in man.

The golden rule as we have it, whatever personality deduced it, or whether we apply it to man or beast, is the formulation of humanity. Every endeavor, however small, to carry out this logical conclusion, always means further emancipation, larger freedom, and greater happiness to mankind.

The callings of man as a social being are as numerous as his necessities. But of all the attributes of which he is possessed, inherent or acquired, none have been regarded more significant than his power, real or imaginary, to succor the weak and to heal the sick. The acknowledgment of this power runs through the annals of time like a golden thread. It is the loveliest virtue in all the traditions which have blossomed and ripened into the older mythologies and later theologies. We find its prototypes in times prior to the fabled Chiron or Æsculapions, or the humble Nazarine—the healer of the leper. In art, in poetry, in literature or in real life, a picture representing mighty deeds of prowess may dazzle our senses for the time being, but it does not linger in our consciousness like the memory of a delightful dream. We recall

with greater pleasure the expression in the face of the wounded spaniel while the young master is extracting the thorn from its foot, than we do the representation of a Samson tearing asunder the jaws of a lion, or the slaying of tens of thousands of his fellow creatures with the jaw bone of an ass, or the barbaric splendor of a chariot race. The one emphasizes the fleetness of temporary glory and suggests death and annihilation; the other points to the evolution of something higher and lasting in the possibilities of the race, and hints at immortality, and typifies the ideal doctor and his patient. We behold Christ nailed and writhing to the cross, and shudder with despair at the thought, the sons of men and women will never be less cruel and heartless. But our doubts are dispelled and our hopes inspired anew, that life's most beautiful dreams will be fulfilled as we look at Mary, tenderly bathing and anointing the feet of her master, foreshadowing the faithful nurse.

The veterinarian like the doctor and the nurse to man, is an evolution. The time is fast approaching when the two vocations shall occupy a footing of nearer equality.

The calling of the veterinarian, like its ally, springs from the best and sweetest impulse, viz., a desire to assuage and remove pain, and to care for and nurse domestic animals. The expansion of this desire has given birth to schools and colleges all over the civilized world, where a more scientific knowledge for practice in this particular branch of medicine and surgery may be formulated and imparted. Though these schools and colleges are comparatively young, they are making wonderful progress in the domain of practical research, which is already productive of good both to man and beast. They already are contributing valuable hints to the science of medicine as applied to man. The brilliant achievements in this direction are fast winning acknowledgement, though often reluctantly given. The experiments in America and Europe attest this fact. They hint at discoveries in explored regions that centuries failed to make, through the professions of those who regard man as a special and distinctive feature of the animal creation thought to be introduced into this mundane sphere by unnatural means and miracles.

The veterinary doctor of to-day has an advantage in not having to encounter so much superstition begotten of ignorance.

You gentlemen are assembled here to-day to celebrate your graduation from the college to a school of broader activities. The diplomas you receive are simply hints of an unfinished race in which you are entered. They are not guarantees of success. Their value depends upon the amount of stimulus they bring to your powers in the contest in a larger arena of usefulness.

All systems of medicine and surgery should tend to be corrective and seek to prevent the propagation and perpetuation of diseased conditions, which conditions mostly result from the products of vital forms, and which we conveniently call parasitical, bacterial, and infusorial. The field of opportunity veterinary medicine and surgery presents is broad and inviting, and contains many experimental hints for rational medicine and surgery as related not only to the study of brute life, but the study of mankind. After all said, the proper study of man is the *world* in which he lives and moves and has his being. Were we to know the whole truth we would find there are no disconnecting links in the mineral, vegetable, animal and man kingdoms. All forms of life are cast in divine moulds. Man is potentially greater only as a sequent resulting from the productions and modifications of the same vital principle involving and evolving all forms, all genera, and all species, including the embodiments of human traits and characteristics, a ceaseless impulse without beginning and without ending. Nor is it to man's discredit that he be a regenerate ape; for this fact bespeaks his further regeneration. Human thought and human intelligence in the stricter sense are no more marvelous than the scent of a dog, and the sagacity of a horse. The finest model of man's architecture is no more wonderful than the home of the ant, and the cloistered cell of a bee-hive. The most intricate piece of fabric from the weaver's loom finds its counterpart in the spider's web. The conceptions and songs of the poets are no sweeter than the roundelays of the mating birds hinting at

some beautiful law of natural selection in marriage among the sexes. The love of our mothers is no stronger and no more reasonable than the affection of the mare for her colt. All these things are hints of unfulfilled destinies, and of activities sustaining relative parts in the awful drama we call life and death.

Since man's responsibility increases, and his powers of volition, man's chiefest happiness taken individually and collectively, is found in the exercise of his freedom for the continued uplifting of humanity.

The veterinarian, like the worker in other fields, finds himself face to face with many problems which this century of the Christian era fails to solve. He is entitled to a recognition commensurate with the dignity and worth of his profession. The term "horse doctor" should be listed with obsolete words of opprobrium. His fellowship is with the scientists of all schools for investigation. He deserves the co-operation of all searchers after truth and its practical application to the welfare of the race. The individual who can in the least help correct the practice which for commercial gain allows our tables to groan with flesh and lacteal fluids concealing germs of destruction of human kind, is a law maker as well as a benefactor, whose benediction is holier and more far-reaching than the apologies of prayer.

The usefulness of the veterinarian is not confined to his laudable endeavor at treating the ills to which flesh is heir, and bringing succor to the suffering; nor does it cease with its effort to arrest the conveyence and transmission of diseased conditions found in cattle, to men; nor does it end with his suggestions of a regimen of exercise and diet for a determinate result in health; but he has a still higher mission. He follows in the footsteps of the botanist and the horticulturist who produce for the use of man better fruits and fruit-bearing trees, by their hints for a systematic seed and scion culture. In the stock-breeding experiments, he suggests truths for the perpetuation of the more sterling qualities of animals in strains of beauty, speed, strength, endurance, docility; he hints at a study of paternal functions from a higher intellect-

ual and moral standpoint than hitherto attained among men. He furnishes invaluable data and logical deductions for the upbuilding of the most important of all sciences—sociology. Only by stricter methods scientifically applied to the growth of the race can completer health, happiness and longevity be insured.

In the study of animals, veterinary surgery and medicine hint at the intimate relation of all physical and moral ideas. Why may it not become an important factor in teaching the sacredness and value of foetal life in human species, and assist in arresting the practice of foetecide so alarmingly in vogue that our homes are filled with wrecks of womanhood. Foetecide is the wholesale murder of infinite possibilities in the womb of the future!

As you leave the college to engage in the active work of your chosen profession, your enthusiasm will determine your lines of duty as gentlemen and as citizen of this republic.

Your first patient is perhaps a horse—a most beautiful exemplification of vital forces. You should not regard him as a wholly dumb beast. He is stiffened with rheumatism engendered by overwork, over-feeding, and ammoniacal gases that surround him. Pray desist in your attempts to exorcise the monster with a bolus, or by robbing him of his vital fluid without first seeking to rectify conditions productive of his discomforts. His mute appeals are hints for better sanitation, better food, purer water and rest.

Will you profit by his hints? Perchance your example may induce your professional brethren who have in keeping the families of men, breathing the foul air of school rooms, theatres, churches, and other places of amusement and instruction, and drinking the impurities which flush our hydrants, to unite with you in a common warfare for less cruelty to animals, for better hygiene, for more wholesome food, for purer water.

In concluding, you will pardon me for recalling an illustration I once used on a similar occasion. At the old exposition building which stood on the lake front, not many months ago, there was on exhibition a small painting. It was visited

by many thousands of people. In this masterpiece the artist has so succeeded in projecting on canvas the truthfulness of natural prayerful posing that the entire freedom from affectation of the two figures sketched in an open field of nature, holds all spellbound and wrapt in admiration. So faithfully is the central idea of the artist outlined in the painting, the effect is the same when one catches a glimpse of the picture after it is transferred to a cold engraving, in which it is robbed of color and warmth. Our lives should be so attuned to the grand centralizing idea of the golden rule, that the influence of our labors and aspirations, wherever our lines fall, shall not be unlike the spirit of truth expressed in Millet's Angelus. It lies in the power of all to contribute something toward the betterment of the world.

SARENA—ITS ANTISEPTIC AND DEODORIZING PROPERTIES.

BY DR. R. ARTMANN, Buffalo, N. Y.

It is with a hope that my bacteriological investigations concerning the germicide and antiseptic properties of the new compound, "sarena," may prove of some interest to your readers that the present communication has been prepared for the REVIEW. Having obtained some extraordinarily good results by the use of this new compound in the treatment of wounds, and especially of wounds of a suppurative and ulcerative nature, I became convinced of its active qualities as a disinfectant and deodorizing element, and in order to demonstrate the facts as they exist began a series of experiments, confining my researches to its action upon the virus of anthrax of tuberculosis and of glanders.

It is a well known fact that anthrax is the most resistant of infectious diseases, and that its germs are the most difficult of any to destroy, and I therefore began my work by giving my special attention to the effect that sarena might have upon the micro-organisms of that disease. With this object in view, I took a number of silk threads loaded with germs (sporen) of anthrax, and (Seidenfaden Nilzbrand) inoculated three guinea-pigs on the morning of 24th of March, at eight

o'clock. Two of these animals died at noon of the day following, or in from twenty-eight to thirty hours. The third was found dead in his cage the next morning. The autopsical demonstrations revealed *tumor lienis and catarrhus intestinalis hemorrhagicus*, and in all three cases the microscope confirmed the anthrax condition.

From these lesions I made cultures and impregnated some of the silk threads, and treated them by soaking them in a sarena solution of 1-2000, and even stronger, the result of the inoculation being negative as to the development of anthrax, and only in a few exceptional cases being followed by a little suppuration at the point of insertion.

EXPERIMENT I.—Operating with a solution 1-2500, I saturated ten silk threads, and used them as follows :

No. 1 was used immediately after being dipped in the solution.

No. 2	after remaining	$\frac{1}{2}$	a minute.
No. 3	“	“	1 minute.
No. 4	“	“	$1\frac{1}{2}$ “
No. 5	“	“	3 “
No. 6	“	“	5 “
No. 7	“	“	20 “
No. 8	“	“	40 “
No. 9	“	“	60 “
No. 10	“	“	2 hours.

Ten guinea-pigs were thus inoculated on the 31st of March, at 4 P.M. The animals were feeling very well until the afternoon of the 4th of April, when my assistant reported No. 2 at being sick. When I saw him I observed that not only No. 2, but also No. 1 and 4 were affected, though less so than No. 2. At noon of the day following the inoculation the animals had all eaten well.

The symptoms then observed were the following : slightly comatose ; no appetite ; great thirst ; sometimes very nervous, or again lying down to jump up again, as in convulsions. These symptoms subsided on the 5th of April. The other animals showed no signs of illness.

On the 6th of April, at 8.20, I inoculated six more guinea-pigs, as I had done before, as a means of control. On the

morning of the 11th of April Nos. 2 and 3 of these exhibited the same symptoms with those of Nos. 1-4 in the first experiment. One of these I killed one hundred and twenty-four hours after the inoculation, with the following discoveries: *Post-mortem* results: Small tumor lienis; slight intestinal catarrh; no anthrax germ, either under the microscope or in the cultures made from the lien bowels, or from the injection spot. I also killed the other, as he showed signs of convalescence, late in the afternoon of April 11th, (or after one hundred and thirty hours).

Post-mortem: Slight intestinal catarrh; no tumor lienis; microscope and cultures both negative as to germs of anthrax.

Why did not No. 1 become sick, though he got stronger virus, I cannot explain, except that he was a stronger animal, and more able for that reason to resist the disease.

EXPERIMENT II.—Solution 1-3000. Preparations of the silk threads as in the first experiment; day of the inoculation, 31st of March at 4.30 P.M. On April 4th, two pigs (1 and 3) were sick in the morning. At noon pigs Nos. 2, 4 and 5 were sick, and in the evening all the others were in a similar condition. They all recovered. In three of the controlled cases the post-mortem discoveries were similar to those of the first experiments, and there was no trace of anthrax germs.

EXPERIMENT III.—Solution 1-4000; same experiments and same results.

EXPERIMENT IV.—Solution 1-5000. This time one change was noticed; the day of inoculation 31st of March at 5 P.M.

On the morning of April 4th pigs Nos. 1, 2 and 3 were dead; 5 and 6 were very sick, lying in a comatose state in their cage, while No. 8 showed only slight indications of sickness. The remaining subjects continued healthy. No. 8 recovered in the afternoon of the same day, and took some food. Nos. 5 and 6 were convalescent the next day. At the post-mortem of Nos. 1, 2 and 3 all the anatomical lesions of anthrax were present, lienis tumor, especially in No. 1; dark liquid, non-coagulating blood, muddy hemorrhagic catarrh of the intestines; with the microscope anthrax bacillus. In the hanging drop of the excavated object glass, in nutritious

bouillon, a most interesting fact was observed, viz., that after twelve hours in the breeding apparatus the bacilli, though they had grown, did not present the characteristic granulated appearance—a fact which was confirmed by the cultures made on glass plates and reagent glasses. The cultures grew very slowly, and were not of their usual size or aspect. After thirty-six hours I could count only about twenty colonies on ten glass plates.

Inoculations were made in five cases with this material, but in one only were there signs of sickness after one hundred and thirty hours, and in this I was unable to determine positively that his sickness was of the nature of anthrax. From this I infer that with a solution of 1-5000 the bacillus loses its aspect and its growing properties, but that it may still be effective in a first inoculation.

EXPERIMENT V.—Sarena solution, 1-7500; day of vaccination, 31st of March at 5.30 P.M. On the night of April 3d Nos. 1, 2, 3, 4 and 6 were dead, and all the others very sick, especially No. 5, which was in a very comatose condition. They recovered after from twelve to eighteen hours of sickness. Both the post-mortem and the microscope showed anthrax lesions. Cultures grew up in twenty-eight hours, and inoculation proved fatal in two out of ten cases.

EXPERIMENT VI.—Sarena solution 1-10000; day of inoculation, 31st of March at 6 P.M. Nos. 1 and 7 died on the second day; No. 8 on the third, and Nos. 9 and 10 recovered in four days after severe sickness. Cultures were also prolific but slow.

CONCLUSIONS.—The results of these experiments are that a solution of 1 in 2000 is a good and sure prophylactic and preventative. It immediately kills all germs. Experiments relating to the direct contact of sarena with other bacilli-cultures are not yet completed, but will, I believe, give still better results. I have also experimented with the bacillus tuberculosis, and I am satisfied that a solution of 1 in 3,500 is perfectly sufficient to arrest completely the further fructification of the bacillus. A solution of 1-3000 produces some effect, but fails to destroy the bacilli or germs.

GLANDERS.—Cultures are more sensitive to sarena in glanders than into tuberculosis. A 1-5000 solution is sufficient to kill the micro-organisms of glanders. I have sent to German and Russian institutes the result of these investigations, and have asked that similar experiments of control be made, and while waiting for a response I believe I am justified in saying that sarena is one of the most powerful of the antiseptic preparations at our disposal as a disinfecting agent against communicable diseases. I have also made some experiments for the purpose of testing its properties upon putrefying solution of organic matter. With a 1-1000 solution the breeding of cultures is impossible—an evident proof of the death of the bacteria of putrefaction. With a 1-5000 solution, twenty minutes' application failed to destroy the bacterium germs, etc.; but it removed all bad smells. After two or three hours the power of growth in the bacteria is abolished, and the germs are destroyed.

There is, in other words, a peculiar chemical decomposition which takes place in the solution, the nature of which I am at present unable to explain. Is it that the growth of the micro-organisms is interfered with by an increase of their excretions? Are they, as it were, suffocated in them? I believe that a molecular modification has taken place, but what? Is it similar to that obtained with phenic acid? All this requires more study and more experimentation, of the result of which I will at a later period inform you.

CASTRATION OF CRYPTORCHIDS.

By PROFESSOR F. MAURI, of the Veterinary School of Toulouse, France.

(Continued from page 83.)

SURGICAL ANATOMY OF THE INGUINAL REGION IN THE HORSE.

The first condition of success in the castration of cryptorchids is a perfect knowledge of the direction to follow in the inguinal region in order to reach the testicle in ectopia. The most perfect asepsia would be powerless to insure success, if the hand of the operator should follow a wrong road during

this very delicate step of the operation, and for this reason I have deemed it indispensable to say a few words as to the topographical anatomy of the region, before entering upon a description of the *modus operandi*. Others before me, and especially Messrs. Degives and Jacoubet, have given a minute and precise description of the inguinal region of the horse, and I certainly have nothing to add to the excellent work of these two authors; but it has appeared to me that in order to better reach my object, viz., to familiarize the idea of the operation among veterinarians, it will be of advantage to give them a description as plain and accurate as possible, not of the entire inguinal region, but of its essential organs and their most important relations. If a long and minute description would be apt to tire the minds of those who may have mostly forgotten what they had previously studied, it is also possible to produce hesitancy and apprehension in the operator, by the multiplicity of anatomical details to which he may attach exaggerated importance. The inguinal region will not, therefore, be described in the sense given to that term by anatomists, and I shall only indicate the parts of which a knowledge is indispensable. I would first consider the inguinal region itself, and subsequently, the testicles and the various positions they may occupy.

First.—INGUINAL REGION.

This is constituted by the angle formed by the union of the inferior abdominal wall with the internal crural region. Running obliquely downward, inward and from before backward, it extends from the external angle of the ilium to the anterior border of the pubes, offering for consideration the inguinal ring and the inguinal tract or interstice, of which the description possesses a special interest in relation to the operation under consideration. Before considering these two organs, let us glance at some of the anatomical dispositions presented by the fleshy portion of the small oblique muscle of the abdomen and the crural arch, which are the boundaries, before and behind, of the place of the entrance for the initial procedure of the operator.

The fleshy portion of the small oblique, triangular and

flabelliform, proceeds from the external angle of the ilium and the superior and external quarter of the crural arch. Its posterior border, slightly elevated, simply rests upon the crural arch, to which it is united by a loose connective tissue, except on a level with the inguinal ring, where the two organs are separated. At this point the small oblique is covered by the aponeurosis of the great oblique, which very thin and almost connective tissue twists by its archiform fibres around the posterior or external lip of the inguinal ring.

The crural arch is a wide fibrous band, very strong and resisting, which, attached by one extremity to the external angle of the ilium, and by the other to the anterior border of the pubes, spreads itself upon the pelvi-crural muscles, and diminishing in structure, enters upward into the abdominal cavity. In the superior quarter of its length, it assists in the attachment of the small oblique muscle, and in the rest of its extent is simply resting on the posterior border of this muscle, thus co-operating in the formation of the inguinal canal and of the inguinal ring.

(a) *Inguinal Ring*.—This is an oval opening easily felt under the skin, near the anterior border of the pubes, at the point of union of this border with the pre-pubic tendon of the abdominal muscles. Its great diameter is obliquely directed from before backward, and from without inward. Pierced through the aponeurosis of the great oblique of the abdomen, the inguinal ring, exposed by the incision of the scrotum, and of the dartos with the laceration of the connective tissue underneath, presents two lips or borders, one anterior or internal, the other posterior or external, and two commissures, one anterior and one posterior.

The anterior or internal border is formed by the posterior border of the small oblique, upon which rest and adhere the fibres of the aponeurosis of the great oblique. This border is soft and inextensible, and though imperfectly defined by the touch, yet allows easily of a certain degree of dilatation of the inguinal ring.

The posterior or external border, well stretched and resisting, is formed by the crural arch. It is straight, and by

its direction breaks the curve described in its whole by the inguinal ring. The anterior commissure is constituted by the angle formed by the pre-pubic tendon and the crural arch, as they are inserted upon the anterior border of the pubis. This is a point *de repere* and a precious guide for the operator, indicating as it does, positively, the actual position of the inguinal ring.

The posterior commissure is not well defined, a result of the lesser resistance of the archiform fibres of the aponeurosis of the great oblique muscle, which form it, and which cover the small oblique whose fibres are also quite loose. Thus made up, the inguinal ring is the opening ending the inguinal canal below and through which the hand of the operator must enter. It is also through this that the testicles, when passed out of the inguinal canal, come to occupy their normal position in the testicular bags.

(*b*) The inguinal tract or interstice, thus so happily named by Mr. Degires, because in cryptorchids there is as yet no inguinal canal, is situated between the posterior border of the small oblique of the abdomen and the crural arch. It is neither a canal nor an empty space, but simply an interstice, completely closed, and filled by loose cellular tissue. It runs obliquely from above downward, from before backward, and from without inward, and extends from the superior quarter of the crural arch, where a part of the fleshy fibres of the small oblique are inserted on the inguinal ring. About seven inches long it is closed above by the peritoneum, which rests on its edges, and is filled up by the sub-peritoneal connective tissue, which is continuous with that of the tract itself, and which becomes more loose and abundant as it approaches the inguinal ring.

It is very important, in a surgical point of view, to avoid misunderstanding the inguinal interstice and confounding it with the inguinal canal. At first, it seems to indicate the direction of the latter, if it existed, and the proper one to follow in searching for the testicle in abdominal ectopia. But the inguinal canal, constituted by the vaginal sheath, is situated on the side of the pre-pubic region at the lower part of

the inguinal interstice, and in an oblique direction downward, backward and inward. It is about three or four inches long, and is situated between the crural arch and the posterior border of the small oblique. The operator who, after passing through the inguinal ring, would expect to find the testicle in that direction, would certainly meet with a failure—indeed, not only would he meet with great difficulties before reaching the testicles, but their oblation would besides be extremely difficult on account of the shortness of its suspensory ligament, which would prevent it from being brought on a level with the inguinal ring in order to be amputated. And not only so, but what would be a still more serious matter, the inguinal interstice, thus opened at its inferior part, would soon be filled by the intestinal mass, and the operator would find himself in the presence of an incurable eventration.

I have encountered this accident on one occasion, and was very much discouraged by the complication which at first I thought could not be avoided. Simulated operations, performed afterward, have given me greater familiarity with the correct mode of procedure, so that I am now able almost without danger to penetrate the peritoneal cavity and secure the testicle in ectopia. This is the whole secret of the operation, as we shall show at a future time.

(To be continued).

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.”—VETERINARY RECORD.

INDIGESTION—AZOTURIA—PURPURA.

By W. H. GRIBBLE, D.V.S.

On Sunday, April 23d, we were hurriedly called to see a four-year-old, 1,100-pounds, sorrel mare, trotting bred, and which had suddenly been taken sick while being driven; found her lying by the roadside, bloated, rolling, pawing, etc., in fact, a well marked case of acute indigestion; gave eserine

sulph. gr. one hypodermically, and in a short time large quantities of gas passed per anus, and in an hour was considered well.

The owner desired to take her to a barn about one-quarter of a mile distant, and he proceeded to take her there. On his nearing the barn we noticed that they had almost to drag her, being partial paralysis, hardened, and enormously swollen muscles, and our case of acute indigestion had become one of azoturia. She was taken to a good box-stall, and being constipated the following was given: Hyd. sub. mur., one drachm; ext. colocynth comp., one and one-half drachms; aloë barb., four drachms; olei lini, one pint. In less than an hour she was down and unable to rise. Citrate of lithium, two-drachm doses, every four hours in sufficient water, and potass. chlor., one-half-ounce doses every day in her drinking water was ordered. Next morning the cathartic not having acted, olei. lini., one pint, was given; other treatment continued. On the fifth day the lithium citrate was stopped, and liq. potass. arsen., one ounce daily, substituted. Potass. chlor. in water continued. On this day she was raised with slings and stood about two hours, and every day after she was raised until the tenth day when she was able to get up herself.

During all this time the appetite had been fairly good, and was now all that could be asked for, and we supposed our patient out of danger, as no bad symptoms presented themselves, and only from loss of flesh and a few bed sores, one would not have known she had been sick. She was turned out to grass and carefully watched. One evening, after being out but a few days, when being fed and cared for, nothing wrong was noticed; but next morning she was found with swollen limbs and nose, and no appetite, and so we were again sent for. Imagine our surprise to find our acute indigestion, azoturia case now presenting the well known characteristic symptoms of purpura hæmorrhagica, which caused her death inside of thirty-six hours after.

Now here is a case where in the treatment of azoturia potass. chlor., one-half ounce, had been given every day for

nearly two weeks, except the three days preceding the symptoms of purpura, and yet from the time the first characteristic swellings were noticed to the time of death was less than forty-eight hours, and the hygienic surroundings were of the best, and the owner a most excellent horse-nurse. This is not our first and was not our last case of azoturia preceded by acute indigestion, but is the first case I have known of azoturia ending in purpura hæmorrhagica.

LACERATED WOUND OF EYELID AND HEAD.

By L. HEMPELMAN, D.V.S., House Surgeon American Veterinary Hospital.

The patient was a gray gelding belonging to a well known firm of this city. He was brought to the hospital on April 17th suffering from a lacerated wound of the eyelid and head, which extended from the external face of the orbital process of the frontal bone within about one inch of the median line. The laceration was crescent-shaped with the convexity upward, making a wound about four inches long; between the muscles of the eye and the bone a probe could be passed to a depth of about two inches. The flap hung down, exposing the whole contents of the orbital cavity.

The history was that he had gotten cast in his stall the night before, and was found with the above described laceration the next morning.

After carefully washing the wound with an antiseptic solution and removing a piece of the frontal bone, about three-quarters of an inch long, and one-quarter of an inch in diameter, the flap was sewed in place by means of interrupted silk sutures. On the 21st, or four days after the accident, it was noticed that the sutures were commencing to give way, and strips of adhesive plaster were then applied to support the flap. These were continued for five days, the wound having been carefully cleansed with antiseptics every day, and fresh plasters applied. By the 23d, or the sixth day after the accident, all the sutures had been removed, and it was found that for about an inch and a half the edge near the median line had adhered, or reducing the length of the wound to about one-half its original size. The granulations looked healthy,

but a pocket had formed in which pus collected. This was opened to allow of free drainage. After April 26th the only treatment that was followed was to wash the wound every morning with a creolin solution, and to stimulate the edges with mild cauterization with nitrate of silver. The wound closed rapidly under this treatment.

EXTRACTS FROM GERMAN PERIODICALS.

By RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

EPILEPSY INDUCED BY ASCARIS MEGALOCEPHALA.

Since the majority of veterinary writers do not totally disclaim the possibility of the round worm as a factor in the ætiology of epileptiform convulsions, we desire to relate an instance of reflex spasms induced in our opinion by ascarides. The case was a nine-year-old mare of the common breed, belonging to a farmer in moderate circumstances.

According to a detailed statement of the owner, who had raised the horse, the animal had become thin within the last year; the coat was dry, brittle and without lustre. Repeated disturbances of the digestive tract as evidenced by alternate constipation and diarrhœa, and in the last ten months intermittent attacks of colic. For four weeks preceding our visit, associated with other symptoms, which seemed referable to the weakness of the assimilative tract, appeared spasms, which recurred every three or four days. The same occurred two hours after feeding, and had increased in intensity and duration lately until now they lasted from three to four minutes.

Status Præsens.—Animal badly nourished; hair unkempt, coarse and erect; ribs prominent and cuticle tightly covering the same; visible mucous membranes of a pale yellow glance, stomatic and lingual membrane dry and hot. Pulse small and hard, indicating thirty-eight per minute; heart irregularly intermittent; rectal temperature 100.5°; nothing noteworthy detectable in the respiratory tract; appetite at a minimum, but increased thirst; peristalsis and defecation retarded. The train of symptoms observed by myself and

stated by the owner were not sufficient to convince me as to the ætiology. Upon questioning, the owner admitted to have seen worms passed with the manure. A pill was administered to the patient composed as follows :

℞

Aloes pulv.,	3 viss,
Creolini,	3 iiss,
Farin. sec. et aquæ com. q. s.,	
M. et. f. Bolus.	

Sig.—At one dose.

On the second morning we arrived at the place shortly after the animal had been fed ; the ball had the desired purgative effect, and in the material defecated numerous worms were discovered.

While conversing with the owner we had an opportunity to observe one of the characteristic attacks. The patient became unquiet, quivering over the whole body, suddenly tumbled against the partition, and fell to the knees. The occipital and cervical muscles were contracted on the right side ; the upper lip elevated. The eyes stared and partially revolved, during which state the membrana nictitans was propelled forward, occluding momentarily the vision.

Consciousness and sensibility had for the time being apparently disappeared. After the lapse of about a minute, a gentle sweat exuded, and the conjunctiva became reddened by venous blood. The patient gradually recovered, but was evidently exhausted ; after five minutes the condition was so far improved as to appear normal.

We ordered all food kept from the horse except a small quantity of hay, which, together with water, constituted the rations for the day. On the following morning we administered ʒiij of antimony et pot. tart. dissolved in a bottle of sterilized water. Later the animal was given an injection of gr. $1\frac{3}{4}$ of eserine sulph. which emptied the passages of liquid feces containing a considerable number of ascaris megalocephala.

After fourteen days the owner observed another attack of spasms, and we again gave the anthelmintic, with the result

that only six examples of the worm appeared. This was the last noted recurrence of the spasms, notwithstanding personal observation extending over four months. The sudden inhibition of the cramp and spasms, directly after the expulsion of the parasite, leaves no doubt, in our judgment, of the cause of the symptoms.—*B. Thier. Woch.*

ACTINOMYCOSIS IN THE HORSE.

A foal one and one-half years old had a swelling the size of a hen's egg upon the inferior maxillary, directly below the first and second premolars. The formation was pierced with four fistulous tracts, and in the solid debris secured therefrom the actinomyces were found.

The treatment consisted of internal doses of pot. iod. ʒiv to ʒv, and injections of the tincture of iodine into the tracts. After the expiration of five weeks symptoms of iodine poisoning manifested themselves (dry and brittle hairs, and roughness of same, anorexia and emaciation), but which disappeared after dropping the use of medicinal agents for fourteen days. In the interval, however, the swelling was irrigated and injected with a three per cent. creolin solution, and the "Berlin fistula tincture," as follows:

℞ Cupri sulph.
 Ferri. sulph.
 Ac. tannici ad ʒi,
 Ag. font. ʒiij.
 M.

Sig.—To be used externally or as an injection.

The iodine treatment was recommended and proceeded with until the patient had received two pounds of the pot. iod. internally, and one pound of the iodine tincture externally.

Actinomyces were always to be found in the discharges.

The injection was now changed to a 10 per cent. solution of cupri sulph., which we used four weeks, with the result that three fistulas disappeared.

We have lost sight of the patient, but so much has been shown, that the iodine treatment may be considered unsafe

and uncertain, while the beneficial effects of copper in this one case must be admitted.—*Ztsch. f. Vet. K.*

OBSTETRICAL PRACTICE.

OBSERVATIONS IN PUERPERAL ECLAMPSIA.—Roeder does not believe that the “Frank” theory of the ætiology of this disease—excessive contractions of the uterus—can be so adjusted as to be useful in explaining the cause when the affection has taken possession of the subject previous to parturition. R. has also found on post mortem that the uterus was only slightly contracted, and as a direct result of this he bestowed especial care on the section of all cases of parturient apoplexy brought to him. He has not been able, after recording some twenty such cases, to state that unusual contraction of the womb was present.

Another proof adduced against the “Frank” theory is the fact that cases of this disease have been found in which the foetal membranes were retained, post mortem showing that the uterus could not have contracted. The author, in one instance, was able to inject two buckets of water into the organ. From this infusion the animal immediately derived benefit, as exhibited by the general brightness and vivacity. The same irrigation was repeated several times daily, and Roeder noted that the uterus each successive time contained less.

The capacity of the organ becoming smaller after each consecutive injection, the patient was discharged as cured in four days.—*Berlin Wochschr.*

AN UNUSUAL NEW FORMATION.—Wolf found in the uterus of a cow that had been destroyed, after delivering a seventy pound calf, an immense formation of extraordinary composition and appearance. The same was as long as broad, and as thick as long, therefore spherical in dimensions, reddish in color and partly covered by a thin placenta.

Sections from the tumor appeared homogenous, lardaceous, compact and of a white color. The weight indicated two hundred and seventy-eight pounds.

ABORTION IN SHEEP.—Karl, of Mauheim, communicates an instance of contagious abortion in ovidn. A herd composed half of the merino and half of a common cross-breed, were pastured together upon a well ordered farm.

In the winter season the merinoes were all premature in parturition, while the commoner sort bore as healthy sheep should. Too much in-and-in-breeding is assigned as the cause.

PROCEEDING IN RETENTION OF THE PLACENTA.—Brueller used solution of creolin, or of liquor alumen acet., and several days later applied manual force. Corrosive sublimate is never to be recommended, and creolin only in very weak solution. When the placenta has been four or five days withheld, Brachinger irrigates three times daily, using ten quarts of a potas. permanganate solution, temperature 104° at each injection. As a rule the membranes are rejected in four days or less. Liebl uses creolin water continuously for two days, after which time, the envelopes not appearing, manual aid is extended to the animal.

CONGENITAL CLOACA IN SUIDÆ.—Rotter found the anus to be wanting in a slaughtered, half year old swine. The animal was in a goodly condition, and intra-vitam had excreted urine and feces through the lips of the vulva. The rectal and vaginal cavities were made communicative by means of a forearm one and a half inches in diameter, not supplied with valvular appendages. In other respects the anatomical conformation was normal.—*Koch's Œsterr. Wtsschr.*

PURGATIVE AGENTS.

Medicines of this nature, which may be introduced into the body through the skin, and which have no secondary influence upon the organism, are indeed scarce; aloin, acid. catharticum, senna, colocynth pur. (Merck), and citrullinum (Merck), are the more prominent of this class.

Nevertheless the introduction of these medicines is associated with pain to such a degree that even with the addition of cocaine the agony does not disappear. Objection has been made to their use on this score alone. That this disagreeable objection may be obviated, Kohlstock dissolves the agents in

certain liquids, and by means of a glass syringe holding half a drachm projects them into the rectum."

Aloin and ac. catharticum are suitable for slight constipation, while colocynth and citrullin are more properly made use of in habitual constipation. The method of prescribing is as follows :

℞ Aloin,	3 ss,	℞ Ac. cathartini,	
Form amid,	3 iiss.	Sennæ aa,	gr. xlv,
M.		Aq. distill,	3 ii,
		Sodii bicarb. ad,	gs,
		React alkalin.	

In chronic and stubborn constipation colocynth and citrullini are used as follows :

℞ Colocynthin,	gr. xv,	℞ Citrullini,	3ss,
Glycerini,		Spiritus,	
Spiritus ad,	3 iii.	Glycerini ad,	3 iss.
M.		M.	

Therapeutische Monatsh.

THERAPEUTIC NOTICES.

Botazzi gives the following treatment for spavin in the horse. Animal is cast, the hair is removed from the elevation, and an incision two inches in length is made directly in the middle of the same. The labia of the wound are permitted to fall from one another in order that the subcutaneous tissue may be exposed and removed.

Two or three indentations are now burned in the substance of the bone, in the form of a triangle, having its base superior. Antiseptic bandages, etc., are applied. B. states case cured in thirty days.

FOR INFECTIOUS DIARRHŒA IN CALVES.

℞ Ac. lactici
 Ac. salicylic aa 3 i,
 Naphthol, 3 iiss,
 Syr. simplicis, 3 v,
 Aq. destill., 3 iii.
 M. et. f.

Sig.—Fine half tablespoonful before each meal.

FOR ULCERATING WOUNDS.

℞ Ac. salicylic,
 Ac. boric,
 Zinci oxid,
 Amyli pulv aa ℥i,
 M. et. f. Pulv.

Sig.—To be used as a drying powder.—*Therap. Monatsh.*

Block, of Oeseda, has used the following epispastic with great success in the removal of painful conditions incidental to exostoses about the phalanges, tarsal articulations, cold abscesses and chronic sprains :

℞ Ung. canth., ℥i,
 Firch. canth.,
 Firch euphorb. aa ℥ss,
 Ol. crotonis, gtt. xxxxx,
 Hydrarg. biiod. rub., ℥i,
 Butyri. insulsi, ℥i.
 M. et f. unguentum.

Sig.—Apply sufficient to the clipped surface, and by means of a heated iron one inch from the skin facilitate the absorption.

Buquet applies the following in alopecia with remarkable results :

℞ Ol. cinnamomie, chin., ℥iiss,
 Aeth. sulph., ℥i.
 M.

The hair upon the part is cut as short as possible, and the application made once per day, by means of a tuft of cotton ; washing or otherwise cleansing of the spot is to be forbidden. Cases of long standing, from one to four years, were concealed by hirsute fiber in a very short time.

As an anthelmintic against tape and round worms, Dr. T. Clemens, of Frankfort-on-Main, recommends creolin and lysol. A tania which had resisted the action of numerous

medicines, yielded within four days, to gtt̄s. xxv. of creolin four times daily in milk, supplemented by two clysters of gtt̄s. cx each, also in the same fluid.

Ascorides disappeared after a single clyster of gtt̄s. xxx̄ of lysol incorporated in milk. Also by three tablespoonsful of cod liver oil administered at consecutive intervals, and in each of which were gtt̄s. lxxx of lysol. These medicines do not burden the stomach or intestines.

Benzine is put forward by Nedzwiecki with much fervor as an agent against pediculosi.

The same may be applied as it is commercially dispensed, and in this form proves the most practical, cleanliest and withal the most effective agent for the annihilation of lice. The infected regions of the anatomy must be bathed continuously for five minutes; the parasites and their abode are destroyed immediately. The result is generally uniform, and a single application suffices to cure the most obstinate cases.—
B. T. W.

PROFESSIONAL ETHICS.

The following card or circular, containing, among several explanatory sentences, the profile of a horse, was sent to the receiving department of this paper:

I now live in my new house, at No. 315 Oatstore, which is at the intersection of Red Alley.

Medicines,

though only for animals, are prepared and dispensed for rock bottom prices; salves, insect powders and solutions for the destruction of all animal parasites, are sold in doses as small as two and a half cents' worth.

Milk powders for the cow, sow and mare. Powders for hysteria of the sow. Powder for the prevention of post partem paralysis, proven by thirty years of continuous application to be reliable. These medicines will be sold in quantities ranging from six to twenty cents' worth.

Operations.

Castration of the stallion by means of binding, seventy-five cents; by the clamps, one dollar and fifty cents. Castration of young pigs two and a half cents each.

Obstetrical operations in the mare, one dollar and fifty cents; in the cow seventy-five cents; in the sow fifteen to twenty-five cents. Yours, etc.,

District Veterinarians.

Dieckerhoff proceeds to chastise the writer, who is already an elderly man, and one holding no mean position in the employ of the Government. He says under extenuating circumstances the fault might be pardonable in a young man.—*Berlin Weekly.*

EXTRACTS FROM ENGLISH PAPERS.

SALIVATION CAUSED BY A PIN.

BY R. J. BUSHNELL, M.R.C.V.S.

On the 21st of November last a young mare was brought to my yard showing profuse salivation at the mouth, but no other symptoms. On examination I found a large swelling on the off cheek, extending from the commissure to the molar teeth, tender to the touch, very hard and produced by a severe bit. I thought this was the cause of the salivation, but on questioning the man in attendance I was informed that as he was taking some hay out of her mouth in the morning he noticed that it was smeared with blood, and I then made a further examination of the teeth and mouth. Opposite and to the inside of the third molar tooth (off side) I felt a sharp object, as if a piece of tooth were protruding through the gums. I was able to move this with the finger and thumb, and after a little trouble extracted what proved to be an ordinary pin—an inch long—to the great surprise of a few spectators. The pin had evidently got there with the fodder, and the head had been broken off.

Moral.—Always examine the mouth thoroughly in case of salivation.—*Veterinary Record.*

TRAUMATIC VENOUS THROMBOSIS.—DEATH.

By WM. ALSTON EDGAR, F.R.C.V.S., Dartford.

Subject, black mare pony, thirteen hands, five years in May, 1892. January 9th, 1893, called to see pony reported to have a swelling in throat and neck, and at 10 A.M. found pony in loose box on peat moss, with nose close to ground, and she could not be easily induced to move. A long, diffused swelling extended from the submaxillary region all down channel of neck on each side, but most intense on right; at lower part of neck on right side a patch of emphysema was present. The nostrils and lips were a little swollen, and also in the parotid region there was some œdema; mucous membrane of nostrils normal; heart rate 82, with a hissing sound after each ventricular contraction; temperature 102.2°; respiration slightly quickened. Pony had taken a few oats about an hour before.

History.—The railing around the box was about eight feet high, boarded, with open iron work at top for eighteen inches. The pony was in the habit of standing up on hind legs to look over top at horse in next box. A leather head-stall was buckled by the head strap to the top iron rail, and in jumping up the pony put her right fore leg through the nose piece and hung herself in that position, and was cut free by a boy who happened to be in the stable. The struggles were evidently severe, as a board was broken away from the side of the box. This happened on the afternoon of the 6th of January. On the morning of 7th the coachman noticed a swelling the size of a cricket ball on the right jugular vein opposite the fourth or fifth cervical. In the evening the swelling had become flattened, and five or six inches in diameter. He now fomented the injured part and rubbed in a stimulating embrocation. The pony continued to feed as usual all through the 8th, but the swelling gradually increased but did not alarm the owner or attendant until the morning of the 9th, when it presented the appearances indicated.

Diagnosis.—Thrombosis of jugular veins at thoracic ex-

tremity, or of extreme anterior portion of anterior vena cava.

Continued fomentations to neck and chest, and gentle hand-rubbing from above downward. Seen again at 4.30 P.M., the œdema was less intense in facial, maxillary and laryngeal, but much increased in pectoral and axillary regions. The area of emphysema on the right side had greatly extended. The pony had eaten a small bran mash during an interval for lowering the head, which was suspended to avoid the œdema becoming intense in region of larynx. She received amyl nitrite inhalations every three hours, but the effusion became more intense during the night, extending to the knees and over the whole area traversed by the external thoracic veins, especially on right ribs.

Death occurred at 9 A.M. on 10th, and *post-mortem* was made at 3 P.M. The connective tissue in the whole of affected area was engorged with very dark blood, the effusion being about three inches thick, excepting in the area of the blocked veins, the connective tissue was normal. The thorax was opened laterally and the external aspect of heart and pericardium was normal, the vena cava was soft, and the coats not discolored. Outside the first rib the thrombosis evidently commenced, and extended upward, this part being coal black, and so dense that it was impossible to discern the vessels or where the rupture had taken place, but it was evidently between the point indicated by the external injury and the first rib. Mucous membrane of mouth, etc., pale. The endocardium in left ventricle was abnormally thick, and there was a small lymph-deposit on the bicuspid valves. No ecchymoses present, nor in the right ventricle, where the tricuspid valves were in a similar condition to the bicuspid; there was an extravasation about three-quarters of an inch in diameter on the outside of right auricle. Mucous membrane of trachea pale; hypostatic congestion of left lung. Blood from axillary and jugular veins, spleen and pectoral connective tissue examined microscopically—contained no micro-organisms. The cause of death was evidently venous hemorrhage in the subcutaneous connective tissue. I have seen death similarly caused in a few hours from an injury to the left carotid artery.—*Ibid.*

DIARRHŒA IN COLTS DUE TO THE "STRONGYLUS ARMATUS."

By WILLIAM STOTHERT, M.R.C.V.S., Blackburn.

On November 19th, 1892, I was called to the stud farm of R—— S——, Esq., I found there several colts the subjects of diarrhœa, one in particular, the chief cause of my services being requisitioned. This, big, a bony, two-year-old gelding, presented the following symptoms: Very poor condition, rough staring coat, profuse fœtid diarrhœa, capricious appetite, insatiable thirst. The pulse, temperature, respirations and mucous membranes were almost normal. Learned that the loss of flesh and purging had been noticed two or three weeks, also that a yearling colt had died and been buried the day previous to my visit, having presented similar symptoms, with the addition of an abscess on the withers.

I examined the food and pastures but failed to detect the irritant in operation, nevertheless I had the diet repeatedly changed, and the colts, which were fit to run out, moved to better drained pasture.

The symptoms varied very slightly, the pulse never counting more than sixty to a minute, and the temperature never over 102.2° F., the animal always seeming bright and ever on the alert for liquids, the purging continuing most persistently. Once, about the third day of my attendance and after the administration of ol. terebinth, slight colicky pains were evinced, which disappeared after a couple of hours, and were not again manifested up to the time of the colt's death on the 15th inst.

Medicines and food were tried without beneficial results, diarrhœa, emaciation and loss of appetite becoming perceptibly worse daily, carried the patient off from sheer starvation. In the absence of any recognizable disease, I notified the owner my impression the cause of the persistent diarrhœa and its consequences was probably the presence in the walls of the intestines of parasites, and I thought if such were the case the strongylus armatus would be the species.

Autopsy revealed besides the appearances of emaciation, a highly congested condition of almost the whole of the

cæcum and colon, the contents of which were of a muddy brown color and semi-fluid. The intestinal lymphatic glands particularly were much congested. Thinking I had a case of muco-enteritis I made little labor over the post-mortem, but secured a piece of about five square inches from the blind end of the cæcum for verification and more minute examination at leisure, in hopes of arriving at a definite *causus operandi*.

From this I have obtained over two hundred nematode worms, some of which I forwarded to the New Veterinary College where Professor Williams recognizes them as specimens of the "strongylus armatus." Almost every blood vessel in this piece of bowel contained one or more parasites, but the majority of them I found in the mucous and sub-mucous tissues. The former presented a slate brown color, studded with numerous black spots, and quite a network of numerous perforations, evidently illustrative of the abode of the parasites.

Since the above post-mortem I have had doses of ol. terebinth administered night and morning, along with ferri perchlor. to several suspected colts, and on examination of the fæces of one of them found quite a number of the parasites, mostly in the adult stage.

The owner has suffered great loss for several years from abortion in cattle; in fact, so serious were the ravages of the disease last winter that he entirely sold out his dairy stock. Isn't there a likelihood of this sanguinary nematode having made the walls of the uterus its habitat, and there been the chief cause in operation?—*Ibid.*

CASES OF AZOTURIA.

By E. H. CURBISHLEY, M.R.C.V.S.

CASE I.—Brown mare five years old, and worked in a greengrocer's cart. This mare showed no signs of illness after the morning's work; was taken out after a short rest at dinner time and got about three miles from home when she suddenly fell down, scattering the greengrocers stock-in-trade all around her. She broke out into a profuse sweat and fought

very hard, but being quite unable to rise was dragged to a loose box on a gate.

The owner asked me to attend at once, and on my arrival I found the muscles of the loins and hind quarters quite hard, and all the symptoms of well-marked azoturia. I at once passed the catheter, which allowed the escape of a large quantity of coffee-colored urine, gave a purgative ball, packed the mare up, and left her with instructions to the attendant to give a dose of medicine (sps. ether. nit.) every three or four hours. I passed a catheter night and morning for the next few days, and at the same time prescribed ether. nit.; this was all the treatment the mare got. On the third day she could raise herself a little, and on the fourth could stand for an hour or so at a time; after this she improved rapidly, and was ready for work in about fourteen days.

I allowed no food except bran mashes and hay until she was fit for outdoor exercise.

CASE II.—Bay mare seven years old, the property of a butcher. Symptoms similar to first, except that though she became very weak behind she did not lose power to stand. Adopted same treatment as before, and the mare was ready for work in about a week.

CASE III.—Dun mare, aged, and in foal; after going about one and one-half miles from home the owner thought the bit hurt, and made his coachman get down to examine it, but finding her begin to sweat and blow and drag her hind legs, they turned for home, and with difficulty arrived there. I happened to call to see another horse just as the mare got in, and gave similar treatment as in case I.

This mare made a good recovery, and was not worked again. due to being in foal; was turned to grass, and is expected to foal early this spring.

Believing (as set forth in Principal Williams' book on Veterinary Medicine) that azoturia is a dietetic disease, I made careful inquiry as to the feeding and general management, and found:

CASE I.—At hard regular work, and getting beside a small allowance of corn a bundle of green clover two or three times a day.

CASE II.—At hard work, and receiving same quality and amount of corn as for several years.

CASE III.—Not working much, and not getting much corn, but on morning in question got a large feed of corn on account of the journey she was expected to make.

I should like to ask if the feeding was *quite* sufficient to cause the disease, and whether it is anything more than a coincidence that all the cases were in *mares*, also whether there is any reason why they should be more susceptible than horses. Neither of the first or second cases were at the period of *œstrum*.—*Ibid.*

LARYNGEAL AND TRACHEAL STENOSIS, AS THE RESULT OF OSSIFYING CHONDRITIS, IN A MARE.

By PRINCIPAL THOMAS WALLEY.

This is a case of a mare which had been for a period of two years under the personal supervision of a veterinarian, and which when seen first was apparently in good health and excellent condition. She had no cough, nor did she roar except when trotted fast, and that increased until suffocation was threatened. She was tracheotomized, and worked well for a period of twelve months, when the lumen of the trachea became so small that she had to be operated again at a point lower down. She continued to work well, and retained her condition up to a short time before her death.

The autopsy revealed almost complete stenosis of the larynx brought about by ossification and thickening of its cartilages, and at the seat of the operations of tracheotomy the adjunct cartilages were found greatly hypertrophied and in advanced stage of ossification. Two large indurated granulations had formed in the mucous membrane around the tracheal apertures, and in the case of the lower one the skin had crept over the edges of the wound to such an extent as to infringe upon the interior of the trachea itself.—*Four. of Comp. Pathol.*

UTERINE FIBROID WITH EVERSION OF THE UTERUS.

By J. HUGHES.

The author was called to a cow which, it was said, was straining persistently and heavily. At his arrival he found the uterus completely everted, with the placenta still attached to it. On removing this, an enormous tumor was found attached to it and growing from the uterine wall, a little distance from the cervix, and, as its size precluded the possibility of successful reduction of the uterus, it was decided to excise it. This was done, after chloroforming the animal, by amputation with an ordinary scalpel, and antiseptic solution applied to the uterus, which was then returned. The after-treatment was simple, and the animal made a good recovery. The tumor weighed sixteen pounds, macroscopically and microscopically showed the characters of a fibroma. Strange to say its presence did not interfere with the birth of the foetus.—*Ibid.*

SUCCESSFUL TREATMENT OF AN OPEN JOINT.

By JOSEPH ABSON, F.R.C.V.S.

The subject was a three-year-old filly, which, having run away, had been secured after upsetting and breaking the wagon to which she was attached. She was taken home apparently well. The next day she was a little lame on the off hind leg; she had a small wound on the hock; the joint was open; there was a well-made round hole on the inner aspect, well to the front of the joint, nearly to the bottom of the capsula; the articular cartilage of the astragalus was plainly visible; but little synovia appeared to have escaped. Prognosis, unfavorable; perfect rest, and dusting of iodoform on the wound three times a day were recommended.

On the following day but very little worse. As she is ticklish from the accident slings are dispensed with, and same treatment of rest, and iodoform directed, the mare being kept tied up. After three weeks the opening had gradually closed, the discharge ceased, and the lameness subsided. A couple of good blisters completed the treatment, to remove a slight bony deposit which had remained.—*Ibid.*

ACTINOMYCOSIS BOVIS SUCCESSFULLY TREATED.

By G. W. GIBBINS, M.R.C.V.S.

These are cases in which the pot. iodid. treatment has again given good results. The first is that of a bullock which had been purchased for the purpose of being fattened. He has of late lost flesh; ceased to lick its coat; has constant dribbling of saliva from the mouth; masticates and swallows with pain and difficulty. The tongue is found the seat of disease; the posterior part of it particularly is affected.

A blister is applied on the throat, and pot. iodid. three drachms are given once a day before food. Improvement is manifest after a week. The treatment was kept for nine days, and then changed to alternate days until six more doses were given. Recovery was then complete.

The second was a colt. He presented about the same symptoms and an enlargement on the parotid region. The same treatment was followed and proved even more successful, as but twelve doses of the medicine were necessary before a cure was effected.—*Ibid.*

EXTRACTS FROM ITALIAN JOURNALS.

CEREBRAL ECHINOCOSIS IN ANIMALS.

By DR. F. BOSCHETTI.

The first case observed by the author was in a cow. This animal had calved a month previously, and since that time had continued to be dull while in the barn, carrying her head down, and pushing against the wall. Her pulse, respiration and temperature remained normal, but her movements gave evidence of serious disturbances of the economy; when made to walk, if turned shortly from the right to the left she stumbled over whatever obstacles she might meet, and kept on her feet with difficulty. On the contrary, if turned in the same manner from left to right, she avoided those obstacles perfectly well. On the left side, the frontal region was evidently warmer than on the right, and when percussed on this side there was a dull sound heard. The left eye was smaller

than the right, and was retracted in the orbit, while the pupil was widely dilated. The animal was destroyed.

Examination of the eyes was indicated, as it was evident from the manifestations presented that their condition was the result of a tumor or a parasite in the neighborhood of the encephalon. Dr. Arena had already, in a case of cerebral echinococcosis in a man, found an abundant exudate around the pupil of each eye. Bouchat, in animals suffering with cunerosis, had found the neuro-retinitis characterized by a marked œdema of the optic nerve and of the retina, with an exudate concealing the papilla of the nerve, or one of its sides. Similar observations have also been made by Ercolani and Reynal.

In this cow, the ophthalmoscopic examination of the left eye showed a hemorrhage of the retina near the papilla of the nerve, and there was atrophy of the optic nerve of the right. At the post-mortem, the cranial walls corresponding to the left hemisphere were hollowed and thinned out, the meninges stretched and nearly transparent, the circulation seemed to be cut off, and the touch gave evidence of fluctuation. On opening the left hemisphere, the lateral ventricle showed a kind of cyst as large as a billiard ball, which under the microscope proved to be an echinococcus.

A similar case was observed in a terrier dog. The animal had shown symptoms of various ailments; for example, for several months previously he had great difficulty in lowering his head, and was in the habit of wandering about indefinitely, seeming by the movements of his head to indicate that he was suffering from some violent pain in that region. These symptoms, by degrees, increased in intensity until drinking and eating became impossible, and the dog was destroyed, and five echinococci were found in the right lateral ventricle. The same conditions were present in a Danish dog, in which before the post-mortem there seemed no reason to suspect the existence of such a lesion. Yet in this case the echinococcus occupied more than half of the left hemisphere. There was such a destruction of the nervous substance that the walls of the cyst were in contact with the bony walls of the cranium.

The last case was that of a donkey, which had died in consequence of an experimental inoculation of tetanus. This animal was old and in poor condition, and was affected with immobility, besides which he presented the peculiarity of constantly pushing with the left side of the body, as if about to fall on that side. The cranial walls were removed, and the brain exposed. On the left, upon the frontal lobe, the dura mater was strongly stretched and so much thinned that it showed underneath a large pouch covered by the pia-mater, and as soon as the dura-mater was opened a cyst as large as an egg escaped from the left lateral ventricle, while within this there was another of the same size. The left ventricle was largely distended, and the cerebral substance at the anterior part of the frontal lobe was entirely destroyed. The cyst was an echinococcus in which germinal and hydatid membranes were well presented.

The post-mortem examination of the right eye failed to reveal anything abnormal, but the left showed, besides the atrophy of the crystalline lens and the diminution in the quantity of the vitreous humor, a hemorrhage of the central artery of the retina.

The conclusions are :

1st. Cerebral echinococcosis is observed in animals as well as in human patients.

2d. That the examination of the eye has shown serious lesions of the retina and of the optic nerve.

3d. That the functional disturbances due to the presence of a cerebral echinococcus may vary considerably.—*Il Moderno Zooiatio.*

SUBCUTANEOUS CAUTERIZATION.

By M. RABBAGLIETTI.

The horse which was subjected to this treatment had for some time been lame, and had received blistering applications on the shoulder, but without any favorable result. The actual cautery was then decided upon, and, the animal being thrown, some twenty cutaneous incisions were made in four parallel lines, measuring about three centimeters (one inch and a half) in length. These incisions were quite deep, and partly included the muscles underneath. The cautery was then twice

reintroduced. In two weeks after the operation the animal resumed his work, free from lameness.—*Giornale di Vet. Med.*

VERMINOUS ANEURISM IN THE HORSE.

BY THE SAME.

After jumping over an obstacle, the animal dropped dead, and as the jump had been perfect and without touching any object, and nothing appearing that could explain such a sudden complication, the post-mortem was ordered. The abdominal cavity contained a large quantity of blood mixed with food. The mucous membrane of the stomach, as well as that of the intestines, was much thickened, and at the point where the great mesenteric passes near the middle portion of the cæcum there was a ruptured aneurism as large as an egg. Its walls were very thin, and it contained some fibrinous clots in which some *sclerostomus armatus* were discovered. These were also found in varying numbers in the colic arteries, and the liver and spleen seemed to be atrophied. The other organs were healthy.—*Ibid.*

INTRA-VENOUS INJECTION OF SPIRITS OF TURPENTINE.

By M. BERTOLOTTI.

This subject was a horse three years old affected with all the characteristic symptoms of anasarea. The hind legs were the seat of an œdema, which rendered locomotion difficult, and the effusion had begun to throw itself at the sternum. The conjunctival and pituitary membranes were covered with petechia. Respiration was accelerated, the pulse hard, and the temperature 41° C. Dullness was manifest on percussion of the right lung. Spirits of turpentine was administered internally; dry friction made on swollen parts. In the evening, the swelling of the legs appeared to be diminished, but the head then became affected, and the temperature rose. The next morning all the symptoms were more marked, and as suffocation was threatened, tracheotomy was performed, and five grammes of spirits of turpentine were injected into the left jugular vein. During the first twenty minutes following, the animal seemed anxious and showed some abdominal pains, which, however, were only transient. In the evening, instead

of finding the patient dead, a result of which the symptoms quite justified the expectation, the œdema of the head and legs had become reduced, and the temperature had fallen to 40° F. A second injection was then made into the left jugular. The next day the facial œdema had disappeared, the respiration was easier, and the temperature was reduced to 39° C. A third injection was then made, this time in the right jugular, and tonics were prescribed. The improvement continued, and was followed by recovery. Two other cases out of four in the hands of the author, recovered under the same treatment.—*Ibid.*

TINCTURE OF IODINE AND WOUNDS OF THE FOOT.

By M. BARUHELLO.

A mare had picked up a nail, which caused a deep punctured wound in the median zone of the foot. The ordinary treatment was applied—thinning of the sole and antiseptic washes, yet suppuration appeared and became very abundant, and the author having decided to try tincture of iodine the wound was thoroughly cleansed, and the tincture introduced well and deeply into the fistulous tract, and a dressing applied. Three days later the mare had completely recovered. From this experiment the author concludes that tincture of iodine is very efficacious, it being understood that the traumatism does not extend to the tendons or to the joint, nor to the navicular bone.—*Ibid.*

VOMITING IN PREGNANT BITCHES.

By M. A. MARINI.

A small, pregnant bitch had for some time suffered with recurrent vomiting, and opiates, antispasmodics and cocaine had been tried, but vainly and without result. The author then thought of rectal injections of bromide of potash, and administered on the first day two grammes of the bromide; on the second, four; and on the third, eight, and with this the vomiting stopped entirely. She was afterwards delivered of two healthy pups.—*Clinica Veter.*

 COLLEGE COMMENCEMENTS.

CHICAGO VETERINARY COLLEGE.

A large concourse of the friends of the Chicago Veterinary College assembled at the Grand Opera House on Friday, the 24th of March, to participate in the tenth annual Commencement, at which eighty-one students received the right to practice. A very interesting programme was prepared for the occasion, which elicited plaudits of approbation from the audience. Following the President's address and a selection by the Imperial Quartette, the degree of Doctor of Comparative Medicine (M.D.C.) was conferred upon the graduates, which, at a unanimous request of the senior class and majority of graduates, the trustees and faculty decided to adopt instead of Doctor of Veterinary Science (D.V.S.), thinking it more appropriate. The President of the Illinois Humane Society, John G. Shortall, Esq., delivered an excellent address upon the humanity that should guide and direct the action of those having the care and treatment of animals during sickness. Dr. Albert Babb, the valedictorian, delivered an erudite address on the comparative anatomy of the animal kingdom, and bid farewell to the faculty in terms that indicated the feeling of respect in which the class held their teachers, and was followed by Dr. Champlin, with a scholarly subject pregnant with ideas and a fitting adieu for the occasion. Three prizes, consisting of twenty-five dollars' worth of books each, were given to the following graduates: A. Babb, for highest average in anatomy, W. G. Clark, for highest average in theory and practice, and W. A. Bruette, for highest average in materia medica. The highest general standing, ninety-five, was that of Dr. A. Babb.

The following is the graduating class:

Adamson, J. H.	. . . . .	Chicago, Ill.
Anderman, F. W.	. . . . .	Chicago, Ill.
Armstrong, G. E.	. . . . .	Sanborn, Ia.
Babb, A., B. A.	. . . . .	Springfield, Ill.
Barrett, D.	. . . . .	Cascade, Ia.

Baxter, C. E.	Griswold, Ia.
Bennett, G. M.	Chicago, Ill.
Binger, S.	Monroe, Wis.
Bovett, J. A.	Chicago, Ill.
Bruette, W. A.	Chicago, Ill.
Casper, A. M.	Milwaukee, Wis.
Casserly, W. H.	St. Paul, Minn.
Clark, W. G.	Johnson, Wis.
Cobb, G. H. Jr.	Housatonic, Mass.
Cole, W. H.	Kewanee, Ill.
Crane, C. M.	Waukesha, Wis.
Davis, F. H.	Ensworth, Wis.
Deenis, C. G.	LaSalle, Ill.
Downs, N. H.	Geneva, O.
Draper, O. G.	Macon, Mo.
Durack, J. D.	Mineral, Ill.
Eaton, R. D.	Minneapolis, Minn.
Eckley, M. C.	Duncan, Ill.
Eddy, J. H.	Stockton, Cal.
Everton, C. O.	Monroe City, Ill.
Faulkner, G. F.	Monterey, Cal.
Fay, G. H.	Oakfield, Wis.
Goodale, O.	Toulon, Ill.
Gould, J. N.	Fairmont, Minn.
Gould, J. W.	Fairmont, Minn.
Gwinn, W. T.	Newman, Ill.
Gysel, R.	So. Chicago, Ill.
Hagadone, G. L.	Chicago, Ill.
Herzer, E.	Milwaukee, Wis.
Higgins, R. A.	Milwaukee, Wis.
Hill, Geo. C.	Milwaukee, Wis.
Hill, M. N.	Minnesota, Lake, Minn.
Ilstrup, F. A.	Buffalo, Minn.
Kaylor, J. M.	Baylis, Ill.
Kermath, D.	Chicago, Ill.
Ketchum, F. D.	Marseilles, Ill.
Koehne, Chas.	Paynesville, Wis.
Lamont, F. G.	Esmond, Ill.

Leith, F. J.	Chicago, Ill.
Longnecker, A. O.	Atlanta, Ill.
McAllister, J. H.	Lee, Mass.
McDonald, J. T.	Shelbyville, Ill.
McGraw, E. F.	Ft. Scott, Kas.
McKenna, C. S.	Mt. Morris, N. Y.
McNair, F. S.	Elburn, Ill.
McNay, G. P.	Humiston, Ia.
Merrick, C. H.	Okawville, Ill.
Metzger, A. E.	Clyde, O.
Morgenroth, E. L.	Boltonville, Wis.
Mullett, J. H. F.	Williamston, Mich.
Newbury, M. C.	Hanover, Mich.
Newton, E. H.	Poynette, Wis.
Oberst, J. J.	Belgium, Wis.
Presler, H. A.	Montpelier, O.
Rich, R. G.	Fayette, Ia.
Richmond, F. O.	Sabetha, Kas.
Rimmer, F.	Chicago, Ill.
Rimmer, T.	Chicago, Ill.
Rork, A. M.	Merrill, Wis.
Rushworth, W. A.	Monte Vista, Colo.
Sawyer, F. N.	Galt, Cal.
Schoedde, B.	Milwaukee, Wis.
Scott, J. A.	Minneapolis, Minn.
Sheppard, J. N.	Edinburg, N. D.
Stanley, O. W.	Sioux Falls, S. D.
Sutziñ, J.	Minneapolis, Minn.
Thornborrow, J. A.	Jacksonville, Ill.
Troxell, R. E.	Chicago, Ill.
Ulm, F. J.	Chicago, Ill.
Van Aken, R. D.	Columbus, Wis.
Waterman, G. A.	Salem, Mich.
Wheeler, E. G.	Pella, Ia.
White, S. J.	E. St. Louis, Ill.
Wiesen, W. J.	Chicago, Ill.
Wright, F. O.	Smithport, Pa.
Ziegenhorn, A. F.	Claytonville, Ill.

received from
Washington, Pa.

OHIO VETERINARY COLLEGE.

The second annual Commencement exercises of the Ohio Veterinary College were held in the college hall, on the evening of April 5th. Prof. A. H. King, in his address to the gathering, dwelt on the progress of the college, which has been so great since its organization, two years ago, that the present quarters on Sycamore street have been found inadequate, and the probabilities are that it will be moved to the old home of the Cincinnati College of Medicine and Surgery.

The valedictory address was delivered by Prof. Frederick Kebler. O. H. Everly won the Mead-Fox medal, offered for the best general examination.

The graduating class numbered twenty students as follows:

James, T. H.	Maysville, Ky.
Curtis, H. L.	Little Hocking, O.
Smiser, H. A.	Cynthiana, Ky.
Galbraith, G. R.	Manhattan, Ill.
Bethune, J. G.	North Pine Grove, Pa.
Geary, C. K.	St. Thomas, Ont.
McCann, A. A.	River Dissert, Que.
Cantelow, S. H.	Brantford, Ont.
Miller, Alvin.	Chillicothe, O.
Spitler, J. L.	Dayton, O.
Everly, O. W.	Holmesville, O.
Nesbitt, J. G.	Ottawa, Ont.
Dixon, C. Price.	Cumberland Gap, Tenn.
Haffman, L. R.	Centerville, Ky.
Boehme, Herman.	New Port, Ky.
Marshall, H.	Cumberland Gap, Tenn.
Ruth, C. V.	Torch, O.
Ware, J. T.	Paris, Ky.
Freshour, J. W.	Covington, O.
Willerton, Tom.	Lynville, Ill.

DETROIT COLLEGE OF MEDICINE—VETERINARY DEPARTMENT.

At the last Commencement of this institution, the following gentlemen graduated in veterinary medicine and surgery:

Messrs, J. A. Attridge, S. F. Barnes, J. B. Caughey, F. H. Ellis, Orton V. Sanford, J. A. Yoder, F. C. Wells, C. E. Anderson, N. F. Dunn.—(*Medical Age*).

uates. The main reasons for the change are that M.D.C. is more appropriate, comprehensive, elevating and less liable to be assumed by empirical practitioners than V.S., or any other combination of initials relating to the title.

Former graduates can avail themselves of the change by returning to the Secretary their old diplomas accompanied by five dollars, the cost of the new ones.

Excepting the change in degree the new diplomas will be as far as practicable fac similes of the old.

JOS. HUGHES, *Secretary.*

OBITUARY.

Dr. J. F. Boothby, graduate of the Ontario Veterinary College, died on the 20th of March, of intestinal disease, at Ironwood, Michigan, where he had succeeded in establishing a good and lucrative practice.

SUNDRIES.

INFORMATION REGARDING GLYCOZONE;—ANSWER TO ONE OF OUR READERS.—Glycozone is a staple compound from the chemical reaction which takes place when C. P. glycerine is submitted, under special conditions, to the action of fifteen times its own volume of ozone, under normal atmospheric pressure at a temperature of 0° C.

The presence of water and other foreign substances in the glycerine changes the nature of this reaction, so that instead of producing glycozone, we obtain formic acid, glyceric acid, and other secondary products having deleterious effects upon the animal cells.

Glycozone being hygroscopic must be tightly corked, so as to avoid being deteriorated by the moisture contained in the atmosphere.

Although glycozone absorbs water readily, it does not deteriorate when kept at a temperature of 110 degrees F. as long as it retains its proper anhydrous condition.

The therapeutic properties of glycozone and Marchand's peroxide of hydrogen (medicinal) differ in the following particulars.

Peroxide of hydrogen (medicinal) instantly destroys the morbid elements of diseased surfaces of the skin or of the mucous membrane with which it comes in contact, leaving the tissues beneath in a healthy condition.

On the contrary, glycozone acts more slowly, but not less certain as a stimulant to healthy granulations. Its healing action upon a diseased mucous membrane is powerful and harmless in the treatment of inflammatory diseases of the stomach. In such cases it gives an immediate relief to the patient.

In chronic inflammation of the intestines, a rectal injection administered every day with a mixture composed of

℞

Glycozone, ℥ i

Lukewarm water, ℥ 12

soon relieves obstinate conditions.

A syringe made exclusively of hard rubber or glass should be used in all instances where either peroxide of hydrogen (medicinal) or glycozone is used as an enema.

After any diseased or suppurating surface has been cleansed by peroxide of hydrogen (medicinal), the application of glycozone stimulates healthy action, and accelerates a cure.

GENERAL DIRECTIONS FOR USE.—Glycozone may be given for diseases of the stomach, in doses of one to two teaspoonfuls in a wine-glassful of water immediately after each meal. In catarrhal diseases, it should be applied in full strength as often as required.

As an application to wounds and suppurating surfaces it should be used without dilution.

CAUTION.—Glycozone is a peculiar chemical compound, and not a mixture of peroxide of hydrogen (medicinal) with glycerine.

These two liquids when mixed do not form a stable product,

but develop substances which have injurious effects upon animal cells.

Such a mixture when freshly made has no healing properties similar to glycozone. On the contrary glycozone is stable, harmless and always effective.

SANITARY NEWS.—From the *Public Health* of Minnesota, Dr. C. N. Hewitt the editor gives the following statistics for glanders in the State during the months of November and December, 1892.

NOVEMBER, 1892.—Remaining on hand Nov. 1st, 38; killed during the month 3; reported during the month 7; released during the month 0; remaining isolated Dec. 1st, 42.

DECEMBER, 1892.—Remaining on hand Dec. 1st, 42; killed during the month 3; reported during the month 4; released during the month 0; remaining isolated Jan. 1. 1893, 11.

Most of them "suspects" under observation.

COMPARATIVE ACTION OF ANTIPYRINE, PHENACETINE AND PHENOCOLL.—From a series of experiments on dogs, Drs. Herna and Carter have reached the following conclusions: 1. Antipyrine, phenacetine and phenocoll, all fail to produce any effect on the heat functions of the normal animal. 2. Antipyrine produces a decided fall of temperature in the first hour after its administration in the fevered animal. This reduction is due to a great decrease in heat production. 3. Phenacetine, both in septic and albumose fevers, produces a very slight fall of temperature during the first and second hours after its ingestion by the stomach, but the greatest reduction occurs the third hour after its ingestion. The fall of temperature results chiefly from the heat dissipation. The increase in dissipation is not as great as with antipyrine. Probably the delayed action of the drug depends on its insolubility. 4. Phenocoll causes in fever a very decided fall in temperature, which occurs the first hour after the administration of the drug by the stomach. This reduction is the result of an enormous diminution of heat production, without any alteration of heat dissipation. Their experiments

with antipyrine are in accord with the results obtained by Martin. Wood, Reichert and Hare, together with Destree, have reached the conclusion that antipyrine reduces the temperature by a decrease in heat production, and that heat dissipation also falls with the production. In their experiments with antipyrine the composite curve shows the rise of heat dissipation. The authors believe, therefore, that this phenomenon is effected through a thermotaxic rather than through a thermogenic mechanism. They further believe that phenacetine and phenocoll reduce the temperature by a decrease in the heat production through their action on a thermogenic nervous center. The fact that all drugs here studied fail to produce any effect on the normal heat function, proves that they affect these functions through the nervous system. Probably the fact pointed out by Hare, that many investigators do not take into account other circumstances, such as tying animals down, and confinement in a box, may explain many of the results obtained by some observers in the normal animal.—*Medical Record*.

GOOD BUSINESS OPPORTUNITY.

Qualified Veterinary Surgeon, obliged to leave a good established practice in best location in Pennsylvania, will give same to Veterinarian buying his office, infirmary and residence.

For full particulars address,

J J A

A. B. C., care of AMERICAN VETERINARY REVIEW.

FOR SALE.

Veterinary practice (established four years) in city of forty-five thousand (45,000) in farming country. Only one other graduate within one hundred and ten miles. Cool summers. Good climate. Good schools. Price (\$500) five hundred dollars cash. For particulars etc., apply,

DR. POE, V. S.,

T F

Knoxville, Tennessee.

 CORRESPONDENCE.

"A NEW CATTLE DISEASE"—OR CONVULSIVE ERGOTISM.

An article has this month appeared in the *Veterinary Journal* of London, England, copied from your issue of March, headed a "New Cattle Disease," by Mr. T. J. Turner, D.V.S., State Veterinarian, Columbus, Mo.

There is an old adage, perhaps not infallible, that "there is nothing new under the sun." Will it not be well to be quite certain that in this case we have not an "old disease" not recognized.

The writer describes the gradual development of the symptoms, nervous derangement and convulsions; good state of the appetite and digestion; some of the animals, perhaps, affected with diarrhœa, and death in convulsions—the nature of its distribution in different herds. The post-mortem appearances revealing nothing remarkable, but a close examination showing an atrophy of the nervous structures.

The symptoms, the nature of its distribution and the post-mortem appearances, which are all well and minutely described, point so markedly to "convulsive ergotism" that before accepting the idea of a "new disease," the possibility of the food, or any portion of it, containing any of the ergotted grasses or grains, must be satisfactorily established. It is well to remember that ergot attacks many varieties of grasses and grains, and that the ergotted seed of many of the grasses may be so small as to be microscopic; that hay may be well saved and appear wholesome and sweet, but a close examination may reveal quantities of ergot, or ergot may probably be found on the grasses in the pasture.

C. H. SWEETAPPLE, V.S.,

Lecturer on Cattle Pathology Ontario Veterinary College.

 VETERINARIAN WANTED.

Gentlemen :

ANSONIA, CONN., May 10, 1893.

Our veterinary surgeon just died. He was a young man, graduate of Ontario, I think; had a good practice. We are a city of ten thousand people, stirring, busy.

Do not some of your young men wish to come here and locate? We think it a good opening. S. W. SMITH.

KILL OR CURE.

BALTIMORE, MD., May 12, 1893.

Editor American Veterinary Review :

I enclose a recipe that came into my hands through a druggist friend that is a corker, and may be of use to those who are looking for a general utility liniment that will cure spavins, ringbones, big head, etc.

If it does not consume too much space in the REVIEW, it will probably edify some practitioners:

Corrosive sublimate, one-eighth ounce; tarter emetic, one-half ounce; green euphorbion (?), one half ounce; cantharides, one-eighth ounce; oil of spike, two ounces; verdigris, one-fourth ounce; oil of wormwood, one-half ounce; croton oil, one-half ounce; oil of turpentine, two ounces; mercurial ointment, three-fourths ounce; tincture iodine, one-half ounce; laudanum, one ounce; crude oil, four ounces; water ammonia, two ounces; tincture capsicum, one ounce; sulphuric acid, one ounce.

(Druggist's advice) Mix and add the acid slow.

S. Use a feather or brush.

Very truly yours,

W. H. MARTENET.

BIBLIOGRAPHY.

VETERINARY MEDICINES—THEIR ACTION AND THEIR USES. BY FINLAY DUN. Eighth Edition, Sabiston & Murray.

What more can be said, than has already been said, of a book which has been for years not only the classical book for students, but the standard work of reference for practitioners? That this edition has been revised and so considerably enlarged as to bring it quite up to the dimensions of modern therapeutics, is well evidenced by the arrangement of the new volume, and by a recapitulation of the names of the authors to whom acknowledgments are made, and which includes many of an authoritative rank among the English, French, and German authors who have contributed to veterinary

literature. "Dun's Veterinary Medicines" will, for years to come, continue to be the authority *par excellence* of its kind in the English language.

MATERIA MEDICA AND THERAPEUTICS. BY J. V. SHOEMAKER, A.M., M.D. Second Edition, F. A. Davis & Co., Detroit.

Although "Dun's Veterinary Medicines" is about the only good work in its own domain which veterinarians can consult, study or learn from, yet of course the subject of *Materia Medica and Therapeutics*, as pertaining to humane medicine, is more extensively treated and covers more ground, and a larger number of writers have given it their attention and striven to throw new light on its topics.

"*Materia Medica and Therapeutics*," by Dr. J. V. Shoemaker, is among the last attempts in this direction, and in the two volumes which he has devoted to the subject he has done well, and rendered it full justice. Veterinarians who devote a portion of their time and study to the acquisition of a knowledge of human therapeutics as well as to those of their own specialty, will never miss the time or regret the trouble it may cost them.

NOUVEAU DICTIONNAIRE PRATIQUE DE MEDECINE CHIRURGIE AND HYGIENE VETERINAIRES. (New Practical Dictionary of Veterinary Medicine, Surgery and Hygiene). Vol. 21. BY SANSON, TRASBOT & NOCARD. (Atselin & Hougeau).

This volume contains articles on: Thyroid, cribbing, tetanus, tonics, thrombus and embolics, trichinosis, tuberculosis, tendons, their diseases and their surgery; coughs, etc., etc. They are contributed by a company of choice collectors, amongst whom are found the names of Cadeac, Cadiot, Kaufman, Neumann, Nocard, Peuch, Sanson, Trasbot and Dr. Labat. What more could be said?

OTHER BOOKS RECEIVED.

Precis de Teratology. By L. Guinard.

Tuberculosis of Bones and Joints. By H. Senn, M.D.

Precis de Pathologie Veterinaire. By E. Leclainche.

Internal Parasites of the Horse. By J. F. Duncan, V.S.

Cholera, its Protean Aspects and Management. By Dr. G. A. Stockwell, F. Z. S.

SOCIETY MEETINGS.

SOCIETY OF VETERINARY GRADUATES OF WISCONSIN.

The second annual meeting of the Society of Veterinary Graduates, incorporated under the new Charter Laws of Wisconsin, was held at Madison, Feb. 8th, at 1:30 P. M. Vice-President E. D. Roberts in chair.

Roll call showed the following present: Drs. J. F. Roub, C. A. Woodford, E. D. Roberts, Jno. F. Unerth, W. A. Waite, Chas. Schmitt, C. H. Ormond, H. Arpke, Wm. F. Williams, W. R. Claussen, J. R. Kelso, J. P. Laws and the Secretary.

Guests, Drs. D. C. Gillies and David Culdham. Minutes of the last meeting read and approved.

The Secretary's and Treasurer's reports were then read, and Treasurer's report showed a balance on hand. Reports accepted. The correspondence laid on the table from the last meeting respecting the members becoming members of the United States Veterinary Society was brought up and all were requested to join the United States Society at its next meeting in Chicago in September. Moved by Williams, seconded by Waite, to endorse and adopt the resolution passed by the United States Society, making a three years' course necessary for membership in the Society of Veterinary Graduates of Wisconsin, after '93. Two new names were reported for membership, namely, Duncan C. Gillies, Neenah, and David Culdham, Stoughton.

Report of Censors favorable and the applicants accepted and elected to membership. The Committee on Legislation, namely, Drs. Ormond, Woodford and Laws, reported a bill drawn up to present to the Legislature at this session to regulate the practice of veterinary medicine and surgery in the State. Moved by Claussen, seconded by Unerth, to accept the bill as presented. Carried.

The election of officers was the next order of business and resulted as follows: President, Dr. E. D. Roberts, Janesville; Vice-President, J. P. Laws, Madison; Secretary, G. Ed.

Leech, Milwaukee; Treasurer, C. H. Ormond, Milwaukee. Censors: Drs. J. F. Roub, Monroe; J. R. Kelso, Baraboo; and W. R. Claussen, Wapaca.

Adjourned to meet at 7:30 P. M.

Meeting called to order by President Roberts. Dr. C. A. Woodford then read a good and interesting paper, subject, "Parturient Apoplexy;" discussed by Drs. Roub, Laws, Claussen, Williams and Kelso.

After a lengthy discussion it was moved by Laws, seconded by Waite, to excuse the essayist. Carried.

Dr. Unerth then read a paper on the subject of "Cornstalk Disease," which was discussed by Claussen, Williams, Schmitt and Roub; essayist excused. Dr. J. R. Kelso then followed with a paper on the subject of "Sunstroke, Heatstroke or Anhydraemia." This paper was thoroughly discussed by Drs. Roub, Woodford, Ormond, Arpke and Williams. On motion the essayist was excused, and Dr. Claussen followed with a paper, the subject being the disease which is the bane of every veterinarian's life, namely, "Azoturia," and was thoroughly discussed by all present, after which general discussion the essayist was excused.

The essayists for the next meeting were, Williams, Roub, Ormond and Laws. After the usual vote of thanks to the essayists, the meeting adjourned to meet in Milwaukee, August 30th, 1893.

LATER.—The bill introduced in the Legislature was indefinitely postponed by the Senate.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The ninth annual meeting of this Association was held at the State Street House, Trenton, N. J., on April 13th, 1893. The meeting was called to order by the President, Dr. J. C. Dustan.

After the roll call the Secretary read the minutes of the last meeting, which were accepted.

The President then read an interesting address, where he took opportunity to dwell upon the good work done by the

Association, which he attributed to the harmonious and friendly feeling that existed among the members of the Association. He dwelt lengthily on the importance of the services rendered by the veterinarians, especially to those that may be required of him in the presence of the prevailing and rapid increase of tuberculosis among cows in New Jersey. He closed his remarks by expressing his regret as to the action of some associations, who were ignoring the self-made veterinarians and refusing them membership, wisely alluding to the fact that many of those were already working in behalf of the profession years previous to the establishment of veterinary colleges in this country.

The address was warmly received and followed by the report of the Secretary and of the Treasurer, both of which were received and placed in the minutes.

On account of the absence of several members of the Board of Censors, the President completed the board, but no election of new members could take place, the candidates not having complied with the requirements.

The Legislative Committee reported progress, as well as the Registration Committee and the Judiciary Committee.

The essayist having failed to be present, the order of business was the election of officers, which resulted as follows: Dr. J. Gerth, Jr., President; L. P. Hurley, First Vice-President; V. L. Drummond, Second Vice-President; S. L. Lockwood, Secretary; B. F. King, Treasurer.

After the appointment of various committees and transactions of miscellaneous business, the Association adjourned.

NOTICE.

A NEW VETERINARY DEGREE.

To the Graduates of the Chicago Veterinary College :

Notice is hereby given that the degree given by the Chicago Veterinary College has been changed from Doctor of Veterinary Science (D.V.S.), to Doctor of Comparative Medicine (M.D.C.)

This change has been made at the unanimous request of the classes of '92 and '93, and eighty-five per cent. of the grad-

AMERICAN VETERINARY REVIEW,

JULY, 1893.

EDITORIAL.

FIRST VETERINARY CONGRESS OF AMERICA—UNITED STATES VETERINARY MEDICAL ASSOCIATION.— We have nearly reached the ides of July, the days are swiftly passing by, and but three months intervene before the veterinarians of this continent must have their preparations completed for their trip to Chicago. That much has been done to insure the success of this affair there is no doubt, but is everything made ready? Are all the preparations completed? Is all the work of all the committees finished, and all the preparations smoothly progressing? All these are questions which we feel bound to ask ourselves, as well as to present to those who have been entrusted with the responsibilities respectively of the great occasion. We ask them because we fear that through some unforeseen events and possible complications, some committees may have been delinquent or tardy in the execution of their plans, and may not succeed in "holding up their end." There is yet time enough left, but there is none to be lost or wasted.

Though we may have fears in some directions, we cannot have any when the work of the secretary of the Association is in question. We have received another circular from Dr. Hoskins, which not only announces the issue of the

proceedings of the last two meetings of the Association, but gives us also new information relating to the International Congress. If we consider all that we are promised, all that we are to expect from the committees through their reports, without counting the unexpected, the few days which the meeting is to occupy will never be sufficient unless everything is well prepared, and all the items so adjusted as to move on in the style of clock-work.

Dr. Hoskins last circular is as follows :

PHILADELPHIA, May 25, 1893.

To the Members of the United States Veterinary Medical Association :

The reprints of our proceedings, containing a complete account of our meetings at Washington and Boston for 1891-92 will emerge from the printer's hands in the next ten days.

These reprints will contain all the papers, reports of committees ; discussion ; with a list of officers, past and present ; those who have resigned ; the deceased members ; those dropped from the rolls ; those expelled, and much other information relative to the Association that it will be found of interest and value as a book of reference.

This book will be bound in cloth, with gilt top, for twenty-five cents, while the cost bound in paper will be but five cents. All those desiring that their copies shall be bound in gilt will immediately give notice to this office and transmit twenty-five cents by postal note or postage stamps.

Copies of these reprints will be issued to all members of the Association. To all others desiring a copy the exact cost of printing and binding will be charged for the same.

I desire to give notice at this time of the near approach of our International Congress at Chicago, and to say to the members that everyone has a duty to perform in making this meeting a grand success. The officers and committees are actively at work, and the three leading subjects that are to be considered and discussed will be handled in a very thorough and interesting manner. The general committee reports will be of special interest, and in addition we have offered the following papers :

- "Swine Plague and Hog Cholera"—Drs. Welch and Clement.
- "Contagious Pleuro-Pneumonia"—Dr. A. W. Clement.
- "Millet Disease of Horse"—Dr. T. D. Hinebaugh.
- "Fistulæ"—Dr. M. H. Reynolds.

The consideration of our Association having a National charter under the United States Government will be acted upon at this meeting.

A list of honorary members will be considered that has for its aim proper recognition of veterinarians in every country of the world who have contributed largely to the general advancement of the profession.

Many other matters of equal importance will be taken up and disposed of at this meeting, and it is urged that every member of the Association shall lay

aside his business and work and attend this coming meeting, as it will probably be the only International Congress ever held in America during the lives of the present membership of our Association; and its importance and value will wholly depend upon the united efforts of those upon whom the responsibility of its success depends—and this is upon our members.

From time to time bulletins will be issued from the Secretary's office, containing details of plans and arrangements, railroad rates, etc., in ample time for the proper preparation for our meeting, and at a time when the best rates may be obtained.

By order of the President.

W. L. WILLIAMS, Pres't,
Lafayette, Ind.

W. HORACE HOSKINS, Sec'y.
3452-54 Ludlow St., Phila. Pa.

DELEGATES TO THE CHICAGO FAIR.—The *Veterinary Journal* sends us the following greeting:

“The German Government has deputed Prof Dickerhoff, rector of the Berlin Veterinary High School, to represent Prussia as Commissioner for Veterinary Affairs at the forthcoming Chicago Exhibition.”

We take this opportunity to call the attention of our United States Veterinary Medical Association, and principally of the International Committee, to this action of the German Government.

We have personal information which justifies us in the belief that Prof. Dickerhoff will not alone occupy the position of an authenticated delegate and foreign representative, and it is to be hoped that special effort will be made to receive him and any others who may come from other countries under similar auspices, in a manner that shall leave no room for reflections upon our hospitality or want of appreciation of their professional repute and position.

CONGRESS FOR THE STUDY OF HUMAN AND ANIMAL TUBERCULOSIS.—The investigation of whatsoever subjects are connected with the study of this scourge of animal life, both human and mute, still continues to command the attention of medical men and veterinarians on the European continent, principally in France, and the third session of the congress which has been organized for its promotion has been called to take place at the close of the present month. We have just received the circular and programme of the

work prescribed for the meeting, together with the questions which are to be discussed. In the organization of the permanent committee we find the names of prominent veterinarians, such as Nocard, Leblanc, Rossignol, and many others; and the prominence of the veterinarian, and the value of the services he is competent to render in facilitating the labors of the congress, become the more evident as we refer to the positions to which our colleagues on the committee are assigned. Five members of the profession may be counted in a list of thirteen members, a number which is well justified when it is considered that among the questions to be treated are such as "the relative influence of contagion and heredity in the propagation of tuberculosis;" "the various means of diagnosis in bovine tuberculosis, and especially researches in the inoculation of tuberculin as a sure means of diagnosis of the disease in bovines;" and "the necessity for generalization of the practice of meat inspection." None of these questions can very well be solved without the assistance of the veterinarian.

The question of tuberculosis is not only occupying the attention of European sanitarians, but is also attracting notice on this side of the Atlantic. Without alluding to the official action of the New York State Board of Health, whose work of last year is to be resumed at an early date, the public at large begins to be awake to the existence of the disease in the United States, and inquiries are made from various directions of those who are supposed to know more than others on the subject. The *Breeders' Gazette* of June 14th prints a letter from Dr. E. Salmon in answer to an inquiry as to the percentage of tuberculosis in dairy cattle, and we extract so much of the letter as answers this inquiry. Coming from such an authority, we feel that certain statements which we made some years ago on this subject are receiving an approval based upon facts of whose existence we were then not even aware. The letter, in part, reads as follows:

The percentage of tuberculosis in dairy cattle in this country has never been ascertained, and in Europe we may say that the information on this subject is of more or less fragmentary nature. A few investigations have been made as to

the proportion of dairy cattle affected with tuberculosis in this country, the most extensive being the observations made by the veterinarians of the Bureau of Animal Industry during the inspection and slaughter of cattle in the pleuropneumonia work. These observations indicated that from three to five per cent of the dairy cows about our large cities were affected. Some veterinarians have estimated that the percentage was much higher than this. It should be remembered, however, that these conclusions were reached by examining the lungs during the life of the animal, and by such hasty post-mortem examinations as alone were possible at the large slaughter-houses where the killing was generally done.

Recent investigations have shown that observations made in this way are very unreliable, and that the percentage of affected animals so discovered must be entirely too low. Within the last two or three years tuberculin has been extensively used to determine the existence of tuberculosis in animals, and the results which have been reached with it show that a large proportion of the tuberculous animals have been overlooked both in the examination before death and in the ordinary post-mortem examinations. Tuberculin has been used to a considerable extent in diagnosing this disease in Europe, and instead of there being from five to fifteen per cent. of the dairy cows affected, as appeared from the older statistics, scientists are now beginning to talk about from forty to seventy-five per cent. of the cows showing the presence of this disease.

Tuberculin has not very largely been used in the United States, and in most cases where it has been the herds were known to be tuberculous. For this reason the results of its use in this country do not furnish a reliable indication of the average percentage of animals affected. In the individual herds which have been tested from fifty to seventy per cent. of the animals have been found affected. Just what percentage of animals would be found affected if all the dairy cows of a large district were tested with tuberculin cannot at this time be predicted. In Europe as many as two hundred and fifty animals have been tested by the same observer, and have shown from sixty to seventy-six per cent. tuberculous. This indicates that a much larger proportion of dairy cows are affected than has been supposed. We should say in explanation that many of the animals which were shown to be tuberculous by the use of tuberculin are only very slightly affected, and it requires the most careful scientific examination of the carcass in a considerable proportion of the cases to discover the tuberculous centers. Sometimes only one of the small lymphatic glands is affected, and a microscopic examination may be necessary to discover the effects of the disease.

In connection with this, the report presented in this issue of the REVIEW, by Dr. J. Faust, will carry its weight in relation to the value of tuberculin as a means of diagnosis, as well as an addition to the statistics establishing the relative percentage of cases in a given number of animals forming a herd.

PRACTICAL PROTECTION AGAINST TUBERCULOUS INFECTION.
—The holding of the expected Congress, the past and current investigations of Boards of Health, the experiments with

tuberculin, and all the other means of sanitation at the present time under discussion, and which have of late occupied the attention of sanitarians and scientists, will, without doubt, be followed by the public with great interest and curiosity; but practical measures are now beginning also to become the order of the day. This is illustrated by the institution of a project inaugurated by several prominent physicians of New Jersey, under the lead of Dr. H. L. Coit, for providing the public with an article of thoroughly healthy milk.

We are pleased to notice in the proposed plan of organization the important part which is assigned to the veterinarian, who, with the chemist and the bacteriologist, is to be called upon to act as an expert to decide upon the condition, as to health or disease, of the cows which are to furnish the fluid which is to be put on the market.

This recognition of the veterinarian and the value of his function by the medical fraternity in the little State of New Jersey, is one which is likely to be soon followed by other States. And a valuable addition we are proud to call it, to the means of preserving our future national health. New Jersey is in some particulars an antiquated little commonwealth, but this is taking a long step in advance of some of her more bulky sisters.

ORIGINAL ARTICLES.

TUBERCULIN

AS A MEANS OF DIAGNOSIS.

BY JOHN FAUST, V.S., POUGHKEEPSIE, N. Y.

On April 30th I was called to the farm of John G. to hold a post-mortem to ascertain the cause of the death of one of the dairy cows. Post-mortem showed general tuberculosis. The owner was led to have the post-mortem held by his having a suspicion of some contagious disease among his cattle, a large number of them not having been doing well for a long time. The owner then requested me to examine his herd, which I did. The physical examination showed a large percentage affected with tuberculosis, and I so stated to the owner, and he in turn

reported the same to the State Board of Health. The Board ordered me to examine said herd, which I did, assisted by my son, Dr. Otto Faust. By virtue of a tuberculous history which we had personal knowledge of, we concluded to make a scientific test by the use of the tuberculin furnished by the Bureau of Animal Industry, at Washington, D. C. The amount used was s. c. c., and the following is the complete report of our investigation. The post-mortems were conducted by Dr. Austin Peters, of Boston, and myself.

No. 1.—Wild Brindle—9 years old.			No. 2.—Becky—6 years old.		
	Before Injection. May 19.	After Injection. May 20.		Before Injection. May 19.	After Injection. May 20.
7 a. m.		102.0			104.0
9 "	103.0	102.2		102.1	106.0
11 "	101.1	101.0		100.4	106.5
1 p. m.	100.1	101.0		101.2	106.1
3 "	101.3	101.4		101.3	106.3
5 "	101.2	102.1		102.4	106.0
7 "	101.0	103.2		102.3	106.3
9 "	101.3	104.3		102.3	107.0
11 "	101.1	103.4		102.3	105.2

No. 1.—No reaction; not killed.

Post-mortem No. 2.—Tuberculosis in left lung. Tuberculosis in mediastinal glands. Two or three nodules in right lung; a few tubercular nodules on the omentum over the pouch.

No. 3.—Registered Holstein, Large Black and White Cow.			No. 4.—Little Brindle, 10 years old.		
	Before. May 19.	After. May 20.		Before. May 19	After. May 20.
7 a. m.		104.2			101.3
9 "	103.4	106.0		102.0	102.1
11 "	102.3	102.3		102.0	105.1
1 p. m.	102.2	104.0		101.0	106.2
3 "	103.3	102.3		101.3	107.0
5 "	102.0	101.4		101.3	105.4
7 "	101.1	101.4		102.2	104.4
9 "	102.0	101.4		101.3	104.3
11 "	102.3	103.3		101.0	103.2

Post-mortem No. 3.—Three nodules in liver.

Post-mortem No 4.—All mediastinal glands swollen and containing numerous foci of a cheesy and calcareous matter. In posterior part of both lungs are several tuberculous tumors, size of clenched fists. In liver several small tubercular nodules.

	No. 5.—Yellow Jersey, 5 years old.		No. 6.—Black Jersey, 5 years old.	
	Before. May 19.	After. May 20.	Before. May 19.	After. May 20.
7 a.m.		104.0		104.2
9 "	102.0	104.4	103.4	106.0
11 "	101.0	104.4	102.4	104.3
1 p.m.	101.4	106.0	104.0	105.3
3 "	103.0	104.0	105.3	105.0
5 "	102.1	104.3	105.0	105.1
7 "	102.3	103.3	106.0	105.0
9 "	103.1	104.0	105.0	104.2
11 "	103.0	103.4	105.1	104.3

Post-mortem No. 5.—A few tuberculous spots on liver. Mediastinal gland small and tuberculous. Small tubercles in left lung.

No. 6.—Not killed at this writing.

	No. 7.—Big Bull, 5 years old.		No. 8.—Sopharn. Brindle mother died recently of Tuberculosis.	
	Before. May 19.	After. May 20.	Before. May 19.	After. May 20.
7 a.m.		102.1		104.4
9 "	102.1	103.0	103.0	106.2
11 "	100.0	105.0	102.0	105.0
1 p.m.	100.1	106.0	101.4	106.1
3 "	101.1	106.2	101.3	106.3
5 "	101.2	107.0	101.4	105.4
7 "	102.0	105.4	101.4	105.2
9 "	102.0	105.0	101.3	105.2
11 "	100.4	105.2	101.4	104.3

Post-mortem No. 7.—All mediastinal glands tuberculous, containing a caseous material. Tubercle in posterior part of right lung.

Post-mortem No. 8.—Posterior mediastinal glands size of hen's egg, containing tubercular foci of old form. Spots in posterior part of left lung; a large mass in right lung; a little deposit on ribs of both sides; two or three nodules in liver. Liver a little indurated.

	No. 9.—Blue and White Cow, 10 years old.		No. 8.—Yellow & White Cow, 12 years old.	
	Before. May 19.	After. May 20.	Before. May 19.	After. May 20.
7 a. m.		103.3		102.1
9 "	101.2	105.1	101.4	102.0
11 "	90.3	103.3	100.3	104.0
1 p. m.	100.0	104.3	100.4	105.2
3 "	101.3	105.0	101.2	105.1
5 "	102.3	104.3	103.0	104.4
7 "	101.4	104.3	102.0	104.3
9 "	102.3	104.3	101.3	104.3
11 "	102.0	104.2	101.1	104.1

Post-mortem No. 9.—Cow very much emaciated. General tuberculosis of lungs, liver and spleen. Tubercles on mesentery. Large tubercles on pleura. Liver spotted with tubercles. Kidney anæmic. Both retro-pharyngeal glands swollen, one the size of a hen's egg, the other the size of a goose's egg; filled with a thin fluid containing calcareous matter.

Post-mortem No. 10.—No tuberculosis, but cow's pouch contained numerous nails, hay wires, bits of iron and stone; this would account for the reaction.

	No. 11.—Davids'.		No. 12.—Hams', 9 years old.	
	Before. May 19.	After. May 20.	Before. May 19.	After. May 20.
7 a. m.		102.6		101.3
9 "	101.3	102.0	102.2	102.2
11 "	100.0	103.2	100.3	101.0
1 p. m.	100.3	105.1	101.0	105.3
3 "	102.0	106.0	101.0	106.0
5 "	102.0	104.3	100.3	105.3
7 "	101.0	104.0	101.4	105.1
9 "	101.2	103.0	102.0	105.1
11 "	101.3	102.2	101.3	105.1

Post-mortem No. 11.—Retro-pharyngeal gland contains a single focus the size of a pea. Mediastinal gland swollen, containing tubercular deposits. In middle lobe of right lung and posterior lobe of same are tuberculous tumors the size of clenched fists. On pleural surface of right lung numerous tubercles of new formation the size of beans, single and in clusters. On corresponding side of ribs a collection of tubercles two inches high.

Post-mortem No. 12.—Mediastinal glands tuberculous. Cysts in kidney.

	No. 13.—Irish.		No. 14.—Silman.	
	Before. May 19.	After. May 20.	Before. May 19.	After. May 20.
7 a. m.		102.3		102.0
9 “	102.2	104.3	102.0	102.2
11 “	101.0	105.4	103.0	101.2
1 p. m.	102.0	107.6	101.0	101.3
3 “	101.3	106.3	101.2	101.4
5 “	101.0	105.4	103.2	102.2
7 “	101.0	104.0	102.0	103.0
9 “	101.4	103.0	102.0	105.1
11 “	101.1	102.2	101.4	104.4

Post-mortem No. 13.—Small deposit starting in right lung. Considerable in posterior lobe of left lung.

No. 14.—No reaction. Cow was sound.

	No. 15.—Simson. Brown, Registered Jersey.		No. 16.—Sizzy. Black, Half Jersey.	
	Before. May 19.	After. May 20.	Before. May 19.	After. May 20.
7 a. m.		101.3		103.0
9 “	102.0	102.0	101.4	105.3
11 “	102.2	101.5	100.2	105.4
1 p. m.	201.3	101.3	102.1	106.4
3 “	101.0	101.4	104.4	106.1
5 “	101.2	102.0	102.2	105.2
7 “	101.4	102.0	102.1	105.0
9 “	101.0	101.2	101.4	104.1

Post-mortem No. 15.—This cow did not react with the tuberculin, but had a suspicious cough. Was killed to verify tuberculin, and not a particle of tuberculosis could be found after a most diligent search.

Post-mortem No. 16.—Both retro-pharyngeal swollen, containing several deposits of caseous substances. Tubercles in mesentery, hydro-nephritis of kidney. Mediastinal gland ten inches long and four inches thick, containing several deposits of different sizes and dates. Diffuse tubercular pleuritis and numerous large tubercular tumors in lungs. Diffuse tubercular peritonitis coloring all organs in abdominal cavity with red nodular tubercles.

	No. 17.—Doty.		No. 18—White Marshall, 7 yrs.	
	Before. May 19.	After. May 20.	Before. May 19.	After. May 20.
7 a.m.		101.4		102.2
9 “	100.4	101.3	102.2	103.0
11 “	101.1	99.3	104.0	103.2
1 p.m.	101.0	101.3	101.1	106.0
3 “	101.3	103.0	101.2	106.1
5 “	101.2	105.0	101.4	105.4
7 “	101.0	105.0	102.0	104.2
9 “	101.2	106.1	102.0	105.1
11 “	101.2	105.0	101.4	104.4

Post-mortem No. 17.—Middle front teeth gone, and all others ready to drop out. Tubercle in anterior lobe of right lung; two in posterior lobe of left. Contents cheesy.

Post-mortem No. 18.—All mediastinal glands affected; two cardiac glands as large as a goose egg. Anterior lobe of left lung filled with newly-formed tubercles. In middle lobe of same a tumor the size of a hen's egg.

	No. 19.—Brown Marshall.		No. 20.—Red Marshall.	
	Before.	After.	Before.	After.
	May 19.	May 20.	May 19.	May 20.
7 a. m.		102.1		101.3
9 "	101.3	102.2	102.1	102.1
11 "	99.3	101.2	100.0	101.2
1 p. m.	101.0	102.0	100.4	102.3
3 "	101.4	101.2	101.2	104.4
5 "	101.3	101.2	101.3	106.0
7 "	101.4	101.2	101.4	105.3
9 "	101.4	101.2	102.0	105.0
11 p. m.	101.1	101.1	101.1	103.3

No. 19.—No reaction. Pronounced sound, and was not destroyed.

Post-mortem No. 20.—Mediastinal glands affected. Liver speckled with numerous tuberculous spots.

	No. 21.—Black Cow, White Star, 30 months old. One Calf. Half Holstein.		No. 22.—Red Cheek, White Cow, 12 years old.	
	Before.	After.	Before.	After.
	May 21.	May 22.	May 21.	May 22.
7 a. m.		101.3		103.6
9 "	101.0	103.2	100.3	102.4
11 "	103.0	106.2	100.1	103.2
1 p. m.	102.0	106.3	101.2	104.2
3 "	101.4	104.4	101.2	106.2
5 "	102.2	103.2	101.3	106.3
7 "	102.1	103.1	102.0	104.3
9 "	102.0	104.3	102.2	105.2
11 "	102.0	105.0	101.2	105.0

Post-mortem No. 21.—Numerous tubercles gathered in groups on the omentum. Mediastinal gland, six inches long and three inches wide, filled with a hard, old-formed tuberculous material. Posterior lobe of each lung affected. Small deposit beginning on sides of ribs.

Post-mortem No. 22.—Right retro-pharyngeal gland swollen, and containing cheesy and calcareous matter.

		No. 23.—Brindle Sucker.		No. 24.—30 Months' old Cow. Mother died of Tuberculosis.	
		Before. May 21.	After. May 22.	Before. May 21.	After. May 22.
	7 a. m.		104.1		104.0
	9 "	100.3	106.3	102.0	106.0
	11 "	101.2	106.4	103.3	106.0
	1 p. m.	101.0	106.1	102.3	106.0
	3 "	102.0	105.3	103.2	106.0
	5 "	101.2	106.0	103.3	106.0
	7 "	101.4	104.4	103.1	105.0
	9 "	103.0	104.1	102.4	104.0
	11 "	100.4	104.2	102.1	103.3

Post-mortem No. 23.—A tuberculous deposit on posterior external margin of right lung. A small spot in the liver. A nodule the size of a pea in anterior portion of posterior lobe of left lung.

Post-mortem No. 24.—Left retro-pharyngeal swollen to the size of a large pigeon's egg, containing numerous small tubercular foci. Tubercles in posterior lobe of right lung. Deposits of minute tubercles on sides of ribs. Posterior face of left lung newly affected.

		No. 25.—Red Sucker.		No. 26.—Phillips. Respiration roaring.	
		Before. May 21.	After. May 22.	Before. May 21.	After. May 22.
	7 a. m.		102.2		101.2
	9 "	101.2	101.3	101.3	104.2
	11 "	102.0	102.3	101.4	106.1
	1 p. m.	101.3	105.2	102.1	106.0
	3 "	102.0	105.0	102.2	105.0
	5 "	102.0	105.0	102.4	105.0
	7 "	102.0	104.0	102.3	106.1
	9 "	102.0	103.1	102.2	106.0
	11 "	102.0	103.0	102.0	105.2

Post-mortem No. 25.—Cardiac gland tuberculous, containing hard, old-formed material. A fresh tuberculous tumor, the size of a hen's egg, in the middle lobe of right lung.

Post-mortem No. 26.—Sub-maxillary very cheesy. Lungs anæmic. Liver highly affected with tuberculosis. A few nodules in left lung. Posterior mediastinal glands slightly tuberculous. Tubercles in spleen.

No. 27.—Young Benny. 2-year old Bull. Half Holstein.			No. 28.—Black and White Speckled Heifer. Half Hol- stein. 30 months old.	
	Before. May 21.	After. May 22.	Before. May 21.	After. May 22.
7 a. m.		104.0		103.3
9 “	101.3	101.1	101.3	102.2
11 “	100.4	105.4	101.0	101.1
1 p. m.	100.2	104.4	101.0	102.3
3 “	100.4	104.2	102.1	104.3
5 “	101.0	104.4	101.0	105.2
7 “	101.1	103.4	102.0	106.1
9 “	101.1	104.1	102.3	105.0
11 “	101.0	102.3	101.3	104.1

Post-mortem No. 27.—Left retro-pharyngeal size of a small hen's egg, filled with cheesy material.

Post-mortem No. 28.—Numerous tubercular nodules on small intestines and rumen.

No. 29.—2-year old Heifer. Lym- phatic glands at lower corner of lower maxilla swollen. Res- piration roaring.			No. 30.—Small Black Heifer, 30 months old.	
	Before. May 21.	After. May 22.	Before. May 21.	After. May 22.
7 a. m.		101.2		101.0
9 “	102.0	106.0	100.3	102.3
11 “	101.3	107.0	101.2	104.0
1 p. m.	101.0	106.2	101.2	105.2
3 “	102.2	106.0	101.1	105.0
5 “	101.4	106.0	101.4	105.2
7 “	102.0	106.0	102.1	105.3
9 “	102.1	105.1	102.3	104.4
11 “	101.2	104.2	101.3	104.4

Post-mortem No. 29.—Retro-pharyngeal glands swollen to five inches long and three inches wide, containing tuberculous

matter. Tubercle in posterior lobe of right lung. Post-mediastinal slightly tuberculous. A little deposit in left lung.

Post-mortem No. 30.—Glands in head sound. Two post-mediastinal glands slightly affected. Posterior part of right lung affected with fresh tuberculosis.

No. 31.—Blue-spotted Holstein, 30 months old.			No. 32.—Red Holstein Heifer. 30 months old.		
	Before. May 21.	After. May 22.		Before. May 21.	After. May 22.
7 a.m.		101.0			102.4
9 "	102.1	103.0		102.0	104.0
11 "	101.4	104.3		101.4	105.3
1 p.m.	101.2	105.1		101.3	106.0
3 "	101.3	105.3		102.2	106.3
5 "	101.4	105.0		102.3	106.1
7 "	101.3	105.0		102.4	106.1
9 "	101.3	103.4		103.0	104.1
11 "	101.3	103.1		103.0	104.0

Post-mortem No. 31.—Liver, lungs, spleen and omentum vastly affected with tuberculosis. Large numbers of groups of tubercles on sides of ribs. Mesentery lymphatic badly affected with tuberculosis. Right retro-pharyngeal gland size of goose egg. Diffused tuberculosis in thoracic and abdominal cavities, involving all organs.

Post-mortem No. 32.—Post-mediastinal glands swollen, and containing numerous fresh tubercles. Several small nodules in the liver. Hemorrhage of the heart.

No. 33.—Old Benny, 6-7 years old.			Registered Holstein Bull.		
	Before. May 21.	After. May 22.		Before. May 21.	After. May 22.
7 a.m.		101.3	5 p.m.	102.0	106.2
9 "	101.4	105.0	7 "	101.4	106.2
11 "	101.3	106.2	9 "	101.3	106.1
1 p.m.	101.2	106.3	11 "	101.2	105.1
3 "	102.2	106.0			

Post-mortem No. 33.—Right sub-maxillary gland the size of a large hen's egg. All mediastinal glands affected. Both lungs very bad; worst in posterior part of right lung. A little fibrous deposit on the pleura. One or two small spots on liver; liver small and slightly indurated. Mesentery glands a little swollen.

CASTRATION OF CRYPTORCHIDS.

By PROFESSOR F. MAURI, of the Veterinary School of Toulouse, France.

(Continued from page 131.)

Second.—DISPOSITION OF THE TESTICLES.

Every author who has written on testicular ectopia in the horse has recognized two principal forms of cryptorchidy. In one, the *abdominal*, the testicle remains floating in the abdominal cavity, having failed to pass through the peritoneal orifice of the inguinal canal; in the other, the *inguinal*, the organ is more or less engaged in the inguinal tract.

(a) *Abdominal Cryptorchidy.*—In this abnormality, which may be either simple or unilateral, or again double or bilateral, the testicle is attached to a peritoneal ligament more or less developed, which allows it to float in the neighborhood of the inguinal and prepubic, or again, more or less near the lumbar region. It is at the entrance of the pelvic cavity, along the ascending branch of the ilium in the direction of the flank, that it is most commonly found.

In his first article on cryptorchidy, published in 1875, Prof. Degive has given in a concise manner the composition and disposition of the serous band which acts as a suspensory ligament of the testicle. He says: "The suspensory apparatus of the testicle is composed of two continuous folds; the first, very long, wide, and extending from the sub-lumbar region to the entrance of the pelvis, and containing between its folds the testicular vessels in front, and the efferent canal behind. The second, much shorter, narrower and falciform, connects the external face of the first with the lateral wall of the pelvic entrance; its free border, somewhat thick, still carrying a remaining portion of the *gubernaculum testis*. The suspensory ligament of the testicle has three free borders: one, the anterior, formed by the testicular blood vessels; another, the posterior, by the efferent canal; and third, the external, having for a base the *gubernaculum testis*. These three borders are united together by two serous folds, of which the

principal one is spread between the efferent canal and the testicular blood vessels, while the other, the accessory, lies between the gubernaculum testis, the lateral wall of the pelvis and the external face of the gubernaculum.

Under the name of incomplete abdominal cryptorchidy, Prof. Degive has described a variety of abdominal testicular ectopia in which there exists a rudimentary vaginal sheath, measuring from one to three centimeters in depth, containing either the testicle, or perhaps the epididymis alone, the testicle remaining floating in the abdomen.

The testicle in the abdominal cryptorchid horse varies in size, sometimes scarcely exceeding a hazel nut in dimensions, and with an epididymis twice its normal length. Generally, however, it is as large as a hen's egg, flattened, slightly elongated, and of a marked grayish color, with a vaguely elastic softness, and with an irregular surface resulting from the sinuous blood vessels which run under the tunica albuginea, the tissue of which is more loose than in the normal state.

The epididymis also varies considerably. At times, with its normal relations to the testicles, its dimensions are in regular proportion to those of the gland itself, while at other times it is greatly elongated and more or less separated from the testicle.

Mr. Montané makes the following report of a histologic examination of a testicle in a case of abdominal ectopia: "Cryptorchidy is an abnormality due to an arrest in the development of the testicle, produced by a functional incapacity of the organ. It is one of those peculiar cases of the general law by which the *function* becomes predominant and determines *the form*. The descent of the male organ in the testicular bags is the normal consequence, almost obligatory of the establishment of the testicular function. Let this function cease during one of the various stages of their regular evolution, and the testicle becomes immobilized in the form and situation which it had at that moment attained, and, as a consequence, the arrest of the genital gland in the abdominal cavity, or in the inguinal canal, constitutes either the abdominal or the inguinal cryptorchidy.

“The testicular epithelium of the cryptorchid horse retains its embryonic form, especially if the testicle has been arrested in the abdominal cavity. In two cases observed, the seminiferous canaliculi were lined on their internal face by an epithelial covering, formed of two different elements—the elongated cells, with vesicular nuclei, resting upon the walls by their periphery, having a central extremity more or less developed, and very much resembling the coming elements of *Sertoli*; rounded cells, with large granular nuclei placed between the former, which they deform by their pressure, all resembling the *seminiferous cells*. In the normal testicle, these last constitute the important element of the epithelium, or that which by its multiplication and proliferation gives rise to the spermatoblasts, and consequently the spermatozoa.

“In the cryptorchid testicle, the seminiferous cells are, as it were, glued in their embryonic form, as a result of the arrest of the genital function. It is only on rare occasions that they exhibit signs of attempts at proliferation, but the formation of spermatoblasts or of spermatozoa never occurs.

“The growth of the testicular epithelium of abdominal cryptorchidy is scarcely started. Probably it is more advanced in inguinal cryptorchids. *A priori*, the supposition is even admissible that some testicles, located immediately on a level with the inguinal ring, do possess a complete spermatogenesis. This is an interesting point to elucidate. The connective tissue, more abundant than under normal conditions, offer nothing of a particularly interesting character; it seems to have a greater number of interstitial cells.”

(b) *Inguinal Cryptorchidy*.—In this abnormality, the testicle, surrounded by its vaginal sheath, has begun its migration toward the inguinal tract, but has been interrupted at a varying height before reaching the inguinal opening. Yet one case has been found where it had passed through that opening but without having reached downward into the testicular bags, and when the horse was thrown to be castrated it could be felt through the scrotum by inguinal exploration. In the cases of inguinal cryptorchids upon which I have operated, I have always found the testicle larger and firmer than as described above.

As to the relative frequency of occurrence between the two forms of cryptorchidy, whether abdominal or inguinal, or whether taking place on the right or the left side, the statistics are very variant. In 1875, Prof. Degive wrote: "During this time (ten years) we have castrated altogether thirty-seven subjects, four of which died with sequelæ of the operation, and the remaining thirty-three recovered. Of these the greatest part had abdominal cryptorchidy; four only had simple inguinal ectopia."

According to Goubaux and Dieriex, the left side is more frequently the seat of cryptorchidy than the right. The observations I have made during the year 1891 give the following results: Out of twelve ridglings operated upon, seven were abdominal, three were on the right, and four on the left side; and five were inguinal, of which two were on the right side, and three on the left. Upon data like this it would be difficult to establish any satisfactory physiological or anatomical explanation, or to found any rule in respect to the seat of these abnormalities. Their appearance seems to be governed by chance or accident.

(To be continued).

INFECTIOUS ABORTION IN MARES.*

By T. J. TURNER, B.A., D.V.S., State Veterinarian of Missouri.

In response to the Governor's letter of May 16, 1892, ordering me to visit the State of Montana, and investigate a troublesome malady then affecting brood mares, especially those owned by one Marcus Daly, of Riverside, Bitter Root Valley, Montana, I immediately started on the trip, and arrived at the Daly ranch on May 24th. An investigation was begun in a few days, which required about four weeks to consummate. The following is my report upon this subject, containing a history of the outbreak, its nature, and salient points pertaining to the proper management of the trouble, should it occur on any farm; also facts ascertained by experi-

* Reprint from the *Modern Medicine and Bacteriological World*.

mentation, leaving out the more minute details concerning the parasite, which are yet to be determined by investigation.

Location of Daly Ranch.—The Daly ranch is situated in the fertile valley of the Bitter Root, in Missoula County, Montana. The grounds are generally high and well drained, the tillable land being in a high state of cultivation. Much money has been expended on the property to make it a first-class breeding establishment. Many thousand (some 30,000) acres are inclosed within its confines. The climate is perfect, and feed first-class, as is also the management. To diverge slightly from the object of this report, I am constrained to say that the location of the ranch, its soil, and the climate of the country have nothing whatever to do with the cause of the malady.

History of the Outbreak.—Infectious abortion (so called) was first manifested on the ranch, according to facts attainable at that place, about the middle of February, 1892.

To preface the subject, it might be well to state that the malady, whatever its nature, was causing the mares to slip their foals, either by abortion or a premature birth. It was first noticed among the trotters of the Daly ranch, the renowned mare, "Fannie Witherspoon," being the first to abort. The trouble ran riot through his entire stud of most valuable animals, of both thoroughbreds and trotters. The first few abortions caused but little alarm, the owner thinking they were the result of some accident. This being the case, the mares known to have aborted were not regarded as specially dangerous to those still carrying foal, and were consequently allowed to pasture with them. Later, however, alarm was taken, but not until too late, for nearly all the mares in foal had been exposed. The abortion continued until the last of May. Before I reached the locality, the mares were constantly, as they aborted, removed from the ranch, and kept isolated for two or three weeks.

The disease was of an enzootic nature, no animals save those belonging to Mr. Daly being affected. Thus it will be seen that this disease may be comparatively easily controlled, although of an infectious character.

Concomitant with this abortion, a few mares would carry their foals to nearly full term, and then premature births

would occur. Several foals lived, and apparently, for a week or ten days, were perfectly healthy, when it would be noticed that the joints of the little fellows were swollen, and there was general dejection.

The possibility that the same cause was in operation in producing the two maladies at once presented itself for consideration. Upon this general supposition, the investigation in regard to abortion was made. The result will be seen in a history of the experiment.

Etiology.—At first, the trouble was supposed to be caused by the food on which the animals were fed. Investigations were made, but no agents likely to cause abortion were found. These investigations were made by botanists and men thoroughly capable of doing such work. They were employed by Mr. Daly, who has been extremely anxious to fathom the trouble, and has used all available means to do the same. He has spared no expense, and too much credit cannot be given him for his kindly and generous aid to science in fathoming the cause of this malady.

Prior to this, however, it was supposed that the animals might be aborting from sympathy; then it was that those having aborted were immediately separated from the mares in foal. Mares and cows frequently abort through sympathy it seems, and no infection exists. Upon arrival and prior to it, indeed,* infectious abortion was suspected, and the investigation was begun with that idea in mind. Having arrived late in the foaling season, few mares were left to foal. This, however, was not a great disadvantage, for a few days after arrival a sorrel mare, Biddy Mac, running on a mountain range, gave birth to a foal, which, as far as external appearances were concerned, was perfectly healthy, except that it was extremely weak. Being very young, however, no trouble was anticipated from this cause. In all these cases the foetal membrane was always abnormal in appearance.

* Dr. Halloway, State Veterinarian, had secured the services of Dr. Paul Paquin for Mr. Daly, and they had made researches which led them to conclude that it was infectious abortion. Later, Dr. Paul Evans was secured to continue the investigation begun by the former. His work, not yet published, conforms to the views of Paquin and Halloway.

Appearance of Membranes when Found.—The membrane of this particular case when found in the morning after the labor (upon a hill-top), and a close and minute examination made, revealed the following facts: That portion of the membranes accompanying the horns of the uterus, was found to be undergoing decomposition, having a deep red, congested appearance, this followed by a leaden greyish color later, and exhaling a very sanious odor. Small patches of the membranes were entirely destroyed, and small quantities of a muco-purulent matter were to be found. From these membranes, septic material was obtained for future use for experimental purposes. The method will be found hereafter in “History of Experiment and Result so far as Ascertained,” the direct operating cause being a microscopical parasite, with its classification not yet definitely determined; the life-history of the parasite, and its habits are yet also to be determined.

Symptoms.—In this trouble—infectious abortion—no symptoms save those premonitory signs, as a possible uneasiness noticed in simple abortion, are noticed, and most frequently nothing at all is to be seen. However, in the joint affection, due to the same organism which caused abortion, as shown by investigation hereafter noted, affecting the foal which lived, the following symptoms were noticed: About a week or ten days after the birth of the foal there was a swollen condition of some of the joints of the limbs. These increased in size, and became very painful. They often ruptured, and a muco-purulent discharge escaped. Usually, however, there was no rupture, but a continuous distention of the synovial sac. Upon manipulation, these swellings were found very tense and feverish, the little fellows, with a most dejected look, stood or reclined alternately, moving around very little, on account of the extreme pain caused by any motion whatever. A severe synovitis, at times partaking of a suppurative character, was established, and upon post-mortem examination the entire epithysis would be found denuded of cartilage, so severe had been the suppurative action. The appetite seemed tolerably fair in most cases, yet there was

no thriving, the hair looked dead and rough, the animal itself having little life and scarcely any vitality.

Course and Determination.—The mares, after inoculation, abort in about fifteen to twenty days. The foals born alive from inoculated mares invariably die, though some live for two or three months.

Treatment-prophylactic.—In regard to the treatment of mares having aborted, the following measures should be followed:

1. If the mare aborted in an open paddock or pasture, the foetus and foetal membranes should be burned, and the mare taken to a stable or small lot where she can be easily treated.

2. If the mare is removed to a stable, it must be apart from any other stable containing pregnant animals; and must not be on high ground, the urine of which will run into lots, paddock, or field occupied by pregnant animals; if removed to a small lot, the lot must be low or situated in such a place that no pregnant animals will by drainage be exposed to the germs causing the trouble.

3. (This third measure is only necessary in mares that have aborted and are not doing well). The external parts should be thoroughly cleansed with a solution of hydrargyrum bichloride (corrosive sublimate), 1 part to 1,000 parts of water. The tail itself should be thoroughly washed with the same, or if in fly-time, a solution of carbolic acid may be supplemented to the corrosive sublimate, of the strength of one part of acid to 100 parts of water. This having been done, the vagina and uterus should be thoroughly cleansed with injections of pure tepid water. After this, use the solution above mentioned for injections per vagina. Continue these injections once a day for two or three days.

4. The attendant treating mares should thoroughly disinfect his hands, and if possible change his clothing before he goes into the presence of pregnant animals.

5. The mares after two or three weeks of treatment may be allowed to the stallion with safety,

6. The foals affected with joint-ail (it being the same disease differently manifested and capable of producing abortion) should be destroyed, and their carcasses burned.

7. If, however, the foal is suffered to live, it should be separated from pregnant animals before any of the swellings exhibit suppuration or sores.

8. A mare, the dam of a foal suffering from the joint-ail, should undergo the same antiseptic treatment as though she had aborted, providing she is not doing well.

9. Mares that have aborted and done well should not be allowed to stallion sooner than two or three weeks after the accident.

History of Experiment and Result so far as Ascertained.—A few days after arriving at the ranch, June 25th, "Biddy Mac," a trotting brood mare, gave birth to a foal. This foal, previously mentioned, was very weak, and died from starvation in two days after its birth. A post-mortem examination was held, but nothing could be found sufficient to cause death. The udder of the dam was then examined, and no milk found. Cultures were made from the blood and several of the glands of the colt, to see if they might possibly contain any of the germs causing the trouble. It is not intended to give the results in detail, as many of the minute points were only tedious and of no practical value to the general public.

Cultures were made from the diseased foetal membranes from "Biddy Mac," and inoculation made therefrom. One bay mare in foal received the inoculation on June 6th, and on the following night she foaled. On June 29th, the foal showed signs of joint trouble in right knee, and on July 1st the hock joint was as large as a man's head. Thus, from this experiment almost just begun, we might say, do we produce the disease in a colt that when born was apparently in health, and that, too, after the inoculation had only been introduced a few hours.

Another mare, a dun, inoculated with a culture from the blood of Biddy Mac's colt on the 20th day of June, gave birth to a dead foal. This was an abortion, as evinced by the diseased placenta. Hence we see that from these two inoculations with culture we have produced both the diseases, abortion and joint trouble. The germs causing these two diseases are the same, as shown under the microscope. That

these two maladies are one and the same disease differently manifested, there is no doubt.

Other and more varied experiments were tried, and are still in progress, concerning other matters with reference to the possible nature of the malady in regard to immunity and length of incubation after natural exposure. The investigation in these lines is not yet consummated, and much time and attentive work must be done ere the public receive any further statements.

From the foregoing it will be seen that antiseptic measures in the way of washes, etc., in treating mares that have aborted, are not sufficient, and perhaps of doubtful benefit, the germ causing the malady being in the system and not a local parasite; that strict sanitary measures are necessary; that medicinal treatment, of whatever nature, will be of no benefit so far as removing the cause or preventing the accident is concerned; that joint-ail and abortion are the same malady differently manifested; that local application to umbilicus of a recently born foal whose dam has been infected previous to foaling, will not prevent the occurrence of joint-ail in colts.

The following facts may be determined by experimentation: Whether one attack gives immunity to another the succeeding year; whether we will or will not be able to vaccinate against its appearance; what is the length of time required for incubation under natural or accidental exposure; whether or not the germ is capable of producing abortion save at certain stages in its life; and what is the length of time during which the germ remains in the animal economy.

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.”—VETERINARY RECORD.

A CASE OF VETERINARY JURISPRUDENCE.

Reported by JAMES A. WAUGH, V.S., Allegheny, Pa.

The case of W. A. Hatfield *versus* J. E. Duncan, V.S., and J. H. O'Brien, M.D., V.S., was tried May 16th and 17th, 1893, before Judge Magee in Common Pleas Court No. 2, of

Allegheny Co., Pa. It was an action to recover two hundred dollars damages for the death of a standard bred and registered mare which died while anesthetized for neurotomy. Attorney T. M. Marshall, Jr., represented the plaintiff, who appeared with a civil engineer and two grooms as witnesses who were present at the operation. Chas. A. Spicer, V.S., and Jas. A. Waugh, V.S., gave expert testimony in behalf of the plaintiff. Attorney T. T. Donahue appeared for the defense, and H. F. Doris, D.V.S., J. C. McNeil, V.M.D., J. A. Holden, V.S., and R. H. Gilliford, M.D., testified; also the defendants and a few other witnesses. The evidence adduced was somewhat contradictory, but proved that hobbles were placed on the mare's feet, chloroform administered on a sponge in a cloth shirt-sleeve tied at one end and drawn tightly over the nose, and the hobble rope was drawn and the animal cast and secured in a box-stall as soon as the anesthetic caused excitement. There were no air-holes in this improvised nose-bag. Eight ounces of chloroform was used, and one side of one front limb was neurotomized; then the owner became alarmed and asserted the patient was dying, but the operators claimed that they needed more chloroform to complete the operation on both fore limbs. Four ounces of chloroform was obtained without delay, but was not used, as the operators realized the mare was dead. Efforts were made to resuscitate the subject, but proved of no avail. Veterinarians Spicer and Waugh testified that modern methods of local anesthesia were safer and preferable to absolute methods of general anesthesia for neurotomy. Drs. Doris, McNeil and Gilliford testified that chloroform might be used as an anesthetic, but they would not use it in neurotomy. J. A. Holden stated that he had thirty years' experience in veterinary practice, but had never seen chloroform used in any way, and he was not familiar with the action of anesthetics. The defendants claimed that it was proper to use chloroform as an anesthetic in neurotomy, and they operated as they had been taught by Prof. Smith at Ontario Veterinary College, and was approved and practiced by the leading veterinarians in all countries.

It was claimed that the defendants solicited and guaranteed this operation, and were financially responsible for the result. It is regretted that no post-mortem examination was held on the remains of this mare, which was said to have been affected with navicular arthritis in fore feet.

The jury returned a verdict for two hundred dollars in favor of the plaintiff. A motion was made and argued for a new trial, but it was not granted, and the case was duly settled by payment of the damages.

PELVIC TUMOR IN DOG.

BY C. CLAYTON, D.V.S., House Surgeon to the American Veterinary Hospital.

A large liver-and-white retriever dog was brought to the hospital May 6th, with the following history:

About four months ago the owner had noticed a swelling on the back of right hind leg, which had gradually increased in size. A medical student had lanced it, and there escaped about a quart of clear fluid with no decrease in size. Of late the animal had suffered with constipation and a slight loss of power in hind extremities.

Upon examination a growth about the size of a billiard ball was found situated between rectum and ischial tuberosity, it was hard and felt like a fibrous tumor, and a diagnosis was made accordingly, and owner advised to have it removed.

On May 12th the dog returned to be operated upon, having been previously prepared for the operation. The animal was secured, the hair clipped from the part and the skin thoroughly washed with bi-chloride 1-1000, all instruments having been previously sterilized.

An incision of about two inches was then made over the most prominent part, and it was found that the growth extended within the pelvic cavity, was surrounded by an abundant growth of cellular tissue, and pressing upon the rectum, thus accounting to some extent for the constipation and partial loss of power.

The growth of cellular tissue surrounding it was dissected off with scissors and scalpel, and the growth exposed; it was

then removed with scissors, and the artery supplying it ligated. When the base was severed, which was attached to the neck of bladder, unfortunately an incision was made into the bladder, and about a quart of urine escaped. This incision was sewed by two interrupted sutures taken very close together, and then the whole ligated. There was a profuse capillary hemorrhage. The wound was washed and absorbent cotton placed in the cavity, and the incision closed with interrupted catgut sutures, and an oakum pad and bandage placed over all. That night the patient seemed bright, but in the morning was somewhat dull, and upon removing the dressing it was found that a great exudation of a plastic nature had taken place, and some of the omentum protruded through the wound; this was washed with bi-chloride 1-2000, as well as the wound, and a bandage applied; from this time on the animal seemed to sink in spite of stimulants, and finally died at 12:45 P. M.

Post mortem revealed nothing abnormal other than what had taken place since the operation, which was a localized peritonitis.

The growth was bi-lobulated, looked very much like a hypertrophied prostate gland. It weighed three ounces and five drachms. When it is sufficiently prepared and opportunity offers itself, it is to be examined under the microscope and its real character discovered.

PEROXYDE OF HYDROGEN.

BY E. N. HUTCHINSON. Odell, Ills.

DEAR SIR.—I have just dismissed, as well, a very interesting case of poisoning from using peroxide of hydrogen from a tin vessel. It may be of equal interest to some of my fellow readers of your excellent publication.

About May 25th, a farmer brought a mare to me which had a large swelling upon the lateral surface of the withers. I at first diagnosed it as a simple cyst or hygroma, but upon further examination I concluded that suppuration had set in, and treated it as an abscess, and was rewarded by an abundant flow of pus.

After injecting a little of the peroxide of hydrogen, I sent the mare home with instructions to bathe frequently with cold water and use that same injection, cautioning the owner against using any but a rubber or glass syringe, confidently expecting that the mare would make a nice recovery; but in about a week the owner brought her to me, saying he was afraid he was going to lose her; and she was indeed in a deplorable condition, the whole region of the withers was intensely inflamed and swollen. I was myself at a loss for an explanation of such a state of affairs, and, however, assured him that his horse was in a nowise dangerous condition, telling him to take her back to his stable, and put several folds of a heavy woolen blanket over the inflamed parts and pour three buckets of water over it three times a day. A few days ago I visited the animal and found the swelling and inflammation entirely gone, but a considerable flow of pus through the opening I had made. Wishing to use the peroxide of hydrogen again, I asked him to get what he had and inject some of it, when I discovered that he was in the habit of pouring it out into a *tin cup* and then injecting it into the wound, pouring what he didn't use back into the bottle again. I think that this fully accounts for the former unfavorable action of the medicament.

OSTEO POROSIS.

BY C. L. THUDIOUM.

I send you the following on the successful treatment of a case of osteo porosis by myself, hoping it may prove of some benefit to some of my more fortunate brethren who possess the desirable sheepskin, and I hope shortly to gratify my ambition of having one myself.

In March of last year, while training some race-horses at Gloucester, N. J., I had an old colored trainer come to me to see if I could do anything for a colt which had been given him because it had the bighead. I told him that there was no cure for the disease that I knew of, that there was any certainty in, but that the only thing that seemed to prove in any way beneficial as far as I could learn, was to give him a

change of climate and a run at grass, and an alterative treatment medicinally. But as the colt had cost him nothing, if he was willing to pay for the feed till it either recovered or died, I would like to experiment with the case, as I had an idea that bighead was a sort of cancerous condition, and if we could get at the part first affected, and use some effective caustic, we might cure the disease.

Two days after he brought me the colt, and told me to go ahead and do what I liked with him, and if he died it was his loss. Working on this basis, and finding the following condition to exist, I treated as follows :

The colt, a two-year-old thoroughbred, whose pedigree I have forgotten, was a bay about fifteen hands high, and a stallion. He could hardly breathe from the enlargement of the nasal and superior maxillary bones, and the greatly congested condition of the nasal mucous membrane, and there was a rusty-looking discharge from both nostrils, though the quantity was not of any moment, simply a little trickling ; as to his further condition as regards body and extremities, outside of the fact that in this case there existed extreme emaciation, the symptoms were identical with those in Williams' Surgery, except that the only enlargement discernible was that existing in the face, and which will be exactly illustrated to you by a reference to Fig. 31, in the above mentioned work, had the colt died and the head been dissected.

We now took the animal and after thoroughly washing the face over the affected part with a bi-chloride of mercury solution, inserted a seton over the enlargement on each side from the lowest point of the enlargement to directly below the eye, where we brought it out ; on the setons we smeared a small quantity of the bin iodide of mercury blister as usually given, one in eight.

This we allowed to remain for twenty-four hours, after which we removed the setons, and replaced them with new tapes after thoroughly cleansing with an antiseptic solution ; these new tapes we moved every day for four days, taking care to keep the wound clean and free from accumulations, and then for two weeks, each day after dressing, we dusted

the tapes with dry, powdered arsenic as much as would adhere to them, and drew them up into the wound, with the result that we got a most outrageous enlargement of the head temporarily. At the end of this time we removed the tapes, and washed and dressed the wounds each day till they healed up, and then turned the colt out to pasture, when he at once began to grow and fill out, and is at the present time in training and nearly fit to race; is eating heartily and is doing generally well, and I shall be pleased to show him to any one who may desire to see him. The enlargement of the head still exists, but the breathing is in no way interfered with, and when last I saw him two weeks ago, he was as lusty a looking youngster as I most ever saw. I may as well say that he had been turned out prior to the treatment without any beneficial effect. Taking this in the light of an experiment, which does not prove of course the correctness of my theory, as I have had no further cases up to the present time to try the same course of treatment on, I would ask those who may have the opportunity offered them of doing so, to try the same course of treatment, or something similar, and report the result for the benefit of all.

REVIEW OF BIOLOGY.

SANDWORMS AND TUBERCULOSIS.

BY M. M. LORTET AND DESPEIGNES.

Sandworms may, for several months, store up in various regions of their organisms the bacilli of tuberculosis, and bring up to the surface of the ground the microbes, thus infiltrated in their tissues.

The authors have demonstrated by inoculation of the faecal substances that these lumbricoids deposit upon the surface, that they can bring up from deep ground tuberculous baccilli which had been deposited there. Very deep flower-pots were filled with earth finely sifted. Tuberculous matter was then deeply buried in these pots, and they were placed in deep plates filled with water. The surface of the

earth was covered with a coat of pure white, silicated gravel, and the flower-pots well enveloped with sheets of paper.

In a few days the worms were seen passing their excrements upon the gravelly coating, from which they were gathered, avoiding all surrounding contamination. The inoculation of the excrements to guinea pigs gave rise to the development of well-marked generalized tuberculosis.

Conclusion: Lumbricoids may carry to the surface of the ground, with the products of their digestion, bacilli which are possessed of all their virulent properties.—*Rec. de Med. Vet.*

PHYSIOLOGICAL ACTION OF SPERMINE.

BY AL. POEHL.

The author has studied the chemical composition of the Brown-Sequard liquor, and has found, with the albuminoid, lecithine, mecleine and other leucomaines, a sensible proportion of spermine. This last seems to be the active principle of the liquor; it is found in the testicles, the prostate, the ovaries and the pancreas (where it is abundant), in the thyroid body, the thymus gland, the spleen and the normal blood.

Numerous experiments made with pure spermine in the chlorhydrate state by Tarchanoff, Maximowitch, Schicharoff, etc., have proved that this basis possesses a tonifying and dynamogenous action, like that of the testicular fluid of Brown-Sequard.

Spermine is not an oxydizing agent, but it gives rise by its contact to an acceleration of the mineral oxydations, as well as of the physiological. This property of being an excitant of the oxydations explains the phenomena produced by spermine in men as well as in animals. It resists the intra-organic oxydations.

The beneficial action observed in diabetes is also explained by a reduction of the formation of spermine produced by the pancreas in diabetic patients.

The action of spermine as a *tonic* and a *nervine* agent is easily understood from its effect in restoring to the blood its power of carrying oxygen to nervous elements.—*Ibid.*

ACTION OF THE EXTRACT OF BOVINE BLOOD UPON ANIMALS
SUFFERING WITH GLANDERS.

BY A. BABES.

The following is the mode of extracting the active substance from the blood of bovines :

The blood obtained by bleeding is received into a sterilized balloon, and left alone for several hours at a low temperature. A certain quantity of water is added to it, and then, little by little, zinc powder, the balloon being well shaken. The mixture is then filtered.

The filtered liquid, which is clear and slightly colored, of a greenish brown, is treated with sulphuret of potash, to eliminate the zinc; then undergoes a second filtration and concentration in a vacuum at a temperature of 35° C.

The residue is then dissolved in a mixture of equal parts of sterilized water and glycerine, and the solution is ready for use.

The cutaneous injection of this liquid in doses of occ.25 extract of blood, is followed several hours after by a thermic reaction, very marked in the glanderous guinea-pig, but producing no change in the healthy animals.

Experiments¹ made upon thirteen horses, both healthy and glanderous, have given the same results. Upon the healthy animals, no elevation of temperature; among those which had proved to be glanderous at the post-mortem, a well-marked elevation of temperature, continuing for from six to ten hours following the injection. The author is led by these results to the conclusion that the serum of the blood of bovines, besides the property of revealing the presence of glanders, possesses also a specific therapeutical and inoculative or developing action in that disease.—*Ibid.*

UPON THE TRANSMISSIBILITY OF THE MANGE OF THE CAT
AND RABBIT DUE TO THE SARCOPTES MINOR FÜRST.

BY M. A. RAILLIET.

But little was known of the transmissibility of this disease from one species to the other when the author had occasion to study the mange of the rabbit, and to make experiments as

to its ease of transmission. He has done the same thing with the mange of the cat, and has made the following conclusions :

1. It has been impossible to transmit the sarcoptic mange (due to *sarcoptes minor*) from the rabbit to the rabbit, to the cat, to the rat or to the dog.

2. This affection was easily transmitted from cat to cat.

3. It was transmitted only with great difficulty from the cat to the rabbit, and only after an extremely long period of inoculation. (Five months after cohabitation and three months after the death of the cat).

Rabbits which contracted the disease from cats have given it to rabbits.

For rabbits the degree of contagiousity must then necessarily be very weak.—*Ibid.*

EXPERIMENTAL PATHOLOGY.

THYROIDECTOMY—EFFECTS UPON THE NERVOUS CENTERS.

By T. CAPOBIANCO.

Entire thyroidectomy is always followed by death in man and also in dogs, in which when operated on, the temperature diminishes gradually from the moment of the operation until death, though rising somewhat during the convulsive attacks. The histological examination of the central and peripheral nervous system reveals circulatory troubles and peculiar modifications of the nervous element, such as atrophy, granular and vacuolar degeneration with a predominance of one or other of these lesions according to the cases and the parts examined. These alterations are specially precocious in the brain (cerebrum) where they principally assume the atrophic form. Cerebral lesions occupy principally the cells of Puckinje, but are also found in the cortical layer and the dentated body. Among the bulbous nuclei, that of the hypoglossus is most commonly affected, then those of the facial, of the pneumogastric and the others. In the marrow, the lesions are in the gray and white substances, with predominance upon the

anterior gray horn and the crossed pyramidal bands. There the three types of degeneration are found. The spinal roots are the seat of very important lesions of degeneration.—*Revue des Sc. Med.*

TUBERCULIN IN GUINEA-PIGS AND RABBIT INOCULATED WITH TUBERCULOSIS.

By K. YAMAGIWA.

When tuberculin is injected into animals already inoculated with tuberculosis, after the first or the second week one finds metastatic centers in the lymphatic ganglions, the spleen, the liver and the lungs. Besides this, the spleen contains deposits of pigment. The bacilli are in great number under the same form, and possess the same coloring powder in animals simply inoculated with tuberculin, or those which have previously been inoculated with tuberculosis.

And again, the injection of tuberculin does not protect an animal from ulterior infection of its organs when he is inoculated subsequently with the tuberculous bacillus. When a guinea-pig is inoculated with the bacilli of a metastatic center from the lung of a rabbit treated by tuberculin, the bacilli continue to develop and grow in the inoculated guinea-pig.—*Ibid.*

ACTION OF BOVINE BLOOD SERUM ON THE VIRUS OF GLANDERS, AND ITS CURATIVE POWER IN EXPERIMENTAL GLANDERS OF GUINEA-PIGS.

By P. N. CHENOT AND J. PICQ.

Conclusions of the Experiment.—1st. The bovine blood serum possesses a bactericide property on the virus of glanders. 2d. Animals infected with equine virus, and treated with the serum before and after glanderous inoculation, recover seven times out of ten. 3d. Animals condemned to a fatal and rapid end by the excessive virulency of cultures resulting from successive generation in the guinea-pig, have survived from twenty-one to forty-two days, while witnesses died in five days. 4th. Post-mortems of animals considered during life as recovered have shown evident alterations of

tissue (sclerosis and calcification) which are proofs of their recovery. Recovery from a first attack does not confer absolute immunity.—*Ibid.*

INOCULATION OF GLANDERS IN NERVOUS CENTERS.

By TEDESCHI.

Animals very susceptible to glanders (as cats, guinea-pigs and rabbits) die more rapidly when the inoculation has been made in the nervous centers than when performed in any other region. Death is due to general infection.

Animals having a complete immunity (rats) or a partial one (dogs) die also very rapidly by this mode of inoculation. The virulency of the microbes obtained in the nervous centers of animals thus inoculated is greater, and especially if these bacilli are taken from animals refractory to glanders, but that have died of inoculation. This exaggeration of virulency, positive for the microbes taken directly from the exudates of the cadaver, persists in the cultures to such a point that they are capable of killing with subcutaneous injections animals that are naturally refractory to glanders.

In all these cases generalized lesions are found in all the organs—congestions, necroses, disseminated miliary granulations of glanders.—*Ibid.*

EXTRACTS FROM GERMAN JOURNALS.

By RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

PERIODIC OPHTHALMIA.

This article respects cases in large stables, and relates to those which occurred in the tenth Ulanen regiment in Zullechau. At this place, after the return from practice maneuver, three horses became sick of a disease affecting the interior of the optic globe; in March, April and May of the next year many other individuals in the same military company were afflicted with the same disease, which also recurred in the three original cases. This left no doubt as to the nature of the malady, and an exhaustive investigation of the conditions surrounding the animals in this particular barracks was insti-

tuted. The horses had been quartered in the stables, whose floor was somewhat damp, for ten years, but up to the present time no deleterious effects were noticed. This was divided into three portions. During the period included between 1882 and 1892, only nine cases of periodic ophthalmia had occurred in the whole regiment.

Examination of all the animals of this company revealed numerous alterations of varied pathological importance, embracing opacity of the lens, nuclear cataract, adhesion of the iris and capsule.

Fifteen individuals of various ages were attacked since autumn; in all cases the first symptom was indicated by photophobia, which lasted eight to twenty-one days; with one exception the disease began in one eye. Recurrence of the disease took place in from ten to twenty-eight days, but in those animals becoming afflicted in the autumn not until six months after the primary appearance.

The facts as given undoubtedly permit the conclusion that the interior structure of the eye was the seat of an insidious inflammatory process. The younger horses were uniformly exempt from the affection. The cause, whatever it may have been; had commenced its encroachment upon the stock in 1891 and 1892.

Schwarznecker examined the local drinking water furnished the horses, using Willach's and his own method, and discovered therein evidence of vegetable and infusorial life, together with a species of minute round worms.

The contents of one patient's eye proved nothing. Later, another one of the horses was killed, but the search of the aqueous and vitreous humors yielded negative results. In another case, however, examined post-mortem, three examples of a small, round worm were discovered in the vitreous humor (species described by Willach), together with an egg-shaped formation of double contour and cellular contents in the aqueous humor. (Upon this single section and record we cannot presume to draw conclusions.) This but agrees with the observations made in Saarburg* upon the unusual contagion of

* Berl. Thier. Woch. No. 33, 1892.

ophthalmia, to wit, that in epizootics of periodic inflammation of the eye, the progress of the disease is necessarily abetted by the presence of some influence indigenous to the locality in which it appears.

The breed of horse has also its predisposing, or rather its supplementary, effect when other conditions are present; for instance, the horses of east Prussia are more amenable to the affection than those of the western part of the kingdom.—*Zstchr. f. Vet. K.*

TETANUS IN CATTLE.

A cow having retained the afterbirth, and which had been treated by an empiric, was examined by Hock, and found to have tetanus. The same had started as a trismus, and gradually invested the whole muscular fabric of the anatomy. Chloroform inhalations were futile, and the patient was destroyed.

Klockenberger saw, after a lengthy retention of the membranes, which induced a second metritis, a case of trismus and subsequent tetanus. The cow died after an illness of two days. District Veterinarian Haertle has seen tetanus appear in three days after the application of ligatures to several tumors, some of which approached a child's head in dimensions. Lieble saw the disease present in a calf having gangrenous fistula of the umbilicus; upon thorough disinfection of the cord the animal recovered.

Steuert also reports tetanus, which had been mistaken for puerperal eclampsia, following an easy and normal parturition. As a result of wounds induced by manipulation in delivery, Frank Speyer saw two cases of tetanus in cows.—*B. T. W.*

ACTINOMYCOSIS OF TONGUE IN EQUIDÆ.

Since its discovery in cattle, the actinomyces bovis has been assigned as the cause of certain well-defined swellings in swine, dog, horse and man. Especially abundant have the recorded cases become in the last decade, owing, no doubt, to a more perfect and stringent method of meat inspection.

These neoplasms, while abundant in animals of the slaughter houses, but seldom come before the attention of the profession as factors in equine pathology. T. has had occasion to treat a glossitis in the horse, which was directly due to an infection of this micro-organism. A half-blooded gelding ten years of age, the property of a farmer, had manifested difficulty in prehension and mastication for some time, and was further inconvenienced by a profuse salivation. An empiric had removed the apices of the molar teeth as being the cause of the complaint.

Our local examinations exposed an inflammation of the tongue, especially at the point where it was swollen, hard stiff and painful. Upon the superior surface of the organ, and about three inches from the anterior contour, five small swellings, each the size of a bean, were noticeable; the tissue adjacent to these was deeply reddened. The veins upon the lateral surfaces were congested and varicose. A fistula had formed by the confluence of two of the tumors, and by pressure a caseous discharge flowed from the tract. This latter was composed of many granules, which by the microscope exhibited the characteristic features of the actinomyces.

In each of the tumors T. made a deep incision which he daily pencilled with iodine tincture. Internally, the patient received ʒiv of potassium iodide daily in a bottle of water. After twenty days the swellings and the symptoms which they induced had disappeared.—*Berlin Thier. Woch.*

SPERMA IN VARIOUS GLANDS—BROWN-SEQUARD'S PANACEA.

Brown-Sequard found in the testicle secretion an agent capable of inducing nervous activity in all its diversified complications;* his discovery has been wrongly used, and considered as an aphrodisiac only. The ancients knew the medicinal worth of the testicle product; the Gallic preparations of the castoreum and musk sack were known as stimulating agents—one of the constituents of the latter is the material under consideration. Brown-Sequard injected a watery

* *Berlin Thier. Woch.*, 1892, p. 584.

emulsion obtained by trituration of the testicles of freshly killed animals.

Poehl distinguishes the sperma as the active principle of this emulsion. Experiments by Prof. Tarchanoff have developed the fact that in man and animals alike sperma acts as a tonic, spending itself upon the nervous organism.

Respecting the occurrence of the sperma, it may be stated that not alone is it the exclusive product of the male animal, as was earlier supposed, but also of the opposite sex, being secured from various glands and organs of both sexes; it is a normal constituent of the female.

Naturally the greatest amount of sperma is secured from the testicles, following which, in the order named we have the prostate gland, pancreas, spleen, thyroid glands and lastly, as containing the least amount of the fluid, come the ovaries. H. believes that sperma circulates in the general system.

Vasalle has obviated the cachexia strumipriva, when caused by extirpation of the thyroids, by injections of the secretions of these glands. The operation in this case being evidently dependent upon the sperma contained therein.

Young dogs and guinea-pigs which receive daily injections of 0.02 g. of sperma for several months, become more developed and bulky than control animals of the same species.

Prof. Minkowski has observed diabetes, due to removal of the pancreas, to disappear upon inserting a particle of this same gland under the tegument; this is also to be referred to the excessive spermin capacity of the organ. There have been numerous instances recorded in which the sperma injections have operated beneficially upon diabetic patients, even causing a total suspension of the saccharine material in the urine.

Concerning the application of a watery extract of the various organs, as a medicinal agent, Brown-Sequard and d'Arsonval say the following: "All animal tissues may and will be applied, with the lapse of time, as medicinal agents; in this particular direction we see the foundation of a new therapy, whose constituents are obtained or extracted from the physiological products of the animal body."

Since the injection of watery infusion is not unattended

with certain palpable dangers, Poehl urges isolation of the essential element of the sperma, and experiments upon the action of the same.—*Deutsche Medicinal-Ztg.*

OSTEOMYELITIS SUPPURATIVA.

PROF. JANSEN, Tokio.

From ancient times, in Japan, the appearance of rare animals of a white color, especially albinos, has been held to presage a reign of happiness and prosperity to the ruling emperor.

A small white bear being found upon the Isle of Yeso by a native Aino, was in pursuance of the legend just related, presented to the emperor, who in turn transferred the young cub to the imperial zoological garden in Tokio to be nurtured.

That the animal was unhealthy soon became apparent, the affection progressing from the previous October to the middle of March, at which date the author attended the same at the emperor's command.

Status Praesens.—The patient, a male of medium size and somewhat over a year old, was covered with white hair, had a white skin, claws, nose and eyes devoid of pigment. The iris appeared red and the pupil reflex, of a yellow-red color.

The mouth is continually open, and the jaws may not be brought in apposition, a space of one and a half inches separating them; the molar teeth of the upper and lower jaws do not come in contact; saliva flows uninterrupted from the mouth at all times.

By a closer examination we found the intermaxillary bones in their whole contour, as also the superior and inferior maxillary bones in their anterior portion, enormously hypertrophied, to the extent of five times their normal proportions.

The enlargement is mainly in the middle section of the bones named, which disposition permits the formation of deep grooves or interstices between the localized swellings which in themselves are about the size of an egg.

The mucous membrane covering the stomatic portion of the left intermaxillary bone was destitute of epithelium, and in its center necrotic. On the enlargements, fluctuation

could be discerned ; incisors, and especially the eye teeth, were loose, the latter admitting of extensive movement. The posterior portion of the mouth and the tongue were normal and in no way involved. The voluntary and free prehension of liquid or solid food was impossible ; but deglutition, when the liquid food was brought well back in the fauces, was readily accomplished.

The general health, beyond that we have cited, was unimpaired by the local lesions. A diagnosis was made of suppurative inflammation of the medulla—an osteomyelitis involving the ossa supra, infra and inter-maxillaria.

Therapy consisted of incisions in the fluctuating centers, which yielded five ounces of pus, daily cleansing with a collutorium composed of creolin solution. Internal treatment commenced by calcium phosphate, and later displaced by ol. morrhuæ and phosphorus. A strong diet of bouillon and eggs, or milk, was administered by means of a tube.

The condition of the animal gradually bettered, so that in four weeks the jaws could come in contact and be utilized by the owner in masticating soft food.—*Wochenschrift*.

JABOT IN CANIDÆ.

After an exhaustive observation upon the aetiological and chirurgical character of this case, the author communicates the same in all its details.

The patient had received a bite in the lower portion of the inferior cervical region. Externally nothing could be noticed but the slight puncture from the canine teeth of the other animal ; great pain was evinced and the location was considerably swollen. Anorexia and great weakness.

The owner applied cataplasms, with the idea of softening the swelling, but the general health of the dog continued to decline. Ten days from that on which the wound was received, the enlargement had increased to the size of the doubled hands, and a deeply-seated fluctuation could be distinguished. Temperature 105° F.

Following the incision there escaped two gills of a foul-smelling pus. The examination of the abscess cavity per-

mitted one to come in contact with the trachea, carotid artery and œsophagus.

Microscopic scrutiny of the contents revealed the bacterium terms, staphylococcus pyogenes, staphylococcus aureus and albus. Treatment consisted of careful irrigation of the cavity, drying with tents soaked in iodoform ether, and insufflation of iodoform. Healing followed.

At the termination of a half year a relapse again brought the dog to my care. The symptoms at this time were accelerated heart action, dyspnœa and vomiting. The seat of the former wound upon the left side of the neck was now occupied by a cicatrix and slight swelling, the latter not of a painful character.

On account of the progressive weakness and inanition the dog was killed.

Post-mortem exhibited, upon the under side of the œsophagus, towards the median line and directly anterior to the curvature made by its entrance into the thoracic, a tumor the size of one's fist. This formation had contracted adhesions with the trachea, carotid and adjacent muscles; it was in intimate union, however, with the gullet.

The natural grey color was seen with difficulty, due to the escape of a dark brownish liquid through one of several openings.

After pressing considerable of this material from the swelling, food particles remained in a compact mass behind. The cavity was a veritable diverticulum of the œsophagus—a jabot—with which it communicated by means of a half inch aperture. At the point of communication the calibre of the gullet was smaller.—*Schweizer Archiv. fur Thier. K.*

EXTRACTS FROM ENGLISH JOURNALS.

SUPERFLUOUS MALFORMATION.

By W. WILLIAMS, M.R.C.V.S., Llandilo, South Wales.

On January 28th of this year I was asked to examine a gentleman's hunter, about fifteen years old, on account of a hard swelling which suddenly appeared on the near side of

the neck, some five inches behind the posterior border of the parotid gland, just above the jugular, about the size of a goose's egg, and painless upon manipulation. This continued very much the same for about a fortnight, apparently causing no inconvenience, when the swelling in the course of one night increased to three or four times its original size, causing difficulty in breathing and total inability to swallow.

In spite of everything that was tried the swelling rapidly extended in all directions (including the lips) with a very well defined border toward the mane and chest. There was no fever until within three days of his death, when the pressure on the blood vessels became so great as to obstruct the circulation on that side. At times there were severe fits of coughing followed by discharges of foul-smelling pus from near nostril.

About twelve months ago an enlargement something similar to this appeared a little nearer the posterior border of the gland; this gave rise to fits of coughing with simultaneous disappearance of the swelling, followed by a foul discharge from the same nostril. This slight enlargement appeared several times during the twelfth month with the same result.

Post-mortem.—On the 18th of February the horse died, and I found on opening this tumor that it contained impacted food, oats and bran, about a pound in weight, enclosed in a dilated end of a tube. This tube was about four inches long before reaching the dilated end with the mass of food, and macroscopically identical with the œsophagus, which was at its side to the right. Their respective openings into the pharynx were side by side, the only difference between them was that the superfluous opening was a shade smaller.—*Vet. Rec.*

TRAUMATIC CARDIAC DISEASE.

By EATON JONES, M.R.C.V.S., Liverpool.

A short time ago a draught mare was brought to our yard having just received a wound which pierced the pectoral muscles for some depth, and caused by collision with the shaft of a trap. The wound at the time did not appear dangerous at all, and for a week did not affect the mare, who did

not go off her food, the pulse and temperature keeping about normal; the wound being dressed with antiseptic and healing lotions, and only discharging a very little.

After that time the discharge increased, and the mare began to go off her food, the pulse became irregular and the temperature varying, sometimes being nearly normal and then rising to 103-4°. In about three weeks from the time of the accident the mare refused all food, the pulse became very irregular, and the temperature kept to about 103-4°. She also began to purge very badly, and the discharge from the wound increased enormously, the respirations were short and hurried, and confined to the abdominal region—the mare exhibiting every sign of pleurisy or hydrothorax. The ordinary remedies were used, and the mare fed chiefly on milk, but she gradually grew weaker, and died about five weeks after the accident.

A post-mortem examination exhibited most interesting appearances, the shaft had pierced the thoracic cavity, entering it between the second and third ribs and just touching the pericardial sac. The pleurisy was confined only to that part of the thoracic cavity pierced by the shaft, and a very small amount of serum found in it. The pericardial sac, however, showed most peculiar appearances; upon being opened quite *two gallons* of fluid escaped, and around the heart a coagulation of lymph had taken place covering both auricles and ventricles, being over an inch thick and studded all over with little pyramids, both being of a bright yellow color. As I had never seen or heard of anything similar before, I thought it might be of interest to your readers, and would be glad if you would insert it in your paper.—*Ibid.*

BIBLIOGRAPHY.

PROCEEDINGS OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION—SESSIONS 1891-92. Edited by W. HORACE HOSKINS.

For the last twenty-nine years this national body of veterinarians has been holding yearly and semi-yearly meetings, ostensibly for the advancement of their profession. But it rather seems that the work which has been accomplished at

these meetings has been somewhat of a selfish and exclusive character, contemplating, more than any other object, the benefit of those who were in attendance, unless, indeed, it was sheer and excessive modesty which has prevented their periodical transactions from finding their way outside of the meeting-halls and the banqueting-rooms of the cities where the meetings have been held. And probably this state of things would have continued for years to come, as it had already been perpetuated from the date of the organization in 1863, had it not been for the energy of one of its members, who for the last few years has filled the ungrateful position of secretary of the Association. Dr. W. H. Hoskins in this, which we hope for his own sake will be the last year of his secretaryship, will leave, when he resigns his office, not only a record that few men will successfully undertake to break, but has presented to the profession and to the public at large a book which will remain forever a monument to his professional lore, to his enthusiasm for the promotion of the National Association, as well as to his devotion to whatever pertains to the elevation of American veterinary science.

In editing the proceedings of the last two meetings, though directed to do so as Chairman of the Committee on Publication, and on assuming and performing the entire work, we dare to say single-handed, Dr. Hoskins has not only collated the materials furnished at the meetings and arranged the papers read in their proper order, but has also supplemented the discussions following. Whether reports of committees, or motions, or amendments, nothing has been omitted, and if the readers of our veterinary journals remember all that they have seen in these periodicals, there is still something that can be found in the *Proceedings*, something of unusual value in records which carry us back twenty-nine years to the day when the Association was born in 1863. The book begins almost at the first page with a list of the presidents and officers from the beginning, and this is followed by lists of the entire number of members who have joined the ranks of the Association from 1863 to 1893. The honorary list comes next, where the celebrated names of our profession, both at home

and abroad, are found, and then we have the necrology of our deceased brethren. The constitution and by-laws complete this introduction to the book, which is followed by the minutes of the last two meetings.

All in all, it is a valuable contribution to the history of our profession in this country, and forms an intrinsic addition to our veterinary literature, and we sincerely feel that we only express the feelings of all veterinarians in the land in not only tendering to Dr. Hoskins their compliments for his work, but also their thanks for the manner in which he has accomplished his task.

HORSES—SOUND AND UNSOUND. By J. IRVINE LUPTON, F.R.C.V.S.
(Balliere, Tindall & Cox, London).

We have been so intimately connected with the subject treated in this book, and have so often had occasion to deplore the state of our literature on this important topic, that when we received the work of Mr. Lupton we laid aside all other readings to examine it. And must we acknowledge the fact that when we got through reading it we felt disappointed? Why? Not because it is not well written, or of smooth reading, nor because the subject is not well treated or presented to the reader. Far from it. The descriptions in each chapter are good, the diseases which one must consider as constituting unsoundness are well described, everything is well said, and the book is worthy of the attention of all veterinarians. But we felt disappointed because we did not find in "Horses—Sound and Unsound" that which we would have been glad to find in it, viz., a criticism on our laws relating to the subject, and a suggestion of needed improvements.

Our position in respect to the law of warranty is already pretty well known, and we have already on former occasions before the United States Veterinary Medical Association expressed our views upon what we consider an erroneous method of procedure. We have, however, found in Lupton only that which we have read in others, Oliphant, Hanover, etc., and probably better presented, but all only the same

thing. And if we are not mistaken, we are no better advanced in our means of deciding clearly and positively where soundness ends and unsoundness begins.

Almost the first hundred pages are devoted to the subject of soundness; then comes a chapter on horse sales and warranty, and this is followed by the act referring to contagious diseases in animals. The balance of the book relates to the subject of prevention of cruelty to animals, with the various laws and amendments upon the subject.

Altogether, "Horses—Sound and Unsound" contains lots of useful information, and whether it is the veterinarian, the layman, or the members of the Society for Prevention of Cruelty to Animals, every one will enjoy its reading as a book which is presented by the well known house of Balliere, Tindall & Cox—a sufficient voucher for its value.

PRECIS DE L'INSPECTION DES VIANDES. (Treatise upon the Inspection of Meats). By L. PAUTET. Asselin & Houzeau, Paris.

In this excellent book of three hundred and sixty-four pages, the author treats this subject in the most thorough and practical manner. After an introduction upon the necessity of proper and honest meat inspection, he gives the reader the various laws relating to the matter, and after giving a few pages to considerations concerning age, breeds and general conditions of health and disease in the various animals used for butchery purposes, with a short chapter on slaughterhouses, slaughtering, the dressing of meat, etc., he devotes a short chapter to the differential characters of the various meats, and their preparation and division by quarters. He then considers the alterations occurring in meat under atmospheric influences, and the process of preservation. The last chapters treat of the flesh obtained from animals suffering with parasitic diseases of a microbic or non-microbic nature, as well as of that of animals affected with other classes of disease, such as actinomyces, phosphorescent meat, leucocythemia, etc., all possessing for the inspector some points of special interest. The meat of the animals sold by the butcher proper, such as that of steers, cows, calves and sheep, is not

only considered, but in chapter XII that of swine, game animals, birds, venison, and even fish, receives due attention. The book is well illustrated with ninety wood cuts of great value.

The "Precis de l'Inspection des Viandes" is an excellent work which our colleagues familiar with the French language will do well to consult. English literature on the subject is rather deficient, and a translation of this "Precis" would be of great benefit to those who are engaged in this specialty—comparatively a new study in this country.

SOCIETY MEETINGS.

MEETING OF THE COMITIA MINORA, INTERNATIONAL COMMITTEE, AND OTHER COMMITTEES OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The meeting was held in the office of Dr. Huidekoper at 129 West 52d St., New York, May 20th, 1893, and was attended by the following members: A. W. Clement, of Baltimore, Vice-President; James L. Robertson, of New York, Treasurer; W. Horace Hoskins, Secretary; Leonard Pearson, Philadelphia, A. Liautard, New York. R. A. McLean, of Brooklyn, as a guest.

The Secretary called for report of the International Committee, who asked a delay of half an hour for preparation of same. The Secretary then read the following communication from the President, Dr. Williams:

PURDUE UNIVERSITY,
LAFAYETTE, IND., May 17th, '93. }

Dr. W. Horace Hoskins, Sec'y U. S. V. M. A.

DEAR DOCTOR:—Your notice of May 12th of meeting of committees of the United States Veterinary Medical Association at New York City on the 20th inst., to complete arrangements for International Meeting, duly at hand and noted.

I regret very much that my duties here forbid my attending, but I trust Dr. Clement will be present to act in my stead, and will cheerfully abide by the action taken by the

International Committee or the Comitia Minora. I have little to suggest that is new.

The local arrangements at Chicago will be all right, and I shall be in Chicago within four to six weeks and complete the details as far as practicable at that date.

The dates to be assigned us for public mass meeting have not yet been decided upon, neither have the speakers, nor any one of them for this part.

Of these we should have five or six addresses twenty or thirty minutes long, and I suggest that the speakers be largely from foreign countries, possibly two from the United States and Canada, the others from England and continental Europe. All must, of course, be able to speak English, and make their addresses in our language.

I think Professors McEachran and Smith should be provided with or offered places on programme. Can they not have places on Veterinary Education?

As subjects for addresses in mass meeting I would respectfully suggest:

1. History of Veterinary Science.
2. Veterinary Science and National Economics.
3. Veterinary Science and National Health.
4. Veterinary Science in Relation to Ethics.
- 5.
- 6.

Will leave some blanks; possibly those already suggested will be deemed unsatisfactory.

These topics should be settled at once, and proper persons for presenting them named, with alternates where practicable.

The Committee on Honorary Members will doubtless submit a satisfactory report, and in making list of foreign veterinary associations and colleges I have little to suggest or knowledge to impart, but let me suggest for one thing that we try if possible to have representatives from Central and South America.

I have accepted a paper from Dr. M. H. Reynolds, Keosauqua, Iowa, on "Fistulæ" which comprises considerable work, and promises to be interesting.

Permit me to suggest that the matter of programme, its arrangement, etc., be well discussed, suggestions made as to general outline, and the details then committed to the judgment of a small committee to carry out the recommendations as far as practicable.

We can have all the hall room we wish, and in case the major subjects already fixed upon by the Association will require the full time of the meeting, I suggest that subordinate, or rather branch meetings be held for the consideration of other topics, to allow veterinarians to choose between two programmes, and attend the one of most interest. Some veterinarians may not care to hear discussions on our major subjects. The details of such arrangements I would leave with Programme Committee. I have no further papers under consideration.

Any appointments which need immediate attention please refer to Dr. Clement, or in case the appointment should come from the International Committee, then, of course, to Dr. Huidekoper.

This is all which now occurs to me, and should I have anything to add, will address you at New York, care of Dr. Liautard, either by telegraph or post.

Have written Mr. Bonney on several matters which I trust will be answered in time to lay the information before the meeting.

Wishing a successful meeting, and regretting my inability to be with you in person, I am

Very truly yours,

W. L. WILLIAMS.

The Secretary then read a letter from Dr. C. P. Lyman, of Boston.

HARVARD UNIVERSITY, }
BOSTON, MASS., May 15th, '93. }

W. H. Hoskins, D.V.S., 12 South 37th St.

MY DEAR DOCTOR:—Your favor of May 11th is received. I am sorry to say that I shall not be able to be present in New York on the 20th inst. As being the one appointed by the Comitia Minora at their last meeting in New York to see what could be done toward obtaining a national charter for

our Association, I have to report the receipt of the following letter from Washington, dated February 11th, 1893, and signed by one of the United States Senators :

“It is now too late in the session to do anything with any new bill in this Congress, but if you have an act of incorporation drawn I think there will be no difficulty in getting it through Congress at next session. These bills are usually passed without objection. Any good lawyer could draw it for you.”

I should like to be further instructed by the committee as to whether I shall employ a lawyer to draw an act of incorporation for us as suggested by the Senator. There seems to be some good reason for thinking that Congress will be called early in the fall, and if we are to do anything it would seem to me that we had better be prepared to advance our request there at a very early date.

As Chairman of the Committee on Prizes, I have to state that considerable work has been done, as a result of which, and through the kindness of the editors, we have been able to publish in the professional journals a notice asking that papers be submitted to the committee.

I am happy to be able to say that the form of this notice has finally assumed a shape that seems to be fairly acceptable to all those interested.

No papers have as yet been received.

Will you kindly bring these matters before the committee for me, and advise me of their further desires.

Yours very truly,

CHARLES P. LYMAN.

A letter from Dr. J. F. Winchester, Lawrence, Mass., was also read.

LAWRENCE, MASS., May 14th, '93.

Dr. W. Horace Hoskins.

DEAR DOCTOR :—Yours of the 12th at hand. It will be impossible for me to come to New York on the 20th. As to the work being done by the committee of which I am Chairman, I would say that Dr. Wyatt Johnson has promised an article on Cornstalk Disease and Contagious Pleuro-Pneumonia of the English. Dr. J. B. Paige will take up the subject of Tuberculosis. Dr. S. Stewart will attend to the Swine.

Dr. Jos. Hughes has not even shown me the courtesy or good breeding to reply to either of two letters I have sent him suggesting that he take the subject of Actinomycosis. I will try in a general way to fill up the report that it may be acceptable for the occasion.

Yours, etc.,

J. F. WINCHESTER.

It was moved that the reports as received be placed on file in proper order. The motion was seconded and passed.

Dr. Robertson asked why the date of the Congress was changed from May to October. The Secretary replied that it was absolutely necessary that such a change should be made for several reasons. One was the negligence on the part of the veterinarians of the West and officers of the Society who failed to make the applications for a place among the list of congresses soon enough. "If we accepted May, it would have been too early, as we have done no work; September was closed to us, October only remaining. Those committees on which we depended most have done little or nothing. It has therefore been thought well to have the meeting in September and adjourn until the 16th of October. October is one of the most pleasant months of the year in Chicago. At that time the Fair will be at the topmost notch of perfection. Mr. Bonney has proffered to enable us to bring foreign delegates here, and to furnish a hall for meetings and also a public hall. The Comitia Minora deemed these good reasons for deciding that the meeting should be adjourned until October."

Dr. L. McLean thought that the Comitia Minora had not the power to change the date. He also complained of the indifference of the Western men, and suggested that the Society ought not to spread its wings too far.

In reply, the Secretary said that the men in the West were not more indifferent than those in the East.

The Secretary then read the list of those who were invited to report. They were the International Committee, Comitia Minora, Committee on Veterinary Education, Animal Food Committee and Committee on Tuberculosis.

The Secretary then asked that the names of the candi-

dates for honorary membership be produced. This, however, could not be done as the committee who had charge of making out the list had been too busy to complete it.

Dr. McLean asked whether persons who were honorary members were included among those whose expenses had to be paid.

The Chairman replied that it had already been decided not to pay their expenses.

Dr. Liautard moved that the committee be empowered to have a letter of invitation and circular, explaining the object of the Congress, written in English, French and German, and containing the names of those recommended by the committee for honorary membership, and that these letters be sent to the veterinary papers of the various countries with the request that publicity be given them. This motion was seconded and passed.

In reply to questions asked by some of the members, the Secretary stated that it had been resolved that three persons from each of the various countries should be the maximum number for honorary membership, and that these were to be selected by the committee for approval by the Association. He said also that if publicity were given to the names of those who had been selected as candidates for honorary membership, it would be an incentive for them to come to our meeting.

He said that it had been decided at the Boston meeting that any member could submit to the committee the name of any one whom he deemed worthy of membership. The names of worthy candidates should be put in print by July at the latest.

The Committee on Honorary Membership reported progress.

Dr. Huidekoper then read the invitation which he had formulated. It was considered sufficiently comprehensive, and needed only further development and greater detail.

The International Committee reported progress, and requested that they be given six days to complete their circular and be empowered to publish it.

The Secretary reported that the Pennsylvania Association

stand ready to respond to any call that may be made by the officers in charge of the Congress, and that they will do everything in their power for the promotion of its success. They have appointed a committee for considering any work that may be designated by this Association, and they have also appointed a committee for the entertainment of foreign delegates on their way to Chicago.

The Secretary then called the attention of the Comitia Minora to the re-application of John Doris, Jr. The latter was a graduate of the Cincinnati Veterinary College, and was rejected on the ground that he was a graduate of a school granting diplomas to minors. The school has now changed, and does not confer diplomas on those who are under twenty-one years of age. The Dean of the Faculty has written for the exact wording of the rejection of Dr. Doris, who will re-apply for membership.

Adjourned to meet at the call of the Secretary.

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AMERICAN VETERINARY REVIEW,

AUGUST, 1893.

ORIGINAL ARTICLES.

STUDY OF THE PATHOLOGICAL ANATOMY OF PULMONARY GLANDERS.

BY PROFESSORS E. LEOLAINOHE AND L. MONTANE, of the Toulouse Veterinary School (France).

Translated from the *Annales de l'Institut Pasteur*.

I:

Glanders in the lungs of the horse assumes a great variety of anatomical features, according to the mode of evolution of the lesions. While the acute forms are manifested by extensive and diffused alterations, similar to those attending purulent infection, those of a chronic nature are essentially characterized by diminutive and limited neoformations of a tuberculous appearance.

The works which have been devoted to the special study of the lesions of *acute glanders*, are but few in number. J. Renault* has shown that they consist of the presence of confluent centers of pneumonia, analogous to those of pyemic infection. The alveoli are filled with white globules; the endothelium of the vesicles is no longer present; the alveolar walls are infiltrated with embryonic cells; a translucid sheath,

*J. Renault, Art. Morve, Dict. Sciences Medic., 1876, Vol. x. p. 148.

formed by an old hemorrhage, is spread around the nodule, and at this point the vesicles contain granular or fibrillar fibrine, discolored, red corpuscles, and large, round cells. "These are simply endothelial cells of the lung, which, becoming active and globular, are thus enabled to surround and envelop, and destroy the red corpuscles."

The very complex alterations of *chronic glanders* have been the object of numerous researches. *Dupuy has recognized in the pulmonary tubercle the anatomical characteristics of the disease, and insists upon the absolute diagnostic significance of the lesion, and he considers glanders in the horse as analogous to "tuberculous disease" in man.

†Virchow, who undertakes the histologic analysis of the neoformation, confirms the resemblance established between glanderous granulation and the true tubercle. Both are due to a proliferation of the nuclei of the conjunctive tissue, due to an acrid or irritating agent, and constituted by an agglomeration of small cells, and by the elastic fibres of the primitive tissue. Thus formed, the nodules undergo, in their central part, a caseous degeneration. And again, metastatic alterations may be seen in the lung, under the form of irregular centers, projecting above the inflamed parenchyma, and possessing most commonly the characters of the parts affected with lobular pneumonia. They sometimes assume large dimensions, as those of a nut or an apple, and soften and form a mass of detritus, and then much resemble the great centers of tuberculous infiltration.

‡Ravitsch systematically defines the glanderous lesion to be a thrombosis of the venous and lymphatic vessels, giving rise to disturbances of nutrition in the surrounding parts. In its incipiency, the tubercle is indicated only by a fibrinous intra-alveolar exudate, containing some leucocytes, but later

*Dupuy, de l'affection tuberculeuse vulgairement appelée morve—Paris 1817.

†Handbuch der speciellen Patho. 1855, vol. II., p. 405—Pathol. des tumeurs—1869, vol. II., p. 541.

‡Ravitsch, Einige Worte ueber die Pathogenese der Rotz und Wurmkrankheit des Pferdes, Virchow's Arch., 1892, vol. XXIII., p. 33.

inflammation appears and gives origin to the alveolar membrane, with a multiplication of the fixed elements of the tissue.

*Leisering confirms the ideas of Virchow in regard to the histological constitution of the tubercle. He admits that the lesion is developed in the interstitial connective tissue, under the influence of a contagium received directly into the parenchyma by the inspired air.

He also mentions a peculiar anatomical form (infiltrated glanders) characterized by diffuse inflammations of the connective tissue, and at times spreading between the lobules, around the bronchia and blood vessels.

†Trasbot and Cornil give a concise description of a glanderous granulation, developed around a bronchia. This tissue is constituted by numerous fibres of elastic laminous tissue, forming an extremely close network, in which are found spherical nuclei, some of which are surrounded with protoplasmic granulations.

‡Rabe publishes a very good study of the pathological anatomy of the various localizations of glanders. The pulmonary tubercle develops itself in the centre of the parenchyma, and includes a varying number of alveoli. At the beginning, a thickening of the partitions occurs; then these, infiltrated with nuclei, give the idea of a tissue in a condition of rapid proliferation; round cells are also found in the alveoli, and a more complete examination shows that these cells are specially abundant around the capillaries, and that, in reality, the tissue of granulation starts from the surface of the capillaries, which are the source of the round or elliptic elements which infiltrate the tissue; the alveoli and the alveolar epithelium have no part in their production. At a later period, the alveolar cavities are entirely filled with a tissue of granulation, which may form into cellular tissue, while

*Leisering, zur Pathologischen Anatomie des Rotzes, Sachs Veterin. Bericht, 1862.

†Trasbot and Cornil. Note sur la structure des granulations morvenses du cheval: Soc. de Biolog. 1866, vol. XVII., p. 218.

‡Rabe, zur Pathologischen Anatomie und Histologie der Rotz Krankheit, Talvarber K. Thierarzmischule zu Hannover, 1877-1881.

on the periphery of the center, the inflamed alveolar cavities unite to form the fibrous envelope of the tubercle. Rabe, again, insists upon the diversity of the pulmonary accidents observed in chronic glanders, and especially upon the alterations in the lymphatic vessels, the obstacles interposed to the circulation giving rise to a stasis of the lymph and to the œdema and gelatinous infiltration of the tissues, and later to their induration. This is the explanation of the lesions of the interlobular tissue and those of the lymphatic sheaths which surround the vessels and the bronchia.

*Czokor studies only the glanderous tubercle, and distinguishes it histologically from the lesions which are proper to true tuberculosis. When these are constituted by an irregular agglomeration of very small centers, the neoformation of glanders always assumes a well-marked, rounded form, and is constituted at once by a single center of inflammation. The histological examination shows that the nodule of glanders begins with the cloudy tumefaction and dropping of the alveolar epithelium, and soon after, upon a section of the part, a central detritus appears composed of an accumulation of round, granular cells and dissociated vesicular walls. The degeneration becomes less marked as the examination recedes from the center, while at the periphery the round cells have kept their form and their characters. The central four are circumscribed by a compact zone, of variable thickness, formed by an infiltration of leucocytes in the alveoli, and lastly, a third external layer is composed of a dense, indurated cellular tissue, which constitutes an isolating envelop for the inflammatory center:

†Laulanie gives a very exact description of the old glanderous tubercle. In the center is a caseo-purulent mass, very brittle, which can be squeezed out at the post mortem, and which very frequently drops off while specimens are being mounted; around this central zone is another of proliferation,

*Czokor, *Vergleichende Patholog-anatom. Studien ueber den Rotz und die Tuberculose des Pferdes.* *Revue fur Thierheilkunde*, 1885, 1886.

†Laulanie, *Etude critique and experimentale sur les cellules geantes normales and pathologiques*, Paris, 1888.

formed of epithelioid cells, among which at times giant cells appear; then comes a fibrinous zone, which surrounds the others and tightly presses them; and then a zone of interstitial pneumonia, frequently containing epithelioid and giant cells in its alveoli.

This concise review is sufficient to show that the lesions of glanders with slow growth are as yet incompletely determined as to their form, though much discussed as to their significance. In the researches which we have prosecuted it has been principally our design to determine certain points of study which would probably be the most advantageous and interesting to pursue.

(*To be continued*).

VIRULENCE OF THE BLOOD AND MUSCLES IN TUBERCULOSIS.

*BY J. M'FADYEAN, M.B., B.Sc., F.R.S.E., Royal Vet. College, Edinburgh.

Ought tuberculosis to be regarded as a disease *totius substantiæ*—one in which the agents of infection are distributed throughout the entire system, or is it in the majority of cases a local affection?

Considering the immense amount of research that has within the past two decades been devoted to tuberculosis, it is not a little surprising that opinion should still be sharply divided regarding this point, which is one of supreme importance from its bearing on the etiology and prophylaxis of the disease.

If tuberculosis is in the vast majority of cases a local disease, in which the bacilli are confined to the visibly altered parts at or near the point where they have found a port of entrance into the tissues, it is obviously improbable that hereditary transmission can play a great *role* in the propagation of the disease. Again, if tubercle bacilli are only exceptionally distributed throughout the entire body, the ground is to a large extent cut from the feet of those who maintain that the total seizure of every tuberculous carcase

*Reprint from *Journal of Comparative Pathology and Therapeutics*.

is necessary in order to protect human beings from the risk of infection through the ingestion of tubercle bacilli in the flesh of animals.

On the other hand, if it can be shown that the agents of infection are frequently disseminated throughout the system, there is at least nothing improbable in the supposition that the foetus may in many cases be infected *in utero*; and the practice of partial condemnation of tuberculous carcasses must be pronounced inadequate to safeguard the public health.

There are several lines along which the information necessary to guide to a correct conclusion regarding these disputed points may be sought. In the first place it is obvious that a study of the distribution of the lesions in naturally contracted cases of tuberculosis is fitted to throw light on the mode of dissemination of the bacilli within the body, and to furnish evidence for or against the theory that the blood-stream is a common vehicle for the transport of these organisms. In the second place we may call in the aid of experiment, introduce tubercle bacilli into the blood-stream, and observe whether the resulting lesions have a distribution agreeing with that observed in natural cases of the disease. Or, finally, we may in cases of natural or experimental tuberculosis institute a search for tubercle bacilli in the various fluids and tissues of the body, either by direct microscopic examination or by inoculating these fluids and tissues into the bodies of animals known to be easily infected with the disease. The main purpose of this article is to record the result of some investigations that I have recently carried out along the last mentioned line of inquiry.

I. EXPERIMENTS WITH THE BLOOD OF TUBERCULOUS ANIMALS.

Before proceeding to state the details of these experiments, it may be well to describe the precautions that were taken with a view to preventing accidental infection of the experimental animals.

In each instance the blood was taken from the jugular

vein. The hair having been clipped closely from the middle part of the jugular furrow, the skin was washed with a strong solution of mercuric chloride in water. The fleam or lancet used to open the vein was sterilized in a 5 per cent. solution of carbolic acid in water, and the vessel in which the blood was caught had previously been sterilized, either by exposure to dry heat for one hour at 160° C., or by steaming for half an hour at 100° C., and for a subsequent quarter of an hour at 115° - 120° C. The blood was defibrinated by whipping with a bunch of iron wires previously heated to redness in the flame of a Bunsen burner. The blood was injected into the peritoneum with an extemporized instrument on the principle of Koch's syringe. This instrument consisted simply of a hypodermic needle attached to one end of a piece of glass tubing either by cement capable of resisting a dry temperature of 160° C. or by a short piece of rubber tubing embracing both needle and glass tube at their point of contact. In the latter case the instrument was sterilized by steaming in an autoclave for half an hour at 100° C. and then for a quarter of an hour at 120° C. In inoculating the expelling force was obtained by attaching the ball of a "hand spray apparatus" to the free end of the glass tube.

EXPERIMENT I.—The blood in this case was taken from a cow with enormous tuberculous tumors (lymphatic glands) in the parotideal region and in front of the shoulder. Each of three full-grown rabbits had 6.8 cc. of the defibrinated blood injected into the peritoneum.¹ All three rabbits were killed 41 days after inoculation. The peritoneum and all the organs of the body appeared to be perfectly normal, save

¹ I may here remark that as long as the material used is bland and unirritating, such as blood, milk, or meat juice, intra-peritoneal inoculation is a simple and apparently almost painless operation. In the earlier experiments, in which the blood was injected cold, the animals for a few minutes after the operation lay prone on the abdomen with the hind legs extended, but since I have adopted the method of raising the liquid to be injected to the body temperature, the animals have in general borne the operation without any sign of discomfort. When the stomach and intestines are not overloaded with food materials 5 cc. or more may be injected into the peritoneum of a full-grown guinea-pig and twice that amount into a rabbit.

that in one animal the liver contained a few white specks of psorospermosis.

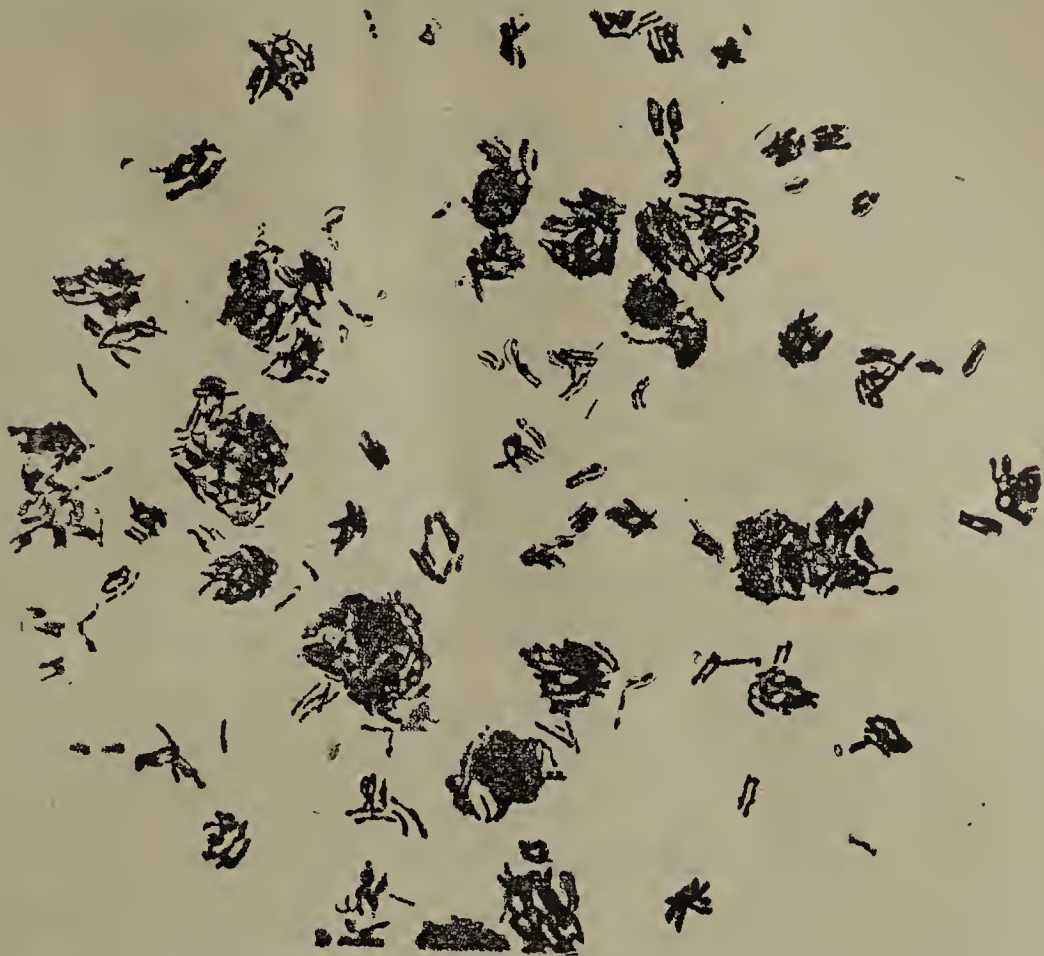
EXPERIMENT II.—This experiment was almost an exact repetition of the foregoing one, save that only 2 rabbits were inoculated, and that the quantity of blood injected into each was 5 cc. The cow from which the blood was taken was the subject of extensive tuberculosis of the lungs and bronchial glands.

Both rabbits were killed 40 days after inoculation. In one of them the *post-mortem* revealed no lesion whatever; the liver of the other contained a few white specks of psorospermosis, but the peritoneum and all the other organs were healthy.

In neither of these two experiments was the distribution of the lesions in the cow from which the blood was taken such as to indicate a generalized tuberculosis. In the following three experiments the blood was taken from horses in which the conditions of a generalized tuberculosis had been experimentally produced by injecting tubercle bacilli into the blood stream. Each horse was infected as follows: about a tablespoonful of caseo-pus from a tuberculous tumor of the spleen of a horse was well shaken in a test tube with 30 cc. of sterilized tap-water. The milky fluid thus obtained was poured into a conical glass and allowed to stand for a few minutes until the coarser particles had settled to the bottom. Eight cc. of the still milky upper strata of the liquid were then sucked into a syringe and injected into the jugular vein of each of the three horses. What I have here termed caseo-pus is the diffuent whitish material which in some cases of equine tuberculosis constitutes the bulk of the tumors found in the spleen, and which, in my experience, is above every other form of tuberculous lesion rich in bacilli. The annexed figure is from a photograph¹ of a cover-glass preparation made from the liquid injected into the jugular vein of the horse referred to in Experiment IV. When it is reflected

¹ This photograph was kindly made for me by Mr. P. D. Coghill of the Royal Veterinary College, London.

that the bacilli here shown formed an infinitesimal fraction of those present in the cover-glass film, and that 5 cc. of a liquid equally rich in bacilli were injected into each horse, it will



TUBERCLE BACILLI FROM HORSE (x 1000). The larger spots represent solid masses of bacilli in which the outlines of the single rods were not clearly distinguishable (see text).

readily be admitted that such an enormous number of these organisms can seldom or never in the course of nature be thrown into the blood-stream of a tuberculous animal. That the bacilli were fully virulent was abundantly proved by the enormous number of miliary tubercles found in the lungs of these horses when they were afterwards killed.

EXPERIMENT III.—Each of two guinea-pigs received into the peritoneal cavity 5 cc. of defibrinated blood withdrawn from the jugular of a horse 24 hours after it had been inoculated intravenously, as already described, with a liquid rich in tubercle bacilli.

One guinea-pig was killed on the 27th, and the other on the 28th day after inoculation; in both the peritoneum was absolutely healthy, and no trace of tuberculosis was discoverable in any organ of the body.

EXPERIMENT IV.—This experiment was similar to the preceding one, but the blood was from a different horse and withdrawn 20 hours after the intra-venous inoculation. One of the guinea-pigs received 4 cc. and the other 2 cc. of the defibrinated blood.

Both guinea-pigs were killed 23 days after inoculation, and the *post-mortem* showed in neither case the least trace of tuberculosis.

EXPERIMENT V.—In this instance the blood was withdrawn (from a third horse) 48 hours after the intra-venous inoculation, and after defibrination 5 cc. of it were injected into the peritoneum of each of two guinea-pigs.

Both guinea-pigs were killed 34 days after inoculation, and both were found to be absolutely healthy.

2. EXPERIMENTS WITH MEAT JUICE.

The following three experiments were made with the juice expressed from the muscles of the three horses referred to in connection with the foregoing series. And here again, although the results were negative, or rather because they were negative, it appears desirable to state that at every step strict precautions were taken to exclude the risk of accidental infection of the animals under experiment. The superficial dissection required to expose the muscles was made with a sterilized knife, and a second sterilized knife was used to cut out the portions intended to furnish the juice for inoculation. In each case the muscular tissue was taken from the pectoral region, and the juice was expressed from it by means of a sterilized meat-press, and received in sterilized vessels. The syringe used for inoculation was of the extemporized pattern previously described, and in each case it was carefully sterilized before use.

EXPERIMENT I.—Two guinea-pigs were inoculated intra-peritoneally with muscle juice, one receiving 4 cc. and the other 3 cc. The juice was obtained from the muscular tissue of a horse killed 10 day after 5 cc. of a liquid enormously rich in tubercle bacilli had been injected into the jugular vein.

Both guinea-pigs were killed 26 days after inoculation, and found to be perfectly healthy.

EXPERIMENT II.—The material used for inoculation in this case was the juice expressed from the muscular tissue of a horse into whose jugular vein an enormous number of tubercle bacilli had been injected sixteen days prior to its death. Of this juice 5 cc. were injected into the peritoneum of each of two guinea-pigs.

Both guinea-pigs were killed 21 days after inoculation, and the *post-mortem* showed the peritoneum and all the organs of the body free from tuberculosis.

EXPERIMENT III.—This experiment was an exact repetition of the preceding one, save that 22 days had elapsed between the intra-venous inoculation and the death of the horse from whose muscles the juice was obtained.

The two guinea-pigs were killed 26 days after inoculation, and both were found to be free from any trace of tuberculous lesions.

The view that the blood-stream is the carrier of tubercle bacilli in most if not all cases of tuberculosis has within recent years repeatedly been expressed, and it may be said that this view is tacitly subscribed to by all those who demand total seizure as the only safe method of dealing with the flesh of tuberculous cattle, for if the muscular tissue in general is the seat of the tuberculous virus it can only be in consequence of the arrest of tubercle bacilli circulating in the blood current. There does not appear to me to be anything like sufficient evidence to prove the correctness of this opinion. Indeed, I would go further, and say that the available evidence furnished by experiment, or drawn from a consideration of the common distribution of the lesions in natural cases of bovine tuberculosis, abundantly warrants the conclusion that in the vast majority of cases tubercle bacilli are not carried by the blood-stream, and that there is no general infection of the muscular or glandular system.

I intend on another occasion to revert to the evidence regarding this point that is derivable from the distribution of the lesions in cases of natural and experimental tuberculosis in the larger animals, but in the present article I wish to review the experimental evidence relied upon by the advocates

of total seizure to prove the virulence of the blood in the first instance, and the mass of muscles secondarily.

At the Fifth International Veterinary Congress, held in Paris in 1889, M. Butel, who may be said to have initiated the crusade in favor of total seizure, submitted a table showing the results of the experiments published at that date regarding the virulence of the blood in tuberculosis. The experiments quoted were as follows:

Experimenter.	Number of Inoculations.	Positive Results.
Villemin	3	3
Gosselin	13	8
Toussaint	5	5
Galtier	11	2
Jeannel	24	10
	—	—
Total,	56	28

At the Congress for Tuberculosis (Paris, 1888) Nocard described an experiment which ought to have been included in the above list. He injected 1 cm. of a virulent culture of tubercle bacilli into the auricular vein of a rabbit, and four hours later he withdrew from the animal's jugular 1 cm. of blood and injected it into the jugular of another rabbit. The latter when killed three months after inoculation was found to be free from tuberculosis.

Since the above date Professor Bang, of Copenhagen, has published the largest series of experiments of this kind yet placed on record. He inoculated defibrinated blood from 20 tuberculous cows into 38 rabbits and 2 guinea-pigs, the quantity of blood injected being in no case less than 5 cc., and in most cases from 10 to 18 cc. The inoculations with the blood of 18 of these cows yielded negative results. In one of the cases that yielded positive results the cow was the subject of acute miliary tuberculosis; in the other positive case only one of the rabbits had insignificant tuberculous lesions, and the other similarly inoculated escaped.

If to the experiments given above in M. Butel's table we add those by Professors Bang and Nocard, and the 5 by my-

self previously described, there is brought out a total of 82 experiments, of which 52 were negative and 30 positive.

Now, if it were a fact that out of 82 cases of bovine tuberculosis selected at random in the slaughter-houses the blood had been proved virulent in 30 cases, hardly any one dare raise his voice against the general enforcement of total seizure. But at the same time it is right to observe that this would by no means prove that the risk of human infection from tuberculous carcasses, even with partial seizure, would be great, for it hardly needs to be pointed out that the subcutaneous or intra-peritoneal inoculation of relatively large quantities of blood is probably a much more certain method of infection than the ingestion of under-done or even raw flesh, and that the guinea-pig and rabbit are probably much more easily infected than human beings.

But when the particulars of the cases cited in M. Butel's table are examined the evidence in support of the frequent virulence of the blood is found to be much weaker than it appears at first sight. The majority of the experiments quoted were made not with the blood of bovine animals but with that of small rodents, and it is quite inadmissible to immediately apply positive results obtained in the rabbit or guinea-pig to animals of the ox species. No one familiar with the common course of a tuberculosis infection in rabbits and guinea-pigs can deny that in these animals the blood within a comparatively short space of time becomes contaminated with the bacilli. The distribution of the tuberculous lesions in the viscera leaves no doubt on that head. But the march of events is very different in the bovine species; in them the progress of the primary lesions is incomparably slower, and it is only in quite exceptional cases and at a late stage in the disease that the lesions assume a distribution such as is almost constant in the guinea-pig or rabbit within at the most a few months after infection. Again, experiments made with the blood even of a bovine subject, provided that the lesions are those of a general miliary tuberculosis, are beside the mark, for no one disputes the necessity of total seizure in such cases.

Finally, it may be objected that any experiments of this nature, whether with blood, meat juice, or other materials taken from tuberculous carcasses, are almost valueless unless the most scrupulous care has been taken to prevent accidental error. We know that the neglect of such precautions at one time led otherwise careful experimenters to conclude that various non-tuberculous products were capable of setting up a true tuberculosis.

When the before-cited experiments with blood are criticised in the light of these objections, it is found that the majority of them fall to the ground. Thus Jeannel's entire series of 24 were made with the blood of rabbits and guinea-pigs. At least 1 of Toussaint's experiments was made with blood from a pig that was the subject of generalized tuberculosis. Again, 2 of Galtier's experiments were made with the blood of tuberculous rabbits, and the other 9 with blood from the tuberculous carcasses (of cattle) condemned as unfit for human food, and therefore presumably affected with general tuberculosis. From these considerations alone, and without insisting on the fact that it is not expressly stated that sterilized instruments were used at every step of the operations, the entire experiments of Jeannel and Galtier, and in part those of Toussaint ought to be eliminated from M. Butel's table. Unfortunately, I am unable to give detailed report of the 16 experiments by Villemin and Gosselin, but I think it is highly probable that they also are open to one or other of these objections.

It is worthy of note that Professor Bang's experiments are expressly stated to have been made with blood from "extremely tuberculous cows," several indeed having had lesions indicating a generalization of the disease. And if, for the reason already given, we put aside the positive result obtained in the case of the cow that was the subject of acute miliary tuberculosis, out of 36 rabbits and 2 guinea-pigs inoculated with relatively very large doses of blood only 1 rabbit was found to be infected, and in it the lesions were insignificant. Considering that the other rabbit used in the same experiment remained healthy, Professor Bang would probably him-

self admit that the one positive result is within the limit of accidental error.

I do not wish to attach undue weight to the small number of experiments made by myself, but it cannot be denied that the negative result of those made with the blood of horses is diametrically opposed to the view that the blood can be the carrier of tubercle bacilli in any considerable proportion of cases, or for any considerable period. The belief that in any circumstances tubercle bacilli multiply in the blood-current, or even for any length of time continue to make the round of the circulation, is probably unfounded. In support of this statement and in corroboration of the results obtained in these experiments with tubercle bacilli, I may cite the experiments of Chauveau (quoted by Frank and Lubarsch),¹ who found that even anthrax bacilli when injected in enormous numbers into the blood-stream, are very rapidly filtered out in the capillaries of the various organs.

Turning in the next place to the published experiments with meat juice, one finds a condition of things which at the first glance appears to tell strongly in favor of the contention that tubercle bacilli are not infrequently harbored in the muscular system of tuberculous animals. Thus, a table compiled by M. Butel in 1889 showed the general result at that date to be as follows:

Experimenter.	Number of Experiments.	Positive Results.
Bollinger	12	0
Gratia and Liénaux	3	2
Peuch	2	2
Galtier	25	6
Veyssière and Humbert	2	2
Arloing	2	1
Nocard	21	1
Total	67	14

To the above list there failed to be added the 3 experiments with muscle-juice from horses referred to in this article

¹ Zeitschrift für Hygiene, Elfter Band, zweites Heft, p. 259.

and a further series of 14 experiments carried out by myself at the request of Professor Brown. These later experiments were made with the juice from the muscular tissue of tuberculous carcasses condemned as unfit food at the Edinburgh Abattoir,¹ and the result in every case was negative. When these two series are added we obtain a total of 84 experiments, of which 70 had negative and 14 positive results.

But here again a scrutiny of the experiments brings out a result much less unfavorable to the muscle-juice than is at first apparant.

The 2 experiments of Peuch must be put aside, for the cow from which the juice was obtained in the first experiment was obviously the subject of a general tuberculosis, since the lesions are stated to have involved the lung, pleura, peritoneum, bronchial and intestinal mucous membrane, mesenteric, bronchial and submaxillary glands, and even the bones; and in the second experiment the juice was obtained from the muscles of a fowl dead from generalized tuberculosis. It may be observed that there is thus a double objection to the validity of the second experiment; for there is strong reason to suspect that avian and mammalian tuberculosis are distinct diseases. As was remarked in speaking of the experiments with blood, it is useless to cite experiments made with carcasses in which the lesions indicate a generalization of the virus, for no difference of opinion exists as to how such carcasses ought to be dealt with.

The same objection holds good with reference to Galtier's experiments, for while it is not perfectly clear from his report that the animals furnishing the muscle juice were all the subjects of a general tuberculosis in the strict sense of that term, they had at any rate lesions sufficiently extensive to determine their condemnation even under a system of partial seizure. It may be worth while to note here that Galtier himself, as the result of subsequent experiments made with raw flesh from tuberculous cattle, has arrived at the con-

¹ The details of these have already been published in the Annual Report of the Veterinary Department for 1890.

clusion that such carcasses may with safety be passed for consumption provided the visibly diseased organs be confiscated.¹

Veyssiere and Humbert's 2 experiments are very far from convincing. No information is given regarding the extent or distribution of the lesions in the two carcasses from which the muscular tissue was taken, it being merely remarked that the animals were "in very good condition." Besides, it is not stated that any special precautions were taken in cutting out the flesh or in the other steps of the operation; and although the inoculation was intra-peritoneal, the peritoneum itself appears to have been healthy at the autopsy. There is therefore room for suspicion that the tuberculous lesions in the experimental animals owed their origin to an accidental infection.

The details of Professor Arloing's 2 experiments and those of the 3 by Gratia and Lienaux are not stated in the references to which I have access; but assuming that the animals furnishing the muscle-juice in these 5 cases were not the subjects of a general tuberculosis, and that the experiments are not open to any objection on the score of inadequate precautions to prevent accidental infection, we have remaining from the total of 84 experiments with meat juice 55 that are still valid; and of these 51 had a negative and 4 a positive result.

It might thus be said that there is evidence to show that the muscular tissue of the body contains virulent bacilli in nearly 8 per cent. of cases of apparently (as regards the distribution of the visible lesions) local tuberculosis. But it is surely a remarkable fact that 3 of the positive results were obtained in 2 series with a total of 5 experiments, while in 3 other series with a total of 55 experiments the result was positive in only 1 case. How can one explain the fact that Arloing, Gratia, and Lienaux found the muscular juice infective in 60 per cent. of the carcasses examined by them, while 3 other experimenters found it infective in less than 2 per cent.? With results so very discrepant it would almost

¹ Reference in the *Centralblatt für Bacteriologie*, 1892, p. 11.

appear justifiable to assume that there must have been a fallacy in the one or the other series of experiments, and, from the smallness of their number, those in which the large proportion of positive results was obtained are most open to suspicion.

CASTRATION OF CRYPTORCHIDS.

By PROF. F. MAURI, of the Veterinary School of Toulouse, France.

(Continued from page 187).

DIAGNOSIS OF CRYPTORCHIDS.

The diagnosis of cryptorchids involves an inquiry into the general character of the subject and the critical examination of the scrotal region. Excepting for the absence of the testicle in the scrotal region, the animal has all the conformation and appearance of the entire horse, and is spirited, fiery and noisy in the presence of animals of his own species. No practitioner can be mistaken as to the significance of such manifestations. But it is important, from a surgical point of view, to determine whether the cryptorchidy is permanent, whether it is on the right side or the left side, or whether it is double.

In the colt, the testicles have generally descended when he is six months of age; their migration, however, may be delayed to a later period, and may not take place until he has attained his first year or eighteenth month, or even his second and perhaps his third year. It is therefore only when the most extreme of these terms has been reached without the descent of the testicle, that the ectopia can be considered as definite. The presence of a testicle has often been observed at eighteen months or two years at the time of castration, with the dropping of the second organ only six months or a year after the removal of the first. The castration of the cryptorchid is, therefore, only justifiable when he has fully reached his three years. By thus waiting, the animal may complete his development, and this will render the operation easier, besides insuring the benefit of the spontaneous descent of the delayed organ.

It is important at the outset to accurately determine whether the cryptorchidy is on the right side or the left, and this can usually be ascertained without difficulty, since the animal may be seen with one testicle free and properly located, while the other is entirely concealed, with the corresponding scrotum entirely free from cicatrix, which is the positive sign of ectopia. More commonly the visible testicle has been removed, while the descent of the other has been looked for in vain. In this case the absence of the testicle and of the cicatrix of castration in the scrotal region of one side, with one retracted, radiating and in continuity with the cord on the other, are signs which admit of no doubt in the mind of the practiced observer. But it may happen that the gelder has attempted or feigned to castrate on the side where the testicle was absent in such a way as to produce a more or less deep traumatism, and with subsequently a cicatrix. It is easy to distinguish this from the true cicatrix; it is elongated, projecting, and not retracted by the stump of the amputated testicular cord. There are other characters by which double cryptorchidy may be recognized besides those already mentioned, such as the absence of the testicles in scrotal envelopes, as well as that of any revealing cicatrix resulting from an operation. The question whether the cryptorchidy is inguinal or abdominal I view as of little importance, and, like Professor Degive, I never think of it before the operation. Still, the most careful exploration of the inguinal and abdominal regions, whether by direct palpation or by rectal taxis, will not always yield positive data, as I found in my eleventh operation upon a ridgling whose left testicle, of the size of a hen's egg, was situated in the sub-lumbar region, a location which rectal examination was not competent to establish. Mr. Dierieux states that rectal taxis has never enabled him to locate the presence of the testicle suspended in the abdomen. Mr. Degive affirms nearly the same thing, though he is of opinion that "in some cases it may be possible to feel an abdominal testicle, especially when it is comparatively large and sufficiently consistent."

· VARIOUS MODES OF OPERATION.

The preceding remarks sufficiently indicate the operative method which I have exclusively adopted for the castration of cryptorchids. In both forms of testicular ectopia, the inguinal way seems to me indicated to insure success in the greatest number of cases. According to Van Seymortier, of Andenaerde, this method was practiced by Flemish gelders as early as 1832. The results which have followed in numerous cases in the hands of Parrel, Dieriex, Degive, Capon, Jacoulet and others, as well as my own, appear to me sufficiently satisfactory to entitle it to a place in the first rank of surgical achievement, and to justify its adoption by all practitioners. It is, however, but right to expect that with some improvements in the *modus operandi*, and with the more rigorous use of antiseptic measures, the number of fatal results will be diminished, and that in this way the castration of cryptorchids will enter finally in current practice. I have never thought of trying either the method by incision through the flank, or that through an incision of the inferior abdominal wall near the inguinal ring. I suppose these methods have had their time; that they have been entirely abandoned, and that Mr. Degive refers to them in his work simply as entitled to mention as items properly belonging to a history of surgery. Still, this is not wholly the fact, for at the present time foreign practitioners, whose names are authority, are still preaching these methods, and claim for them great advantages. For example, Nielsen has adopted the improved, classical Danish method, which he describes as follows:

“The horse is cast by the Danish method, having the region to be operated upon turned upward, and the inguinal region being first washed with soap and brush, and then with a tepid phenic solution, an incision ten centimeters (about five inches) long is made in the skin immediately in front of the border of the pubis near the thigh, but always at a short distance from the scrotal region at a point where the abdominal wall is thinnest. The cellular tissue covering the abdominal wall is then divided with the fingers from before backwards,

and the opening of the inguinal canal is exposed. If the testicle is not found, the muscular tissue of the abdominal wall, on a level with the point of the operation, is lacerated with the fingers of the right hand, and the peritoneum torn by a sudden push of the extremity of the first finger, the passage thus made being as small as possible.

“ If the fingers fail to detect the testicle, the whole hand is introduced and the organ brought through the wound, and the cord is secured with a caustic clamp. The wound is then sutured in front of and behind the clamp. After twenty-four hours, the clamp is removed and the cord left free. Cicatrization of the wound is assisted in order to prevent any protrusion of the intestines. The operation is performed under the influence of chloroform, and is accompanied by the most thorough and rigid antiseptic measures. After the operation the wound is constantly irrigated with cold water.” More recently Ostertag writes as follows :

“ In occidental Frisia castration of cryptorchids is done by empirics; few veterinarians care to do it. The first idea of the author was to operate in the manner of Nielsen. In 1887 he operated on a four-year-old horse. By rectal exploration the testicle could be felt floating freely in the abdomen. The operation was quite easy, the assistance of a colleague being secured, who through the rectum kept pushing the testicle through the wound. The organ was fixed to the lumbar region by a short peduncle just long enough to allow the testicle to be brought outside the wound, and to have a clamp applied. The method of Nielsen was followed to the letter, and the wound irrigated with cold water for three hours. Violent colics followed, and after twenty-four hours the symptoms were such that death seemed to be imminent. The clamp was then removed, and the wound still irrigated. On the sixth day the condition of the patient was very bad, repeated injections of morphine giving but little relief. The animal was much depressed, and there was an extensive swelling from the pubis to the sternum. On the tenth day condition was better, but hernia of the intestine appeared. After disinfection the hernia was reduced, and no further compli-

cation were observed. The patient recovered, though with an extensive inguinal hernia which rendered him useless." He continues :

" In the numerous cases in which I have operated I have followed the method of Degive on colts between one and two years old, in which one or both testicles were entirely within the inguinal canal, or where the epididymis was only in the superior opening. I have always seen œdema following the dilatation of the superior opening in the neighborhood of the wound, with high fever, and I have become convinced that the penetration through the inguinal ring is less advantageous than the division of the abdominal muscles and the formation of an artificial tract. And again, I have in many cases, with Mr. Peters, employed a process which I recommend highly, and which I believe has never been described.

" When once the position of the testicle has been well established, the animal is cast on the side opposite to that of the operation and chloroformed, and the posterior leg removed from the hobble and pulled backward. The skin of the flank is shaved and washed, first with soap, and then with a solution of corrosive sublimate.

" The horse is well covered with an oiled cloth pierced with an opening two hands wide ; an incision, ten centimeters long, is made below the external angle of the ilium, downward and forward, following the direction of the fibres of the small oblique of the abdomen, and involving only the muscular tissue. This is then divided by a rotary motion of the hand, and the peritoneum penetrated by a sharp push of the fingers. It is a judicious precaution, in order to prevent the introduction of air, to envelop the arm with a cloth moistened with a solution of corrosive sublimate.

" An assistant feels through the rectum for the testicle, and pushes it toward the operator, and when it is brought outside the cord is amputated with the actual cautery and returned into the abdomen. During this manipulation the hind leg must be kept extended backward in order to assist when released in the closing of the wound, which is afterward brought together by sutures and covered with iodo-formed collodion.

“I have never castrated animals with double cryptorchidy, but in all cases of the unilateral form I have obtained rapid recovery when operating through the flank. The after treatment consists in irrigation. The sutures are to be removed after twenty-four hours. The advantages of this method are :

“*First.* The operation is performed while the animal is on his side, while in other methods he must be placed on his back.

“*Second.* The wound is never kept open by the weight of the intestines, and their protrusion is therefore not to be feared.

“*Third.* The after treatment is easier of application upon the flank than in the inguinal region.

“The perforation of the abdominal wall in the Danish method is dangerous, and in cases where the epididymis is in the canal the Degive proofs can be employed. In all other cases my method is less dangerous.”

Herm. Putz, referring to the works of Schmidt, Ostertag, Degive and others, thus concludes :

“The results obtained by Danish veterinarians are but little satisfactory. If the operation is performed through the inguinal canal by means of an incision in front of the pubis where the wall is thinnest, or even through the flank, the result is always a doubtful one.”

As may be seen by the extracts, the Danish and German veterinarians favor the methods which involve the opening of the peritoneum by incision of either the flank, or, preferably, of the abdomen near the inguinal canal. Notwithstanding the authority of these writers, however, I shall continue to consider these operations as of a very dangerous character, and shall prefer the perforation of the inguinal interstice. Our foreign confreres ought to have sustained their case by reporting the exact number of operations performed, with the results obtained in each case, as, after all, these practical results are the best proofs of the comparative merit of this, as of any other surgical method.

The figures which we have gathered from various publications relate specially to the operation through the inguinal space. For example: Degive reports 9 deaths in 127 opera-

tions, or an average of 7.08 per cent., and Hering, in the last edition of his work, revised by Vogel, describing Stockfleth's and Degive's operation, reports a loss of thirty per cent.

Schmidt gives the details of three operations through the inguinal passage, and reports a letter from Stelkens, who has operated upon 36 animals, with 8 deaths, or a loss of 22.22 per cent. Capon reports three deaths in 10 operations, or a loss of 30 per cent.

Evidently, this variation in the results actually obtained depends a great deal upon the different conditions in which the several operations have been performed.

(To be continued.)

AN OUTBREAK OF SCARLET FEVER IN COLORADO.

BY CHARLES CRESSWELL, M.R.C.V.S., State Veterinarian.

A disease of a somewhat mysterious character has been prevalent on the Johnson ranch, near Dolores, Montezuma county, for a period of between four and five years, resulting in the death of several valuable horses; the most noted of which have been the celebrated thoroughbred stallions Jim Douglas and King Faro. During the past year twenty-five horses have been affected, of which seven died. Latterly, the general opinion, among the horsemen and neighbors of the district, was that this disease was glanders. Last week I made a journey there in order to investigate the nature and cause of the disease. On arrival I found one stallion in the first stages and thirteen more or less affected, and several others which had recovered. The recent case had only been affected two days. The thirteen were, with three others—now showing no symptoms of the disease—the remainder of twenty horses turned out in March with the expectation that all would die.

The symptoms of the recent case were: Discharge from both nostrils, enlargement of the submaxillary glands under the throat, and of the parotid glands below the ears, sore throat, high temperature, and injected condition of the lining

membrane of the nasal passages, with the commencement of scarlet and purple spots, and great difficulty in swallowing. These symptoms were common to all the previous cases in the early stages. As a rule the symptoms gradually advanced to increased discharge from the nostrils—sometimes with blood—more or less ulceration of the nasal membranes, swelling of one or both hind legs or between the fore legs, with multiple pustules on various parts of the body, which on breaking off left sluggish ulcers. In cases where the swelling was very extensive the animal died in from ten days to three months.

Of the sixteen animals examined thirteen had more or less discharge of a thick, glutinous character from one or both nostrils. All had either completely healed scars on the nasal membranes, showing a previously ulcerated condition, or had ulcers in now a healing condition; one had perforation of the septum, four had no signs of ulceration either past or present; and ten had more or less enlargement of the glands of the jaw. A mule, which had also been turned out with the horses, and which had the disease in its most acute form together with extreme emaciation, was found to be perfectly healthy and the symptoms had entirely disappeared. Upon a general review of these symptoms, with a history of the disease, it is not to be wondered at that, considering its persistent character on this ranch, it should have been considered glanders.

The main reasons determining a doubt, which afterwards culminated into a certainty, of its non-glanderous character, were that undoubtedly several horses had recovered absolutely, several more were in a fair way to recover and during the whole five years not a single case of direct infection to man or other animals at a distance could be proved; and, finally, the appearance of abscesses which frequently broke at maturity, in several of the cases, which is the rarest circumstance in glanders. Having determined that the disease was not glanders, and not wishing any doubt to exist in the minds of the public, I represented to Mr. Johnson that the only way to settle the question absolutely, was to destroy the worst chronic case for post mortem examination. To this Mr.

Johnson consented, and a young thoroughbred mare having the disease in its worst form, to the extent of complete perforation of the nasal septum, was shot and examined at once. Absolutely no disease whatever of the lungs, spleen or liver was discovered, and no enlargement of the lymphatic glands other than those in and around the throat.

The body was well nourished, all the disease being confined to the septum, and already the process of healing had begun. But the structural changes in the nose and the frontal sinuses of the head, caused by the ravages of the disease, would in all probability have rendered the mare useless for racing purposes. The question of glanders having been thus eliminated, the disease was decided to be an aggravated form of what is technically called purpura hemorrhagica, commonly called purpura or scarlet fever form of distemper and its persistence on this farm accounted for—and the chronic alterations of structure somewhat usual in outbreaks of this disease—by the peculiar conditions existing on the farm, hereafter more fully described. This form of distemper is very persistent in its recurrence in a given locality, is especially destructive in its action on all high-bred stock, and is fatal in a large percentage of cases if not properly treated.

It starts with a high fever, injection of the lining membrane of the nose, with first scarlet and afterwards purple spots on the visible mucous membranes, and tumefaction of various glands. If the fever is very high, and runs unchecked, and death does not occur from passive congestion of some important organ, it frequently happens that ulceration of the nostril will take place, and sometimes pyæmia or general blood poisoning from the enlarged glands. And even though apparent recovery should take place after these many changes, it is yet possible for the animal to still retain some subacute disease of the nasal passages. In this case the glands would naturally remain slightly enlarged so long as the disease lasted. One of the principal reasons for its continuance on this farm is, in my opinion, the exceptional hardness of the water, drawn from a surface well sixteen feet deep. It is a well-known fact that water containing a large amount of

gypsum, will, in the thoroughbred, produce a chronic thickening, gradually, of the various glandular structures of the body.

These, in turn, reacting on the system, produce a strong tendency to take in quickly and develop rapidly any disease germs which may be around, and so render malignant what would otherwise be a mild eruptive disease. Then again, when attacked with the disease, no means were taken either to arrest it in its early stages of fever, or by effective surgery to reduce the effect of the abscesses to their minimum amount of damage. It is a characteristic of purpura, when in a malignant form, to affect glands in a deep-seated position, consequently when pus forms it is highly necessary that it be immediately evacuated; otherwise pyæmia or blood poisoning occurs. This necessitates early and practical surgery, and in these cases above described, there is no doubt a great amount of after damage, and in several cases death resulted from want of timely surgery.

The whole history and progress of the disease points to the facts, illustrated in so many instances, that whereas the majority of the natural eruptive fevers of the horse will, in a natural undeveloped horse, assume a non-malignant type, yet in the more artificial animal, under artificial conditions, assume a malignant character, either fatal immediately or very destructive in after effects, if not treated in a scientific manner, and not prevented with especial reference to general sanitary and dietetic condition. The treatment recommended for the prevention and cure of the disease is as follows: For all highly bred stock it is very necessary that they should have pure water, as free as possible from all elements of hardness. In various parts of the country the source of hardness varies, but as a general rule it is sulphate of lime or gypsum, contained in solution by excess of some acid radical.

In a few cases it is sulphide and arsenite of iron, which under abnormal conditions of the digestive system cause a certain amount of arsenic to be set free. Copper and lead will sometimes be present, also mercury in more rare instances. In addition to these mineral impurities, it will some-

times happen that organic impurities from surface leakage into wells will take place, which have a constant action on the glands of the body. In all cases, therefore, of extra hardness of water or of organic impurity, the use of such water should be discontinued for horses kept or raised in an artificial condition. In the cases above there is no doubt but that the exceptional hardness of the water and its close proximity to the stables, was to a great extent the cause of the abnormal glandular enlargements found on almost all the young bred stock on the farm.

The importance of the water supply can hardly be overestimated, as apart from the potency of hard water to cause all catarrhal and eruptive fevers to assume a higher activity, it will arrest development of the animal. In the case of the Johnson horses, if better water cannot be obtained by sinking deeper, the water should be drawn from the Dolores river. It is a fact worthy of note that a wonderful improvement took place in the chronic cases, which were turned out on the river in March. Next in importance as a preventive measure is a thorough cleansing and disinfecting of the stables periodically, and especial attention should be paid to the floor of the box-stalls. These are for the most part of earth, and this should be removed for at least twelve inches, and fresh soil put in, after first covering the old floor with slacked lime. All the walls should be whitewashed with half a pint of carbolic acid in each bucket of wash. The wooden feed-boxes and mangers should be taken out and destroyed and fresh ones substituted.

The chronic cases should be brought up once a week and an ointment of one part of idoform to eight parts of lard inserted into both nostrils by means of a piece of soft sponge attached to a stick. As soon as a fresh case develops, which can easily be determined by the high fever, enlargement under the jaw and scarlet spots appearing in the nostrils, the animal should be at once isolated from the others and the fever reduced by doses three times a day of two drachms of potash, two drachms bicarbonate of soda, and one drachm of chlorate of potash. The throat must either be poulticed con-

stantly with applications of camphorated spirits and glycerine, equal parts, three times a day, or if poultices are impracticable, apply in the first instance a sharp cantharides blister, one part of cantharides to eight parts of lard. As the pus in the abscess draws to the surface, lance freely and dress with carbolic oil, one part carbolic acid to twenty parts olive oil.

It is most important that the abscess be operated on as soon as decided suppuration has taken place. Care, of course, must be taken not to cut or injure any of the vessels or nerves, and in many cases only a qualified surgeon can perform the operation. In some instances no suppuration occurs and this is due to the great number of glands previously indurated, together with the high fever, causing a distribution instead of a concentration of the disease. In such cases the early application of the blister is necessary, together with the free administration of the fever medicine. When the fever abates, to be determined by the use of a clinical thermometer, the medicine should be gradually reduced, and the animal allowed a liberal supply of whatever food it will eat or drink, except corn. During the whole fever keep the stables fumigated with burning pine tar, at least once a day, and also allow all affected animals to breathe such occasionally.

This fever has been very prevalent in Colorado this year, there being one hundred cases in Denver during the month of May which came under my notice. Great care and effective surgery are necessary to effect cures without after bad effects, but if taken in the early stages the disease readily yields to treatment. During the early stages of fever and abscess formation exposure is certain death in a large percentage of cases, and the more highly bred the animals of course the greater the loss. Where they can be taken up and cared for on the lines laid down, the loss would be very small and the after effects of chronic disease in the nasal chambers prevented in almost every instance. To sum up, the conclusions arrived at are: Scarlatina among horses has been prevalent in Colorado in many places for several years past. It is far more malignant in character and causes far more losses than ordinary distemper, so called.

Its virulence is increased by anything which tends to cause natural increase in size of the glands in and around the throat and hind legs, notably hard water, or water containing much alkali. Highly bred stock, by reason of its peculiar liability to take on glandular enlargement, is more affected and the disease runs a more severe course. If properly attended to under sound medical and surgical treatment, most cases recover absolutely. If not properly attended to, or the causes predisposing to excessive virulence are not removed, the effects of the disease are either death from pyæmia, or a chronic condition of the nasal passages so much like glanders as to deceive anyone unless the history of the case is known or a post mortem examination made. Most decidedly the disease is not glanders, and it is important that this fact be appreciated at once.

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."—VETERINARY RECORD.

PROLAPSUS VAGINA AND RECTUM.

BY DR. H. FULSTOW, V S., Norwalk, O.

Some time ago I was called to see a two-year-old Jersey heifer that was due to calve in eight days. Upon my arrival I found the patient running in a barn-yard with a small shed in it for her to run in, but which had got so filled up with manure that it was impossible for her to go in without scringing down, and when in she had to scringe in order to stand without her back touching the floor above. On examination found the vagina out as large as a man's head, and very much inflamed and thickened, and covered with filth, and a cut in it about three inches, which was bleeding; also rectum protruding about four inches. Upon inquiry found that vagina had been in and out for three weeks every day or two, and they had kept putting it back, but this time it was so large

they were unable to reduce it, and it was out for three days before I was called. They had also been feeding the animal on chop feed and she was very constipated. The heifer was kept in a barn at night with a floor sloping back, which also kept the case aggravated. I cleansed the vagina with lukewarm carbolized water, and as it still kept on bleeding quite freely, and she strained violently, I gave her a hypodermic injection of morphia, grs. iii, and used a solution of tannic acid and opium on the vagina before replacing it; after replacing it I sewed up the lips of her vulva, leaving an opening below for the passage of urine, and left a solution of tannic acid and opium to inject into the cavity several times daily; also gave her ol. lini, Oiss, and gave her enemas, after replacing the rectum, which stayed all right without further interference, and ordered her fed on mashes and grass. In several days I was called again as the heifer was straining some. I found her down, acting as if labor had commenced, so I removed the stitches and made an examination and found that she was making preparation, and with a little assistance, she delivered a fine heifer calf. After removing the foetal membranes I washed the uterus and vagina out with a solution of pot. permanganate and replaced vagina, which had come out again, and sewed up her vulva. Kept on using the astringent wash for a few days. I heard from her in about one month; she was all right and giving a good supply of milk.

EXTRACTS FROM FOREIGN JOURNALS.

FROM GERMAN JOURNALS.

BY RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

*TRICHINÆ DEVELOPMENT IN THE FLESH OF AMERICAN SWINE.

The result of the systematic examination of American pork products, embracing smoked and pickled meats, has been to

*Reprint from the Pathological Institute connected with the Veterinary College at Hanover.

discover a relatively large proportion trichinæ, and this despite the enforcement of the Act of March 3d, 1891, which provides for the microscopic supervision of meats intended for export trade. The same report has been rendered from the cities of Dusseldorf, Crefeld, Emmerich, Bremen, Leipzig, Altona, Posen and Koblenz.

It consequently becomes of immense import to the sanitary police to determine if the micro-organism is annihilated by the process of pickling through which the meat is conserved. Many experiments upon this point have been carried out, but few positive results have been obtained. Mice, rats, rabbits, cats, young swine and guinea-pigs have been the animals used in these trials.

Thickly settled swine meat was fed to rabbits with negative results by Hintzen of Cleve, Ernst of Hildesheim, Schenk and Wagner of Frankfurt-a-M., Frankel and Klap-hake of Crefeld; flesh of the same character was fed by Wagner, Schenk and Janssen to cats, pigs, mice, rats and guinea-pigs also with negative results.

Experiments instituted by the Imperial Health Bureau also terminated adversely. Hertwig and Johne have found living trichinæ in American meat (supposed to have been inspected at the port of departure in the United States). Duncker in Dresden and Untersuchen in Hamburg have acquired positive results by feeding the flesh to rabbits.*

In modern times Janssen† has also secured positive results by feeding the affected meat to a rat for twenty-one days. At the end of this time the rodent was killed, and three well developed and sexually mature intestinal trichinæ were exposed—two females and one male. In the former numerous eggs could be discerned, but no embryos.

On the 27th of March, 1892, Supervising Veterinarian Grosswendt delivered to the pathological institute samples of American pork which were so thickly overrun with the parasites that in 0.1 grammes of the same six trichinæ were

*Ostertag, Handbuch der Fleischschau, S. 347.

†Berliner Thierarztl. Wochenschr., S. 237, J. 1892.

found. The latter evidently were possessed of animation, and a portion of the meat was fed to two white mice; these both succumbed the following day from the toxic effect of the concentrated brine within the substance of the muscular fibres fed.

On the same day a rabbit was given bits of this meat, and died on the 22d of June; no trichinæ discovered post mortem.

On the 31st of March two more mice were fed from this same meat, steeped in water, one of which was killed April 4th, but no trichinæ detectable. The companion mouse was kept in a glass jar and continued lively and healthy up to the 15th of June, when it was inoculated with skin from a dead swine, and died of septicæmia. In its muscles numerous examples of the trichina were found, which from their appearance had been imbedded fully three months. They were flexed and rolled upon themselves, possessing a capsule of double contour, somewhat truncated at the termini.

On the 7th of May an inspector connected with the institute received an American ham in which many examples of the worm existed. On the 10th of the same month a mouse and rabbit were fed with portions of this meat; on the 14th the mouse was killed, but no intestinal representatives were apparent. The rabbit, despite careful attention and nourishment, died on the 24th of September, but trichinæ were absent.

Out of seven endeavors at transplantation, all of which were favorable in the minutest detail, to the propagation of the worm, only one was successful. It is of interest to recount the opinions in mitigation of this conclusion, which are promulgated by the various authors and investigators.

The Royal Health Office advances as a cause of negative results, the fact of the meat being too strongly pickled or excessively smoked. Klaphake†, of Crefeld is of the opinion that the various steps and substances incidental to and used in the conserving process are calculated to destroy the trichinæ

†Ostertag, Zeitschrift für Fleisch u Milchhyg., B. ii. H. 4.

in Atlantic transit. In confirmation of this supposition we have the experiments of Frankle and also of this establishment.*

The former states expressly† that he used hams in his trials that had previously been pickled; notwithstanding the minute strength of the brine the trichinæ were killed by it.

At the institution we applied meat that was so intensely salted as to cause death from sheer thirst†, even after we had soaked it in water a short time before feeding it.

In a later trial we used the same meat, but permitted it to remain a period of several hours in water, previous to administering. This gave positive results. Up to the present time we cannot assert the reason for the immunity possessed by the trichinæ in the latter instance in which, moreover, the brine was unusually strong.—*Berliner Thi. Woch.*

PERNICIOUS ANÆMIA IN THE HORSE.

We were lately called by the owner to attend a young horse which had for six weeks eaten indifferently, and which was gradually losing flesh. The slightest work was sufficient cause for a profuse perspiration and weakness which threatened to precipitate the animal to the ground.

Status Præsens.—Emaciated dark brown gelding of medium weight, five years old; the coat without lustre and dry; patient exhausted and standing with drooped head in the stall; countenance languid and immobile; visible mucous membranes, anæmia, and almost white in tint; the corporeal surface of the same degree of heat, rectal temperature 102° F.; pulse unusually weak, wiry and beating 72 per minute; heart tones indistinct, only one being appreciable; contraction, however, strong; respiration labored, and occurring twenty times in the minute; percussion of the thoracic walls, and auscultation of the lungs, indicated nothing abnormal; as well could we observe no lesion of the digestive tract; urine

*The Patho-Biological Institute of Hanover Vet. Univ.

†Ostertag, *Zeitschr. für Fleisch u Milchhyg.*, B. ii., H.10

could not be secured; along the abdomen, extending from the xiphoid appendix to, and including the prepuce, a considerable œdematous swelling; the sheath was immensely enlarged. Small amounts of blood drawn from the jugularis and microscopically examined, did not contain a superabundance of white corpuscles. The red variety of these, however, appeared paler, longer, and indented by numerous fossæ. Prognosis unfavorable; therapy, ferrum and digitalis.

Death overtook the patient on the third day. The section revealed the blood vessels only partially dilated, and occupied by a watery quality of blood. All the serous membranes were characterized by ecchymotic points—the pericardium being especially so. The cardiac muscle itself was tender, pale and brittle; muscular portion of the general anatomy also possessed this quality to some degree. Upon the other organs, excepting the spleen, which was somewhat enlarged, nothing noteworthy was found.—*Berl. Th. Woch.*

INHERITANCE OF RABIES IMMUNITY.

The investigations relative to the transmission of immunity to certain diseases from the parent to the offspring, have been conducted upon two different lines of procedure.

Firstly, with respect to the germinal transmission, i. e., either through the spermatozoa or the ovulum.

Secondly, as to the result of sanguinary and nutritious interchanges between the mother and foetus of a natural immunity, or that induced by vaccination.

It has been determined that exemption may be conveyed by the immunized female to its young through the fluids passing from the maternal to the foetal body. Experiments upon the germinal transmission through the sexual organisms have terminated negatively. Ehrlich, who has probed this question accurately, does not believe the egg or the semen capable of transplanting—in the true meaning of the word—the freedom from disease.

The authors (Prof. Guido Tizzoni and Dr. Eugenio Centami) have had their observations directed to the germinal

transmission through spermatozoa. These gentlemen took three males of different mothers, which they immunized against rabies; the females supplied to these were susceptible of rabies, but in the most intense degree were immune to tetanus. The result of these trials is concisely given in the following:

First. The father may impart per the semen an acquired freedom from rabies.

Second. The same is not influenced by the mother, as the rule holds good when the father has access to several females.

Third. The inheritance is given to all children to the same extent.

Fourth. The immunity is less comprehensive in the children than in the father.

Fifth. The protection, when acquired by the semen, is permanent, which fact is in opposition to that produced by the blood or milk from the female.—*Centralblatt f. Bact. u. Par.*

THEORY AND PRACTICE IN MEAT INSPECTION.

It is evident at the present day that meat poisoning is almost exclusively caused by the consumption of the flesh of such animals as have suffered from septic or pyæmic processes. Doubt as to whether the meat inspection remains applicable to all such cases has led the author to relate the following:

First case, a cow, systemically febrile, and showing symptoms of such indisposition, exhibited enlargement and disease of a quadrant of the udder accompanied by the usual pain, heat and hyperæmia. Diagnosed mastitis septica.

The microscopic character of the disease discharges could not be disputed. The swelling included the anterior quarter of the udder upon the affected side. General condition continued to decline, so slaughter was advised. Upon the meat there was nothing indicative of the intra vitam affection, and the same was passed by the inspector as conditionally healthy. Examination of the mammæ showed it to be four times its

usual dimensions ; every quarter was surrounded and intersected by a hyperplastic, gelatinous tissue, which upon the left half of the organ was infiltrated with a reddish brown serous material which could be expressed. The subject, then, was one of parenchymatous and interstitial mastitis associated with phlegmonous œdema. Upon the other organs nothing more was discovered. In all probability a general septicæmia had already acquired a foothold.

Second case, also a cow, had manifested for three months partial loss of appetite, and suddenly declined all food. The animal was systemically affected and very languid ; temperature $105\frac{4}{5}^{\circ}$ F., local lesion not apparent. A septicæmic process was diagnosed, but upon the cause of which nothing definite could be recorded.

Post-mortem.—A bloody, gelatinous œdema could be noted subcutaneously along the spine and tarsal joints. In the abdominal cavity, with the exception of a slight swelling of the spleen and opacity of the parenchymatous organs, nothing unusual ; nothing of note in the thoracic cavity. Between the liver and diaphragm, and along the posterior vena cava, the same gelatinous material could be seen. Upon opening the right auricle, a tumor the size of an apple, and containing pus, could be seen disposed beneath the tricuspidalis. The endocardium ulcerated. We diagnosed septico-pyæmia and ulcerous endocarditis as the cause of the symptoms. The inspector here also passed the meat as conditionally fit for food.

In both cases the consumption of the meat caused no sickness. This circumstance has induced the author to enumerate the following facts :

In both animals the disease was of a local nature, primarily circumscribed, though later causing a general septicæmia.

That such flesh may be eaten with impunity is a truth which has been many times confirmed.

It is known that septicæmia is a process caused by decomposition of the blood accompanied by the formation of a toxic by product. This latter being carried to all tissues by the circulation produces its pathological effects ; when, however,

the blood is drained from the vessels, as in slaughtering, the dangerous principle leaves the body, and post-mortem does not produce appreciable changes in the meat.

Animals having suffered the affection only a short while are to be more favorably considered than those slain possibly only a short time before a natural death.

It is also known that the meat of septicæmic patients becomes rapidly foul after death, and the poisonous product, traces of which undoubtedly remain in the carcass, greatly increases. The danger enhances with the length of time between slaughter and consumption.

In meat poisoning, these changes after death are an important factor, whose virulent character is not always annihilated by boiling.

The foregoing premises lead to a simple and inevitable conclusion, which naturally excludes the use of such meat in the manufacture of sausage.

It may further be observed that the time of year and condition of the weather materially influence the process of decomposition.—*Schweizer Archiv*.

FROM ENGLISH JOURNALS.

TUBERCULOSIS IN THE DOG.

By STEWART STOOKMAN, M.R.C.V.S.

The history of this case is thus reported: The dog was fourteen years old, and had been kicked by a horse a short time previous to his being brought in for treatment, and after the animal's death the following interesting and amusing history was obtained: About eighteen months ago the animal was engaged in an *affaire de cœur*, which necessitated his staying out late at night. It had even been noticed on more occasions than one that his bed had not been occupied over night. This unseemly conduct in one old enough to know better, did not go unpunished. His constitution was undermined, as the result of his dissolute course of life, and was unable to resist the effects of the wintry blasts which were

then in season, and he fell a victim to what his master described as a severe cold, and continued to cough and expectorate for about one month, when the cough ceased. At this time the dog was in poor condition, with an appetite either lacking or perverted into a morbid craving for putrid material. He also suffered from continual thirst, and showed signs of exhaustion after the least exertion.

The symptoms present were a slow and painful walk; a pulse accelerated and occasionally thrilling, and a hurried respiration. Pain was manifested by a complaining whine when the animal was raised from the ground. Percussion betrayed dullness on both sides of the chest up to the angles of the ribs, and above this the sound was tympanitic. Hyperresonance was especially marked at the posterior upper third on the left side. On auscultation the friction sound was still present in the upper part of the chest, but there only. In the lower part, the vesicular murmur was absent, except when the patient was placed on his back. The same result could be brought about anteriorly and posteriorly by elevating either the fore or hind quarters. The heart sounds were replaced by one of a booming character on both sides at the upper part of the chest. Hydrothorax was diagnosed, and thoracentesis performed, a considerable amount of fluid escaping, and two minutes afterward the dog died.

At the *post-mortem* a pint of fluid was found in the chest; the lungs were adherent to the thoracic walls; a few yellow spots were found on the pulmonary pleura; the left lung was converted into an inflated cavity, the walls of which were composed of shrunken lung tissue, adherent to the chest wall at the upper posterior part. The cavity contained a quantity of caseous material, which on straining showed numerous tuberculous bacilli. The heart was hypertrophied, the pericardium thickened, and the liver was full of blood, the other organs being normal.—*Journal of Comp. Path. & Ther.*

CHRONIC INTERSTITIAL NEPHRITIS IN THE DOG.

By HENRY GRAY, M.R.C.V.S., London.

A dog aged eleven, which was kept in the best hygienic condition, had for some time been affected with excessive thirst, often drinking an unnatural quantity of water, with a naturally corresponding increase in the irritation. He had occasional epileptic fits. The author was consulted on account of the dog's yelping when suddenly touched or made to move, or when going either up or down stairs.

Symptoms.--Spine arched; coat dry, harsh and without gloss; dejected appearance; gradual emaciation. The yelping occurred when he was touched suddenly on the loins, the scapulæ, the face or the tail, but not if firm pressure was used. There was obstinate constipation, polydipsia and polyuria. He took but little notice of his master; preferred the recumbent position, curling up, and being very careful in lying down; preferred water to milk, though the appetite was poor; breathing at times accelerated; pulse hard and frequent.

At the *post-mortem* every organ was normal except the kidneys, which showed well advanced lesions of chronic interstitial nephritis.--*Ibid.*

LIPCEMIA IN THE DOG.

By THE SAME.

This patient was a thirteen-year-old black-and-tan bitch, which had been travelling with her owner, and was always clean in the house until lately when she had acquired dirty habits. She had showed symptoms of partial paralysis, but had eaten well until recently, and yet had lost most of her obese condition.

Symptoms.--Wasted condition of the hinder parts from loins backward, especially the thighs. The animal was disinclined to move voluntarily, and frequently assumed the semi-recumbent position. When made to move she seemed to throw the hind quarters upward from off the ground, in order to regain the use of her feet, and at every step she took

the posterior limb upon which the weight rested seemed to be rotated outward at the stifles. The anterior limbs were also wasted, but their temperature was higher than that of the posterior. The appetite declined, the animal became dull, dazed and listless, and died.

Post-mortem.—On slitting the posterior vena cava, the blood which flowed from it contained what appeared to be particles of fat. The heart had undergone extensive fatty changes, but the cavities contained no blood. This fluid from the thoracic vessels was of a dark greenish tint and fatty looking. The ribs of the left side, from the third to the eleventh, were fractured, most of them in two places, at the neck and the central third.—*Ibid.*

TUBERCULOSIS IN THE DOG COMPLICATED WITH ASCITES.

By E. W. HOARE, F.R.C.V.S.

The patient was a thorough-bred bull-dog two years old, which, when first seen by the author, was lame in the right hind leg, said to be occasioned by injuries received by being run over by a car. He was treated for his lameness and improved.

At that time he did not look like a healthy animal, though his appetite was moderately good; but shortly after this period he seemed to pine away, and the abdomen began to enlarge, continuing gradually to do so until it became enormous in size, the remainder of the body looking, meanwhile, like that of a skeleton. The visible mucous membranes were pale; the pulse weak and irregular; the respiration labored; appetite gone; bowels obstinately constipated.

Paracentesis abdominis was performed, with a temporary relief. Then the liver was found much enlarged, but without jaundice or vomiting. Stimulants, laxatives, bandages over the abdomen all failed to relieve, and the animal died without a struggle. At the *post-mortem* the liver was found enormously enlarged and almost a mass of white growths, which in some parts had broken down into cavities. The peritoneum also was covered with small growths, and a few were

found on the spleen. The lungs, with the exception of a few very small growths at the lower borders, were healthy, as were the pleura. The specimens examined under the microscope proved to be of a tuberculous nature.—*Veterinary Journal*.

EXTENSIVE RUPTURE DURING PARTURITION.

By C. E. DAYUS, M.R.C.V.S.

On Monday night, the 15th inst., I was requested by R. J. Mann, Esq., the Home Farm, Acton Burnell, to at once attend a parturition case in a mare. From the messenger I elicited the following history of the case: The patient, a well-bred Yorkshire coaching mare, had gone a fortnight over the natural period of utero-gestation, and was first observed to be in a little pain that morning, but had afterward become quite easy, and had been turned out in the paddock, where she had remained grazing most of the day.

About 7 P.M. she was taken with labor pains, and was placed in a loose box, her owner thinking she would foal immediately. She was left until 9 P.M., then finding that she remained about the same, I was sent for. Upon arrival I was met by Mr. Mann, who said, "We have got the foal away alive and with little trouble, but most strange to say, it came through the rectum," which upon examination I found to be the case.

The anus was considerably lacerated, as was also the rectum, being completely divided from the single colon, about two feet of which were hanging out through the anus. Upon examination per vagina I found that the os uteri was slightly dilated, admitting of but three fingers. Knowing that the uterus must be ruptured, and the patient being in a state of collapse, I ordered her to be at once destroyed.

Post-mortem examination revealed an extensive rupture of the os, rupture of the single colon, and laceration of the rectum. Upon questioning the attendants I gathered that the mare had given several very heavy throes when suddenly the foal's head and two fore legs were protruded through the

anus. They then pulled, and with little difficulty the mare was delivered. The foal lived about a week and then died.—*Veterinary Record.*

EVERSION OF THE BLADDER IN A MARE.

By ROBERT W. CLARKE, M.R.C.V.S.

On Wednesday, the 17th inst., at 9 P.M., I was called to attend a mare which had foaled without assistance sometime during the previous night, the foal being alive and to all appearance healthy. I was told that she had not "cleaned," and was paining hard. On my arrival I found the mare wandering round the box, occasionally stopping and stretching out as if to urinate, and being unable to do so she would pain as in parturition, and in so doing a purple body was just visible between the labiæ of the vagina, which had been mistaken by the owner for the foetal membranes. On examination per manu I felt what I at first mistook for a pedunculated tumor attached to the floor of the vagina, about as large as a cocoanut, and which, when the mare was at rest, lay on the floor of the vagina between the neck of the uterus and its attachment to the vagina, but which when the mare pained was forced outward, so that a portion of it was visible. On parting the labiæ, two circumscribed patches about the size of a shilling were seen, one on either side; and this, together with the position of its attachment to the vagina, convinced me that it was the bladder, and the two patches, like raised blisters, were the openings of the ureters. I immediately administered one ounce of chloral hydrate to relieve the pain, and after squeezing as much blood as possible out of the tumor, I passed a small cane with a round knob about one inch in diameter into the vagina, and pressing the knob on to the fundus of the bladder I turned it toward the urethra and pressed gradually until the bladder, after a little opposition as the knob of the cane was passing through the urethra, was easily returned to its natural position. The mare immediately ceased paining, and though she suffered from some inflammation of the bladder for a few days, answered to treatment, and

has quite recovered. I believe this to be rather an uncommon condition, and have no doubt that the bladder was forced inside out during parturition; also that it was owing to the extreme debility of the mare that such a condition occurred, as the mare had been worked very hard up to the day before parturition.—*Ibid.*

RUPTURE OF STOMACH.

BY JOHN E. MILLER, M.R.C V.S., Keyingham.

On the 31st of January I was called to attend a cart mare. It had been all right at 6 o'clock in the morning, taken its usual feed, and went to work on a plough with its fellow horse. The feed consisted of chopped food with Indian corn. At 8 o'clock the animal showed signs of gripes, and I was called to attend.

The animal was uneasy, pawing with the fore feet and frequently wanting to lie down; the breathing was hurried and there was heaving at the flanks. Pulse quickened, ears warm, mucous membrane not much disturbed, and curling of the lip. The animal had not passed any dung. I proceeded with the following treatment: I gave the animal an ordinary colic drink, containing a solution of aloes; I called to see my patient an hour later when it seemed no better, so I then gave a dose of chloral hydrate. At noon she was no better and could not be kept on her feet from pain. She continued to roll about, the breathing was more quickened and heaving of flanks more pronounced, whilst membranes had become highly colored. I then took about two quarts of blood from her, after which she gave another roll and got up again, and standing with her legs apart commenced to perspire profusely—as if some one was turning water on her. Her countenance was anxious and she looked round to the side of her chest. After that she made several attempts to go down, but was afraid to do so. In about half an hour later she went down suddenly and died right out.

On *post-mortem* I found the stomach ruptured towards the pyloric orifice, some of the contents of the stomach among

the bowels, and also the stomach partly loaded with undigested food. I came to the conclusion the animal had been over fed, thus causing indigestion and over distension, and that the rupture was caused by mechanical violence due to falling and rolling.—*Ibid.*

EQUINE HYSTERIA. (?)

The following case has occurred in my practice, and thinking it may be of interest to some of your readers I forward particulars.

Last Tuesday evening, the 9th, about 9:30 P. M., I was requested to attend at one of the yards under my supervision. The message delivered to me was, "Please come up at once as there is a mare gone mad." Upon arrival at yard, I found patient a five-year-old mare that had been in the company's service about three months; she was standing in the same stall occupied by her since she had been in the yard. On attempting to approach her she became absolutely mad, and fought at me with her fore legs. Upon going behind her she kicked viciously. When left alone she stretched herself out till her body was nearly on the ground, and made a most peculiar noise, something like a pig under a gate. I removed other horses away from her and got a long rope round her neck, pulled her round and attempted to take the pulse, examine membranes, etc., but I could not get anywhere near her, about every five or six minutes she would raise herself on her hind legs and fight. As I was of opinion that any treatment was out of the question, after a lot of trouble I got her to move and had her taken down into a loose box, and there left with a man to watch her so that she did not get cast. She amused herself by keeping up the same noise for about five hours, walking round the box and occasionally kicking the door.

I saw her again next morning, Wednesday, about 8:30 A. M., she was perfectly quiet, feeding all right, pulse 48, temperature 101.4°; but she had been in œstrum to a degree I never saw equalled.

I have been in practice twenty years and have never seen a case like it before. If this was a case of uterine hysteria in the mare they are very rare, and I cannot think it was due to cerebral disease, as the mare so soon resumed her normal condition.—*Ibid.*

REMARKABLE CASE IN A FOAL.

By JOHN BARR, M.R.C.V.S., Halvergate, Norfolk.

My object in relating the following case is merely to place it on record. I cannot recollect having heard of a similar case, and although there is not much useful information to be derived from it, I hope its extraordinary nature is sufficient to warrant my object.

On Monday night (3d inst.) I was called upon to assist a mare in the act of foaling. There was not much wrong with the position of the foal, the head and neck being merely depressed and lying between the fore legs, and inasmuch as these were in the vagina I had little difficulty in getting the foal. Having removed the foal and seeing nothing further amiss I left, but almost immediately thereafter the man in attendance noticed the foal straining, and on looking to see if there had been any fæces passed he observed a mass of intestine protruding from the anus. Within half an hour of the birth of the foal I was again in attendance, and found on examination that the protruding mass consisted of small intestine and mesentery, with a small portion of everted rectum which was intensely inflamed. I considered nothing could be done to benefit the little sufferer so I advised slaughter.

Post-mortem examination next day revealed a rupture three inches long in the rectum, the mucous membrane of which was inflamed throughout. The protruding portion of the ileum measured four yards, and before death had become strangulated.

Was the rectum inflamed before birth, and did the rupture occur before or after? I am at a loss to ascribe a cause or fix the time of the pathological changes.—*Ibid.*

FROM FRENCH JOURNALS.

SOME EXPERIMENTS UPON THE PHYSIOLOGY OF THE PNEUMOTHORAX BY PENETRATING WOUND OF THE CHEST.

By MM. RODELE AND POURRAT.

In this interesting experimental work, the authors have considered, first, the condition of the air introduced in the pleural cavity, and then the disturbance brought on in the pneumothorax by the functions of respiration and circulation. All the experiments were made on dogs.

First. After introducing into the pleura measured quantities of sterilized air by an opening in the thoracic walls, sufficiently small to allow a free communication of the pneumothorax with the external atmosphere, they killed the animals after a variable number of days, and measured and analyzed the remaining air. Following are the results obtained from the contents of the book :

The quantity of air thrown into the pleural cavity gradually diminishes. The resorption, which was soon followed by its complete disappearance, was accompanied by evident changes in the composition of the gaseous mixture; the oxygen diminished, and the carbonic acid immediately took its place in increasing proportions, to be afterward resorbed in proportion to the other gases.

Second. The disturbances of the respiratory and circulatory functions varied, according as the pleura received the air gradually or suddenly by a free opening; or again, if the pleural cavity was kept in free communication with the external air. A gradual injection of air produced an acceleration of the respiration, with slight amplification of the respiration and an elevation of sanguine pressure. When the air was allowed to enter suddenly through a wide opening of the chest, the respiration was at first accelerated, with a gradual increase in amplitude; but this was only a transient effect, and soon ceased. The wound being kept open, the acceleration was soon followed by a diminution, and the amplitude became still greater. Soon after there were arrests in the inspiratory action, with a gradual diminution of the ampli-

tude until there was complete stoppage of the respiratory movements. If the pulmonary insufflation was made without waiting too long, and it was kept for one or two minutes, spontaneous respiration returned, provided the pleura was kept closed. The simple occlusion of the pleura would have the same result if done after only four or five large respiratory motions; if later it is useless.

In respect to the pulse, there was, first, a period of acceleration corresponding to that of the respiration, and then followed a general diminution until a definitive arrest a little previous to that of the respiration. These disturbances, with the death which soon followed, were the results of the phenomena of arrest and asphyxia.

After the section of the pneumogastrics, the retarded beating of the pulse became more readily perceptible; the acceleration persisted with even greater rapidity; then, some instants after complete cessation of the respiration, it ceased gradually by the diminution of the systoles. The influence of asphyxia was also manifest, the markings of intra-brachial pressure showing that the movements of the thoracic frame were entirely inefficacious upon the chest, open only on one side. How is it that the sound lung itself did not dilate?

The hypothesis of Weill must here be admitted, viz., that of a displacement *en masse* of the mediastinum; the aspiration produced in the sound side by the movement of inspiration may be without effect upon the lung if it exhausts itself in displacing the mediastinum.—*Comp. Rend. Soc. Biol.*

NOTES UPON THE COMPOUND ANTISEPTICS.

By Drs. DECHRISTMAS AND RESPANT.

In all the researches made into the nature and operation of antiseptics, the curious phenomena is brought out that by the association of several antiseptic substances possessing similar properties a new body is produced with a microbicide power far exceeding in its peculiar properties that of either of the component substances used singly.

It is upon this data that the authors have made methodi-

cal researches into antiseptic formulas, in order to discover, if possible, a sufficiently powerful combination to destroy microbes, yet, while still in such a degree of concentration, weak enough to be harmless to the organism. The following formulas have given them the best results: Benzoic acid, 1 gramme; phenic acid, 8 grammes; chloride of zinc, 1 gramme.

An aqueous solution of one per cent. of this mixture kills the staphylococcus of suppuration in thirty seconds, and anthrax in the vegetative stage; pyocejanic bacillus, that of diphtheria and that of typhoid fever in one minute. Similar effects are obtained with a one per cent. solution of a mixture of: Phenic acid, 8 grammes; benzoic acid, 8 grammes; oxalic acid, 1 gramme; or with one of 9 grammes of phenic acid and 1 of salicylic acid. The authors have obtained still better results with a degree of concentration of half of that strength.

The last mixture adopted is of phenic acid, 8 grammes, to 1 of salicylic, and 10 drops of English oil of mint.

An aqueous solution, one-half per cent. of this mixture kills the above named organisms in thirty seconds. The bacillus anthracis is destroyed with a solution of 2 at 1,000, which corresponds to an antiseptic strength five times greater than that of pure phenic acid.—*Ibid.*

REFLEX PARAPLEGIA DUE TO THE ACARUS OF THE EAR IN RABBITS.

By M. A. LAVERAN.

The author had watched a rabbit which had paraplegia, with scabs or crusts in the ear. He killed it, and in a careful post-mortem found the following lesions: Both ears were filled with cerumen, and at their bottom were easily seen a great number of small, whitish moving bodies which proved to be acarus. They were present in enormous numbers, and presented under the microscope all the characters of the acarus of the ears of rabbits. There were no lesions in the brain or cord, or elsewhere. From this it seems that the paraplegia was due to the parasites of the ear.—*Ibid.*

EFFECTS OF THYROIDECTOMY IN DOMESTIC ANIMALS.

By M. G. MOUSSU.

The author has performed complete thyroidectomy upon a dozen adult rabbits, and none have died. Only two were sick, none of the others seeming to be in any way affected, the appetite and strength remaining the same. Those which were sick began to show signs of it in forty-eight hours after the operation. In the first, it was manifested by clonic contractions of the jaws and of the neck, extending after an hour and a half or two hours to all the muscles of the vertebral region and superior parts of the legs. Toward the third hour, the respiration became accelerated and difficult, and the beatings of the heart increased and became tumultuous. General excitation was well marked. The next day the animals were in perfect health.

In the presence of these results, so contrary to those of Mr. Gley, all of whose operations were fatal, death following in every case where he had performed complete thyroidectomy, M. Moussu thought that probably the age of the animals might have had some agency in producing the results. He then operated on seven others, three and four months old, and he then had two deaths after well marked symptoms of general tetanus. The disease showed itself as early as the twelfth or thirteenth hour, and death took place between the fifteenth and twenty-fifth following the operation. Hence, young animals seem to be less able to endure the operation than adults.

The author then experimented upon solipeds, and subjected several horses and a donkey to the complete ablation of the gland, meeting with no accidents; all recovered well and lived. Similar results were obtained among ruminants with cattle and goats.

In the adult pig the operation was also harmless. But in young, sucking animals it gave rise to the evolution of myxœdema. The day of weaning may be deemed the term of organic development of young animals, and later than this, though there may be no acute accident, growth does not continue. Compared with other animals operated on, the young

pigs remained thin and delicate; the skin is rough to the touch; the hair is long, stiff and coarse, and the voice is aborted and plaintive.

From further experiments, M. Moussu says that he believes that by the ablation of the thyroid body any one may, at will, according to the individuals operated on, give rise to cretinism, with atrophic, in the myxœdematous form.

The thyroid body then, has a physiological function which influences the general nutrition, with a well marked effect upon the young ones, evidently much less upon adults, and which is manifested by various, but analagous symptoms, according to the species of the animals.—*Ibid.*

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NEW PRONOUNCING DICTIONARY OF MEDICINE. By JOHN M. KEATING, M.D., LL.D. (W. B. Saunders, Philadelphia).

A COMPLETE PRONOUNCING MEDICAL DICTIONARY. By JOSEPH THOMAS M.D., LL.D. (J. B. Lippincott & Co., Philadelphia).

These are two new additions to medical literature which veterinarians, and especially students while at college, will do well to possess. Both works are brought out in uniform style, and give the signification, etymology and pronunciation of medical terms. There are also appendices, each relating severally to different subjects. That of Keating gives an important table of bacilli, micrococci, leucomaines, ptomaines, drugs, poisons and antidotes, etc.; while that of Thomas furnishes an explanation of Latin terms, writing prescriptions, tables of doses, of chemical symbols, of the orders and families of living mammalia, and metric weights and measures.

Both works are issued in the form and style of excellence which are characteristic of the publications bearing the imprints of these Philadelphia houses.

DISEASES OF THE LUNGS, HEART AND KIDNEYS. By N. S. DAVIS, JR., A.M., M.D. (F. A. Davis Co., Philadelphia.)

This volume of over three hundred and fifty pages is a component portion of a series of lectures delivered by the author

in the Chicago Medical College. The subjects are divided into three sections, each treating separately of the diseases of the lungs, the heart and the kidneys. Concise in the consideration of the divers chapters which treat severally each individual disease, the author has nevertheless gathered in his work a large amount of interesting material, which may be profitably reviewed and studied by all interested in these branches of pathology.

PATHOLOGIE GENERALE et ANATOMIE PATHOLOGIQUE (General Pathology and Pathological Anatomy). By PROF. C. CADEAC, of the Veterinary School of Lyons, with the collaboration of J. Bournay. (J. B. Bailliere & Sons, Paris.)

This is the first volume of a work known as the Cadeac Encyclopedia, and is designed to comprehend the consideration of the most indispensable topics pertaining to the veterinary profession. *General Pathology and anatomy, semeiology, diagnosis, operative surgery, internal pathology, parasitic and contagious diseases, surgical pathology, obstetrics, sanitary medicine, jurisprudence, legal medicine, inspection of meats, therapeutics, hygiene, zootechny, etc., etc.*

These subjects will be treated in sixteen convenient volumes, in which the student, the practitioner and the layman will equally find treasures of information amply sufficient to satisfy the needs of all classes of investigators.

Repetitions, statements and reduplications of material will be treated with the conciseness necessary to keep abreast with the progress of modern science.

This first volume contains two parts, each of which is divided into sections.

Etiology, in its various aspects, is first considered and is followed by a dissertation upon the phenomena of the action of surrounding media, such as atmospheric pressure, dampness, dryness, light, electricity, etc., etc. The third section is appropriated to the consideration of the influences of the parasites and microbes.

The second part introduces the reader to a view of the various phenomena of congestion, hemorrhage, thrombosis, embolics, gangrene, inflammation and hypertrophy, and is com-

pleted by a careful general and special description of tumors.

The work originated by Professor Cadeac and his assistants is one which is sure to form a most valuable addition to the already extensive veterinary literature of France, and when it is taken into consideration that the cost of each volume is to be within the reach of all (five francs, or one dollar per volume), there can not be any doubt as to the immense financial return which the house of Bailliere & Sons may hope to meet with.

The several parts of the Encyclopedia will be rapidly issued, one volume being promised monthly, and the completed work before the end of 1894.

CORRESPONDENCE.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

WASHINGTON C. H., O., July 17th, 1893.

Editor American Veterinary Review:

The regular semi-annual meeting of the Ohio State Veterinary Medical Association will be held in Columbus, O., August 30th (evening) and 31st (morning and evening). All members and all graduates are earnestly solicited to be present. Business of great importance to the veterinarians of this State will come up before this Association. Low rates on all railroads.

WM. H. GRIBBLE, *Sec.*

SUNDRY ITEMS.

DR. JOSE M. PERALTA, graduate of the American Veterinary College, has received his degree of M.D. from the Jefferson Medical College.

PROF. W. ZUILL, M.D., D.V.S., who for several years has filled the chair of operative surgery in the Veterinary Department of the University of Pennsylvania, has sent in his resignation. There are rumors that he has been asked to withdraw the same.

BUREAU OF ANIMAL INDUSTRY.—Many members of the Bureau of Animal Industry in the East have been relieved from duty. Is their usefulness at an end, and have all dangers of contagious infection in our cattle been removed?

DR. E. SALMON.—The health of Dr. E. Salmon has been reported very bad for some time back. It is hoped that this will prove a false alarm, and that he will soon be able to resume his special work in the Bureau.

THE NEW ANNOUNCEMENT of the American Veterinary College for the nineteenth session is just out. It is a handy statement of the advantages offered by this ever *go ahead* institution. It is rumored that alterations of great importance are to be done in the buildings now occupied by the college, which will improve the accommodations for students.

THE FIRST NUMBER of the second volume of the *New York Veterinary Journal* presents to its readers several articles of interest to veterinarians. The editors of the journal, though young veterinarians, deserve much credit for their efforts in behalf of their chosen profession.

THE ANNOUNCEMENT of the Kansas City Veterinary College for the year 1893-94 is just out. In the list of graduates are found the following names: O. G. Atherton, Arrowsmith, Ills.; W. M. Bell, Kansas City, Kan.; T. A. Bray, Kansas City, Kan.; T. A. Donald, Lincoln, Ills.; W. G. Hawkey, Belvidere, Ills.; J. P. Patt, Sedalia, Mo.; Ch. Saunders, El Dorado, Kan.

VETERINARY LEGISLATION.—It is reported that Governor Flower of New York has signed what is known as the Woodbury Bill, granting more time to unregistered veterinary practitioners to call on their county clerks and comply with the law. There have been three or four amendments to the original law, and this last is a perfect farce.

A GOOD APPOINTMENT.—Dr. N. P. Hinkley, of Buffalo, has been appointed by the Department of Agriculture to the position of United States Veterinary Inspector at the ports of Buffalo and Niagara Falls. He succeeds Dr. John T. Claris, who was appointed during the Harrison administration. Dr. Hinkley received his commission recently, and since then has filed his oath of office in Washington. He is a well-known veterinary surgeon, and is a native of Erie County, born in Lancaster in 1855. He went to Buffalo in 1870. Ten years later he was graduated from McGill University, Montreal, with the degree of V.S., and from the same institution, in 1890, he took the degree of D.V.S.

OUR ANIMAL FRIENDS—a monthly issued by the American Society for the Prevention of Cruelty to Animals, contains lots of material interesting to veterinarians, if not directly as professional men, at least indirectly as protectors of animals, as their duties call them to be. Members of such societies and veterinarians are bound to work hand in hand to protect and relieve our domestic animals from quackery and its barbarous cruelties.

A NEW TREATMENT FOR GLANDERS.—Claudius Nourry and C. Michel have held before the Academie des Sciences (*La Medecine Moderne*, September 1, 1892) that there is a great similarity between glanders and tuberculosis, a similarity that has led them to employ in the first disease the methods of treatment most recently recommended for the latter affection. The authors have tried the following in two cases occurring in the horse: 1, hypodermic injections of creosotated oil to enhance the reabsorption of pulmonary tubercles and granular adenitis; 2, chloride of zinc, in washing out the nasal cavities, to combat the ulcerative destruction of the pituitary membrane. This treatment of glanders is based upon the two methods recommended in the treatment of tuberculosis; the first proposed by Bouchard and followed by Burlureaux,

and the second by Lannelongue. After two and a half months of this treatment, the two horses which suffered from all the classical phenomena peculiar to glanders appeared completely cured. The two animals were killed afterwards, and thus the efficacy of the treatment was verified by post-mortem examination. The creosotated injections were made every hour by means of a Pravaz syringe, at first with oil of the strength of ten per cent., then of twenty-five per cent., and, finally, of fifty per cent. The authors add that Burlureaux failed to observe good results with the injections of creosotated oil in a case of an assistant of the Pasteur Institute, who was attacked by the disease while preparing cultures of the virus of glanders.—*Therapeutic Gazette*.

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AMERICAN VETERINARY REVIEW,

SEPTEMBER, 1893.

EDITORIAL.

VETERINARY LEGISLATION.—We suppose that reporters and gossips on scientific subjects, meaning, for our present purpose, those of the veterinary persuasion, are of much the same breed with other common carriers of intelligence and rumor in their liability to commit occasional errors, and that their “on dits” ought to be accepted with a proper modicum of caution, and, moreover, with the idea that when they are subsequently demonstrated they should also be promptly acknowledged, with a due apology for their occurrence. We find that, not differing from others in the journalistic line, we have ourselves become somewhat blameworthy in certain matters, and we now tender the apology which becomes in order under the rule.

In our May issue, when speaking of a new bill which had been presented to the Legislature in Albany, we stated that *we “were told”* (nothing more) that the project in question was fathered by the New York State Veterinary Society. The bill was a bad one. Its tendency is to prevent the advancement of veterinary practice in the Excelsior State. Its enactment is a disgrace to the body which accomplished it, and it is perfectly proper that the State Association should defend itself against our animadversions, as well as against the bill itself, and this is well done in the following letter; received from Dr. N. P. Hinckley, the worthy Secretary of the New York State Veterinary Medical Society :

Prof. A. Liautard :

DEAR SIR :—I have just returned home from an extended trip, and in reading the REVIEW, which had come to hand during my absence, I find a very conspicuous notice regarding the extension of the registering law in this State, and that the writer takes particular pains to say that the New York State Veterinary Medical Society was the *principal actor* in having this extension granted. Now there is positively no truth in that assertion, and as proof of what I say I would refer you to the proceedings of the New York State Veterinary Medical Society published at different times in the AMERICAN VETERINARY REVIEW and other journals. The New York State Veterinary Medical Society was organized for the purpose of calling together the members of the profession in this State who were graduates from veterinary colleges or universities, for the better protection of themselves and the elevation of the profession in the State by having such laws as you mentioned repealed, and a law passed compelling every man who is desirous of practicing the profession to be a graduate of a veterinary college or university, or pass a State Board of Examiners, or both. This, we believe, would in time elevate the standard of the profession in this State far above that of any in the Union. This has been our aim from the date of organization, and if all the members of the profession in the State would take a personal interest in the matter, it could be accomplished. The members of the New York State Veterinary Medical Society most earnestly desire that the members of the profession throughout the country should understand that they had nothing to do with the passing of said act.

Trusting that you will give this article as conspicuous a place in your journal as the one referred to occupied, I am

Yours, etc.,

N. P. HINCKLEY.

We have done justice to the doctor's proper claims, and we think that the matter ought to rest there. But we must remind him that we are excusable for listening to an "on dit," especially as the REVIEW has not been favored with any report of the doings of the New York State Veterinary Medical Society for more than a year, with the exception of the proceedings of the meeting in 1892, and a postal-card notice of the meeting in January of the present year. The REVIEW, however, always desires to treat everyone impartially. "Open to all" is its motto.

VETERINARY LEGISLATION IN CALIFORNIA.—It may take time, and years may come and go, but it is bound to become materialized, and to accomplish its end long before old Europe will have laid out the means to abolish it. We refer to the subject of improper practice of veterinary medicine, and the legal recognition of veterinary quacks. States will attempt

to secure proper legislation, and will fail ; others will do the same, and will partially succeed, for the time being, only to become complete masters of the profession a little later ; and others, probably in small numbers, will at length reach the end of their labors, to wit—the enactment of laws for the regulation of veterinary practice in such a manner that, once for all, quackery will be doomed within their boundaries. We have quite a piece of good news from California, where, in the *Poultry Cultivator*, Dr. R. I. Whittlesey, D.V.S., makes the following statements :

After two previous failures a third attempt proved a charm, and a bill regulating the practice of veterinary medicine and surgery in California was passed at the last session of the legislature.

It had very little opposition, and it passed as introduced, without mutilation.

It is the best law on this subject in the United States, and is as liberal toward the non-graduates as they could ask.

By this act the Governor appoints an Examining Board of five veterinarians, whose business it shall be to hold examinations periodically at San Francisco and Los Angeles, when all who wish to practice in the State must procure a license. Graduates submit their diploma, and if it is all right receive a license. Non-graduates must pass an examination sufficiently strict to satisfy a majority of the board, when a license will be issued to them.

These licenses must be recorded with the county clerk in the county in which they are to be used, and then kept displayed in the office or place of business.

The law went into effect on the 24th of May last.

The board consists of Dr. Maclay, of Petaluma ; Dr. Archibald, of Sacramento ; Dr. Spencer, of San Jose ; Dr. Rowland, of Pasadena, and Dr. Whittlesey, of Los Angeles.

The first examination took place at the Baldwin Hotel, San Francisco, May 24th ; the second at the Hollenbeck Hotel, Los Angeles, June 26th.

All non-graduates who fail to pass their first examination have the privilege of coming up at any future examination until December 31st, 1893, after which non-graduates are barred, and only graduates need apply.

It works no hardships, as the quacks are given ample time for preparation, and if they are successful are elevated to the standard of graduates without nearly the same effort or expense.

After all have had opportunities for receiving their license the illegal practitioners will be prosecuted, and even if they should not be molested the public can know who they are and need not employ them. Their bills cannot be collected.

The law will be a great protection to the public, who have for years been imposed upon by a horde of unscrupulous practitioners.

The non-graduates came from all parts of Southern California, San Luis Obispo, Fresno, and, in fact, nearly every town of any size was represented. The examination took up two days and part of the nights.

Of course some of those who failed to pass were disgruntled and thought they should have passed, but others have expressed their entire satisfaction, and say they are going to study hard and come up again with hopes of better success next time.

Those who did pass are more enthusiastic over the success of the law than the graduates, and have woken up to a new state of things, are reading and propose to make themselves more competent and keep pace with the advance of science.

WHY NOT BE A VETERINARY SURGEON?— We reprint from one of the Boston journals an article under this head, from the pen of Dr. Austin Peters.

The motives which influence the choice of young men of the present time who are assuming the labors of veterinary study and subsequent practice, and who appreciate the value of veterinary medicine, greatly vary. In one case, it is the *eclat* of the success which he hopefully anticipates is sure to crown his widely extended practice. In another, it is the exalted professional standing and recognition which he expects to win. In a third, it will be the exercise of his ability in teaching, and the enjoyment of his bent as an investigator of the practical and theoretical phenomena pertaining to his calling. With another, it will be the apparent, but only apparent, chance of obtaining a livelihood by an unexacting and moderate kind of labor like that of the missionary whose preaching is a mere oral exhortation and written doctrine, instead of being a faith which is proved by its works.

In writing the article in the *Youth's Companion*, Dr. Peters has done a good work for the profession of his choice, and has expressed himself in plain, well-chosen words. He has told his young compatriots what their advantages are likely to be should they enter the veterinary profession, with the privileges that wait for them, and he has indirectly asked them to enter the ranks of the army of veterinarians. He speaks frankly of the schools and colleges of this continent, and we have no doubt that his words will have the effect of inducing many desirable young men to enter our ranks and become *American veterinary graduates*, and side by side with their good adviser learn to write their names with the suffix of D.V.S., M.R.C.V.S.

AN OUTBREAK OF RABBIT SEPTICÆMIA

WITH OBSERVATIONS ON THE NATURE OF THE DISEASE AND
ITS SPECIFIC ORGANISM.

BY VERANUS A. MOORE, B.S., M.D., AND F. L. KILBORNE, B.AG., B.V.S.

Of the Division of Animal Pathology, Bureau of Animal Industry,
Department of Agriculture, Washington, D. C.

In the winter and spring of 1893 a considerable number of rabbits, in the breeding-pens at the Experiment Station of the Bureau of Animal Industry, perished from a disease which was characterized by exudative pleuritis with or without pneumonia. In a few of the animals there was marked peritonitis. In the exudates, a germ which was identified as the bacillus of rabbit septicæmia was invariably demonstrated. The infrequency with which spontaneous outbreaks of rabbit septicæmia occur led to a somewhat careful study of this disease, the more important features of which, together with the result of a few investigations with the specific organism, are here recorded.

The investigations of rabbit septicæmia which have heretofore been made have pointed out two very interesting facts. (1) *The existence of a bacillus in decomposed albuminous substance, and in contaminated water† which is capable of producing a rapidly fatal septicæmia in rabbits when they are inoculated with these substances or with a pure culture of the bacillus, and (2) the appearance of a disease in rabbits caused by a bacillus closely related to, if not identical with, the one found in the first instance. The only report of this disease occurring spontaneously in rabbits appears to be that of Dr. Theobald Smith‡ in 1887. Although it is not our purpose to discuss the identity of the germ which is capable of inducing a fatal septicæmia when injected into the rabbits,

*Koch, Wundinfectionskrankheiten, Leipzig, 1878, p. 59.

†Gaffky, Mittheilungen a, d, Kais. Gesundheitsamte, 1881, I.

‡A contribution to the study of the microbe of rabbit septicæmia. The Journal of Comparative Medicine and Surgery, Vol. VIII, (1887), p. 24.

with the one which found its way in the body of the animal apparently by a more natural method, it seems desirable to point out the two sources from which the germ has been obtained, and the two conditions under which the disease has been described.

In the outbreak from which Dr. Smith obtained the germ which he studied, eight rabbits were known to have perished. The lesions found in the animals that were examined were characterized by an inflammatory condition of one or more of the serous membranes. The bacteria were found in large numbers in both the inflammatory products and the various organs. They were rapidly fatal to rabbits when injected subcutaneously in small quantities of a pure culture.

In the epizootic of this disease about to be described, the features that are worthy of special consideration are: (1) The very marked localization of the lesions; (2) The relation that exists between the fatal form of the disease and a rhinitis (not necessarily contagious); (3) The feeble virulence of the specific germ and its relation, morphologically, biologically and in its pathogenic properties, to attenuated swine plague bacteria. The study of the specific organism of this outbreak is of considerable interest in view of the fact that the writings of several investigators tend to identify the bacillus of rabbit septicæmia with that of *swine plague*, *Schweineseuche*, *Wildseuche*, *fowl cholera*, a peculiar form of pneumonia in cattle, and possibly other forms. The very close relation that exists between the specific bacteria of these diseases was very clearly set forth by Dr. Theobald Smith as early as 1891.* The disease in rabbits appears not to have heretofore been traced from primary lesions in the nasal mucosa to its more fatal localization on the serous membranes.

HISTORY OF THE OUTBREAK.

From time to time, one or more of the breeding rabbits at the Experiment Station have been observed to be suffering

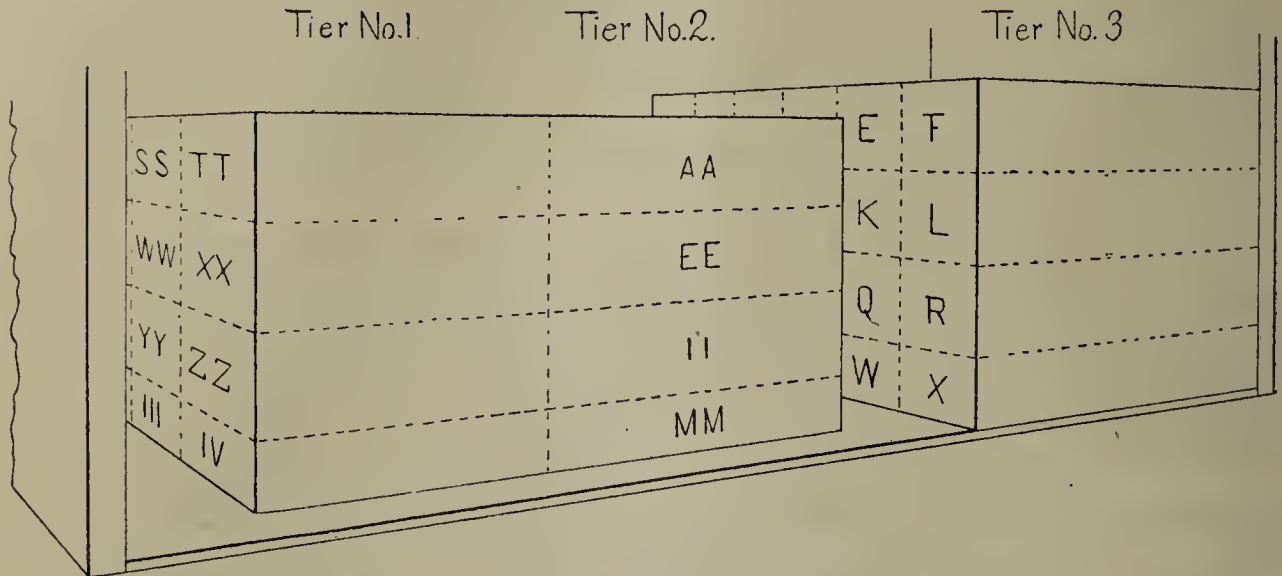
*Special report on the cause and prevention of swine plague. Department of Agriculture, 1891, p. 141.

from what appeared to be a nasal catarrh, or "snuffles," as the affection was termed. Occasionally rabbits have died presumably from this trouble. The infrequency of such deaths among the rabbits was very largely the reason for a less active investigation of the isolated cases, for such occasional deaths were naturally attributed to confinement, old age, or accidental causes. The young, or stock rabbits, rarely suffered from this affection.

During the winter of 1892-93 a considerable number of the stock rabbits, one-half to three-fourths grown, were kept in a small detached stable. Several of these rabbits died of pneumonia and pleurisy, and nearly all of the others were observed to be suffering with a muco-purulent discharge from the nasal cavities. Little notice was taken at that time of the deaths or of the nasal difficulty, which were attributed to pneumonia and nasal catarrh due to the exposure of the rabbits to the sudden changes in temperature and the excessively cold weather to which they were not accustomed. Later the breeding rabbits which were kept in another building began to die. During March three or four died suddenly, and upon examination were found to be similarly affected as those dying from the stock-pen. It was also observed that many of the other rabbits were suffering from a similar rhinitis.

The rabbits kept for breeding purposes were housed in pens about three feet wide and four feet deep. These were arranged in three tiers each four pens high. (See diagram of pens.) The pens were in a small building, which, during the winter, was kept at a temperature of about 60 to 70° F. during the day and 45°-60° F. during the night, by means of a coal stove. The light was good, but during the winter the ventilation was not as good as could be wished. The rabbits were not crowded. They had plenty of water, and their food consisted of clover hay, oats and wheat bran mixed, and more or less green vegetables. Cut hay was used for bedding. The pens were kept clean and every known precaution was taken to promote the health of the animals. The young of these rabbits were removed to the stock-pens as soon as they were of sufficient age. The rabbits were thrifty and in

good condition when the disease appeared, and with few exceptions the dead rabbits were not emaciated. The accompanying diagram shows the arrangement of the pens.



QQ	RR	SS	TT	AA	BB	CC	DD
UU	VV	WW	XX	EE	FF	GG	HH
Y	YY	Z	ZZ	II	JJ	KK	LL
I	II	III	IV	MM	NN	OO	PP

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	X

Tier No.1: Front View. Tier No.2: Front View.

Tier No.3 Front View.

The first of the breeding rabbits to die were examined by Dr. Kilborne who found extensive pleuritis. Subsequently the dead animals were brought to the laboratory where they were carefully examined. As soon as the seriousness of the disease was realized all of the rabbits were inspected and those suspected* of having the disease were removed, and the pens thoroughly disinfected. By repeating the disinfection after each death and removing immediately all suspected rabbits the outbreak was abated, but not until after many deaths had occurred. About one-third of the rabbits that were affected with the rhinitis died in a short time and a few of those that were isolated perished in the course of several weeks.

*The only evidence of disease that could be found among the living animals was a mild or more severe rhinitis, and it was by that symptom that the rabbits were separated.

Rabbit No.	Date of Death.	Rabbit from Pen.	Condition of Pleura.	Condition of Lungs.	Condition of Peritoneum.	Cultures from Blood.	Cultures from Liver.	Cultures from Exudates.	REMARKS.
454	March 29.	AA	Exudative pleuritis.	Hepatitis.	Normal.*	Clear.	Clear.	Bacteria.†	
459	April 1.	BB	"	Partially collapsed.	Peritonitis.	"	"	"	
460	" 1.	YY	"	Hepatitis.	Normal.	"	Bacteria.	"	
476	" 10.	M	"	"	"	"	Clear.	"	
477	" 10.	MM	"	Partially collapsed.	"	....	"	"
478	" 11.	I	"	Hyperæmic.	"	Clear.	"	"	
479	" 12.	....	"	Partially collapsed.	"	"	Bacteria.	"	
489	" 14.	RR	"	Emphysematous.	....	....	....	....	Badly decomposed; no cul- tures. †
488	" 14.	MM	"	....	....	....	....	....	"
482	" 18.	J	"	Emphysematous.	Normal.	Clear.	....	Bacteria.	
499	" 22.	X	"	Hepatitis.	"	....	....	....	No cultures.§
500	" 25.	A	"	"	"	....	....	....	"
1	" 25.	....	"	Hyperæmic.	"	....	....	....	No cultures.
3	" 29.	FF	"	"	"	Clear.	Clear.	Bacteria.	
6	May 4.	T	"	"	"	"	"	"	
7	" 4.	Q	Normal.	"	Peritonitis.	"	"	....
11	" 16.	QQ	Exudative pleuritis.	Hepatitis.	"	"	"	Bacteria.	
12	" 18.	YY	"	"	Normal.	....	....	....	No cultures.
15	" 19.	N	"	"	"	Clear.	....	Bacteria	
20	" 25.	VV	Normal.	Normal.	Peritonitis.	"	....	....
19	" 26.	III	Exudative pleuritis.	Hepatitis.	Normal.	....	....	....	No cultures.
26	June 3.	....	"	Hyperæmic.	Peritonitis.	....	....	....	No cultures.

* Normal indicates that no change was noticed in the macroscopic examination. In many instances cover-glass preparations were made by drawing a cover over the peritoneum either on the abdominal wall, over the liver, or intestines. When stained they exhibited no bacteria.
 † Non-motile, rabbit septicæmia bacteria. In cover-glass preparations from the exudate they exhibited the polar stain.
 ‡ Rabbit examined at station. The lesions were not noted in full on account of advanced decomposition. No cover-glass preparation from exudate.

§ In every case (except No. 488) where cultures were not made, the bacteria were demonstrated in stained cover-glass preparations from the exudates.

In the appended table is given a list of the rabbits that died from the breeding-pens, the pens in which they were kept (for relation of pens to each other see diagram), the gross lesions as found on post mortem examination, and the distribution of bacteria in the organs of the rabbits as indicated by the bacteriological examination. The fact should not be omitted that in stained cover-glass preparations from the spleen, liver and blood no bacteria were found in any of the animals, while in similar preparations from the exudates they were invariably present in large numbers, excepting in No. 488, where no examination was made.

From the facts recorded in the table it will be observed that the disease was practically identical in its manifestations in all of the rabbits examined. It will furthermore be noticed that the lesions were localized in every instance, and that judging from this outbreak alone the term septicæmia does not convey the correct idea of the nature of the disease. The specific organism, however, resembled so closely the germ which has been described as the bacillus of rabbit septicæmia that little doubt can be entertained that it was an outbreak of that disease in which the germ was attenuated to such a degree that it could no longer multiply in the blood and induce a general septicæmia. The localization was very marked, and its similarity to attenuated swine-plague bacteria in its preference for the serous membrane is exceedingly striking. The lesions were so uniformly constant that it seems unnecessary to record the individual post mortem notes, but simply to describe the symptoms and pathology as they were observed in the disease as a whole.

Symptoms.—The general manifestations of the disease were usually slight. In the beginning of the outbreak the disease was so insidious that many of the rabbits were not observed to have been ill. Upon closer observation it was found that only rabbits which were suffering from a rhinitis died, and consequently after the first few deaths the disease could usually be foretold by the nasal difficulty. An occasional peculiar snuffling sound, accompanied by shaking of the head and rubbing of the nose with the feet was noticed in nearly all

cases in which the rhinitis was marked. The nasal discharge was usually observed for from several days to a few weeks without any noticeable effect upon the general health of the animal. For a day or two before death the rabbits ate sparingly and sat in a somewhat crouched position.

Pathology.—The rabbits were not emaciated, excepting a few old females that were nursing young. The most characteristic lesion was an inflammation of the pleura or peritoneum with the effusion of a small quantity of serum and the migration of round cells. The pleura was most often affected. Usually the pleural cavity contained a large quantity of cellular substance. The parietal pleura was covered with an exudate composed of fibrin cells and bacteria. In rabbit No. 6 the lungs were covered with a thin, grayish, membranous exudate, which was removed with difficulty. In ten cases the lungs were more or less hepatized. The others were hyperæmic with areas of collapse, excepting in No. 20, where they were normal, and Nos. 489 and 482, where there was marked emphysema. In all cases of hepatization the dependent portion of the cephalic lobes were affected, and in most instances the dorsal portion of the principal lobes. Upon section the hepatized tissue presented a grayish (necrotic) appearance. The bronchioles were filled with a thick muco-purulent substance. The microscopical examination of sections of the lung tissue that were hardened in alcohol showed the alveoli to be filled with round cells and the capillaries distended with blood. In the areas where the disease was more advanced the cells were breaking down. The changes in the dependent portion of the cephalic lobes were invariably more advanced than the hepatization elsewhere, excepting where the entire lung was necrotic.

The trachea contained more or less purulent substance, and the mucosa was deeply reddened. The larynx was usually nearly filled with muco-pus. The mucosa of the nares was thickened and opaque. In nearly every case the nasal cavities contained considerable muco-purulent substance. In Nos. 15, 20 and 26 there was exudative peritonitis with pleurisy, and in Nos. 7 and 19 peritonitis only. The livers were

invariably enlarged and reddened, due to hyperæmia. They contained a very large amount of pigment, which appeared in granules from 0.8 to 2.0 μ in diameter. It resembled in form the grains of gunpowder. The pigment was usually observed lying between the cells. In most cases the liver cells were more or less fatty. In stained sections (rabbits Nos. 476 and 15) the pigment showed as bluish particles, the capillaries were distended with blood. The cell nuclei and interlobular tissue were not appreciably changed. The spleens were normal in size and color. The kidneys were hyperæmic, and in most instances the tubular epithelium was granular. In stained sections (from rabbits Nos. 476 and 15) parenchymatous degeneration was more or less marked. The blood vessels were usually injected. There was no apparent thickening of the intertubular tissue. The bladder contained very little or no urine. The stomachs, as a rule, contained little food. There was no visible intestinal lesions. The lymphatics were apparently normal.

Bacteriological Examination.—The specific bacteria were demonstrated, as previously stated, in the pleural and peritoneal exudates, but never in cover-glass preparations from the various organs and blood. Cultures were made from nearly every animal that was in a suitable condition, and in every case those from the blood remained sterile, and in only two out of eleven cultures from the livers did the rabbit septicæmia bacteria develop. The bacteria were localized on the serous membranes, more especially the pleura. The cause of the lung infection will be apparent from the fact, which will be further discussed, that the bacteria presumably gained entrance to the pleural cavity through the bronchioles and air-cells. The power of the attenuated forms of the swine-plague group of bacteria to multiply on the serous membranes of rabbits has elsewhere* been brought out by one of us (V. A. M.), but in no other investigations or experiments have we found such a marked example of this property of bacteria as in this outbreak.

* Appendix. Special report on the cause and prevention of swine-plague, Department of Agriculture, 1891.

THE BACILLUS OF RABBIT SEPTICÆMIA.

In the study of the outbreak just described careful comparative cultures were made from the bacteria obtained from several of the rabbits, and in all cases stained cover-glass preparations from the exudates were carefully examined. There was no difference found in the character of the bacteria, and the evidence was conclusive that the same species of organisms was present in the different animals. The virulence might have differed, but in the germs tested (those from three rabbits in all) this property was identical. In the description of the morphological and biological characters here recorded, a culture from rabbit No. 500 was used.

Morphology—A non motile bacillus with ends rounded. In stained cover-glass preparations made from the exudate of the dead rabbits it appeared as an elongated oval germ with more or less polar arrangement of the protoplasm. It varied in size from 1.2 to 1.8 μ in length, and from 0.8 to 1.0 μ in width. There were frequently many involution forms which were especially interesting from the fact that the cellular substance appeared to be concentrated at one end of the elongated form, which frequently assumed a sack-like appearance. These were especially observable in preparations from rabbits that were not examined until ten hours after death. In cultures they were slightly smaller. They stain readily with the ordinary aniline dyes, but do not retain the coloring matter when treated by the Gram or Weigert-Gram methods.

Biology.—On agar it developed a grayish, viscid growth. It did not grow on potato or in gelatine. It produced no appreciable change in milk. It imparted a uniform cloudiness to alkaline bouillon, and changed its reaction in twenty-four hours to a strongly acid one. After several days standing a thin, grayish band was deposited on the sides of the tube at the surface of the liquid, and a grayish, viscid sediment collected in the bottom of the tube. It did not develop in acid bouillon. In the fermentation tube containing bouillon plus two per cent. glucose, it imparted a cloudy appearance throughout the liquid. It fermented glucose but did not produce gas.

Very marked indol and phenol reactions were obtained with a culture that had grown for eighteen days. Its thermal death point, power to resist drying, and to survive in sterilized water were determined. An exposure in a water bath for five minutes at a temperature of 58° C. destroyed its vitality. Upon cover-glasses exposed to the atmosphere under a bell jar it lost its power of development when inoculated into bouillon in forty-eight hours. It perished in sterilized distilled water in eleven days.

It will be observed that morphologically and biologically this bacillus does not differ appreciably from the swine-plague germ, except, perhaps, in its indol reaction, which I have never found in similar cultures of swine-plague bacteria. It was found by Dr. Smith in one case.

Pathogenesis. — Mice, pigeons and guinea-pigs remained well after an inoculation with from 0.1-0.2 cc. of a fresh bouillon culture. Rabbits inoculated subcutaneously with a similar quantity of the virus developed quite severe local abscesses but finally recovered. A rabbit inoculated intravenously with 0.4 cc. of a fresh (twenty-four hour) bouillon culture perished on the fifth day with exudative pleuritis, pericarditis and peritonitis. A second rabbit inoculated with a similar quantity of the culture died on the sixth day. It exhibited a cellular exudate over both parietal and pulmonary pleura. The dorso-median portion of the principal lobes of both lungs were in a state of red hepatization, the cephalic lobes were collapsed; heart muscle was pale, and contained dark blood clots; mucosa of trachea injected; liver pale, fatty; spleen enlarged, dark and friable; kidneys hyperæmic; in the intermuscular tissue about left knee and right elbow joints were small abscesses containing pus and rabbit septicæmia bacteria. Stained cover-glass preparations from the various organs contained very few bacteria. Those from the exudate and pus from abscesses exhibited an innumerable number of polar stained germs.

A short series of inoculations were made for the purpose of accelerating the virulence of this bacillus. The results were negative.

A rabbit inoculated in the ear-vein with 0.6 cc. of a pure culture died in about forty-four hours, and its organs contained innumerable bacteria which exhibited a marked polar strain in carefully prepared preparations. A second rabbit inoculated with 1.0 cc. died of septicæmia in twenty-four hours. In large doses, therefore, it produced a rapidly fatal septicæmia. In these cases the disease could not be distinguished either by the lesions or the number and appearance of the bacteria in stained cover-glass preparations from the organs from the disease produced in rabbits with a small quantity of virulent swine-plague bacteria.

The organism obtained in this epizootic of rabbit septicæmia has been found by a comparative study to differ from the swine-plague germ in its excessive attenuation the marked indol reaction and in certain morphological characters, which, however, are more rarely observed in the involution forms of the virulent swine-plague germ. The outbreak is further illustrative of the extent of the distribution and manifestation of this group of bacteria. Although the source of the germ has not yet been determined, the fact of its producing a local disturbance in the nares, and, subsequently, in many cases, pleuritis and pneumonia, is of considerable importance, not only in its relation to rabbit septicæmia, but also in the suggestions which it offers concerning the etiology of certain forms of pneumonia in other animals as well as in the human species.

RHINITIS IN RABBITS AND ITS RELATION TO RABBIT SEPTICÆMIA.

From the preceding pages it will be observed that rhinitis in rabbits has been somewhat common, and that in this outbreak of rabbit septicæmia the nasal trouble preceded the fatal localization of the disease. This association of the two affections led to an investigation of the rhinitis. In some instances the nasal trouble was very slight, while in others there was a more profuse discharge accompanied with difficulty in breathing. Upon examination the nasal mucosa was found to be whitish (opaque), thickened, and covered with more or less muco-pus. The examination of stained cover-glass

preparations from the nasal discharge showed bacteria which resembled those of rabbit septicæmia in greater or less numbers. They were much more numerous in preparations made from scraped mucosa than in those from the secretions. The presence of these bacteria was expected in cases where the lung disease was advanced, but usually in those cases the nasal symptoms were less marked. Their appearance in the nasal cavities of rabbits suffering from the rhinitis only indicated a causal relation existing between these bacteria and the rhinitis. The temperature of the rabbits suffering from rhinitis was normal, but when the lungs or pleura became affected the temperature was elevated. In order to trace the course of the disease several of the rabbits that were suffering with rhinitis were killed and examined. This demonstrated the fact that the rhinitis was usually the starting point of the disease.

RABBITS WITH RHINITIS THAT WERE KILLED FOR
EXAMINATIONS.

Rabbit No.	Rhinitis Appeared.	Rabbit removed from Pen.	Rabbit Killed.	Suffered from Rhinitis.	Lesions.
26	May 8, '93	I	June 8	30 days	Rhinitis. Trachea hyperæmic, dependent portion of cephalic lobe of right lung hepatized, rabbit septicæmia bacteria.
28	May 8, '93	E	June 3	25 days	Severe rhinitis. Lungs normal, rabbit septicæmia bacteria from nasal secretions.*
39	May 8, '93	R	Jun. 22	45 days	Rhinitis. Lungs normal, rabbit septicæmia bacteria from nasal mucosa † scrapings.
27	May 9, '93	YY	June 7	29 days	Rhinitis. Right lung collapsed, pleura covered with cellular exudate, rabbit septicæmia bacteria.
55	June 22, '93	FF	Jun. 28	6 days	Severe rhinitis, lungs normal, rabbit septicæmia bacteria.

* Rabbit septicæmia bacteria isolated from impure liquid cultures by means of agar plates.

† A rabbit inoculated with the cultures obtained from the nasal mucosa perished of rabbit septicæmia. Pure cultures were obtained from its organs, and in cover-glass preparations from the same the polar stained bacteria were found in large numbers.

A more detailed description of the lesions that were found in the different rabbits is appended.

Rabbit No. 26.—In a fairly good condition. The nasal cavities contained considerable muco-pus. Mucosa thickened, pale. The mucosa of the larynx and upper trachea hyperæmic. In the dependent portion of the cephalic lobe of the right lung a small area of hepatization. Bronchioles in hepatized portions filled with muco-pus. The secretions from the nasal cavities, tracheal mucosa and bronchioles contained rabbit septicæmia bacteria, as indicated by stained cover-glass preparations.

Rabbit No. 28.—Female, pregnant. The nasal cavities contained very much muco-purulent substance. Mucosa thickened, deeply reddened. Lungs normal, heart muscle pale, liver fatty, bouillon tubes inoculated from the blood and liver remained clear. One inoculated from the nasal discharge developed an impure culture of rabbit septicæmia bacteria, which were isolated by means of agar plate cultures.

Rabbit No. 39.—In good condition, considerable abdominal fat. The abdominal and thoracic organs appeared to be normal. The mucosa of the nasal cavities thickened, opaque, and covered with a muco-purulent substance. Stained cover-glass preparations from the nasal secretions exhibited very few bacteria, but in those made from scrapings of the mucosa showed many polar stained, rabbit septicæmia bacteria. A tube of bouillon inoculated with the scrapings from the base of the mucosa developed apparently a pure culture of the bacillus of rabbit septicæmia. A rabbit inoculated intravenously with 0.75 cc., died in about thirty-six hours. Innumerable polar stained bacteria were present in cover-glass preparations from the liver, spleen and blood. Pure cultures were obtained from the blood and spleen.

Rabbit No. 27.—Was somewhat emaciated. The nasal cavities were empty. Mucosa not appreciably affected. Tracheal mucosa deeply reddened, due to the injection of blood vessels. The left lung and heart were normal. The right lung collapsed and encased in a thick layer of grayish, partially organized cellular exudate. Liver hyperæmic. Spleen slightly en-

larged. Kidneys firm, pale. A small quantity of thick, very cloudy, alkaline urine. Microscopical examination of sediment showed the presence of a few granular casts. Stained cover-glass preparations from the pus enclosing the lung, revealed innumerable rabbit septicæmia bacteria. Cover-glass preparations from the nasal mucosa exhibited rabbit septicæmia bacteria.

Rabbit No. 55.—Not emaciated. The abdominal and thoracic organs appeared to be perfectly normal. The mucosa of the trachea and larynx were slightly reddened, due to the injection of blood vessels. Pharynx apparently normal. The nasal cavities contained a considerable quantity of grayish purulent substance. The mucosa of the nares thickened and whitish. Very few bacteria were found in the cover-glass preparations from the discharge, but in those made from scrapings of the mucosa there was a moderate number of oval polar stained bacteria. A tube of bouillon was inoculated from the scrapings at the base of the mucosa, this developed apparently a pure culture of rabbit septicæmia bacteria. Agar plate cultures were made from the bouillon culture. Only colonies of rabbit septicæmia bacteria developed.

The number of rabbits that was killed for examination was sufficient to show the cause of the nasal difficulty. The attenuated condition of the bacteria accounts for their long residence in the nasal cavities without injury to the rabbits other than the rhinitis. In rabbit No. 15 the left ovary and terminus of fallopian tube were encased in a pus sac. The chronic nature of the disease can be appreciated by the fact that several of the rabbits (Nos. 11, 12, 15, 19, 20 and 29) were known to have suffered from the rhinitis from ten to twenty days prior to their death. These were first observed to be affected and were removed from the breeding-pens together with about ten others May 8th. Since that time a few other rabbits have been affected and removed.

In the latter part of July the surviving rabbits were killed for other purposes. They exhibited no lesions excepting a thickening of the nasal mucosa. About one-half of the rabbits that were affected with the rhinitis in the breeding-pens died. The cause of death was due to pleuritis, pneumonia or perito-

nit. None of the breeding rabbits recovered, although the nasal symptoms improved in some instances. Among the stock rabbits a smaller per cent of deaths occurred and a few apparently recovered. The disease, however, is of considerable importance, since rabbits, especially adults, once affected with it can never be considered safe for some kinds of experimental work.

Two experiments were made to test the communicability of the rhinitis from one rabbit to another. June 3, two young rabbits (Nos. 29 and 30) were placed in a pen with an adult rabbit that was suffering with rhinitis. July 12th, No. 29 showed symptoms of rhinitis and July 14th No. 30 was affected. July 20th there was a profuse nasal discharge with accompanying difficulty in breathing. Temperature normal. July 26th rabbit No. 30 was killed for examination. No lesions were discovered excepting a thickening of the nasal mucosa with a profuse muco-purulent discharge from the nasal cavities; cover-glass preparations from the mucosa exhibited polar-stained bacteria. A second exposure was made with an adult (old) rabbit. This gave negative results. The affected rabbits that were used in the experiments continued to suffer from rhinitis.

The length of time that elapsed after the exposure before the young rabbits developed symptoms of the nasal trouble and the failure of the adult rabbit to contract the disease after a two months' exposure would indicate that it was not a rapidly contagious disease.

The source of the germ is of much interest and importance. A careful bacteriological examination of the material used for bedding and food for the rabbits gave negative results. A considerable number of healthy rabbits have been examined, but thus far the germ has not been found in the normal flora of their upper air passages, although bacteria not distinguishable from it in their biological properties have been found in the upper air passages of many of our domesticated animals. In an unpublished article* by one of us (V.A.M.) on "The pathogen-

*Bulletin No 3. Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

ic and toxicogenic bacteria in the upper air passages of domesticated animals," attention is called to a few attenuated bacteria that were found in the air passages of certain healthy animals, which resembled the swine-plague group in their biological characters. Although the evidence is not at hand to establish the fact, our knowledge of the variations that exist in the virulence of the various members of the group of bacteria to which the bacillus of rabbit septicæmia belongs, indicates the possibility of the existence of saprophytic bacteria which, when taken into the nasal cavities might, under as yet unknown conditions, become more parasitic in their nature, and eventually produce the rhinitis and its sequela. In septicæmia, caused by wound infection, we find a somewhat analagous condition, for many of those cases have not been traced to an infection by specific bacteria that are capable of living as parasitic organisms only. In fact some cases have occurred where an infection with germs that have not lived in a condition that would destroy the known species of bacteria that produce septicæmia, seems impossible. Again the experiments of Koch and Gaffky with rabbit septicæmia would indicate the possibility of the existence of these bacteria under certain conditions in nature outside of the animal body.

STUDY OF THE PATHOLOGICAL ANATOMY OF PULMONARY GLANDERS.

By PROFESSORS E. LECLAINCHE AND L. MONTANE, of the Toulouse Veterinary School (France).

Translated from the *Annales de l'Institut Pasteur*.

(Continued from page 229).

A.—HISTOGENESIS OF THE GLANDERS TUBERCLE.

Adult glanders tubercles appear in the lungs of horses under the form of rounded nodules, varying in size from that of a seed of millet to that of a pea, and irregularly disseminated in every part of the two lobes. Upon exploration, the superficial centers upon slightly raising the pleura give the

sensation to the finger of a hard, fibrous nucleus enclosed in the elastic tissue of the organ. Upon section, the tubercle shows a thick, fibrous envelope intimately embedded in the surrounding parenchyma, and a caseous structure of a dirty white color, which is easily removed by scraping. But again, we very often find in the same lung younger forms, whose different aspects correspond to the various periods of development. It thus becomes easy to follow the successive changes of the superficial tubercles, and also becomes possible to judge of the rapidity of the successive transformations, according to the number of lesions of a similar type which come under our observation.

The tubercle is first indicated by a rounded ecchymosis of a dark red color, with a diameter varying from that of a seed of millet to that of a dime. A grayish point soon appears in the center of the hemorrhagic spot, and spreads rapidly. This incipient tubercle has the form of a semi-transparent, homogeneous, gray granulation, and is composed of an elastic tissue of a fleshy consistency. Sometimes a trace of the primary ecchymosis appears in the form of a rosy areola on the periphery. At a later period, a deep gray focus appears of a dirty white color on the center of the gray spot, gradually increasing, while the peripheric zone loses its transparency and becomes more dense in its structure; and as soon as this density becomes perfect, only a rounded mass of a uniform yellowish gray aspect can be recognized, and the nodule assumes the characteristics of the adult tubercle already described.

The histological analysis enable us to follow, step by step, the successional development of these alterations. The formation of the nodule is preceded by an inflammation of the sub-pleural and interlobular lymphatic tracts of the region. The pleural and sub-pleural lymphatic spaces show themselves in great part dilated and gorged with round cells; in the interlobular connective tissue, the lymphatic vessels are also distended; at some points, dilatations filled with leucocytes, resembling a minuscule closed follicle, are met with. The vascular sheaths are infiltrated, and the dilated vessels

are surrounded by a ring of round cells. The sub-pleural connective tissue and that of the interlobular trabeculæ are œdematous, and are infiltrated with migrating cells, both isolated and gathered in masses. In the whole extent of the involved tissue, the glanders bacilli are found free between the cells, and regularly disseminated throughout.

The development of the superficial tubercle always occurs in the neighborhood of the pleura, or of an interlobular band, often taking place at the point of union of the pleura with a band, or again at the junction of the two bands. The result of this is that the tubercle seems under-stretched, and partially limited by a band of inflamed cellular tissue.

The inflammatory center includes a group of alveoli, filled with finely granular fibrine, the remains of a primitive hemorrhage, enclosing some mononuclear leucocytes. The alveolar walls are thickened, and contain leucocytes and some free bacilli, the latter principally in the neighborhood of the connective band. This incipient tubercle is identified by a rounded ecchymotic spot under the pleura.

In the second period, the central portion of the primitive focus of pneumonia is overrun by an active immigration of leucocytes, which infiltrate the walls and fill the alveoli, appearing under section as a strongly colored bunch of grapes. Bacilli, not yet very numerous, are seen in the alveolar walls and in the cavities of the vesicles. All around the central focus of leucocytic apoplexy there exists a zone of fibrinous pneumonia which does not undergo noticeable transformations. The contents of the alveoli have, however, become more granulated, and are colored of a slight rosy tint, with the picro-carmin. By contrast, the surrounding pulmonary tissue undergoes marked modifications of reaction; this zone is indicated by the evolution of a more or less extensive epithelial pneumonia. The epithelium of the vesicles now drop off and proliferates, filling up the alveolar cavities, and at this stage the tubercle is seen under the aspect of a grayish, semi-transparent granulation.

The central focus rapidly undergoes the caseous degeneration, involving at one time the alveolar walls and the immi-

grant leucocytes. The cellular roundness loses its smoothness, and all that remains is a mass of irregular granulations looking like nuclei undergoing segmentation, with some cellular elements in various degrees of degeneration. The bacilli are more numerous, and may be detected in the whole extent of the diseased center. At the same time, the reacting layer of interstitial pneumonia spreads by the multiplication of the connective cells and of the leucocytes, and the alveolar cavities, gradually obliterated, are no longer indicated except by star-like depressions. We may then recognize in the tubercle a degenerated center, granular and colored, formed of cellular remains; a middle layer with festooned outlines of fibrinous pneumonia, and an external layer of interstitial pneumonia.

The presence of the center of degeneration is indicated on the surface of the lung by the appearance of a white, opaque spot in the middle of the gray granulation of the preceding period.

In the fourth stage, the zone of interstitial pneumonia extends by degrees at the expense of the fibrinous disease. This, still indicated by some irregular spots enclosed in the neoformed tissue, soon disappears entirely. The interstitial pneumonia then constitutes by itself, around the central caseous nucleus, a compact cellular wall in which two distinct layers can be found. One, the internal and larger, is formed of large yellowish cells, among which those of the giant kind are not uncommonly found; the other, external and thinner, is formed of delicate connective fasciculi, separated by round cells with large nuclei of an embryonic nature. The internal layer may with propriety be called the "epitheloid zone," while the external is the incipient of the fibrous envelope. The degeneration of the center is complete. The bacilli exist on the periphery only, and are no longer visible in the central part. Only some granulous rods, scarcely colored, can be detected. A last stage is marked by the completion of the surrounding fibrous and epitheloid belts.

There is then a caseous central focus, a middle zone, composed of epitheloid cells and showing several narrow grooves,

marks of alveoli which have disappeared; and an external zone, fibro-embryonal, due to an accumulation of young rounded cells, widely nucleated, and mixed with delicate connective fasciculi. Bacilli have completely disappeared, or, at least, can no longer be made apparent to the unaided vision. At the periphery of the nodule, the pulmonary structure is permeable; yet the walls of the vesicles are thickened by an embryonic neoformation, and hold together only by means of the external fibrous layer.

Thus constituted, the tubercle undergoes none but regressive alterations with external manifestations. The epitheloid zone gradually disappears, as the result of the degeneration of the internal limiting surface and of the growth of the external fibrous envelope. At a later period, there remains but the amorphous granular contents, enclosed in a resisting capsule, composed of concentric connective fasciculi intimately united, and containing between them a few connective cells.

B.—ALTERATIONS OF THE LYMPHATIC TRACTS.

These alterations, which precede and accompany the evolution of the glanders tubercle, are constituted essentially by a gathering of leucocytes in all regions overrun by the bacilli. The sub-pleural connective tissue, and that of the interlobular bands, are from their origin œdematous and infiltrated. The conjunctive cells are plainly visible, and their anastomatic branches form a well-marked cellular network, whose alveola are filled with migrating cells, both isolated and gathered into small groups. Some have a large nucleolus and a thin layer of protoplasm; others a small nucleoles and a definite protoplasmic zone.

Again, in some places, the leucocytes are accumulated in more compact and extended patches, regularly rounded, and situated in the center of the dislocated connective tissue. The cellular elements, strongly colored, are enclosed by a fine reticulum.

Again these foci of leucocytes may be agglomerated, and constitute by their reunion a peculiarly interesting form, re-

sembling lymphadenoma. With a low power they appear under the pleura as a round mass, formed of ten or fifteen rounded or ovoid follicles, granular in appearance, situated in a stroma of similar aspect, but clearer and more condensed at the periphery in a surrounding envelope. The aspect is that of a lymphatic gland. The lesion is developed on the course of an interlobular band, a short distance from its union with the pleura. The band may be clearly seen divided into two fasciculi, which separates in order to surround the neoformation. One pushed toward the pleura is confounded with it, while the other separates the diseased focus from the surrounding pulmonary structure, which has remained healthy. The nearest alveoli, compressed and flattened, present themselves under the form of narrow and irregular fissures. With a stronger power the follicles were seen to be gorged with leucocytes well colored, and provided with a large nucleoli. Here there is an appearance of larger elements, with yellowish protoplasm, finely granular, forming grayish spots on the dark, rosy bottom of the section. Running through the follicles there is a delicate network of lymphatic capillaries, and between the elements a fine, connective reticulum is observed. The spots occupying the center of the lesion contain elements orange red in color, and having a brilliant homogeneous appearance, which have undergone a certain degree of vitreous or waxy degeneration.

In the interfollicular septa, short glanders bacilli are seen, small in numbers, but perfect in form. Their presence is made more difficult to determine in the follicles by the strong coloration of the round cells; they are detected, however, in the wide spaces situated around the walls.

These pseudo-tubercles are in the perilobular connective tissue, or in the interalveolar partitions, while the inflamed connective tissue of the surrounding regions reminds one of the normal reticulated tissue, so these neoformations are strongly suggestive of the lymphadenoma, the resemblance becoming still closer if it be admitted that the reticulum of the lymphoid tissues is a cellular network, as Laguesse* has

Laguesse—(Development of the spleen in fishes).

attempted to establish by his researches in the development of the spleen.

Lymphoid tubercles have quite a peculiar aspect. They are seen on the surface of the lung, in the form of a regularly rounded, well defined nodule of a slightly yellowish translucent tint, or of an opaque rose color; the surface, somewhat convex, is raised up by the pleura; but the surrounding pulmonary tissue is not altered. On section a tissue is found of a fleshy consistency, very finely granular and perfectly homogenous throughout, at least in the earlier periods of evolution.

These forms seem to exist in numerous cases of glanders in the horse, though but few of them are found in any single subject. In one patient which had powerfully reacted to malleine, but two processes of this nature were encountered, and no other lesion of the lung or of the mucous membrane could be detected. A second case was obtained by the examination of a portion of a lung, taken from an animal also destroyed after the test of malleine. A third example was taken from a lung presenting numerous glanders tubercles of different ages, one single nodule presenting the characteristics mentioned; but those were sufficiently perfect to permit the histologic form of the lesion to be described in advance.

(To be continued).

CASTRATION OF CRYPTORCHIDS.

By PROF. F. MAURI, of the Veterinary School of Toulouse, France.

(Continued from page 248).

CONTENTION OF THE ANIMAL FOR OPERATION.

Veterinarians who castrate cryptorchids hold various opinions as to what is the best mode of restraining the patient during this operation. Mr. Degive says:

“To operate easily by the inguinal method, the animal must be thrown on his back, with all four legs flexed against the trunk and fixed by lateral bipeds (one anterior and one posterior, of the same side) on a level, and back of the elbow

to two solid rings secured to a strong strap or rope, surrounding the superior and lateral regions of the chest, a little back of the withers.

“ This position completely exposes the inguinal region, and almost totally relieves the compression upon the arm of the operator, a compression which during the powerful and repeated retractions of the abdomen and of the posterior leg becomes very great. This position, although the easiest, is not the only one, however, which contributes to bring the operation to a successful and satisfactory termination.

“ Most commonly we operate, like Mr. Dieriex, with the subject thrown and secured, as for ordinary castration, upon the side opposite to that in which the testicle is concealed. In this case, the various joints of the secured leg must be kept flexed as much as possible, the exposure of the inguinal space corresponding with the degree of the flexion.

“ Mr. Dieriex places a long and rather large bundle of straw under the thigh, close to the body of the animal, in order to prevent a change of position and keep him nearly on his back the moment the testicle is brought out.”

As we have said before, in the Danish mode the animal is secured on his back with his posterior parts raised. Mr. Jacoulet, like Mr. Capon, throws the patient on the opposite side to the one where the cryptorchidy exists, and secures the corresponding hind leg as in ordinary castration. The animal is then placed in the dorsal position, with little bundles of straw packed on each side, and secured with plate-longes attached to the extremities. Again, like Mr. Capon, Mr. Jacoulet recommends anesthesia, as much to overcome the pain as to render the manipulations safer and easier.

In all my castrations of cryptorchids, I have simply fixed the patient as in ordinary castration, casting him on the side opposite the one on which the ectopia exists. This is not only simpler and easier than the other methods, but it gives me more confidence in the results of the operation. Indeed, in the dorsal position the inguinal ring and the interstice, continuous with it, are opened widely and dilated for the introduction of the hand. The declivity of the opening made

through the peritoneum in order to reach the testicle, is a favoring circumstance for the introduction into that cavity of the blood which may have escaped from the laceration of the cellular tissue. And this will be especially possible if, as is not uncommonly the case, the testicle is not found immediately and without searching, and if, when the hand having been withdrawn for rest, it may, when re-introduced, carry with it not only blood but also threads of lacerated connective tissue, which may prove more than the most favorable media for the culture and growth of septic micro-organisms.

In the mode of securing the patient for ordinary castration, the hand of the operator always follows an upward course, and when it enters the peritoneum, has been, as it were, wiped off and cleansed, the blood and the fatty fragments which are set free being afterward carried out by the declivity of the region; and, moreover, the animal is better secured, his movements more restricted, and the action of the surgeon more certain. According to Mr. Degive, "it is promotive of expedition in double cryptorchidy to keep the animal on his back, with his four legs flexed against the trunk. To move the body slightly on the right or the left, as the case may require, is sufficient to bring to a successful result the ablation of one or other of the testicles."

For myself, I will never advise operating upon a double cryptorchid at one sitting. I think it more prudent to wait before removing the second testicle until after the entire cicatrization of the first wound. The anesthesia recommended by Nielsen, Ostertag, Capon, Jacoulet, etc., I entirely disapprove.

The operation of the inguinal tract by the simple laceration of the connective tissue, which is the most important step of the operation, gives rise to only an insignificant amount of pain. The ablation of the testicle in ectopia is done either with the ecraseur or by limited torsion, without feeling on the part of the animal, considering the extreme atrophy of the elements forming the cord. The ordinary castration is much more painful. As for the execution of the manipulations, it is neither easier nor more certain by the immobility which

anesthesia produces. The hand which is pushed through the inguinal ring and then the interstice, is guided by given points of an absolute fixity, which the motions of the animal (very limited as they are) cannot displace. Then anesthesia has not only no real advantages, but, on the contrary, seems to offer serious objections. First, it constitutes a complication of the operation, especially in the hands of practitioners who may not be familiar with the use of ether or chloroform, and it may give rise to fatal accidents, especially in the ordinary conditions of practice, in consequence of the difficulty of obtaining sufficiently pure anesthetics. Chloroform is often sophisticated with very irritating chlorated acids, the administration of which produces effects of a very dangerous character.

But that which is to be specially feared in the operation which we are considering is the *muscular resolution* produced by anesthesia, as well as the loss of sensibility. The flaccidity which follows in the small oblique, as in all other muscles of animal life, by the action of the anesthetics, is one of the most favorable of conditions for the occurrence of an eventration. Indeed, during the operation, when the testicle is drawn out from the peritoneal cavity into the inguinal tract, one feels the posterior border of the small oblique, which immediately applies itself upon the crural arch after the passage of the testicle, as if to prevent the protrusion of the intestines. Evidently, if the operation is performed with the use of anesthetics, the removal of the contractility of this muscle must involve the dangers of eventration. And again, the animal sleeping under the influence of anesthetics does not recover when the operation is finished within half an hour, three-quarters, and at times even a whole hour. During the period in which he lies upon the bed, he soon makes attempts to get upon his feet and rises on his fore legs, while the hind legs continue powerless and the animal falls back. And it is only with shaking and trembling that at last he succeeds in rising. During these struggles all the conditions for pressure from within outward by the intestinal mass are realized. I have experimentally judged of the effect of the relaxation of

the small oblique in the production of eventration. In numerous operations made on special subjects, I have often observed eventrations when the animals were destroyed immediately after the perforation of the inguinal interstice, and under the influence of the cadaveric flaccidity the relaxed small oblique has easily permitted the intestines whose peristaltic contractions have continued to enter the wide opening made by the hand of the operator. At the cavalry school of Saumur, where anesthesia is always used, a bandage is always applied to prevent eventration after the operation.

Mr. Degive, with the same object as Mr. Jacoulet of keeping the intestines in place in case an eventration should take place after the operation, closes the wound of the scrotum with sutures. Like Mr. Degive, I took the same precaution with the first eight horses on which I operated, but since then, having seen its uselessness, I have in my last four operations (three abdominal and one inguinal) left the wounds to themselves without any suture and dressing, and I have had no reason to regret the result.

Preparation of the Region—Instruments.—The inguinal region and surrounding parts being well exposed, they are to be thoroughly washed with soap, well wiped out, and then submitted to a second washing with Van Swieten's solution.

Let me remark at this point that the operator and his assistant must also have their hands and arms thoroughly washed, the hands quite clean, and the nails freed from all impurities. Washing with corrosive sublimate solution is the thing required.

The selection of instruments is very simple. A convex bistoury, an ecraseur or torsion forceps, all thoroughly cleansed and dipped in an antiseptic solution.

I prefer the torsion to the ecraseur. But this would better be employed when the cord is short, and the testicle cannot be readily drawn close to the inguinal ring.

MODUS OPERANDI.

Though delicate, the operation is one of great simplicity. It will be better to consider abdominal cryptorchidy as being

the most difficult, and the one which demands greater acquaintance with its conditions. Inguinal ectopia is much less serious. The testicle, more or less engaged in the inguinal space, can easily be secured with similar manipulations, less the perforation of the peritoneum.

Abdominal Cryptorchidy.

The operation is divided into five steps: first, exposure of the inguinal ring; second, perforation of the inguinal tract; third, prehension of the testicle; fourth, ablation; fifth cleaning the wound.

1.—*Exposure of the Inguinal Ring.*—With both hands the operator makes a transversal fold to the scrotum, outward of the raphy at the place where the testicle ought to be. While an assistant takes hold of one of the extremities of the fold to keep it on the stretch, the operator, with a convex bistoury, makes a perpendicular incision in its middle, intersecting the scrotum and dartos, and measuring about fifteen centimeters (about seven to eight inches). It is sometimes possible that the dartos is not completely divided at this step of the operation, and in this case it is necessary to carefully expose the sub-dartoic connective tissue by a few strokes of the bistoury, and then lacerate until the inguinal ring can be reached, which is done by the fingers being carried to and fro until the ring is felt by its posterior commissure, indicating—as it does—the course the hand of the operator has to follow.

2.—*Perforation of the Inguinal Tract.*—This most important and delicate step of the operation must be performed with the hand corresponding to the side of the testicle in ectopia, viz., the left hand must be used when looking for the left testicle, and *vice versa*. The horse being secured as heretofore described, it is impossible to act otherwise, and to use indifferently either hand as advised by M. Jacoulet.

The operator, with his arm and hand dipped in Van Swieten's solution, introduces the fingers, brought together in cone shape, into the wide funnel that he has just made and in the bottom of which is the inguinal ring. He pushes them in the posterior commissure, or that resisting angle formed by the

common tendon of the abdominal muscles and the crural arch and where these organs take their insertion on the anterior border of the pubis. With sufficient pressure, and with a slight rotary motion, the cone of the fingers soon penetrates through the inguinal ring and is soon followed by the whole hand. This immediately takes the direction of the inguinal tract, and makes room for itself in lacerating the loose cellular tissue that closes it, by pushing obliquely upward, outward and slightly from forward, backward.

During this delicate step the hand might be the means of serious disturbances did the operator not have at his disposal two essential guides: the ascending direction that he must follow is indicated by the position of the external angle of the ilium. And again, and particularly, the hand, though keeping up a slow rotary motion, must always remain resting with the pulp of the fingers upon the crural arch, which being well stretched, enables the operator to avoid laceration of the posterior border of the small oblique. The hand turned backward, with the fingers slightly flexed and resting on the crural arch, will gradually lacerate the connective tissue, while the posterior border of the small oblique smoothly glides over the dorsal face of the fingers. The manipulations must be carried out slowly and carefully. Thus guided, the hand reaches the bottom of the inguinal, near the sub-lumbar region, where the peritoneum is readily felt, more or less resisting, according to the age of the subjects. The pressure of one or two fingers is sufficient to tear it.

3.—*Prehensiou of the Testicle*.—Generally, the introduction of two or three fingers in the peritoneal cavity is sufficient to take hold of either the epididymis or the testicle itself, and to bring them into the inguinal canal. But sometimes the prehension of the testicle is more difficult, neither the organ itself nor the epididymis being found near the peritoneal opening. In this case it is necessary to immediately introduce the entire hand into the abdomen. This must be done slowly and progressively, and in such a way that the fingers as they proceed will recognize by touch the organs they come in contact with.

Of the seven abdominal cryptorchidies that I have opera-

ted, I had to introduce the whole hand in two cases. In one the testicle was so small that it was scarcely the size of a hazel nut. After taking hold of it several times, and still fearing a mistake, I then had recourse to Degive's method to satisfy myself—that is, to feel for the neck of the bladder, and finding the deferent canal at its insertion, to trace it back to the epididymis and the testicle.

My fourth cryptorchid I operated on a farm, and it gave me another surprise. As soon as my hand was introduced into the peritoneum the animal was taken with violent expulsive efforts, which, pushing the left colon into the pelvic cavity, altered the relative position of the testicle, which then became impossible to follow. The hand was even powerless to find the efferent canal at the neck of the bladder. It took more than half an hour—after the horse, exhausted by his struggles and becoming quiet—for the testicle to resume its position, when it was then secured. It was as large as a hen's egg. No complications followed this accident.

If the hand, when entering the peritoneal cavity, is not too tired, and the fingers have retained their tactile sensibility, it is easy to recognize the testicle and its epididymis. The organ is generally as large as an egg, somewhat flattened and elongated, and of a characteristic consistency. It is soft and yet elastic—the hand taking hold of it and isolating it completely. The ball of fæces for which it is sometimes mistaken has a different form, less soft and without elasticity, and is readily crushed through the thickness of the intestinal walls. The continuity of the tube in which it is enclosed does not permit it to be isolated, and nothing about it can be compared to the peculiar annex represented by the epididymis of the testicle, which is more or less separated from the organ, always very soft, and easily detected by its two enlarged extremities and by the flexuosities of the efferent canal, readily felt with the fingers. At any rate, as soon as the epididymis is secured, the testicle also soon will be, and it is then drawn into the inguinal tract without difficulty. However, when the entire hand has penetrated the abdomen, there is danger that an intestinal loop may follow the testicle into the inguinal

tract. To avoid this accident, which might bring on an eventration, it is prudent to bring the testicle through the peritoneal opening before the hand is removed from the abdomen. To do this, the fingers are flexed from forward backward, the testicle is pushed downward, while the intestines are kept in place with the dorsal face of the hand. This is then withdrawn carefully, carrying the testicle downward more or less, according to the length of the cord. In this motion the posterior border of the small oblique, which was pushed away and encompassed the hand, falls back immediately into position on the crural arch and the opening is closed, its elevated position preventing the exit of the intestinal circumlocution.

Thus it is seen that eventration is but barely possible if one follows strictly the rules of the *modus operandi* herein described. If, on the contrary, the operator, after passing it through the inguinal ring, immediately turns his hand toward the peritoneum or against the small oblique, not only will the intestines have a tendency to push through the opening thus left dilated, but the accidental laceration of the muscle will remain gaping, and eventration is rendered unavoidable, notwithstanding the best contentive dressing.

A difficulty which must not be overlooked and against which one must guard, is the excessive fatigue of the arm and hand while in the inguinal tract or in the peritoneal cavity, resulting from the efforts of the operator and of the compression made by the muscles of the abdomen and of the thigh. Under its influence the fingers will lose much of their tactile sensitiveness, and will no longer act as intelligent assistants. At such times the inexperienced surgeon may lose his self control, becoming uneasy and uncertain through fear of having undertaken too difficult a task. To continue in such a condition is to expose himself to false manipulations and serious accidents. The surgeon must then stop his work, withdraw his hand and rest himself. He cleanses his arm and hand, dips them several times in cool water and waits until the suppleness and sensibility have returned. Another important precaution not to be neglected, is to avoid reintroducing the hand until it has been thoroughly disinfected with

some kind of antiseptic wash, among which I prefer Van Swieten's solution. This prescription is highly recommended by Mr. Degive, and to it I owe the constant success I have met with.

4.—*Ablation of the Testicle.*—Drawn into the inguinal tract, the testicle drops down more or less, according to the length of the cord. Generally there is no trouble to bring it down to the inguinal ring. If the testicle remains concealed higher up I use the ecraseur. In the seven abdominal cryptorchids that I have operated I used the torsion four times and the ecraseur three. I had hemorrhage only in the last case—this was readily stopped with packing. As to the other modes of ablation, such as clamps, ligature, cauterization, etc., they all have serious objections, and I have never used them.

5.—*Cleaning the wound.*—The operation finished, the inguinal region is freely sprinkled with cold water, to remove the blood, or to produce by refrigeration a most beneficial hemostasis. The scrotal wound is then wiped dry with a very clean cloth and afterward sprinkled with Van Swieten's solution. As already said, to comply with Mr. Degive's suggestions, I have in four of my cases of abdominal cryptorchidy brought up the edges of the wound with sutures. These, which must be removed after twenty-four hours, have for object to keep the intestine in place and prevent its dropping on the ground should an eventration take place a short time after the operation. I have since neglected this addition to the operation, as I consider it useless.

I have never used the contentive dressing of Jacoulet, which is thus described: "A round pad of oakum, the size of a man's fist, moist with oil, is squeezed at the entrance of the interstice between the lips of the inguinal ring and no farther. Upon it the scrotal skin is drawn and kept in place with a little bunch of straw and secured with four quill sutures, left on for forty-eight hours. After that time hernia is no longer to be feared, and the products of inflammation must have a free exit."

The operation for us then terminates as a simple castration by immediate excision of the testicles.

(*To be continued.*)

WHY NOT BE A VETERINARY SURGEON.*

By AUSTIN PETERS, D.V.S., M.R.C.V.S.

To the young man just completing his college course, or the youth about to leave school without going to college, the question, "What shall I do?" presents a most serious problem. "Am I best fitted for a mercantile career," he asks himself, "or do my tastes incline toward one of the learned professions?"

Opportunities for rapid advancement in business are not relatively so numerous as they once were, while the number of applicants for positions is proportionately larger. In the professions the same conditions prevail. There are hosts of young lawyers struggling for a living, young physicians are equally abundant, there is a sufficient number of dentists to supply the demand, and it is not every one who is adapted to success as a minister of the gospel.

While it is true that "there is plenty of room at the top," the top seems farther beyond reach than it used to be, and it is much more difficult to climb from one rung of the ladder to the next.

Yet there is one profession, that of the veterinary surgeon, which, although it has become more prominent of late years, is still unfilled, especially in this country. The United States, with its vast agricultural and live-stock interests, offers a large field for such practitioners.

Until recent years the popular idea, usually borne out by the facts, was that a "horse-doctor" belonged to a low order of beings. He was supposed to be an ignorant, disreputable person, one to be generally avoided unless his services were needed for a sick horse or cow, when he was called in as the custodian of certain traditional stable lore which ordinary individuals were not supposed to possess.

Still some of the old school of "horse-doctors" were thought well of. They were men who had not an opportunity to go abroad to study veterinary science, and yet had

* From the *Youth's Companion*, Boston, Mass.

become good, common-sense practitioners by dint of applying their powers of observation, and reading the veterinary books and magazines published abroad at the time. In those days there were no veterinary colleges nor publications in the United States.

The opinion that a veterinary surgeon is simply a horse and cow-doctor is too narrow. A well-educated veterinary surgeon, besides being useful as a general practitioner, can give valuable advice touching wide interests. His opinion should be sought, and his suggestions followed in outbreaks of contagious disease among animals, and in respect of the public health so far as it is influenced by these maladies.

By far the larger number of veterinarians are and always will be employed in doctoring individual horses, cattle, sheep and other animals, but to many a wide field is and will be more and more afforded. The problem of keeping our flocks and herds in health is closely connected with that of keeping in health the whole body of the people; for the people in general consume the products of some domestic animals and are brought into close contact with others, while it is well known that the maladies of these animals may be "caught" in some form by mankind.

Some of the official directions in which the veterinary surgeon can act are in the army, in the work of the National Department of Agriculture, as scientific investigators at the various state agricultural experiment stations, as professors in the agricultural colleges, as state officials for the suppression of contagious animal diseases, and as members and employees of boards of health.

In continental Europe and Great Britain the importance of having educated veterinarians in the army to advise in the purchase and to preserve the health of the cavalry, artillery and train horses is so well understood that veterinary officials are given commissions, because men of proper education and capability for the work cannot be procured unless accorded the rank, privileges and pay of officers and gentlemen.

The English army has a regular veterinary department. Its chief has the rank of colonel, and those under him descend

in grade as lieutenant-colonels, majors, captains, first-lieutenants, to the more recent appointees, who enter as second-lieutenants. In fact, the most promising of the young veterinarians in England to-day enter the military service.

The military service of the United States does not compare in this respect with that of other civilized countries. With hundreds of thousands of dollars invested in horses and mules for military purposes, there are but a few army veterinarians. Their rank and pay is that of sergeant-major—a non-commissioned officer. They cannot very well associate with the enlisted men, and the officers will not associate with them. Hence they are nondescripts, neither officers or soldiers.

It is to be hoped that this state of affairs will be remedied before many years, although the prospect is not very hopeful.

The Massachusetts Legislature of 1891 passed a law providing for the appointment of a veterinary surgeon on the staff of each battalion of cavalry or battery of artillery in the volunteer militia to rank as first-lieutenant. This, the first step in a needed military reform, it is to be hoped will be followed by the formation of a proper army veterinary department by the national Government.

The United States Department of Agriculture has for several years employed a number of veterinarians in what is known as the Bureau of Animal Industry. Its chief is a veterinary surgeon. He has several assistant veterinarians, who are engaged in the eradication of contagious pleuro-pneumonia among cattle, in the investigation of infectious animal diseases, and in the inspection of animals and meats shipped abroad for food in order to guarantee their healthfulness.

The inspection of animals and meats has been undertaken quite recently, and has already resulted in the removal by Germany and France of their embargoes upon American pork. It will, no doubt, soon benefit still further the American shippers; and as the work increases in scope, undoubtedly more men will be required.

Many of the States, and especially those whose leading interest is agriculture, now have agricultural experiment

stations, which are supplied with money from the State and National treasuries, for the purpose of scientific investigation of matters of interest to the farmer. Although in most of them the work has been largely connected with chemistry, yet their equipment is incomplete without the aid of a veterinary pathologist and bacteriologist to study the diseases of animals.

Such positions are certain to be created within a few years, opening a number of opportunities to a young man of a scientific turn of mind.

Besides the agricultural experiment stations, we have the State agricultural colleges, which are also supplied with public money. Some of these have chairs of veterinary science on their faculties in order to impart to the young farmer the knowledge necessary to maintain the animals of the farm in a state of health. Other colleges will, no doubt, establish these professorships as soon as their funds will permit, thus providing still more employment for veterinarians.

Another field for veterinary surgeons is as State Veterinarians. The profession has been recognized in this way, more particularly in the great live-stock-raising communities in the West, where it is the duty of State Veterinarians to enforce the laws for the suppression and prevention of the contagious animal diseases. In other sections these laws are insufficient or non-existent, but as the country becomes more highly civilized the evils of infectious animal diseases will become more apparent, and then the veterinarian will find still greater demand for his services.

Another field for veterinary duty is to guard against the public health from diseases common to animals and man, or transmissible from animals to mankind. Hence in all large cities a veterinarian should be a member of every board of health, or one should be an employee.

New York, Jersey City and Brooklyn now have veterinarians connected with their respective health boards, and the Boston Board of Health employs a qualified veterinarian as inspector at the Brighton abattoir. But in the majority of our large cities politics play a more important part in the ap-

pointment of the incumbents to various positions than fitness. Hence insolvent cigar manufacturers and sausage-makers may be appointed as inspectors of slaughter-houses and provisions, instead of men who by their education and training have the requisite knowledge of the subject.

Dairy inspection is another subject that has received but little attention as yet. There are laws providing that unless milk contains thirteen per cent. of total solids, the dealer shall be liable to a fine; yet the sanitary surroundings of the cows and their condition of health receive no consideration whatever. Tuberculosis is not infrequent in cattle, and it is known that milk from tuberculous cows may produce consumption in the human being. Here is then another opportunity for the veterinarian to demonstrate his usefulness.

Though the ranks of veterinarian practitioners are rapidly filling, the profession will doubtless long afford an honorable maintenance to honorable men who engage in it, and occasionally one will be found who, by his special adaptability to the work, or because of particularly favorable surroundings, will be able to retire early with a competency.

The income of a veterinarian will depend much on his ability and environment. A young practitioner whose gross receipts are twelve hundred dollars for his first year's work can be considered as fortunate. If he is successful in the treatment of his cases and is liked by his clients, he ought to do better every year. Yet he will enjoy a larger income than most of his fellows when his annual earnings reach even as much as thirty-five hundred or four thousand dollars.

There are veterinarians who make two or three times this amount, but they form a small minority of the profession, and most of them began their labors years ago, when men educated in this branch of medicine were less numerous than at present.

Those holding public positions as professors, government or state officials receive salaries ranging from fifteen hundred to thirty-five hundred dollars, but many of them require, in addition to a practical education, a scientific training. The services of such investigators of all kinds in the New World are much less in demand than in the Old.

Many a farmer's son in stock-breeding districts, or near populous localities, might take up the study of veterinary medicine with a view to supplementing work on the farm by the practice of this profession. Outside of cities and large towns he would not find enough to do to depend upon the profession as a sole means of support.

The expense of obtaining a veterinary education varies with circumstances. Does the student live in the city where the school is situated, and can he reside at home free of expense to himself? Or does he come from a distance and have to pay for board? Of course, in either case the cost of tuition and text-books, note-books and stationery is the same. One hundred to one hundred and twenty-five dollars per annum for tuition, and forty or fifty dollars for the necessary books, is a fair estimate.

The expense is less if he attends an institution where the course is included in two winter sessions of six months each—as at the American Veterinary College in New York, or the Chicago Veterinary College—than he would be if he entered where attendance is required at three winter sessions of eight months each, as at the veterinary departments of the University of Pennsylvania and Harvard University. But he would have the satisfaction in the latter case of a more thorough training.

If he sees proper and can afford the expense he can go abroad to complete his education. In short, while he can fit himself after a fashion for seven or eight hundred dollars, twelve to eighteen hundred will fit him more thoroughly, or he can even lay out six or seven thousand to advantage.

A young man in order to be a successful veterinarian should have a love for animals and a knack for managing and understanding them, together with a taste for medicine. The pursuit will enable him to lead a healthy outside life, particularly to be desired if his physical condition or mental characteristics render a sedentary occupation unsuitable.

Though his income may not be as large as that of a prosperous practitioner of human medicine, yet on the other hand it will take less time to build up a practice that will render him self-supporting.

A modern veterinarian should and often does possess as good an education as a medical doctor. This being the case, people can no longer look down upon him as belonging to an inferior order of beings.

Therefore the veterinary profession is worthy of the consideration of the young man who is saying, "What shall I do?"

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."—VETERINARY RECORD.

HEMIPLEGIA IN A FOX TERRIER—WONDERFUL ENDURANCE TO NUX VOMICA.

BY L. H. HEMPELMAN, D.V.S., House Surgeon.

April 4th a small female fox terrier, suffering with hemiplegia, was admitted to the hospital department of the American Veterinary College.

Her history was somewhat incomplete. She had been taken with a fit, had recovered from it, but was found moving sidewise, the near side of the body being apparently partially paralyzed. A practitioner of the city, who had seen her, thought the dog had received some injury about the shoulder and for a few days had treated her accordingly. As she failed to improve, further advice was sought, with the result that she was admitted to the hospital, with all the symptoms of partial paralysis of the left side of the body, and the animal was placed under treatment. Cathartics were prescribed with tinct. of nux vomica, one drop three times a day, to be gradually increased, so that by the 9th she was taking five gtt. at a dose. The treatment was continued until the 16th, at which time she was so far recovered that she was discharged and taken home.

Four days later she was brought back, having had a second attack of apoplexy. She was then worse than during the first attack, and was completely paralyzed on the left side.

The neck was violently twisted to the right, and she howled with pain when touched on the neck. The former treatment was resumed, starting with five drops of the tincture of nux vomica, combined with doses of bromide of potash to keep her quiet. On the 25th of April she became so nervous, and apparently showing symptoms of over excitement, that all other treatment was suspended for two days, during which she was kept under the influence of bromide in ten grain doses three times a day.

On the 27th the administration of the nux was resumed in ten drop doses, and continued, still gradually increasing until the 18th of May, by which time she was taking twenty gtts. three times a day. For a week the large dose of one drachm of the tincture was given her every day, without any symptom of strychnia poisoning manifesting themselves, but the patient gradually gaining in strength, and by degrees regaining the entire control of her muscular power.

After receiving these doses of tinct. of nux vomica for about a week, it was again gradually diminished, until June 5th, when it was discontinued and the patient discharged, having entirely recovered, with only a slight springhalt of the left hind leg. When it is considered that the dose of nux vomica for a dog of her size is from one to five drops, the amount she took daily is certainly remarkable.

EVENTRATION IN A MARE—RECOVERY.

BY R. N. WEIGHTMAN, D.V.S.

This case is simply reported to serve as a contribution to the history of lesions of the peritoneum in solipeds.

On the 8th of July a farmer called upon me at my office and asked me to see a mare which had staked herself in the body, while throwing herself violently on the ground during an attack of colic. He informed me quite graphically, "that some of her insides was coming out, along with a lot of fat." I got to the case as quickly as possible and found a bad punctured wound on the near side, about three inches from the linea alba and midway between the ensiform cartilage and

the pelvis, large enough to admit three fingers. A portion of the large omentum was hanging out about a foot, and was very bloody and soiled from her continued rolling, and some of the intestines were protruding. I cut away all the soiled parts of the peritoneum and replaced the clean portions along with the intestines, and stitched up the wound, binding the patient up with three strong surcingles, and put her upon anodyne treatment. What I cut away would have covered a large-sized slate. The patient had some slight pains the first and second days after the accident, but has had none since, and was put to work again last Saturday, (the 15th), and has worked ever since,

I think that all dangers are passed. Yet is it so? Two physicians in my town said it was useless for me to attempt the operation, for the patient *must* die, even if she should survive two or three weeks. I am anxious to know the end. The mare seems as well as ever now; the wound is quite healed up, and though she is over twenty years old I do not think she will die from that injury.

PROLAPSUS VAGINA AND UTERUS.

BY S. H. SWAIN, V.S., Decatur, Ill.

I notice in the last issue of the REVIEW, a case of prolapsus vagina and rectum. Thinking it would be of interest to your readers while this one is fresh in mind, I herewith furnish you a few notes of a case I had of prolapsus vagina and uterus. It was in a fine Jersey cow owned by Wm. Roach of this city. About two weeks prior to the proper time of parturition the vagina protruded—I do not know just how bad it was out, but presume not so very bad.

Mr. Roach presented his cow to a couple of veterinary surgeons of this city for treatment. I do not know what they did for her, but I do know that they had her in their hospital quite a while, probably from three to five weeks or longer. In the meantime she had a calf and the whole uterus came out. After exhausting their ability they made an unfavorable prognosis of the case, and told her owner that she could not

be cured, and the best and only thing to do was to have her destroyed. Mr. Roach gave his fine cow to the pound-master, Greenberry Martin, and instructed him to take her out and kill her. After arriving at the destination, the pound-master's heart failed him, so he turned her out to eat grass. I was called, but informed Mr. Martin that it was a very bad case and of long standing now, and to save him expense advised him to bring her to my hospital for examination, which he did late in the evening. Myself and my assistant, Dr. Pumphrey, made an examination, but not a very close one, not interfering with the protrusion at all. I told him about the only thing we could do for her was to amputate it and save the cow. After talking the matter over for some time, we decided to treat her for a while first, if not successful we would have to amputate it. I wrote out a prescription about as follows, if my mind serves me right:

Tannic Acid,	℥ i,
Gr. Opii.,	℥ ii,
Ole. Gossypii Sem.,	℥ viii,

Gave instructions and furnished him with a syringe. He accompanied my assistant to the office, who filled the above prescription, and gave an explanation of the trouble. He first washed the parts nicely in alum water and applied the medicine, also succeeding in putting it part of the way back, but the cow had bad spells, straining so; he found it out the next morning and applied his medicine again, and it never came out any more. We had him inject antiseptic and astringent medicine three or four times a day for two weeks. In just three weeks I made a careful examination. By introducing my hand I found the uterus had all gone to its proper place, and we are glad to state that the cow is sound and well, and the probabilities are the trouble will never recur.

OMENTAL HERNIA IN A HORSE.

BY I. TURCOT, V.S., Minto, N. Dak.

On July 7th at 6 A. M. I was called to see a horse aged seven years; he had been hooked by a cow during the night

while at pasture. When I arrived at the farm I found the horse standing in the barn and eating hay as if nothing had happened to him. The wound was situated on the right side of the abdomen, below the sixth false rib, and the omentum was protruding about two and a half feet, covered with coagulated blood and serum, and assuming an unhealthy color.

MODE OF TREATMENT: I severed the protruded omentum with the ecraseur close to the body; then I washed and cleansed the parts well with a creolin solution; then I plugged the wound with oakum well dusted with one part of iodoform and two parts of boracic acid, and the whole protected by a wide bandage similar to those recommended in umbilical hernia. I ordered the horse to be fed on bran mashes and linseed gruel. Five days later I removed the bandage and found a healthy-looking wound in a fair way of cicatrization. The wound was dusted every day with the iodoform and boracic powder. The horse made a good recovery and one month later was doing harvesting.

AZOTURIA AND LITHIUM CITRATE.

BY WM. R. CLAUSSEN, V.S., Waupaca, Wis.

On May 4th I was called to see a chestnut driving mare, seven years old. I had seen her an hour previous passing by my residence and noticed then a peculiar stiffness in her gait. On my arrival at the stable I found her down in the stall and diagnosed the trouble as azoturia. I administered lithium citrate and ordered warm applications to the loins after drawing off the urine, which did not appear so very highly colored. Pot. brom. was left to be given to quiet the extreme nervous excitability exhibited. The symptoms showed no amelioration till the seventh day, when she got up and kept her feet for a short time. During the following days she received sol. Fowl. and nuc. vom., and her condition improved steadily so she was able to walk around on the barn floor, and after the lapse of a week the clonic muscular contractions, from which she had suffered to such an extent that she kept up a constant tripping with her hind feet, had entirely disappeared.

I recommended to have her turned into a small enclosure, that she might take whatever exercise she saw fit. This, however, was not attended to. She was taken by the halter a short time morning and evening. In the course of a week she commenced knuckling at the fetlocks and appeared unable to straighten the limbs. In a few days the rectus femoris and vasti muscles had atrophied to such an extent that they felt like a tendon as large as a finger, and the mare was unable to stand.

The case was considered hopeless and the animal was destroyed.

REVIEW OF MEDICAL PROGRESS.

ANATOMY—COMPARATIVE ANATOMY OF THE SIGMOID VALVES OF THE HEART.

By GILBERT AND ROGERS.

The sigmoid valves of the heart of man are inserted upon a fibrous ring. But this is not the case with the animal series, where the insertion takes place upon the free border of the muscular tables, which are absent in man. The researches made by the authors upon a great number of animals (mammalia and birds) have given them ample opportunities to observe the constant presence of these muscular tables. This conformation and disposition of parts may, however, vary in different species. Birds have three complete aortic rings resting upon each other by their extremities. In the mammalia, there is a space corresponding to the mitral valve, where the muscular fibres are lacking.

The presence of these tables is the cause of the conformation of the arterial orifices of the heart, with modifications varying with their number and their dimensions. The absence of the muscular tables in man must be considered as an inferiority, by exposing the valves to laceration and insufficiency of action.—*Revue des Sciences Med.*

UPON THE BUCCAL GLANDS OF DOMESTIC MAMMALIA.

By B. BARNER.

The macroscopic dispositions of the buccal glands vary considerably in different species of our domestic mammalia. These differences, which are not mentioned in our books of anatomy, are as follows: In ruminants, and especially the ox, there exists three buccal glands, one dorsal, one median, and one ventral. In the cat as in the dog, the dorsal gland occupies the orbital cavity, and for this reason is called the orbital gland. In the pig, the buccal dorsal gland is not covered by the matter. These glands also differ in size, according to the species, being largest in ruminants.

The histological study shows that the buccal ventral gland in ruminants is an albuminous gland, furnishing a product of amylolytic secretion. In this it is classed with the parotid.

The dorsal median gland of the ox, with the orbital and the buccal glands of the carnivora, are pure mucous glands. Yet the fluid from these glands possesses a saccharifying property very well marked, especially in ruminants. They are, from a physiological point of view, mixed glands.

The dorsal and median buccal glands of the sheep and goat are distinguished from those of the ox by their cells, which are not evenly mucous. They are either more or less so, or not at all. However, it doesn't appear that they ought to be altogether considered as mixed, but more as mucous glands subject to variations in their functions.

The buccal glands of the horse and those of swine resemble those of the sheep more than those of the ox, but differ from them in some of their characters. They are special mucous glands in which the functional variations and the division of labor are carried to a fine point. They produce, also, besides mucine, an amylolytic ferment.

In relation to the mucous richness, the buccal glands of the carnivora occupy the first place, and then comes the ox with his dorsal and median glands, and then the swine. The sheep, goat and horse occupy the lowest rank.—*Ibid.*

PHYSIOLOGY—CONTRIBUTION TO THE STUDY OF THE MOTRICE
FUNCTION OF THE STOMACH IN THE DOG.

By A. HIRSCH.

In dogs carrying a duodenal fistula and kept in good health, the evacuation of the contents of the stomach is made by successive acts, taking place at intervals more or less short (a quarter of minute and more). This evacuation begins at a time more or less near to that of the ingestion, influenced by the nature of the food taken in. It begins immediately after the absorption of water, six minutes after that of warm bouillon, and ten minutes after other kinds of food. Each time that the pylorus opens, it only allows the escape of a few cubic centimeters of chyme; at the beginning of digestion, this escapes at short intervals and with a certain pressure, each time gradually diminishing. After a heavy meal, the evacuation of the gastric contents is not completed until fourteen hours. Anesthesia by ether brought on during digestion suspends the evacuation from the stomach, but it returns as the animal awakens. The ingestion of a moderate quantity of fresh, cool water gives it a new activity. The opening of the pylorus seems to be principally stimulated by the liquid consistency of chymified food.—*Ibid.*

PATHOLOGICAL ANATOMY—UPON THE LESIONS OF NERVES IN
TETANUS.

By ACHARD.

In four cases of tetanus, there were lesions of peripheral neuritis occupying principally the traumatic surface and the seat of the contractions, but being also sometimes observed in regions more or less close to those. It was a parenchymatous neuritis, with all the characters of decreasing degeneration. It is probable that this neuritis is related to the traumatism in the same manner as the tetanic contractions themselves. The irritation started from the periphery, and transmitted to the central elements would give rise there, especially to the spasmogenous excitation, and very accessorially to the loss of the trophical power. The mechanism of peripheric neuritis would seem to be the same as in cases of amyotrophy of articular origin.—*Ibid.*

EXTRACTS FROM GERMAN JOURNALS.

By RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

INFECTIOUS GASTRO-INTESTINAL CATARRH.

A—— has seen this disease—generally of a benign character—appear in sporadic instances, but in 1891 the affection came as a contagious epizooty seizing upon twenty-three head in a short time. The course was not essentially different from the commoner variety, except in one case where the total stock, comprising seven cattle, became seriously sick over night, one individual dying within ten hours.

On another farm the affection assumed so persistent and at once so malignant a form as to cause death after an interval of ten years from the time of its primary appearance. A— finds no record in contemporary literature of such a virulent catarrh; the following comprises the substance of his remarks upon the subject:

On June 1st he examined the remaining six animals of the above-mentioned instance; great fever, indisposition, unsteady gait and prostration, with noticeable coldness of the whole corporeal surface, marked the cases as out of the ordinary. Paleness of the visible mucous membranes; pain in the abdominal cavity, with hæmorrhagic diarrhœa indicated a gastro-enteritis.

Twice daily they received beer containing eggs and milk as a drench, and also the following:

℞ Opii pulv., ʒ i, v,
 Creolin., ʒ v, xii,
 Spiritus, ʒ iss, x,

M.

Sig.—Regulate the dose according to size of animal.

Recovery followed the administration of this mixture very rapidly.

Upon post-mortem of the single animal which succumbed previous to our arrival, the muscles were fresh and of a healthy color. The collective organs of the thoracic and abdominal cavities, with the exception of the stomach and intestines, were healthy. The gastric mucous membrane, especially that

of the fourth stomach and small intestines, were intensely hyperæmic, swollen and diffusely colored, showing also petechiæ throughout the area. Erosions of the intestines and large gelatinous infiltration or carbuncular infarctions were not present.

The second occurrence of the affection in the same stable took place some time subsequent, when a cow and an ox were very sick, and a calf had already died. The afflicted were in a soporific state and exhibited symptoms of paralysis, as in parturient apoplexy—protrusion of the tongue and salivation. The ox after many futile attempts to rise relapsed to his former condition, while the cow refused to respond to the strongest irritation.

Pulse imperceptible, respiration normal, peristalsis and defecation suspended. The calf died a few hours after the first symptoms of the attack. Two days later not only were these animals dead, but also another cow and a goat which were kept in the same stable.

Section exposed the following: Fresh and normal aspect of the general myology; serous lining of the cavities sound, and the cavities free of liquid; no alteration of the digestive tract excepting the lining membranes of the stomach and intestines, which exhibited more or less inflammation, swelling and petechiæ—contents of a hemorrhagic mixture. The intensity of the attack, and cause of this infectious gastro-enteritis, reminds one of the lesions in anthrax, Texas fever and malignant aphtha. These diseases, however, were excluded by symptoms wanting intra-vitam and post-mortem, and by inoculation.—*Woch. f. Th. u. Vieh.*

CARCINOMA IN THE HORSE.

The cadaver had been a well-kept horse, and now exhibited as the largest lesion a swelling of the parotid and intermaxillary regions. On the right side of the neck a small potent wound of the skin could be noted, which, when probed, evidently led to the enlargement upon the left parotid space. On the left side a more insignificant and less extensive fistula

gave a similar communication. Between the branches of the inferior maxillary, an ulcerous surface, punctured by numerous fistulæ, led to the sub-maxillary lymphatic glands, which latter were encircled by a white connective tissue envelope.

This new formation occupied the sub-maxillary space, completely usurping the laryngeal region, and becoming continuous with the first-mentioned parotid or retro-pharyngeal swelling.

Microscopic sections revealed carcinoma. The cavities of the stroma were occupied by cylindrical epithelium. From the sub-aural lymphatic glands there proceeded a fistulous tract of perhaps three-quarter inch calibre, which became larger between the larynx and inter-maxillary hypertrophy, terminating in the wound upon the right side of the neck after a course of twelve inches. The left post-pharyngeal glands were also involved in a carcinomatous complication the size of a lemon.—*Berliner W.*

• INTESTINAL RESECTION IN THE DOG.

Prof. Degives, of Brussels, following the modes of Hoffman, operated twice upon a two-year-old hunting-dog. Through palpation he was able to detect the presence of a foreign body in the abdominal cavity. One-half inch to the left of the mesial line an incision was made eight inches in length, which exposed the occluded bowel much enlarged. This was divided to the side, upon the free contour, sufficient to permit the easy extraction of the extraneous material.

The latter proved to be an ordinary smooth gravel stone weighing something over an ounce. The union of the intestine was accomplished by stitches inserted by minute curved needles; upon one side of the gut-wound the needle was inserted, passed through and transversely across the wound to enter the opposite lip, after which it was brought diagonally to the first side, and so on until the aperture was obscured.

It is sufficient to avoid infiltration at the point by leaving the mucous membrane unpunctured by the needle; the serous coat must, of course, come in contact upon the circumference

of the intestine. The portion sewed is further disinfected by a tepid solution of boracic acid, and replaced within the cavity; after this the external wound is closed by the interrupted suture. For twelve hours only pure milk was administered; for the next few days milk and water, and after ten days the patient was discharged.—*Wochenschrift*.

RINDERPEST IN JAPAN.

According to the last official report, publishing the status of rinderpest in Japan, the annihilation has proceeded so far that now only individual or sporadic cases may be found in Osaka, Kobe and Yokohama. The course of the disease gradually assumed a less virulent aspect, while in exceptional cases recovery took place without the slightest medical interference.

The total loss from the epizootic amounted to 4,181 head of cattle; of these 760 died of rinderpest, *per se*, 2,936 sick were destroyed as a sanitary precaution, and 485 healthy subjects were slaughtered as a prophylactic measure. The city of Osaka was the greatest sufferer from the pest; here 127 animals succumbed, and 931 affected were destroyed; no healthy cattle included in the latter.

The porportionately small number of live stock in the country—amounting in 1887 to only 1,020,222 head—makes the loss a relatively significant one. The Government has paid indemnity claims for healthy victims amounting to 50,000 yen.

The individual holders, however, suffer to a greater extent, since the consumption of meat and milk has declined to one-third, probably due to superstitious influence or mistrust. The invasion of the virus could be traced from Corea to three districts of the Kiushiu Island, and to two ports in Japan proper. The details of its advancement from these ports to Kobe—the largest harbor in the country—thence by sea to Yokohama and Tokio, even as far north as the island of Yeso, do not vary from the usual course of propagation of such malignant contagiums.—*Prof. Janson, Tokio, Japan*.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The twenty-ninth regular meeting of the Veterinary Medical Association of New Jersey, was held at Davis parlors, 943 Broad St., Newark, N. J., on Aug. 10th, 1893.

The meeting was called to order by the President, Dr. J. Gerth, Jr., at 10 o'clock A. M., sixteen members present.

After the regular business of the Association was completed, Dr. Geo. A. Banham, F.R.C.V.S., of Cambridge, England, gave an interesting talk on the methods of shoeing horses in England and in this country. He also spoke of the very bad roads here, and said that the smallest country town in England had better roads than our large towns. Dr. Robert Ward, of Baltimore, Md., also spoke on shoeing and the economy of the foot, and afterwards delivered an address on diseased cattle and meat. He told of some of his experience in trying to destroy diseased meat, but under the existing law it is almost impossible to do so. After the doctor's address the meeting adjourned for dinner.

The afternoon session was a general discussion of the subjects presented by the speakers at the morning session, the time being fully occupied, as the subjects were those in which all were interested.

The Association elected Dr. W. B. E. Miller, of Camden, N. J., as a delegate to the first International Veterinary Congress of America, to be held at Chicago, Oct. 16-20, 1893.

A vote of thanks was tendered to Drs. Banham and Ward for their kindness in adding so much to the enjoyment of the members present, by their addresses.

The meeting adjourned at five o'clock P. M.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting will be held Sept. 5th in Scranton at the Y. M. C. A. building, at 10 A.M.

The following essays are announced: W. L. Zuill, Differential Diagnosis of Colics. J. H. Timberman,———. W. L. Nunan, The Veterinarian Socially. Jacob Helmer, Inflam-

mation of the Internal Structures of the Eye. Leonard Pearson, Anthrax. W. H. Ridge, Employment of Force in Dystocia. Reports of Cases, by Leonard Pearson, Hæmaturia. W. H. Ridge, Fracture of Vertebræ.

S. J. J. HARGER, Sec'y.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

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H. L. Eddy, V.M.D., Univ. of Pa., 1308 20th Ave. N., Minneapolis. Vouchers, Olof Schwartzkopff, C. C. Lyford.

Christopher Graham, V.M.D., Univ. of Pa., St. Anthony Park, Minnesota. Vouchers, Olof Schwartzkopff, C. C. Lyford.

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DR. POE, V. S.,

Knoxville, Tennessee.

AMERICAN VETERINARY REVIEW,

OCTOBER, 1893.

EDITORIAL.

FIRST VETERINARY CONGRESS OF AMERICA.—The day is now fast approaching which will see those who entertain a real interest in the success of the important movement contemplated by the veterinary profession of America in their scheme for bringing together in convention the veterinarians of the world, and who shall not be hindered from attendance by insurmountable obstacles and uncontrollable reasons, or by professional obligations or sickness, busy with their final preparations for the trip which will bring together from all points of the compass a majority, we trust, of the veterinary practitioners of this continent. It is then for the last time that we call the attention of our readers to the coming event. What more we may have to say hereafter, will be of the hereafter.

The question is now in order, will this proposed congress prove to be the grand success which its best friends hope and wish it to be, and will try to make it? This, however, is scarcely to be expected from a first attempt of this kind by our veterinarians. Without doubt, there will be errors committed in the management of the affair, as well as accidents encountered, and, if possible, it is better that these should be anticipated now, than that they should surprise us when the day comes. Evidently everybody will not be satisfied. Some of our best veterinarians will, for one reason or another, fail to be present, and will therefore be unable to give the congress the benefit of their experience; and some, per-

haps, will deny or disparage the efforts made by the United States Veterinary Medical Association in inaugurating the enterprise. But all this must be met in the spirit of the old saying, "Better luck next time," or as it may be adapted in the spirit of prophecy for the next congress, "better work next time."

In any case, everything is, or at least ought to be, in a complete state of readiness now. Notices of the meeting were sent long ago to many of the veterinary papers of Europe, informing them of the congress and asking them to give them publicity in their various journals. These were courteously and cordially received, and our exchanges from England, France, Italy, Germany, Austria, etc., are now waiting for the programme which has been promised to them, and which they will publish.*

Unfortunately, through some error or neglect, this programme was not issued by the committee as early as was desired, or, at least, only came into our hands at a very late date. The final arrangements were difficult to adjust, and were so complicated in their nature that pardonable reasons for the delay may easily be found in behalf of those who had that matter committed to their charge. The following, we understand, is the programme which has been decided upon:

MONDAY, OCTOBER 16TH, 1893.—SPECIAL COMMITTEE MEETINGS

10 A.M.—Special Meeting of Local Committee of Arrangements.

11 A.M.—Special Meeting of International Committee.

1 P.M.—Special Meeting of the Comitia Minora.

TUESDAY, OCTOBER 17TH.

8.30 A.M.—Regular Meeting of the Comitia Minora.

10 A.M.—Annual Meeting convened.

ROLL CALL.

Address of Welcome to the Members, by President W. L. Williams.

Address of Welcome to the Visitors.

Reception and Consideration of Report of the Comitia Minora.

Report of Committee on Honorary Members.

1 P.M.—Adjournment for Lunch.

2 P.M.—Reconvened.

* The programme has been mailed since this was written.

REPORTS OF COMMITTEES.

Special Committee on International Meeting. Committee on Intelligence and Education. Finance Committee. Committee on Diseases. Prize Committee. Committee on Army Legislation. Publication Committee. Special Committee on Incorporation. Secretary's Report. Reports from Assistant (State and Foreign) Secretaries.

READING OF PAPERS.

Millet Diseases of Horses, by Dr. T. D. Hinebauch, Fargo, N. D.

Biliary Hepatitis in Cattle (Pictou Cattle Disease), by Dr. Wyatt Johnson, Montreal, Can.

WEDNESDAY, OCTOBER 18TH.

9 A.M. to 1 P.M.—Popular Meeting under the Direction of the World's Fair Auxiliary Congresses.

1 P.M.—Adjournment for Lunch.

2 P. M.—Reconvened. Discussion of Reports of Committees.

READING OF PAPERS.

Fistulæ, by M. H. Reynolds, Keosauqua, Iowa.

A New Method of Treating Periodic Ophthalmia by Surgical Interference, by Dr. R. H. Harrison, Atchison, Kan.

Election of Officers.

New Business.

6 P.M.—Adjournment.

8 P.M.—Reception on the Lake by the Western Veterinarians.

THURSDAY, OCTOBER 19TH.—SPECIAL TOPIC FOR CONSIDERATION.

10 A.M.—*Veterinary Education*, by Dr. A. Liautard, Chairman.

1st. Veterinary Education as it was.

2d. Veterinary Education as it is.

3d. Veterinary Education as it ought to be.

DISCUSSION.

1 P.M.—Adjournment for Lunch.

2 P.M.—Reconvened.

READING OF PAPERS.

Swine-plague and Hog Cholera, by W. H. Welch and A. W. Clement, Baltimore, Md.

Has Contagious Pleuro-Pneumonia been Entirely Eradicated from the United States, by Dr. J. W. Gadsden, Philadelphia, Pa.

6 P.M.—Adjournment.

FRIDAY, OCTOBER 20TH —SPECIAL TOPIC FOR CONSIDERATION.

10 A.M.—*Animal Food*, by D. E. Salmon, Chairman.

1st. The Measures Necessary to Keep Meat-producing Animals free from Dangerous Diseases prior to Marketing.

2d. Meat Inspection from the Standpoint of Public Health.

3d. Meat Inspection from the Standpoint of National Economy.

DISCUSSION.

1 P.M.—Adjournment for Lunch.

2 P.M.—Reconvened.

SPECIAL TOPIC FOR CONSIDERATION.

Tuberculosis Committee, by Dr. A. W. Clement, Chairman.

1st. Nature and Extent of the Disease.

2d. Means of Controlling the Disease.

3d. Practicability of its Eradication from our Meat and Milk-producing Animals.

DISCUSSION.

Discussion of Papers and Reports of Cases.

6 P.M.—Adjournment.

7 P.M.—Banquet.

This is an extensive programme, and we are informed by some is considered to be overloaded. It is true that it is surrounded and protracted by numerous questions and special business matters of the committees of the Association, but this is a disadvantage which could not be avoided, if it is considered that this occasion possesses a double character, and will be not only the first veterinary congress of America, but the thirtieth anniversary of the United States Veterinary Medical Association as well.

As it is, we believe that every endeavor has been made to render the event a success. It remains now for the veterinarians of America to assist in the final effort by taking pains to be present at roll call.

VETERINARY COLLEGE OPENINGS. — When this number of the REVIEW will have reached the hands of our readers, the various veterinary colleges of the United States will have reopened their doors, students will have assumed their seats for the next term on the benches of the institutions they have selected as their future alma mater, and the work of the various faculties will have begun in earnest. There have been but few changes in the organization of the existing schools in respect to the duration of studies other than those already announced by one of the New York Colleges, or in the opportunities and facilities of students for acquiring the knowledge which they are seeking.

The American Veterinary College has, however, made ex-

tensive alterations in its building. A larger and more comfortable lecture-room has been erected, large rooms for laboratory work have been built, and the faculty is now ready to do justice, for years to come, to their patrons and friends—in any case, until the completion of the new building so much talked of. By the way, speaking of this institution, it has been intimated that the statements in its last announcement were lacking in frankness and candor, and that there was a kind of double meaning in the language referring to the requirements for graduation.

Those who know the gentlemen connected with that institution, and of its honest work for nineteen years, were prompt in defence of its honor, and it has been well championed, for the American Veterinary College has started a requirement of three years' college attendance, *and will enforce it*. Both the true and pretended, but false friends, of the institution will please not forget this. The special charter of the legislature, in section 5 of chapter 443 of the laws of 1888 has, it is true, laid down the power of the Board of Trustees (page 15 of the announcement), but the *faculty* has decided to start this year on a new departure, and to extend the curriculum to three years, dividing the students into classes of the first, second and third year, and requiring each student to pass an obligatory examination at the end of each respective session before he will be allowed to proceed. Which of the two-year schools will now be the first to follow?

CONTAGIOUS PLEURO-PNEUMONIA.—The letter which we print below, from our esteemed friend, Dr. J. W. Gadsden, was received as we were about leaving the city for a short vacation, and after the manuscript for our September issue had been completed. This must be our excuse for any delay in acknowledging its receipt, and in presenting it to our readers. We hope that Dr. Gadsden will not suspect us of feeling indifferent to his request, and that knowing our appreciation of the importance of the subject upon which he is asking for information, he may find in the hands of our colleagues all the documents necessary to help him to the solution of a question which is not only of great importance to

us veterinarians, but which is of such consequence in its bearings upon the subject in a national aspect. The letter reads thus:

PHILADELPHIA, August 12th, 1893.

Prof. A. Liautard, M.D., etc.:

MY DEAR DOCTOR.—I am desirous of securing information as to whether “contagious pleuro-pneumonia in cattle still exists in any part of the United States,” and would be greatly obliged if you would advise me if there have been any cases of the disease in your vicinity, or which have come under your notice during the past year. If there have been any, I should like to have the exact location, number of animals affected, and any facts in relation to the outbreak which you deem of interest.

I have been requested to prepare a paper on this subject to be read at the First International Veterinary Congress of America, to be held in Chicago, October 16th to 20th, and desire to be correct as to facts; and any information you send me will be considered strictly confidential.

Yours respectfully,

J. W. GADSDEN, V.S.

ORIGINAL ARTICLES.

SCOURING IN CALVES.

By JOHN M. PARKER, D.V.M., Boston, Mass.

(Read before the Massachusetts Veterinary Association, April, 1893).

Diarrhœal diseases in calves may be roughly divided into simple dyspeptic diarrhœa and “acute mycotic diarrhœa, or diarrhœa of bacterial origin. The difference between the two is rather one of degree than one of kind. In the former the symptoms are not so severe; it is rarely fatal, and the treatment is practically the same as in the more acute form, which is the form I shall more particularly consider.

Within the last ten years numerous investigators have been at work on the ætiology of diarrhœal diseases, but so far no very positive conclusions have been reached. It appears to be generally accepted, however, that diarrhœal diseases are generally due to bacteria or their products.

It is now known that bacteria are present in the normal intestine in enormous quantity, and, further, that different kinds of food favor the growth of different kinds of bacteria. In infants or animals fed on milk diet, for example, there are two kinds of bacteria that are always present; one of these,

the "bacterium lactis ærogenis," is only present during milk diet; "it has not been found in the meconium, nor after a flesh diet, and it is found principally in the upper portion of the intestinal tract." As pointed out by Escherich, "its vital activity in the intestine depends on the presence of milk-sugar, and its extension there corresponds with that of this substance."

Milk-sugar is completely absorbed in the stomach and small intestine, and is not found normally in the large intestine. At the time of milk digestion the "bacterium lactis ærogenis" is found in great quantity in the upper part of the small intestine, and in proportion to the absorption of milk-sugar it becomes scarce, diminishing in numbers; in the colon and in the fæces comparatively few individuals of the species are found." (Keating, p. 180).

Baginsky has demonstrated by experiment that the "bacterium lactis ærogenis" has an extremely active development, and when cultures are made along with other pathogenic bacteria in suitable culture media the "bacterium lactis ærogenis" grows so rapidly that it prevents and retards the growth of the other bacteria.

These experiments led him to the opinion that the "bacterium," if placed under favorable conditions, may prevent the growth of other pathogenic organisms in the intestine, and that in the acid fermentation of milk-sugar caused by the "bacteria lactis ærogenis," we have a remedy which serves in the infant's organism to protect the intestinal wall from pathogenic bacteria. But when this fermentation exceeds a certain degree, which may happen in abnormal conditions of the intestine, it destroys the "bacterium lactis ærogenis," and thus lays the foundation for pathogenic processes of various kinds.—(Keating, p. 185). For example, if from some temporary cause there is increased peristalsis or an intestinal catarrh, or if from any cause there is an interference with the normal process of digestion, the temporary trouble may be kept up and aggravated by the presence of the micro-organisms which have gained the ascendancy through the destruction of the normal bacterium.

These micro-organisms "may have begun their work outside the body by developing in the milk, and so causing abnormal products of decomposition or fermentation, possibly poisonous ptomaines."

These abnormal products of decomposition or poisonous ptomaines affect principally the nervous centers and cause the severe nervous depression and heart failure usually seen in these cases.

Baruch also believes "that the summer diarrhœa of infants is chiefly, though not solely, due to the ingestion of micro-organisms, which create in the gastro-intestinal tract conditions analogous to those found in wounds, to which septic material has had access." He further argues that unsanitary conditions, poverty, filth, etc., are entitled to be placed only among the predisposing causes. The indigestibility of casein of cows' milk by artificially fed children is of no importance, since in winter this is borne without serious consequences." He concludes that the kind of food, if it be reasonably constructed, has little to do with producing diarrhœal disease, *provided the access of micro-organisms in its preparation can be prevented.*

Rachford also holds: First.—"That the chief, if not the only, direct cause of 'summer complaint' is abnormal intestinal fermentations of food stuffs. These are always caused by bacteria.

Second.—"At present we are unable to make an exact ætiological classification of these diseases, but it is probably true that there are quite a number of pathogenic bacteria, each capable of producing definite changes in the food which will cause characteristic symptoms.

Third.—"The disease being of bacterial origin it is necessarily infectious. It is probable that not all the diseases embraced under the general term are equally infectious."

This writer believes that bacteria may cause disease in any one of three ways:

First.—"By interfering with the growth and function of bacteria normal to the intestine. In this way bacteria which do not produce poisonous ptomaines or irritating products

may cause digestive derangements. It is quite likely that this form of disease may act as a predisposing cause to other forms.

Second.—“ By formation of irritating materials during the fermentation of food stuffs in the intestine, especially in acid fermentation.

Third.—“ By producing ptomaines which act as physiological poisons.” (Universal Med. Sciences, Vol. 1, 1889).

All investigators seem unanimously to be of the opinion that bacteria, either directly or indirectly, are the cause of this class of disease.

There seems to be a tendency, however, to lay too much stress on the bacterial origin of the disease, and forget that diet and constitution and the sanitary and hygienic surroundings have a great deal to do with its fatal character. As showing the influence of diet on the prevalence of diarrhœal diseases in children, out of 1,000 cases recorded by Hope, 30 were fed by the breast exclusively; of 602 fatal cases, recorded by Meineot, 24; and of 34 fatal cases, recorded by Ballard, 7 were fed by the breast exclusively, making a total of 1,943 fatal cases, of which but about three per cent. had the breast exclusively.

“ These facts,” says Keating, “ speak volumes. They show that the manner of feeding is one of the most important factors in the production of diarrhœa. As long as children are nursed exclusively they suffer but little from diarrhœal disease, but in the same class of children as soon as the age is reached when other food is added we find a very marked increase in its frequency. Children among the poor in tenements enjoy immunity from intestinal disease just in proportion as they are nursed at the breast and just so long as they are so, but as soon as artificial feeding is begun diarrhœal diseases begin to be prevalent.” (Keating, p. 64).

These remarks apply equally well to calves. In the summer of 1890 and 1891 I treated from forty-five to fifty cases of scouring in calves. The calves averaged from one to three months old when attacked. They were usually allowed to suck until three or four weeks old, when they were hand-fed

till they were three or four months, at which time, if the season of the year was suitable, they were turned out to pasture. With seven exceptions all the cases occurred between the time of weaning and turning out to pasture, and with three exceptions all the cases occurred during the summer months. Six cases occurred while the calf was suckling (morning and night); over forty while the calves were confined in pens and were being hand-fed, and only one after the calves were turned out to pasture.

On one occasion calf after calf was attacked with scouring, two or three new cases occurring each day until there were upwards of a dozen calves sick at one time. Three had died, and nothing seemed to do any good until on close investigation we found that great numbers of the squashes, which were being fed the cows, were decayed. Their use was discontinued, and the scouring rapidly disappeared. That this was the cause of the trouble was proved by the fact that some weeks later the foreman, wishing to use up the remainder of the squashes to get them out of the way, fed them to the cows, with the result that more of the calves were attacked with the old trouble.

Injudicious feeding then of cow or calf, allowing the calf to overgorge itself, irregular feeding, feeding milk too hot or too cold, all unfavorable hygienic conditions, such as hot, close weather, overcrowding, bad ventilation, want of sunlight, want of bedding, any one of these or a combination of them tend to produce an unhealthy condition of the calf and favor chronic indigestion.

“And this chronic dyspepsia or indigestion,” says Keating, “is more important than all other factors as a predisposing cause of diarrhoeal disease.” Anything that lowers the vitality of the animal increases its liability to disease. On the other hand, “healthy digestion and perfect absorption are the great obstacles to the development of new varieties of bacteria,” for “although new varieties of bacteria are being introduced all the time they fail to develop because their number is small or the conditions favorable to their development are wanting.”

Suckling calves escape because they are healthier, because their digestive organs have not been abused, and because their milk is sweet and pure and free from bacteria. While on the other hand, calves brought up by hand are usually more or less troubled with chronic indigestion from one or other of the causes already mentioned.

The pails and milking utensils and receptacles for milk are not usually so pure and clean as they ought to be, and partly for that reason, and in consequence of the hot weather in summer, the milk often swarms with germ life, and is sour and acid from fermentation having already commenced, so that when taken into the stomach, especially if taken in large quantity, and in hot weather when the system is enervated, and there is a low state of vitality, the digestive power is to a great extent lost, food will ferment and produce irritating acids and ptomaines, which in turn produce the symptoms which we know as "scouring in calves."

Symptoms.—The symptoms of acute mycotic diarrhœa in calves are well marked. The onset is usually sudden. One of the first symptoms noticed is usually the want of appetite. The calf refuses food entirely; the tail and buttocks are noticed to be foul and covered with a dirty yellowish discharge; its eyes appear sunken; there is often a discharge from both nose and eyes; the nose is usually dry; it rapidly loses flesh and strength; it lies constantly in a semi-comatose condition with its eyes wide open, and it has not even vitality to brush off the flies that are attracted by the sour-smelling evacuation; if made to rise it will stagger and appear weak; the abdominal walls appear flat and collapsed; its extremities are cold; its muscles become flabby; sometimes when it has been lying with its head round to its side, when made to move the muscles of the neck will have contracted so that it is unable to straighten its neck; it keeps continually pressing its teeth against its gums, causing a peculiar rubbing noise; the pulse is rapid and weak, and hard to count; the temperature is usually elevated.

This disease runs a particularly rapid course, the severe symptoms seldom lasting over forty-eight hours, and in some

cases it reaches a fatal termination in from eight to ten hours. Three cases have come under my notice where the calves were seemingly well in the evening and were found dead the following morning.

In simple dyspeptic diarrhœa, while the symptoms may sometimes develop as rapidly, they are yet not so severe; there is not the sunken appearance of the eyes; the calf does not lie in the same semi-comatose condition; there is not the same evidence of nervous depression; but it appears brighter, pays more attention to surrounding objects, there is no rise in the temperature, and the appetite is not entirely gone.

The *prognosis* in all diarrhœal diseases should be guarded if the symptoms are severe; if the patient lies in a comatose condition, with no appetite, sunken eyes and profuse diarrhœa, especially if the hygienic conditions are poor, then the prognosis is unfavorable; if, on the contrary, the appetite is not altogether gone, if the eyes are bright, and the hygienic conditions and sanitary surroundings are good, the prognosis is much more favorable.

Post-mortem Appearances.--In making autopsies on calves dying from this disease one cannot help noticing the marked absence of lesions when compared with the great severity of the symptoms. This is fully accounted for, however, when we remember that the process is not inflammatory, but through acute fermentation in the gastro-intestinal tract a poisonous substance is produced, which affects primarily the nerve centers, causing nervous depression and heart failure. If this process were continued for a sufficient length of time inflammatory changes would take place; as it is, death usually occurs before the inflammatory lesions are sufficiently well marked to be noticeable to the naked eye.

In ten post-mortem examinations which I have made in calves dying from "acute mycotic diarrhœa," the examinations were held within a few hours after death, and the appearances observed were in all cases practically the same.

The first thing that strikes one in looking at the body is the rapidity with which emaciation has gone on, and the completely collapsed condition of the abdominal walls. The eyes are sunken; there is discharge from both eyes and nose; the

tail is invariably soiled ; on making an incision the first point to be noticed is the pale white character of the muscles and intestines ; the lungs appear normal except for hypostatic congestion ; the heart usually contains a quantity of dark-colored blood in both sides ; the heart muscles are flabby and soft.

The intestines contain dirty white liquid consisting of undigested food and particles of curdled milk. In most instances the mucous membrane is soft and easily separated, but it must be remembered that it is usually hot weather and the post-mortem changes are very rapid. The stomach usually contains a quantity of frothy undigested food, liquid food ; the mucous membranes are all pale in color and have a washed out appearance.

Other abdominal organs appear normal, notwithstanding the absence of pathological changes ; however, the conditions would not be easily mistaken. The flabby condition of the muscles, the collapsed condition of the abdominal walls, the dirty condition of the buttocks, sunken eyes, paleness of intestinal organs, all tell a tale that would enable one to recognize a case, even if there was no history to guide him.

Treatment.—Scouring in calves is an exceedingly indefinite term. It seems to include all cases of simple dyspeptic diarrhœa, acute mycotic diarrhœa, and even the more chronic forms take shelter under its wing ; and in considering the treatment to be adopted, while the general plan of treatment is the same in all, yet the success attending treatment in the more severe forms is usually far from encouraging. The essential points to be remembered in treating a case of acute mycotic diarrhœa are, first and foremost, to sustain and strengthen the heart and system generally, to allay nervous irritation, and to stop diarrhœal discharges.

The treatment with which I have had the greatest success is to clear out the gastro-intestinal tract with laxative medicine (nothing answers the purpose better than castor oil, ℥i-℥iss), to stop all milk diet for from twelve to forty-eight hours, and to support the system with brandy and eggs and oatmeal water. The brandy and water should be used freely. Opium is a good heart-tonic, and at the same time it diminishes the

excessive hyper-peristaltic movements of the bowels. Probably Dover's powder (80 xx-xxx) is as good a form as any in which it can be given. Where there is much stupor chloro-hydral or ipecac is preferable to opium. Sometimes suppositories of opium are of great value.

It should always be borne in mind that the simpler the medicinal treatment the better. Laxative medicine clears the intestinal tract of all irritating substances and products of fermentation, allowing it to begin afresh, "so to speak." After from twenty-four to forty-eight hours have elapsed, probably the best results are obtained by allowing the calf to suck a little, if it will. If it refuses then a very little diluted sterilized milk (not more than one-half pint at a time) may be given with the brandy and eggs and some preparation of opium.

Medicinal treatment, however, is of secondary importance to dietetic and hygienic treatment; good, pure air, and plenty of it, is an absolute necessity; nothing is more depressing, especially in summer weather, than for a sick animal to be shut up in a hot, close pen, with little light or air; and when we remember that these are cases of "poisoning, with great nervous depression of the heart and system generally, and that we are not treating intestinal catarrh, nor intestinal inflammation, although intestinal inflammation is one of the results that are likely to follow if the patient survives the first overwhelming shock of the poison," the necessity for pure air and good light and clean surroundings is still further emphasized. During convalescence too much care cannot be taken; if the calf is very young it should be allowed to suck a cow that has lately come in; if that is impossible, then it should be fed scalded milk for some time, and the greatest care should be taken with the surrounding hygienic conditions.

Diarrhoeal diseases are to a great extent preventable; if "scouring" is due to the introduction of micro-organisms, and if conditions favoring the growth of micro-organisms favor the development of the disease, then it follows as a natural consequence that the removal of these conditions will be followed by a corresponding decrease in the prevalence of the disease. It is most important then that the milk should be kept in as cool a place as possible, the utensils ought to be

scalded both before and after using (in consequence of the difficulty in keeping them clean, wooden pails should not be used). The milker's hands and the udder should both be washed before milking, and in every way an endeavor should be made to keep the milk sweet and fresh and *free from bacteria*.

Further, the calves should be kept in as strong and healthy a condition as possible; the pens in which they are kept should have light and plenty of fresh air; these are just as essential to the healthy development of animal life as of plant life. Dry bedding, and plenty of it, is another item that is too often neglected; the calf-pens are usually in a dirty, filthy condition; on the average farm they are not cleaned out till a wet day comes round, when the hired man does odd jobs around the buildings. Nothing is worse for young stock of any kind than to be compelled to lie in their own wet and filth. Another important matter is the water supply; calves will drink a large quantity of water if they have free access to it, but when the wells are situated in or near the barnyard more or less of the surface drainage must find its way into the well and contaminate the water supply.

In conclusion, the whole sum and substance of prevention is hygiene. Hygiene is of paramount importance; unfortunately, however, farmers do not realize the importance of the subject, and until they do "scouring in calves" will remain as much a mystery and a source of loss to the farmer as it is to-day.

THE HOOF AND ITS CULTURE.

BY DR. WILLIAMSON BRYDEN, V.S., Boston, Mass.

(Read before the Massachusetts Veterinary Medical Association, June, 1893.)

Permit me to apologize to you for again trespassing on your time to call attention to the subject of the "Hoof and its Culture."

The study of the horse's hoof and limbs, as most of you are aware, is not altogether new to me, for it is now almost twenty years since I first determined, after much hesitation,

to send to the *Veterinarian* a little article claiming that *bone spavin and some other diseases and defects of the horse's limbs were caused by defective hoofs*. It was an event I will long remember, both for the anxiety it gave me, first as to whether it would be considered worth publishing or be thrown into the waste basket, and second for the satisfaction and encouragement its appearance in print gave me.

For some three years previous I had mostly practiced in accordance with the text-books and lectures at college until convinced, not only of their error, but of the necessity for some system that must recognize the hoof, when deranged or defective, as the essential cause of most of the blemishes and diseases of the feet and limbs of the horse. Such a system being the only one that can ever relieve us from the confusion we are in on the subjects of soundness, heredity, etc., or help us out of the ruts such eminent writers as Percival and a few others led the profession into, until their theories and practices have become to the veterinary surgeon like a creed, which it would be audacity to question. It makes no difference how much the modern practitioner has failed to obtain the results promised or expected from the firing iron, the frog seton, tenotomy, neurotomy, and the whole array of other operations endorsed as so-called remedies by them, whether applied to the cause or the result.

My experiences, coupled with the success attending a rational treatment that discriminates between causes and results, compelled me to condemn and abandon the old methods, and advocate and practice something in harmony with a more consistent philosophy. The impulse to contribute something on this subject became so irresistible that it has ever since been my greatest delight not only to make of the horse's hoof a careful study, but to think, to practice, and try to impart to others whatever might be found beneficial to the profession, or lessen the sufferings of our humble patients.

It can now be demonstrated beyond a question that in such diseases as bone spavin, bog spavin, curb, splint, ring-bones, etc., the hoof can be guided in a right as easily as in a wrong direction with complete success ; so that such blemishes

and diseases can be instantly arrested and be made to gradually vanish just as they came, being due far more to after-birth environment and mismanagement of the hoofs than to heredity. This is so certain that in nearly every case a cure can be warranted. The same may be said of navicular disease and the various forms of laminitis, side-bones, and enlarged cartilages. They are entirely curable if taken in time, even to an advanced stage; the age of the animal, the length of time the defects have existed, demanding merely more time for readjustment and repair. Springhalt, paddling, interfering, overreaching, hitching, pacing, traveling one-sided, tripping, stumbling, etc., all depend upon hoof depravity. So-called scratches, scurfy and horny eruptions on the legs, also depend on the disturbed state of the skin of the pasterns and ankles from irritation, interrupted circulation and embarrassed functions, caused by a contracted or unthrifty hoof, the result being frequently the transplanting of the horn and hair elements, as well as cutaneous and sub-cutaneous tissues; all these again become normal after the hoof is properly opened up. Tissue metamorphosis in the soliped, I predict, will yet become a subject of the highest interest to the student of comparative medicine; first, on account of a difference from orthopædics in human surgery; and second, the fact such changes are probably as much physiological as pathological, the rectification of imperfect horse's limbs being very different from what is required in human limbs.

The tenacity with which veterinary surgeons will adhere to old mysterious notions and traditions even after the failures and disappointments that have ever attended their practice, of this branch of the profession, and for so many years, can only be explained by characterizing their whole system of treatment as "temporizing expedients," mostly tricks and patchwork; that their patience was not exhausted long ago, nor their veterinary genius stimulated, is hardly creditable either to their ingenuity or their enterprise. Medical men, some of them eminent, to whom these features of the subject (the ætiology of tissue changes) have been submitted, pronounce them to be in entire harmony with sound medical

philosophy, yet the veterinary surgeon either cannot or will not try to comprehend it, consequently they blunder along, believing in, and practicing what never could be demonstrated by them, and causing a heavy average loss of animals every year, which might just as well be saved.

No one has suffered from the mistakes of the veterinary surgeon more than the horseshoer, unless it be the poor horse. Their interference with the technical work of horse-shoeing has done more to confuse the smith and keep horse-shoeing backward than it has ever benefitted the art. When one reflects on the various shoes recommended by the ordinary writer on horse-shoeing, such as high-heeled shoes and low-heeled shoes, tips and three-quarter shoes, bar shoes and jointed shoes, Charlier, La Fosse, so-called Goodenough, and those of a lot of others whose notions of what the hoof's requirements demand are as various as they are wrong, their treatment of the whole subject is so ridiculous that it would be picturesque, were it not for the sufferings the poor animals have been compelled to endure on account of such equivocal teachings.

The sacredness, too, with which the frog and the bars, the sole and the wall have ever been regarded by these gentlemen, especially the veterinarians, is far from being creditable to their surgical instincts. The horseshoer is not allowed by them to use either a rasp or a knife, excepting in the most inefficient manner, and the sight of a good buttress would throw the modern writer of veterinary works and text-books, and professor of horse-shoeing, into hysterics.

Hoof culture is a benign process or system, no devil is to be cast out, consequently no sacrifice is necessary, and no torture is required.

I won't detain you with a detailed history of the early development of the hoof of the young foal, but will simply remark that in northern climates, where the winters are long and the ground liable to be frozen four or five months, May and June are probably the best months for the young animal to be born in; the grass has then come to stimulate the milk-giving functions, the ground is soft, furnishing the best footing for the foal, and also for the mare, especially if she has been kept in a barn or stable on a dry floor all winter.

Begin early to watch the little hoofs. If they grow irregularly or become foul, or the joints do not straighten properly, remember that the hoof is always reproducing itself, and if trimmed properly it can be guided to a renewed and more perfect growth, which always influences the limbs favorably, just as happens when the gardener prunes and trims and fertilizes trees, shrubs and plants. This applies to the cultivation and management of the hoof, especially in a state of domestication, from birth to maturity, and after as well.

In suitable surroundings an unembarrassed circulation can easily be maintained, so that the danger from hoof depravities becomes trifling, either from defectively, irregularly or unsymmetrically acquired development. When the gait is faulty, it is always due to the form and quality of the "horny box," and can be corrected at once. It is of great importance, too, to watch the way his hoofs are placed on the ground; for example, should one foot be placed on the toe and the other square on the sole, it is evident that the two limbs will not organize alike—walking on the toe indicates that something about the heel makes it more comfortable for him to do this. But after his heel is all right, it may still remain as a habit and cannot be neglected with impunity. One or two hoofs sometimes grow less thrifty than the others, and one or more may grow deficient in form and quality. This happens to both male and female, but mostly to young animals reserved for stallions, being deprived of natural exercise, and their hoofs not getting proper tear and wear in suitable pasture—a matter of great importance—they acquire what are known as pin-toes or stallion-toes, and these require much care; yet the worst cases can be changed in from eight months to a year, into feet and limbs that are perfect. It is of great importance, too, that the character of the deformities and blemishes be early recognized and corrected, because a part like the limb or hoof that suffers from perverted or arrested growth of a part, for a year or two before maturity, and during its growing period, is more liable to leave some trace than are adverse changes occurring after maturity.

As has already been said, the hoof is a part that is always

reproducing itself, and consequently becomes of importance, first, to trim and remove any obstacle to the new growth, such as the old contracted wall, sole and frog, which only crowds the lamina, arrests circulation and hinders repair; second, employ suitable remedies, especially such as will encourage the new growth to repair.

The diseases of horses' limbs must be divided into at least two classes:

1. What may be called physio-pathological changes; these include such diseases as spavins of all kinds, curbs, splints, springhalt, navicular disease, diseases of the lamina, so-called corns, quittors, etc., diseases and changes peculiar to the solid-ped species—all entirely curable, unless too long neglected, or improperly treated. They are always the result of hoof depravity, consequently impossible of successful treatment until the cause is removed by the renewed growth of horn, for then only can the derelict limb or the parts enclosed in the "horny box" ever be repaired. To treat such defects locally or directly can only fail, and the case ends in disappointment.

2. What may be regarded as the other class are such diseases and accidents as may affect any species of animals, and are generally amenable to direct or local treatment. A sharp distinction must be made between these two classes, for here is where the most signal failures to comprehend this subject and treat the cases consistently and successfully have occurred. In what has just been described as the physio-pathological class, the following instructions must guide us in treatment.

1st. Prepare the foot by softening the hoof, then reduce the wall all it will bear, rasp the wall thin, unless the animal is to be used, when enough must be left to nail the shoes to, the toe and the heels, however, must be well thinned, and so must the sole. If the bars are bent they must be thinned out; but the heel must also be weakened to correspond with the bar, for if this is not done it is liable to close. If the bar is straight, however, it may be left as a brace to force the quarter out when the heel-wall opposed to it is weakened.

This is better than tricks with spreaders, which are seldom reliable.

When animals have been long affected and must either go to pasture or remain idle in the stable during treatment, reduce as much as possible wall, sole and frog. Do not make the feet tender, neither is it necessary to cause them pain or draw blood, even in the worst cases; be sure, however, to keep the hoofs soft, and use on soft ground.

A great mistake has always been made by paring, for example, the sole, and leaving the wall, the frog and the bars untouched; every part must be reduced in proper proportion, and the more thoroughly it is done the better, for then it immediately starts on its reparative course. Mechanical interferences with the circulation, crowded structures like the defective substance, horny lamina, and other transformed and degraded tissues, such as the unthrifty horn, which are a continual source of disturbance to the extremities, but can be so easily relieved that pernicious growths like enlarged cartilages, etc., are arrested and gradually diminish until they become almost as natural as if they had never been involved in one of the adverse changes I have characterized as a secondary or physio-pathological transformation, a stage beyond the so-called physiological tissue changes, whether associated with atrophy or hypertrophy.

Nothing impels the advanced student of hoof culture to recognize its importance more than the benign methods demanded, and the success attending its treatment, both when the hoof itself is diseased and when it is the cause of defects and diseases on a remote part of the limb or body. I hardly dare to remark that in all probability defective hoofs have much to do with other defects, such as roaring, wind sucking, cribbing, weaving, atrophied muscles, fistulous withers, poll evil, etc. If this subject had first been announced by some French or German professor it might have been considered favorably, but emanating from one near home, it cannot be considered in less than a generation, and even then the veterinary surgeons who practice hoof culture can be counted on the fingers of one hand. They cannot grasp the principle.

The fact is, veterinary pathologists have hardly hinted to the hoof as being the cause of diseases appearing elsewhere on the horse's limbs or body, yet they imagined that they easily understood how bone spavin and splints might be caused by a blow or some mysterious diathesis. To discriminate between the ætiology of changes caused by a blow, and the ætiology of the blemishes, transformations and tissue changes peculiar to the horse's feet and legs, never seems to have entered their heads.

Old maxims, mysterious traditions, and "fake" practices and notions handed down from remote periods, the veterinary pathologist could always explain to the satisfaction of the profession, such simple faith has ever been accorded their teachings that they have ever been allowed to pass unquestioned.

This applies especially to the study of the locomotive organs of the horse and their treatment, which is still so coarse and inconsistent that it is hardly creditable to the veterinary profession in the year 1893.

Again appealing to you to take up this glorious subject, and apologizing for any censure I may have unjustly implied, for I am used to being censured and even sneered at, and have long and patiently submitted to the taunts and criticisms of both horsemen and veterinarians. They have pained me much.

In closing this article I sincerely hope to find hoof culture, before long, one of our most interesting and popular professional topics, studied not only by members of the veterinary profession, but by the horseshoer and the farmer, the farrier and the trainer, the gentlemen of leisure and the owner. I also sincerely hope to see a horse-shoeing department in every college, liberally endowed, and showering blessings on our long suffering and much abused friend, the horse.

BOVINE TUBERCULOSIS.

By JOHN M. PARKER, D.V.M., Boston, Mass.

(Read before the Haverhill Medical Club, April, 1893).

I am pleased to have the opportunity of bringing the subject of bovine tuberculosis before you, not because I have anything particularly new or original to present to you, but because I wish to call your attention especially to the sanitary and hygienic aspects of the subject, which have been too much neglected.

As you are aware, all domestic animals are more or less subject to tuberculosis. Dairy cattle, however, in consequence of their mode of life, and because of the heavy drain on their system through excessive breeding and milking, are more predisposed than any other of the domestic animals. Of the different breeds of cattle the delicate, highly bred Jersey is probably the most susceptible, while the hardy native breeds are most exempt. The early physical diagnosis of bovine tuberculosis is difficult; the symptoms are very meager, and, in fact, in some cases even when the disease is well advanced, there is seemingly little alteration in the health of the animal.

For example, in that form of tuberculosis known as "perlsucht," or "pearl disease," of cattle, where the serous membranes are covered with the peculiar characteristic nodular masses, the animal may be in a seemingly healthy condition. At other times the only symptoms observable may be enlargement or tumefaction of the external lymphatic glands, with possibly tubercular mastitis, in which condition there may be a characteristic hard and knotted condition of the udder, which is devoid of sensibility, and is non-secretive, or there may be a "diffuse and uniform enlargement and induration," with "functional activity to a greater or less degree." These symptoms, however, would be sufficient, especially with a previous history of tuberculosis in the herd, to condemn the animal.

Again, there may be indigestion and persistent tympanitis from the enlarged bronchial glands pressing in the œsophagus

gus, and so mechanically preventing regurgitation of food or gas from the stomach. Persistent œstrum or heat, with barrenness, especially when there is a harsh, unthrifty condition of the coat and a general loss of condition, must be looked upon with suspicion. Tubercular arthritis is also common in dairy cattle.

The most common form of tuberculosis, however, is where there is an almost characteristic chronic cough; on exertion the breathing becomes hurried and more labored, and is usually accompanied or followed by the cough. Auscultation and percussion show a more or less diseased condition of the lungs. There is usually more or less marked tumefaction of one or more of the superficial lymphatic glands. There is often scouring, the buttocks being in a dirty state. The temperature may or may not be altered, and the pulse but little affected.

The only positive diagnostic symptom is the finding of the bacilli in either the nasal or vaginal discharges, pharyngeal mucus or the milk. The microscopical examination of the nasal discharge, when present, usually yields the best results. The only other methods in use as aids to diagnosis are the inoculation of the suspected animal with Koch's tuberculin and the inoculation of rabbits or guinea-pigs with either discharge or milk.

The first of these methods (Koch's tuberculin) has been extensively used and highly recommended by both European and American investigators for diagnostic purposes, and while it has not yet been recognized as an infallible diagnostic agent, the results have been sufficiently encouraging to warrant further trial and investigation.

The second of these methods, the inoculation of rabbits or guinea-pigs with the milk or the discharge from a suspected animal, will probably never be brought into general use by the ordinary practitioner. In a suspicious case, however, it is often of the greatest value as an aid to diagnosis.

Ætiology. — As you are aware, the immediate cause of bovine tuberculosis is the same as in the human family (viz., Koch's bacilli). The bacilli do not always present the same

appearance, however, certain "morphological differences are found," and "under different circumstances and within limits, the morphology of the tubercle bacilli varies with its environments." Thus tubercle bacilli from the nodulus of "perlsucht" are generally shorter and thicker than those from the human being. Those found in cows' milk again approach more nearly to the familiar rod-shaped bacilli found in the human sputa; but while minute morphological differences can be detected in the tubercle bacilli of different species of animals, the general characters and characteristics of staining and culture are the same in them all.

In considering the ætiology of bovine tuberculosis, there are two natural groupings into which the methods of infection can be divided. The first and most important is by the introduction of the bacilli through the respiratory tract. The second, the direct introduction of the germ through congenital or hereditary transmission, or through eating or drinking tuberculous meat or milk.

In considering the first group it is necessary to take a generally broad view of the subject, and include all sources from which the tubercle bacilli can gain access to the atmosphere, whether that source is a consumptive human being or a tubercular cow matters not. Once they gain entrance to the atmosphere, from whatever source they come, they are equally dangerous.

The two most important means by which the bacilli can gain admittance to the atmosphere are: First, by the expectorations of consumptives. Second, by the nasal discharge of diseased animals.

In reviewing the work on the subject of phthisical expectorations, in the Manual of Medical Science for 1890, Whitaker says:

"The work of the year has established almost to universal conviction that pulmonary tuberculosis is caused exclusively by inhalation of dried sputum. This, the original postula of Koch, met its conclusive proof in the studies of Cornet. 'It is not,' he says, 'the breath of the consumptive which is dangerous, but singly and alone the inhalation of the dried

sputum, which is mixed with the dust of the floor.' 'The whole question of infection,' he goes on to say, 'has in the past year narrowed itself down to infection by sputum and by milk, and this fact may be regarded as the acquisition of the year.' " (Manual of Med. Sc., p. 190).

We can easily understand, therefore, how a consumptive person, having charge of a dairy herd, must become a source of danger to that herd, and might become a source of greater danger to a healthy herd than even the introduction of a tuberculous animal.

An instance was related to me some time ago by one of the State Board of Cattle Commissioners, having a direct bearing on this subject. In his capacity as State Inspector he was called to see a young heifer which was ailing. There was no previous history of disease in the herd; all the animals so far as could be traced were perfectly healthy; no new animals had been brought in; the bull used for service was a young, healthy animal with no trace of disease, and yet unmistakable symptoms of tuberculosis began to develop in this young heifer. (These on post-mortem examination proved to be tuberculosis).

Here was something of a puzzle, which was easily explained when it appeared on conversation that one of the attendants was far gone with acute phthisis. And I believe if this matter was carefully investigated, like causes would be found more common than is generally supposed.

The second source of danger, viz., the nasal discharge of diseased animals is analgous to the expectorations of human consumptives. Cattle do not actually expectorate, but we must remember their bodies are not in the upright position of a human being; their heads are held lower, and consequently any discharge from the lungs runs freely from the nasal passages; in this way the manger and woodwork become covered with the discharge, which dries, and subsequently particles, becoming detached, mix with the dust and dirt, and become a source of danger to the neighboring animals.

The second group of ways by which the bacilli may gain entrance to the animal body, is by direct infection through

eating or drinking tuberculous meat or milk, or by direct hereditary transmission. In the matter of diseased meat, the divergence of opinion on the subject is peculiar.

Bollinger, Kastron, Nocard and others have come to the conclusion "that the flesh of tuberculous animals is only exceptionally dangerous, and even in these exceptional cases it is dangerous only in a slight degree." Other observers hold the opposite opinion, and at the Congress for the Study of Tuberculosis, held in France in 1889, and at the Congress of Hygiene and Demography, held in London in 1890, resolutions were passed recommending absolute seizure of meat wherever there was any trace of disease in the carcass. Notwithstanding their action in the matter, however, there is a general tendency both in Europe and in this country to take a more moderate view, and when lesions are found to be localized and the flesh in good condition the carcass is not generally condemned.

With regard to milk from tuberculous animals, the experiments of Ernst and Peters, Hirschberger and others have demonstrated the fact that milk from tuberculous cows is dangerous, even when the udder is perfectly healthy. The experiments of Hirschberger, which are exceedingly interesting, show "that the danger varies at different times, being present when spores from some focus of infection happened to be absorbed into the blood current and were excreted by the milk." These experiments also showed that the milk of tuberculous cows is dangerous in fifty-five per cent. of cases.

Bollinger, however, showed that the virulence was to a great extent lost when the milk was mixed with that of healthy cows. Negative results being obtained in one case "with a dilution of one in forty, in another, one in fifty, in another, one in one hundred." "Milk is rendered less dangerous by admixture with other milk," and while "the advancing disease in one cow increases the virulence of its milk, dilution with milk of other cows lessens the virulence." (Manual of Medical Science, 1890, P. A. S.).

So that while there is danger in using milk from tuberculous cows, the actual danger is not so great as one might sup-

pose if the results of laboratory experiments were only taken into consideration. The danger is principally confined to people having one cow for family use, or to children being fed with milk from a cow reserved for that purpose.

In considering the direct hereditary transmission of tuberculosis, I would call your attention to a case reported in the "Journal of Comparative Pathology" (March, 1892). The article goes on to say "that in the body of a man who died of decimated tuberculosis of the pharynx, larynx, lungs, intestine, kidneys, prostate and rectum, the vesiculæ seminales were full of semen, which were found to be swarming with tubercle bacilli. The other genito-urinary organs were healthy." (Br. Med. Jour.).

This case is peculiarly interesting and instructive, and following in the same line, McFadyean reports a case of congenital tuberculosis in a calf five days old in which several of the lymphatic glands "were enlarged to the size of a large nut, and caseous toward the center. Some small nodules, the size of a pea, were seated in the liver substance itself, and these were also in a state of caseous degeneration; and on staining cover-glass preparations there was no difficulty in discovering tubercle bacilli."

That this mode of transmission of tuberculosis is uncommon, not to say rare, is shown by the fact that up to the present time there have been observed only six cases of indubitable congenital tuberculosis in the calf, that is to say, cases in which the possibility of the disease, having had an extra uterine origin, was excluded, and in which the exact nature of the lesions was established by the discovery of Koch's bacilli in them. In three of these cases the lesions were discovered in the foetus infant; in the fourth, the calf was dead-born, and in the other two the animal was under fourteen days old. The writer goes on to say, "it is probably not wide of the mark to estimate the tuberculosis among dairy cows at three per cent., and yet we know from careful statistics, furnished by the large continental abattoirs, that the proportion of tuberculosis among calves under one month old does not exceed 1 in 70,000."

This would tend to show that direct transmission of tuberculosis from parent to offspring is rare. As a rule, the offspring of tuberculous parents is weak and predisposed to disease in consequence of the want of constitutional vigor to resist it. In the majority of cases tuberculosis is not directly transmitted; there is simply a constitutional weakness and predisposition, perhaps not especially to tuberculosis but to disease in general.

Among the many predisposing causes of tuberculosis I would class anything that lowers or tends to lower the vitality of the system; anything that decreases or tends to decrease the disease-resisting powers which all animals possess to a high degree; and hereditary predisposition is probably one of the foremost of these causes, because for generations cattle have been bred for their milk supply, with a total and suicidal disregard for the general health and strength of the animal.

Among the causes that have tended to produce this peculiar constitutional predisposition of dairy cattle probably the most important are confinement and want of exercise, poor ventilation and bad sanitary condition generally, with injudicious feeding and breeding.

A German journal states "that in Canton Freiburg in 1890, out of 14,142 housed animals there were 249 deaths, and 8.7 of these deaths were due to tuberculosis, while in the district in which the cattle were fed out of doors, the deaths from tuberculosis amounted to only three per cent. of the total losses; that is to say in the districts where the animals were almost constantly housed and fed unnaturally, the deaths were two and one-half times greater than where the animals were kept out of doors and fed naturally."

This is only what one would expect, as it is in close, ill-ventilated barns that the bacilli would naturally collect; and apparently no better proof of this could be found than the remarkable results obtained through improvement in ventilation in the French cavalry stables.

After sanitary measures were adopted, cases in glanders in the cavalry horses fell from 23.32 per 1,000 in 1847-52 to

7.24 per 1,000 in 1862-'66, and during the same period cases of non-specific diseases of the lungs fell from 104.7 per 1,000 to 3.59 per 1,000. The only condition present to account for this remarkable change was increased facility for the ventilation and increased cubic space. (Paper read at Vet. Cong. of H. and D., 1890.)

Now we know that the average dairy barn is very imperfect in this respect. I have seen barns so close that a lantern hung up in the barn in the evening would go out before morning for want of air. One can hardly go into any barn in the morning without feeling the hot, close smell of the cattle, so strong sometimes as to be over-powering, and yet the average farmer will tell you when he has a barn of this description that he has a nice, comfortable, warm barn. The hotter and closer it is the more comfortable he seems to think it.

Drainage is another important matter that is too often entirely neglected; it is just as important to have the cow-barn and yard well drained, as it is to have the house and surroundings well drained. The statistics collected by Dr. Buchanan on this subject are highly suggestive, and their importance must be my excuse for their introduction here.

In Salisbury, Eng., after the introduction of improved drainage, the annual death rate from phthisis fell from $44\frac{1}{2}$ per 10,000 to $22\frac{1}{3}$ per 10,000 between 1837-'64. In Banbury the phthisis death rate fell in the same length of time from $26\frac{2}{3}$ to $15\frac{3}{5}$ per 10,000. In the same period of time in the towns of Ely, Rugby, Worthing, Macclesfield, Leicester, Newport, the death rate fell 47 per cent., 43 per cent., 36 per cent., 51 per cent., 52 per cent. and 52 per cent. respectively in consequence of improvement in drainage alone. And yet this is almost the last thing the farmer thinks of.

Beneath and around the barns stand piles of rotting manure. The urine soaks into and through the wooden floor and drips into the cellar beneath, while the yards and surroundings are usually a mass of decaying animal and vegetable matter. The surface water from this mass of filth often drains into the well, which is usually located in or near the barnyard, forming a cesspool for the collection of surface drainage.

As for good light, every schoolboy knows how essential it is, yet if not wanting entirely, the light is often a mere apology for that commodity. Cattle need light every whit as much as either plant or human beings, and yet I could take you to-day to barns that are supposed to be first-class in every respect, where one needs a lantern to find out whether the pens are occupied or not.

Perhaps, however, the most important factor in predisposing the dairy cattle to tuberculosis is the injudicious management of the dairy stock themselves.

It is generally recognized in the medical profession that when a woman becomes pregnant she should not be allowed to nurse her child, otherwise both herself and her offspring will be the worse for it, both will suffer in health. Fagge says, "In the female childbearing seems to play an important part among the causes of phthisis; and according to Dr. Pollock, it is not so much prolonged suckling that seems to set up phthisis, but the mere fact of suckling at all. Cases associated with childbirth generally run a particularly acute course."

In referring to the foregoing, Dr. Pye Smith says, "These considerations are so important in regard to life insurance, that Sir Risdom Benett and myself have for several years advised the office with which we are connected to count all deaths of mothers in childbirth or after delivery as due to phthisis, unless there is explicit evidence of previous good health." This is possibly an extreme view, but if it is the case, or even if it is only in part true, what must be the result when the dairy cow is not only milked when pregnant, but milked right up to the time of calving; they are fed so as to produce the greatest possible quantity of milk, and every year the dairy cow is expected to bear a calf with unfailing regularity; and when one remembers that this process is kept up, not for one generation only, but for generation after generation, the wonder is that tuberculosis is not far more common than it is, for we have here just the very conditions that are most fitted for its development. Constitutions weakened and vitality lowered through generations of injudi-

cious breeding along with poor sanitary conditions, poor ventilation, poor light and bad drainage; what more do we want what more could we have, even if we wanted to propagate the disease instead of control it?

Prevention.—In considering the measures to be adopted by the authorities for the purpose of controlling the spread of tuberculosis, we must not forget that the disease is not confined to one species of animals, but it may be communicated to and by all kinds of animals, and so long as there remains one tuberculous individual (whether man or animal), there will be danger to all other animals.

But while it is not possible to eradicate it by the process of killing off diseased animals, it is possible to control it to a great extent by improving the surroundings and the sanitary and hygienic conditions of the cattle, and by changing the present method of breeding and feeding to one more in accordance with the dictates of common sense.

In the first place the present provision of the state law ought to be enforced; a competent veterinary surgeon should be appointed as inspector in every city and town of the commonwealth; every dairy should be licensed and periodically inspected (say monthly or bimonthly), each cow ought to be registered and carefully examined for any trace of disease, an especial examination being made of the udders; and no cow ought to be used for dairy purposes unless it is in a generally healthy condition.

And further, as suggested by Prof. Walley, "Whenever such disease is detected, power should be given to the inspector to remove the infected animal to a sanitarium or other place for further observation, or to an abattoir for slaughter; if in the latter case it were ultimately found on autopsy that no disease existed of a nature likely to render the meat or milk harmful, compensation should be given to the owner of the cow."

The barns also ought to be periodically inspected for their sanitary condition, which would include the cubic space for each animal, ventilation, drainage, light, cleanliness, water supply, etc.

In this connection I would call your attention to the grant-

ing of licenses to dairies in other countries. In Scotland an act was passed called "The dairies, cowsheds and milkshops order of 1885," in which the Police Committee as local sanitary authority are empowered to make regulations inter alia, for prescribing and regulating the lighting, ventilation, cleansing, drainage and water supply of dairies and cowsheds in the occupation of persons following the trade of cow-keepers or dairymen, and the order declares that no cowshed shall be occupied, if new, until provision is made "to the reasonable satisfaction of the local authority, for the lighting and the ventilation, including air-space, etc. And no cowshed whatever shall continue to be occupied if, and as long as, the lighting and ventilation, including air-space, are not such as are necessary and proper for the health and good condition of cattle therein;" and in a report to the Glasgow Board of Health, Dr. Russell, the medical officer of health, recommends:

1st. "That the registration, regulation, and control of byers should be placed in control of the sanitary authority.

2d. "That in all existing byers the cubic space should be raised to six hundred cubic feet, that in all new byers it should be eight hundred cubic feet, and that the regulations generally as to lighting, ventilation, drainage, cleansing, and water supply should be carefully revised so as to give full effect to the mind of the sanitary authority, and thereby enable them to discharge themselves of the responsibility imposed upon them by the legislature." (McF. vol. p. 96.)

Denmark and Italy are, I believe, the only countries in the Continent of Europe that pay any special attention to the sanitary condition of the dairies. Great Britain and other countries are fast beginning to realize the importance of the subject, and it would be well if some such regulation as the above, regulating the granting of licenses to dairies were in force here.

Again, in the matter of meat supply, abattoirs should be established, and all private abattoirs should be abolished or licensed, and made subject to inspection at all times. France and Germany take the lead in this respect. In Berlin all meat is inspected and stamped with a government stamp be-

fore being exposed for sale. Special officers are appointed to see that no meat is smuggled in without inspection, and all meat found exposed for sale without the government stamp is confiscated and the seller prosecuted.

“In Berlin the staff engaged in meat inspection at the central abattoir comprises (besides common workmen), two hundred and thirty-nine persons including the director, nineteen veterinary surgeons, six assistant veterinary surgeons; other fifteen veterinary surgeons are engaged in the inspection of carcasses slaughtered and brought into the city.” (Jour. Com. Path. vol. 3, p. 188).

Now while it might not be advisable to go to the length Germany has gone in this matter, yet here we have not gone far enough. It is the duty of the government to protect the public by making meat inspection compulsory, and to provide competent meat inspectors. It is much more the duty of the government to see that dairies from which the public get their milk supply are clean and in good order, and that the sanitary conditions and surroundings are as nearly perfect as possible.

It is true that an enforcement of dairy inspection might result in hardship to certain individuals, but the public have a right to claim protection.

It may also be urged that it would be almost impossible to control the milk supply of a large city like Boston, which receives its milk supply from all the surrounding country, but it seems to me it would be a simple enough matter if the State authorities had the power to grant licenses and were to divide the State into districts, each district being in charge of an inspector, whose duty it would be to inspect all dairies in his district; no person being allowed to sell milk without a license.

And in conclusion, until some such regulations are in force here, and until greater attention is paid to the health and constitution of the dairy stock, and to the cleanliness and sanitary condition of the barns and their surroundings, all efforts to control and reduce tuberculosis in our dairy cattle must result in failure.

CATTLE TRANSPORTATION.

BY DR. WILLIAMSON BRYDEN, V.S., Boston, Mass.

In looking over "The Proceedings of United States Veterinary Medical Association," a copy of which I have just received, I am rather sorry to have to admit to disappointment.

Owing to my article being in a rather unfinished condition at the close of our meeting at Washington, D. C., in 1891, several errors occurred in it as reported in the AMERICAN VETERINARY REVIEW and in the *Journal of Comparative Medicine*, etc. The discussion following it, too, as reported, I found to be entirely unintelligible. This I took pains to correct the following month, so far as it referred to *what I had said*, but I refrained from criticising the remarks attributed to Drs. Michener, Miller and Faville, of the Bureau of Animal Industry, to which they had been but recently appointed, until they had at least time to correct the remarks attributed to them, should they desire to do so, but which they evidently did not think necessary.

It may be stated that owing to the large size of the hall in which we met, and the small number of members present, its acoustic properties were so poor that it was impossible either to hear one another or to report correctly what was said, especially in the discussions. I regret further to say that a similar mistake was made in Boston, at the last meeting, where a hall capable of seating over five hundred was secured, to seat what experience had proved would not exceed one hundred persons.

Referring to my article on the Transportation of Cattle, permit me to say that I am disappointed at its not being published as I corrected it, and as I returned it to the Secretary.

Referring to the discussion, I have to say that the remarks of my opponents show such a lamentable ignorance of the subject under discussion that one is led to infer that they either did not know, or intentionally tried a bluff.

Dr. Michener had always led me to believe that he was a *particular friend of mine*, so I innocently asked him to delay

the enforcement of the new rule demanding two feet eight inches space on the new ships, instead of two feet six inches in the "tween" decks, which had always proved ample. This he refused me, but immediately granted the request when it was made by the agent of the S. S. Line, and I was dismissed. I regarded this as an unkind, unprofessional act.

Regarding the inland transportation of distillery-fed cattle, if the gentlemen of the Bureau of Animal Industry who opposed me are ignorant of the circumstances attending the shipment of such animals on splendid ships, like the "Georgian" and the "Philadelphian," from the finest port in the United States, they ought to be ashamed to admit it, for the stockyards were filled on several occasions with dead and dying cattle, and so were the cars, both those that carried them to the yards, *and those that carried them to the ships.*

In spite of their assertions to the contrary, too, disinfection of cars and stockyards is still far from being perfect, and their condition as I described them still prevails, with the possible exception that parts where mudholes were liable to be formed in spring have been filled and sometimes paved.

Shortly after the meeting in Washington, the Hon Mr. Rusk issued a report, in which he admitted his inability to enforce sanitary measures on the railroads without further assistance from Congress, and I still insist that the British ships have been discriminated against by the United States. They have been treated unfairly, and charged with losses of cattle the railroads were entirely responsible for, as the gentlemen ought to have known.

They took the trouble to remind me of what the law requested me to do, as if I did not know, after fifteen years' experience, that it had become the duty of the representatives of the Bureau of Animal Industry, and not mine, at least within the last three years. The claim, so modestly made by the Bureau officials, that in the short period of their rule, some three years, they have succeeded in reducing the mortality among cattle on the ships from six per cent. to one-half of one per cent., is so simple that it is "childish bounce," the fact being that the rate of insurance has not been more than from

one and one-half to two per cent. within the last half dozen years and more.

Last year I inspected for a single steamship line, the Warren Line, 45,415 cattle, of these 117 (about one-third of one per cent.), died on board ship, but of this small number the death of at least fifty of them was caused by bruises received on the cars, and which did not show in the excitement of loading. None of the cars have cleats on their floors, so they soon become very slippery; only a few have division boards, which are seldom, if ever, used, the consequence is that when the air-brakes are suddenly set, the whole car load is piled on top of one another. Imagine this occurring to a load of heavy, soft-footed distillers, often weakened by confinement, idleness, thirst and exposure both hot and stormy weather, then decide whether it is the duty of the Bureau of Animal Industry to take cognizance of such a state of things, and make special efforts in their behalf or not.

STUDY OF THE PATHOLOGICAL ANATOMY OF PULMONARY GLANDERS.

By PROFESSORS E. LEOLAINCHE AND L. MONTANE, of the Toulouse Veterinary School (France).

Translated from the *Annales de l'Institut Pasteur*.

(Continued from page 306).

C.—GLANDERS LOBULAR PNEUMONIA.

The tubercle does not constitute the only anatomical expression of chronic pulmonary glanders, for at times glanders lobular pneumonia are found. These lesions are manifested on the surface of the lung, under the form of irregularly disseminated centers, of very variable dimensions, yellowish in color, and when recent, surrounded by a zone of severe congestion. Their section shows a dirty white surface, uniform and granular, with irregular outlines, bounded by a hepatized tissue of a dark red color. The center which appears has a cone with its basis sub-pleural, which reminds one of an infarctus of purulent infection.

Like the tubercle, the pneumonia takes place near the pleura, or the interlobular travea, or at times in the subpleural portions joining two lobules. The pleura, the septa and the alveolar walls are thickened, œdematous and infiltrated with leucocytes. The alveoli are entirely filled with a fibrinous exudate, and a large accumulation of round cells in process of degeneration. A few of the elements have preserved their normal aspect and the smoothness of their outlines; others are indicated only by irregular granulation, representing nuclei destroyed during their segmentation. The alveolar epithelium has entirely disappeared. Over the whole extent of the diseased center, large numbers of small bacilli may be found elongated, more or less separated; very abundant in the alveolar contents, they are disseminated in the walls among the degenerated cellular elements.

This portion of the affected lobule represents a rounded grape, surrounded by a narrow zone of catarrhal pneumonia. In the remaining portion of the lobule and especially in the neighborhood of the diseased center, the vessels are gorged with blood, and disseminated hemorrhages are found in the alveola. Bacilli are again detected here, but in much smaller numbers.

These lesions exactly reproduce what is observed in acute glanders, differing from those by their limited localization.

D.—VASCULAR AND BRONCHIAL ALTERATIONS.

The initial lesions of the lymphatic tracts extend rapidly to the sheaths which surround the vessels and the bronchia.

During the first periods of the disease, large accumulations of leucocytes appear in the spots affected, around the large vessels, distending the adventitious tunic and transforming it into a large annular lymphatic sheath. A little later, the walls of the vessel undergo marked alterations: round cells penetrate into the middle tunic, while the endothelium swells, proliferates and becomes loose. The leucocytes infiltrate all the walls, and break into the vessels, and with them enter numerous bacilli; some free, others enclosed in the cells. The imported leucocytes have, most of them, undergone a be-

ginning of alteration; their nuclei are in process of segmentation. Among those which contain one or several bacilli, some seem yet intact, while others show a broken, granular nucleoli, with their outlines scarcely indicated.

In some places the inflammatory troubles are very marked, and reach to the total destruction of the walls and the obstruction of the vessel. Then, under a section, a wide zone of embryonic tissue appears containing several muscular, smooth cells, the remains of the middle tunic, and occupying the lumen of the vessel, a granulation of embryonic tissue.

Lesions of similar order are met near the bronchi. The leucocytal infiltration of the peri-bronchic lymphatic tissue is followed by the inflammatory reaction of the walls. The dermis of the mucous membrane, infiltrated with numerous migrating cells, thickens and granulates in the interior of the canal, while at the same time the epithelium proliferates and falls off. The leucocytes break through the walls and form on some projecting point granulations which practically close it. With them bacilli enter the bronchi, and they are seen sometimes in very large numbers, encased in the immigrated cellular elements and the loosened epithelium, into a mucous exudate which fills up the bronchial cul-de-sacs.

The granulating of the walls going on, the cavity is gradually obstructed and subsequently completely obliterated in some places by an inflammatory granulation.

III.

The preceding observations, though incomplete, present an outline of the principal methods of pulmonary infection. The bacilli are first met in the lymphatic tracts, and slowly progressing they give rise at every point to stasis of the lymph and to an abundant leucocytosis. These very manifest lesions were not overlooked by the first observers. They are those which constitute the "infiltrated glanders" of Leisering and the "lymphatic oedema" of Rabe. But their pathogeny is very different from that which they gave it, since, instead of constituting a passive phenomenon, the simple mechanical result of an obstacle to the circulation more

or less distant, they are an expression of an active process of reaction, due to the presence of the bacilli, and instead of expressing a secondary and accessory accident, the lymphatic œdema explains the primordial and essential fact of the infection.

The lymphatic glands enact the part of *vector* of the virus, and this fact is interesting, in that it shows the similarity of the processes of glanders infection in the various organic territories (farcy). In this, the bacilli meet generally but an insufficient resistance in its spreading march. Notwithstanding the abundance of leucocytes, the phagocytosis does not seem to be active, and the bacilli remain free among the perfectly living cell that surrounds them. The microbe, however, does not meet either with conditions favorable to its pullulation, and though this first stage of defense is most commonly only very slight, in some cases it increases and impresses itself more strongly. Some of the cases above recorded seem to demonstrate that infection may be interfered with, at least for the time being, after a new flow of migrating cells upon given parts. The reaction is very well indicated by the gathering of the leucocytes in masses, and especially by the edification of the pseudo-tubercles, constituted by agminated follicles. *A priori*, it justifies us in considering as possible the localization and the destruction *sur-place* of the agents of infection from that first period.

Very generally, lymphatic centers (media) do not offer sufficient resistance to the invasion, and the bacilli spread diffusely in the interlobular septa to reach the peri-vascular and peri-bronchial lymphatic spaces. The entrance of the bacillus into the alveolar walls takes place with difficulty, and numerous lobules, isolated by a thick travea, filled with numerous bacilli, are sometimes found perfectly intact. Some accidental conditions, no doubt, produce a local weakening in the defense, which yields to the invasion. It is also remarkable that the tubercles appear by successive growths, and can be admitted by the infection while it remains localized in the lymphatic tracts, until a change in the general condition facilitates the eruption by diminishing the resistance of the tissues.

The presence of the bacillus in the alveolar walls coincides with the repletion of the alveoli by a fibrinous exudate; the gathering of leucocytes in the middle part of the diseased center only taking place later. During all the first steps of the evolution only a very small number of microbes are found in the tubercle. Appearing in the middle of well defined, grayish granulations, it is often difficult to make out some bacilli, while they are in large quantity in the surrounding connective traveas.

The pullulation is indicated by the central degeneration of the tubercle, and at that time only can the bacilli be easily detected by direct examination or by inoculation. The inflammatory reaction of the tissues bring on the isolation of the diseased focus, but the virulency remains for a long time, notwithstanding the alterations undergone by the microbes, and it can be demonstrated by inoculation when we can find in the tubercle only a few granulations without any positive significance.

On the side of the bronchial vessels, the bacilli produce the gathering of leucocytes in the lymphatic sheaths, and with it the inflammation of the walls. Direct observation shows that the penetration of round cells into the interior of the vessels is then possible, and also that bacilli, free or intracellular, penetrate, from without inward, the altered walls of the vessel or of the bronchia.

The results of the introduction into the capillaries of the lung of the bacilli could not be foretold *a priori*, but those of the pollution of the bronchia seem evident. The microbes are found in great number on the surface of the inflamed mucous membrane in the center of an abundant exudate, which is thrown out under the form of a discharge. It is thus that the almost constant virulency of the discharge of glanderous horses can be explained, and not as it has been to this day supposed, by the opening of tuberculous centers in the bronchioles. The bronchial alterations being independent of the tuberculous evolution, and subordinated only to the primitive invasion of the lymphatic tracts, one can conceive the virulency of the contents of the bronchia, even in the absence of all macroscopic lesions. It is theoretically admissible that an

animal may be found free from the lesions of pulmonary glanders after a minute autopsy, when in reality numerous bacilli may exist in some parts of the lung in the bronchia of infected regions, and consequently in the discharge. Although the absence of pulmonary tubercles may appear to be established, even after a post-mortem examination, it does not necessarily imply the non-existence of glanders, and that is a fact not at present without interest.

CONCLUSIONS.

To resume : First. In chronic glanders in the horse, the infection of the lung takes place through the lymphatic tracts, and is manifested by tuberculous neoformations as well as by alterations of the blood vessels and of the bronchii.

Second. The glanders tubercle starts by a peri-lobular lymphangitis; the lobule is attacked secondarily from the periphery to the center; the first anatomical indication of the tubercle being a nucleus of fibrinous pneumonia. The middle of the diseased focus becomes afterward the seat of a leucocytal apoplexy, followed by the caseous degeneration of the elements, with a peripheral reaction, which attains to the development of an epitheloid belt lined with a connective envelope.

Third. A peculiar anatomical form is due to the development of agminated lymphoid centers in the interlobular septa, in which form the pseudo-tubercle much resembles, histologically, the *lymphadenoma*.

Fourth. An exceptional alteration is constituted by the development of a center of alveolar pneumonia, surrounded by a hemorrhagic zone. This form constitutes a very limited focus of acute glanders.

Fifth. The blood vessels and the bronchii from the first stages of their development undergo important alterations. Their inflamed walls are penetrated by leucocytes and bacilli, which have been introduced through the medium of the lymphatic sheaths. Even when the lesions are very small, and in appearance localized, bacilli appear in the blood; and again, they are found in abundance in the bronchia, and consequently in the discharge.

CASTRATION OF CRYPTORCHIDS.

By PROF. F. MAURI, of the Veterinary School of Toulouse, France
(Continued from page 315).

2d.—INGUINAL CRYPTORCHIDY.

This includes four steps: First, the exposure of the inguinal ring; second, the prehension of the testicle; third, its ablation; and fourth, the cleaning of the wound.

1st. The first step comprehends the same manipulations as in the abdominal operation.

2.—*The Prehension of the Testicle.*—The organ is situated, more or less, high up in the inguinal tract. Sometimes it is down at the inguinal ring, and then easily taken hold of. When it has remained in the bottom of the groin, the operator carefully introduces the hand into the inguinal canal, as in abdominal cryptorchidy. Then one of two conditions is present: either the testicle, if the cord is sufficiently long, can be drawn down to the inguinal ring, or it remains well up in the inguinal canal. In the first case the operator pulls it to the ring, and incises the vaginal sac with the convex bistoury, as in the operation of castration with uncovered testicles. In the second case, the ablation of the organ must be effected while leaving it covered with the vaginal sac in the depth of the groin.

3.—*Ablation of the Testicle.*—Enucleated from the vaginal sac and drawn out near the inguinal opening, the testicle is cut off in the usual way. If, on the contrary, the organ is still in the deep part of the inguinal tract, the ecraseur is used, applying it on the outside of the cord, constituting the covered operation. In five cases I was obliged to use the ecraseur once, and in the four others the limited torsion.

4.—*Cleaning the Wound.*—Free washing with cold water, and after drying, sprinkling the scrotal region with Van Swieten's solution, as was recommended in the operation for abdominal cryptorchidy, will usually suffice.

Subsequent Care and Sequelæ.—When allowed to rise to his feet the animal is rubbed, covered with blankets, and taken to his stall, and tied up high for forty-eight hours to prevent

him from lying down. In compliance with the directions of Degive and Jacoulet, I have the hind quarter raised by a thicker bed of straw, though I think this is generally useless. It is justifiable, however, if complications arising from improper manipulations are to be feared. During the first day the animal receives about ten pounds of straw and mashes made of barley flour. On the next day he has hay and oats, and toward the fifth or sixth day is put upon his ordinary rations.

The sequelæ of the operations are similar to those of ordinary castration by limited torsion, which I have exclusively adopted for the past eight years. The patient is kept quiet in his stall, and generally paws the floor at intervals for the first twenty-four hours, and does not attempt to lie down. In none of my cases have I observed signs of fever, or even colic, such as commonly occur in animals castrated with clamps. On the second day after the operation, the patients begin to have exercise, and are left at liberty afterward. During this first period, they are slightly indisposed and eat carelessly. There is stiffness of the loins, and they walk sore, but they soon begin to lie down and improve. The sheath becomes the seat of a swelling of varying dimensions, perhaps extending under the abdomen, but requiring no special care. There is some suppuration at the scrotum, escaping passively, but more abundantly when the animal is walked. Cicatrization is complete in from fifteen to twenty days. Such is all the care bestowed upon my patients, and such are the results obtained.

ACCIDENTS.

The two principal complications which may be noticed after the castration of cryptorchids, are eventration and peritonitis.

1.—*Eventration* has been observed at the moment when the animal is getting upon his feet. It takes place because the perforation of the inguinal canal has been made too low down, or because the hand, badly directed, has penetrated the abdomen by tearing through the small oblique. To relieve this complication, according to Mr. Degive, the reduc-

tion may be made while the horse is either on his feet or lying down, by external taxis alone or with traction upon the intestines through the rectum. If the animal is kept standing the reduction is facilitated by placing him on an inclined plane with his hind quarters elevated. Keeping this position one or two days is generally sufficient to prevent the return of the accident. A strong and tight suture, taking a considerable portion of skin between the stitches, will help. If these measures are not sufficient, the direct suture of the inguinal canal may be attempted. Two or three distinct sutures will be all that is required. With a short needle a suture can with but little difficulty be passed through the crural arch and the anterior lip of the ring, so as to bring them together and obliterate entirely the principal hernial sac.

2.—*Peritonitis*, is, it seems, a more frequent accident than the first. It is indicated by an elevation of temperature, anorexia, sensibility of the abdominal walls, slight colics, etc. The treatment recommended by Mr. Degive consists in the application of a sinapism on the abdomen with vesicating frictions, this revulsive action being seconded by the administration of electuaries or drenches, with cinchona, creosote, aconite, etc. Laxatives and phenic acid beverages are also indicated against the constipation and the infection which accompany peritonitis.

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.”—VETERINARY RECORD.

ASCITES IN A BITCH.

By C. CLAYTON, D.V.S., House Surgeon American Veterinary College—Hospital Department.

On October 15th, 1892, a small terrier dog was brought to the hospital for observation for pregnancy, the owner saying she had been lined and was due to whelp in three weeks. The abdomen was somewhat pendulant, but otherwise showed no signs of pregnancy, so was returned home the same day.

On November 14th, 1892, the dog was again brought to hospital, this time a week overdue and the abdomen greatly distended, and on examination a diagnosis of ascites was made. The animal was tapped that day, and under the following dates:

Nov. 14, 1892, 5 pts. 2 ozs.	Feb. 21, 1893, 6 pts. 10 ozs.
“ 21, “ 4 “ 3 “	Mar. 7, “ 7 “
Dec. 1, “ 4 “ 7 “	“ 21, “ 6 “ 14 “
“ 8, “ 3 “ 4 “	April 8, “ 7 “ 8 “
“ 17, “ 5 “	“ 26, “ 8 “ 8 “
“ 27, “ 4 “ 6 “	May 13, “ 7 “ 12 “
Jan. 5, 1893, 4 “	“ 29, “ 5 “
“ 14, “ 4 “ 5 “	June 19, “ 7 “ 8 “
“ 24, “ 6 “	July 10, “ 5 “ 4 “
Feb. 7, “ 6 “ 4 “	“ 31, “ 6 “ 6 “

After the last tapping, when returning home, the dog had grown so weak that the owner decided to have her destroyed, so returned to the hospital where she was chloroformed. Upon post-mortem, the liver was found to have undergone waxy degeneration and increased in size, and the capsule drawn so tight that the lobes were only distinguished by their free border; the kidneys were perhaps slightly enlarged; the heart was hypertrophied, and the valves very much thickened; every thing else appeared normal.

The internal treatment of this animal consisted of chloride of iron three drops three times a day, and having no results from this, bitartrate of potassium was used, but without results. The idea of putting a silver tube into the abdomen so that the owner could draw the fluid off was suggested, but he preferred to bring the animal to the hospital.

To us this seemed an interesting case, as the dog only weighed about thirteen pounds, and had, as you see, over fourteen gallons of fluid taken from her.

LARGE INTESTINAL CALCULUS.

By JOHN MICHIN, V.S., Goshen, N. Y.

I send you by express a calculi taken from a mare through the regular course or channel of the bowels. A calculi, the like

we in all our practice had never seen passed through the regular channel before. Therefore, we thought it might be a little interesting to you.

History.—The subject was a bay mare 15-1, six years old, and trotting bred, valued by her owner at \$1,000, and up to morning of the 10th inst. was supposed to be all right. She with her mate were driven about eight miles to a "picnic," and soon after was taken with colic. We were called to the case, and at 11.40 A.M. saw the patient; found her rolling and trying to get on her back; pulse 56, and sweating profusely.

Treatment.—Gave chlo. hyd., ʒix in sol., and as soon as I could obtain it (which was thirty-five minutes) lini. oli. Oiss. The patient seemed to get relief, but in about one hour the pain returned, when I gave her another dose of chlo., increasing it to ʒiss, which seemed to have the desired effect. As her owner had to come by my place on his way home, I requested he should stop and let me see her, which he did, with the information that nothing had passed her bowels since I saw her. I had her removed from the wagon, gave her a "pill" of aloes, ʒvii, also of soap-suds; told him to give her a loose box, and that I would see her early next morning. On my arrival at 7.23 A.M. next day, found the mare out with his man to a halter, and the owner with a whip in the act of making her move more lively (as he expressed it). In turning she made a jump to get away from the whip, where, for the first time in twenty hours, there was a convulsive movement of the bowels, and with that movement this (to me) large calculi, weighing eleven ounces, was produced. Who can prophecy how long it took in its migration after it left the viscus till its ejection? Again, I attribute its safe delivery to the free use of the oil.

EXTIRPATION OF A TUBO-OVARIAN CYST.

BY DR. ARCHIBOLD, V.S.

A short time ago at his hospital on Broadway, Dr. Pierce, of Oakland, California, performed the above operation successfully. The doctor was ably assisted by Dr. H. A. Spencer and Dr. Rowland Lord, both of San Jose.

The subject was a six-year-old thoroughbred mare called Lady Emily, sired by Three Cheers; dam Queen Emma, by Woodburn; bred by John Arnet, of Pleasanton, Cal., and at present owned by J. B. Chase, of San Francisco, and handled by the well-known trainer, Thos. G. Jones.

The mare since she was three years old had been bred to several first-class horses, such as Imp. Cheviot, Imp. Friar Tuck, etc., but without success.

Last June Mr. Jones, seeing that she was rapidly losing her health (and in fact she commenced declining so fast that it became absolutely necessary to have some medical or surgical attention for her), had her examined by several reputable veterinarians, who diagnosed her case as prolapsus uteri, and she was considered by them as incurable. The mare kept getting worse until Mr. Jones decided to take her to Oakland and have her examined by Dr. Pierce, who (as will be shown later) correctly diagnosed her trouble as being due to a disease of the right ovary, and he decided that it would be necessary to extirpate the diseased organ before it would be possible for the mare to regain her normal condition.

He found that there was a continual discharge of a reddish brown fluid mixed with mucous from the genital organs, and the uterus and vagina were in a highly catarrhal condition. The right fallopian tube was also found to be enlarged, and indurated to the touch.

Having gained permission from the owner to operate on the mare, he invited Drs. Spencer and Lord to assist him.

He then proceeded to prepare the animal as follows: A few days prior to the operation laxatives were administered until the fluid (slightly fæculent) evacuations showed that the intestinal canal had been emptied. The uterus and vagina were washed out twice daily with a weak solution of phenol.

The animal was pronounced ready for the operation on July 31st, when the visiting surgeons, on Dr. Pierce's invitation, made a thorough examination, agreeing with Dr. Pierce in that the removal of the right ovary was necessary to save the animal's life. Owing, however, to the inflammatory and

catarrhal condition of the vagina it was decided not to operate in the usual manner through the vagina, but through the flank. Two hours before the operation the rectum was emptied by an enema.

Only a small number of instruments were selected and placed in readiness in an antiseptic solution of phenol, such as bistouries, artery forceps, scissors, suture material, sponges and a Paquin cautery for cauterizing the bleeding surfaces.

The subject was placed on the operating table and put under the influence of chloroform. The abdominal wall was well washed with soap and water and an antiseptic fluid.

The hair and upper layers of the epidermis were removed off a place midway between the last rib, the transverse processes of the lumbar vertebræ and the anterior iliac spine.

A spray was suspended over the field of operation, the spray being filled with a solution of lysol, the parts operated on were by this method kept continually saturated. An incision was made through the skin and panniculus carnosus, the fibres of the abdominal muscles being separated by the fingers until an opening was made large enough to admit the hand of the operator; the hand was then inserted through the peritoneum into the abdominal cavity; the ovary was grasped and brought to the opening, where with the scalpel the peritoneum (which was very much thickened) was severed and the ovary with a portion of the fallopian tube was removed with the ecraseur. Peritoneal toilette was dispensed with as very little blood had escaped into the abdominal cavity.

The peritoneum was then sutured with carbolyzed catgut, the end of the sutures being left long enough to act as a drainage tube; the muscles and skin were sutured with silk.

A dressing composed of hydrargyrum chloridum $\text{mitr. } \text{ʒij}$, and acidum boricum ʒi was dusted on the wound; three yards of antiseptic gauze (mussed up) was put over this, and over this was placed about a quarter of a pound of absorbent cotton, and over all a strong muslin roller wound round the abdomen, and secured so it was impossible for it to slip forward or backward.

The after treatment consisted of ʒii doses of extractum arnicæ radice fluidum every hour for the first twenty-four

hours, and three times daily afterward. A tepid solution of sodium chloride and zinci chloridum was injected into the uterus twice daily.

Two hours after the operation it was found necessary to administer two grains of morphiæ sulphas hypodermically, in order to quiet the animal, as she was very nervous.

The dressing was removed at the end of two weeks, when it was found that the wound had nearly healed, and there was no trace of pus having formed under the dressing. A fresh dressing similar to the first was applied and left on until the wound had perfectly healed. On the morning after the operation her temperature was 102°, pulse 48, and from that time on the pulse and temperature gradually decreased until they reached their normal condition.

The mare at the present time is healthier and more thrifty than she has been for four years, and it is thought by the attending veterinarians that she may be pregnant next year.

Upon examining the extirpated tumor it was found to be what is commonly called a "tubo-ovarian cyst." The outer surface of the ovary was perfectly smooth. The cyst was as large as two fists, and contained a considerable quantity of thick, brownish-red fluid. The inner surface presented washy excrescences in places. The fimbriated portion of the tube took part in the promotion of the cyst, so the index fingers could be passed from the cyst into the tube. As was mentioned before, the extirpated cyst (which looked somewhat like an ordinary cystoma) also contained a portion of the fallopian tube, which was dilated and thickened. The median portion of the fallopian tube presented a broad mesosalpinx, while the lateral portion ran into the wall of the tumor. On being opened, the tube discharged a thick, brownish-red fluid, and could be followed laterally into the cyst. When seen from the cyst the opening of the tube was markedly convoluted, and the fimbriæ passed over upon the inner surface of the cyst as prolongations of the longitudinal folds. It would be well to say here that the entire tumor was covered with peritoneum, and but a comparatively small portion was situated in the broad ligament.

In regard to the adhesion of the tube to the ovary (since

it is not a part of physiological ovulation), it must have preceded the rupture of the cyst, and the formation of the tubo-ovarian cyst is due to the assumption of a catarrh of the tube and follicle. The tubal catarrh causes circumscribed peritonitis and adhesion of the tube. The catarrh of a follicle causes its dilatation, and its rupture into the tube produces the tubo-ovarian cyst. The first stage in the process is adhesion of the fimbriæ, which can occur only on the peritoneal surface; the fimbriæ and their terminatives are therefore directed inward. This results in dilatation and dropsy of the tube. If a follicle now matures or forms a serous cyst, and ruptures into the tube, the tubo-ovarian is formed. Further secretion of the tube will enlarge the ovarian part of the cyst. This explains the fact that the ends of the fimbriæ are found upon the inner surface of the cyst. The reason that this cyst did not increase in size is due to the fact that the tube was always pervious in the direction toward the uterus, and increased pressure within the cyst occasionally gave rise to a discharge of fluid into the uterus.

SOCIETY MEETINGS.

NEW YORK STATE VETERINARY SOCIETY.

The fourth semi-annual meeting of the New York State Veterinary Medical Society will be held in Buffalo, N. Y., on October 11th and 12th, 1893. The meeting will convene at the assembly room of the Genesee Hotel at nine o'clock A.M. October 11th. It is expected that there will be present several visiting delegates from Europe and from the Eastern States, and this will tend to make it an unusually interesting meeting to all who attend. A cordial invitation is extended to all members of the profession to make a special effort to be with us. Printed notices will be mailed soon.

N. P. HINCKLEY, *Sec'y.*

BIBLIOGRAPHY AND EXCHANGES.

Beside the usual large number of exchanges which we receive regularly, we beg also to acknowledge the receipt of the following:

Bulletin of the State Experiment Station of Baton Rouge, La., where an excellent article can be found by Dr. W. H. Dalrymple, M.R.C.V.S., in which acute nephritis, paraplegia and eczema in mules are discussed, with a report on glanders and cerebritis in horses in the State.

Thirtieth Annual Report of the Massachusetts Agricultural College (Amherst). Kindly sent by Dr. James B. Paige, V.S., Professor of Veterinary Science.

Revue de la Tuberculose (Review of Tuberculosis).—A quarterly journal published under the direction of Dr. Vernueil, in which most valuable information is found from veterinary writers, such as Prof. E. Nocard, who writes on bovine tuberculosis; and L. H. Petit, who reviews the work done by Dr. S. E. Weber, of Lancaster, on tuberculosis of rats.

Rapport des Maladies Contagieuses et Epizootiques du Dept. du Nord (Report on the Contagious and Epizootic Diseases of the Dept. du Nord), by M. Pollet.—An official document giving much information of the prevalence in that part of France of such diseases as pleuro-pneumonia, apthous fever, glanders, bacterian and bacteridian anthrax, tuberculosis, swine disease in its various forms, rabies and actinomycosis.

Nouveau Guide pour l'Examen de l'Œil Fluxionnaire (A New Guide for the Examination of the Eye affected with Periodic Ophthalmia), by Dr. E. Rolland.—A large pamphlet of some eighty pages, illustrated, which introduces to the veterinarian the many changes and various lesions that are presented by the eye affected with periodic ophthalmia, and in which excellent indications are given to guide in the examination of the eye before purchase, as well as after, by the expert in case of legal litigation.

The New York Veterinary Journal and Record of Comparative Medicine (No. 2, Vol. 2), in which, among excellent extracts are found two severe criticisms. One upon the exclusive action of English veterinary authorities to recognize American diplomas, and urging similar action on our part in return; the other upon the next meeting of the United States Veterinary Medical Association. While we strongly endorse its remarks in its strong editorial "protection," we regret its remarks as expressed in "timely warning."

Agricultural Experiment Station of Auburn, Alabama, Bulletin No. 43.—Dr. C. A. Cary, D.V.M., writes in this bulletin a little work on ophthalmology, which occupies no less than seventy-seven pages, illustrated with nineteen plates, and closes with a short appendix on “pink-eye,” scab in sheep, cerebritis, hog cholera, etc., as he was called to observe in his professional capacity.

Kansas Experiment Station, Bulletin No. 35.—In this bulletin Dr. N. S. Mayo, D.V.S., gives an excellent article on actinomycosis bovis, or lump jaw, illustrated by a number of plates depicting the appearance of the animal affected, the condition of the jawbone, etc., and the microscopic appearance of the fungi. The bulletin is very interesting, and the article ought to be read by all veterinarians. A few observations upon loco are also given.

THERAPEUTIC NOTES.

ACUTE BRONCHITIS.—A teaspoonful every four hours of this simple expectorant mixture is recommended for that affection and would prove advantageous in dogs :

℞ Ammon. Muriat, $\frac{z}{3}$ ss,
Mist. Glycirrhiza Comp., $\frac{z}{3}$ iv.
—*The Prescription.*

ECZEMA.—℞ Europhen, ʒ i gr. xv. ,
Ol. Olive, ʒ iiss ,
Landolini, ʒ ii ʒ v .
M.—Fl. ung.

Again.—℞ Zinci. Oxidi., $\frac{z}{3}$ i,
Glycerine, $\frac{z}{3}$ ii,
Mucil. Acacia, $\frac{z}{3}$ ii.
M.

Sig.—To be applied on extensive patches of eczema. If itching is very severe, one per cent. of carbolic acid may be added.—*The Prescription.*

ANTISEPTIC VALUE OF PHENOCOLL HYDROCHLORIDE.—In the *New York Medical Journal*, Dr. C. Beck reports a number of experiments that he made with this new compound in the dressing of wounds. He has used it in the form of a powder, in five per cent. watery solution, in ten

and fifteen per cent. alcoholic solution, in ten and twenty per cent. gauze, and in ten and twenty per cent. ointment (vaselin and anoline.) From all the experiments he arrives at the conclusion that phenocoll hydrochloride is as valuable an antiseptic as iodoform, and stronger than dermatol, aristol, iodol, pyoctanin, euophen, etc.

Furthermore, it probably surpasses iodoform because it is odorless, dissolves easily, does not produce eczema, is not contra-indicated in kidney diseases, and can be applied on extensive surfaces without fear of toxic effects.

HYDROCHLORATE OF COCAINE.—In *Helbing's Pharmaceutical Record* there is a report of a series of experiments which he made in collaboration with Dr. F. W. Passmore on cocaine preparations. He states that there is hardly any alkaloid compound which is found in commerce in more varying degrees of purity than cocaine, and none which is more important to obtain pure. He found the hydrochlorate prepared by C. F. Boehringer and Soehne free from all impurities, and yielding definite and unvarying physiological action without secondary effects.

VETERINARY NEWS.

Director Dieckerhoff, of Berlin, whom we stated in a previous number of the REVIEW had been sent to the Chicago World's Fair to inspect and report upon veterinary matters in this country, sailed for Europe on the steamer Normannia.

Professors Fanson and Banham, of England, who visited this country a short while ago to see the exhibition, are also on their way home.

It is to be regretted that such representatives of our profession in Europe should be allowed to come, stay some time, and leave the United States without the slightest professional recognition.

Foreign Degrees—Another American veterinary graduate has completed his studies in Europe, Dr. Nicholas Louis Nicholas, who graduated at the American Veterinary College, has obtained his diploma at Alfort in the class 1892-93.

SUNDRY ITEMS.

HEREDITARY IMMUNITY FROM RABIES.—Tizzoni and Cantani have shown, experimentally, that in rabbits artificial immunity from rabies may be transmitted from the father to the offspring. They experimented upon the young of three litters. The male had been strongly immunized against rabies, while the mother could be considered normal in regard to rabies, although she had been immunized against tetanus. The young were inoculated at ages varying from forty-six to seventy-seven days with the rabic virus of the streets, introduced within the dura mater. Invariably, these rabbits that had been inoculated with street rabies did not contract the disease; others, however, which were inoculated with the most virulent form, became ill and died, but much later than control animals.

The authors believe, therefore, that they have, beyond a doubt, proven the possibility of a hereditary transmission of immunity through the germinal plasma.—*Am. Med. Gen. Med.*

ANTI-RABIC VACCINATIONS made at the Pasteur Institute in Paris since 1886. During the year 1892, out of 1,793 persons who have received the treatment at the Pasteur Institute at Paris, seven died of hydrophobia; therefore the death rate was 0.39 per 100. But three of these persons, who came to be treated after a certain time had elapsed after the bite, died during the treatment or before fifteen days after the end of it, and they must be deducted from the number of dead as well as from the persons treated, thus reducing the figures as follows: Treated, 1,790; died, 4; death rate, 0.22.

The number of persons treated since the foundation of the institute is 12,782, of which 68 died—an average rate of 0.52 per cent.

The following contains the same information with regard to the work of the New York Pasteur Institute for the year 1892:

	A	B	C
Bites inflicted on head and face.	5	2	1
{ simple.....	.. 5	.. 1	.. 1
{ multiple.....	.. 5	.. 1	.. 1
Cauterization { efficacious.....	.....	.....	.....
{ non-efficacious.....	2.....	.....	1.....
No cauterization.....	3.....	2.....	.....
Bites inflicted on the hands.....	30	32	8
{ simple.....	.. 21	.. 13	.. 4
{ multiple.....	.. 9	.. 19	.. 4
Cauterization { efficacious.....	1.....	1.....	.....
{ non-efficacious.....	11.....	16.....	3.....
No cauterization.....	18.....	15.....	5.....
Bites inflicted on the limbs and body...	7	8	6
{ simple.....	.. 5	.. 4	.. 6
{ multiple.....	.. 2	.. 4	.....
Cauterization { efficacious.....	.....	1.....	2.....
{ non-efficacious.....	4.....	2.....	1.....
No cauterization.....	3.....	5.....	3.....
Clothes torn.....	2.....	3.....	.....
Bites inflicted on bare parts.....	1.....	1.....	1.....
Bites inflicted on different parts of body...	5	.....	.....
Cauterization { efficacious.....	1.....	.....	.....
{ non-efficacious.....	1.....	.....	.....
No cauterization.....	3.....	.....	.....
Clothes torn.....	.....	.....	.....
Bites inflicted on bare parts.....	4.....	.....	.....
Amounts.....	47	42	15
	A	B	C

General Total.....

104

The column A refers to persons bitten by animals in which hydrophobia has been evidenced by experimentation or by the death of some other persons or animals bitten by them; column B to persons who have been wounded by animals having been recognized rabid by the clinical or veterinary examination; and column C to cases in which hydrophobia could only be suspected, as the animals had disappeared or were killed instantly and their bodies thrown away.

These 104 persons treated are distributed throughout the States as follows: Alabama 2, Connecticut 13, Iowa 2, Louisiana 1, Maryland 4, Massachusetts 5, Michigan 1, Mississippi 1, Missouri 2, New Jersey 40, New York 7, North Carolina 2, Ohio 2, Pennsylvania 2, South Carolina 1, Tennessee 3, Texas 2, Virginia 14. No death has been reported among these persons.—*N. Y. Therap. Review.*

FOR SALE.

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DR. POE, V. S.,

Knoxville, Tennessee.

AMERICAN VETERINARY REVIEW,

NOVEMBER, 1893.

EDITORIAL.

FIRST INTERNATIONAL VETERINARY CONGRESS OF AMERICA (THIRTIETH ANNUAL MEETING UNITED STATES VETERINARY MEDICAL ASSOCIATION).—The Thirtieth Annual Meeting of the United States Veterinary Medical Association and First International Congress has now become a matter of record, and it is an opportune time to carefully weigh what it has accomplished, the scope of its work, and what we may possibly consider will be its effect upon the veterinary profession of the future, and how well it has discharged the grave responsibilities resting upon it in directing the affairs of the veterinary profession from a national standpoint.

With an average attendance at each session, numbering seven sessions in all, of 125, with a total of about 200 representatives of the profession in attendance during the Congress, it may well be said that it was a success from a national standpoint if not from an international one. The lateness of the time of holding the Congress militated very much against its success in point of foreign representation, though many were the kind letters, contributing memberships, and much interest taken in its success by those debarred from being with us.

It proved an opportune time for the Association to recognize under honorary membership a number of foreign veterinarians, to whom the veterinary profession of America were

deeply indebted to for valuable contributions and work done in the past, of which they have been favored by translations and selections by our American veterinary journals. Upon some twelve foreign veterinarians was conferred honorary membership in the organization, recognizing in this direction Austria, Belgium, Denmark, France, Germany, Great Britain, Holland and Italy, while an honorary membership in the Congress was conferred upon some thirty-three members of the profession, covering some twelve countries.

Never, perhaps, in the work of conferring its privileges of active membership was there such close scrutiny and great care exercised in rendering their decision upon the list of those applying for this honor, and it is extremely gratifying to note that all of the recommendations of the Comitia Minora in this direction were unanimously adopted by the Congress in session. Some eighty-five applications were under consideration, over twenty per cent. of which failed to receive favorable recommendation at the hands of the Comitia Minora. The Comitia Minora declined recognizing the Detroit Veterinary College and the Ohio Veterinary College. It likewise considered that the New York College of Veterinary Surgeons during the years of 1892 and 1893 was not properly equipped, from a veterinary point of view, in their faculty to graduate students sufficiently qualified for membership in the United States Veterinary Medical Association. Some others, whose application exhibited evidence that they were not in accord with the rules of the Association, were likewise declined.

The adoption of an Association emblem for use by the members was considered and adopted, and the form of insignia selected was the seal of the Association. The privilege of the use of said seal to be under the direction and regulation of the Secretary.

The Comitia Minora, rigidly adhering to its rulings of the past three years, were gratified to find so few names on the list requiring consideration for failure to comply with the rules and regulations of the Association in regard to the payment of initiation fee and dues. The deaths of Drs. F. H. Gage

and J. F. Mustoe were reported, and suitable action taken. A resolution was also recommended by the Comitia Minora and adopted by the Association that there should be a more rigid adherence to the Code of Ethics on the part of a few members of the Association who were reported in violation of the same.

The reports of the various committees, which occupied the first day's session, were, on the whole, the most complete, broadest and best that the Association has ever been favored with. No field within their jurisdiction seemed to have been overlooked, and many valuable suggestions were made that are destined to enhance and make better the work of the Association. It was decided in the discussion of its reports that the organization should seek an act of incorporation in the present Congress.

The programme proved to be overloaded with material, a very gratifying evidence of the interest taken by the members of the Association, and of the importance ensuing from the consideration of these topics by the national organization. Some of the papers, specially those on "Millet Disease of Horses" and "Biliary Hepatitis in Cattle," were particularly valuable in brushing away a great deal of material that had obscured the proper consideration of these maladies, and of outlining in a very clear manner the channels from which future work should be done in the hope of mastering these serious problems.

The consideration of "Surgical Interference in the Treatment of Periodic Ophthalmia" was a new field for consideration and observation. An utter lack of time prevented a thorough discussion of the subject, but the evidence offered by the author will lead to a serious consideration during the coming year as to its value by many members of the organization.

One of the best papers and most complete as to its records, etc., on the very old and important subject, that of "Fistulæ," was most exhaustively handled by the author, and there is a great deal of promise that the time necessary in the complete treatment of these cases will, in all probability, be very

much shortened, a point of great importance and one very much to be desired both by the veterinarian and the owner.

One of the most gratifying features of the Veterinary Congress was a well-timed article relative to "The Existence or Non-Existence of Contagious Pleuro-Pneumonia in the United States," because the statements therein contained were based upon a better knowledge, a more thorough investigation and more earnest consideration by a non-interested member of the profession, not in any way connected officially with any Bureau, and his firm, unanswerable statements that this disease does not exist in the United States to-day in any form was received with the warmest evidence of approval and interest, and makes unexplicable the present decision and status of that part of the veterinary profession in Great Britain relative to the commerce in animal industry with our country unfair and untenable. The presence of members of the profession from Canada with an array of equally unanswerable testimony added much to the interest in the consideration of this topic, and called forth the adoption of resolutions asking that the restrictions and embargoes militating against the commerce in this direction should be removed by Great Britain, and likewise between the United States and Canada,

"The History and Future Prospects of Veterinary Science and its Relation to Ethics," and the considering of a better plan of "Inspection of Southern Cattle Moving Northward," were all duly considered, and it was the general sentiment of the members in attendance that were the laws now adopted by the Bureau of Animal Industry properly enforced, that the danger would be placed at the minimum point and the objections would be little heard of. Some other papers were ordered to be printed in the transactions of the Association.

The three special topics for consideration were all properly handled by the Committees having them in charge. The grounds which they had covered on veterinary education, tuberculosis and animal food supply were all of such great interest, and the thoroughness and completeness with which they were handled by the committees left little for further consideration. The subject of veterinary education as handled

seems to have won the most earnest approval of those present, and this approval was in hearty accord with the progressive and determined action of the Association the past year in regard to fixing the qualifications, and were the propositions submitted by the Chairman adopted by the various veterinary colleges of our country there would be little left for the Board of Censors to do in examining the applications for membership in the national organization.

The position taken by the Committee on tuberculosis on the possibility of plans being adopted to eradicate this disease was a surprise even to those who were most sanguine of some plan for the mastery of this disease, and it met with the hearty approval of the members of the Congress assembled.

The consideration of the Animal Food Supply of our country was a timely paper and exhibited an aggressive position by our national Government in protecting our interests, and that all the steps which made manifest the better regulation of the handling of these products were being well considered by the Government and more efficient work was promised in the future.

A complete resume of the important subject of "Swine Plague and Hog Cholera," from the standpoint of an investigation of the work done by those whose results have been before the profession and the public for a number of years, was one of the most delightful elaborations that the Association has ever had the pleasure of listening to. The fitness, thoroughness and completeness with which this work has been done, and the light shed upon this all important topic will be ever and anon remembered and recalled as a fitting climax to the many hard fought battles of those who had for many years been known to us as investigators on this subject; and when printed and placed before the profession of the country in the transactions of the Association will be found to be a source of the best knowledge to be had upon this subject up to this time.

The election of officers for the ensuing year resulted in some severe changes, and for the first time in its history the main work of the organization will rest upon young shoulders.

The Secretary for the past four years succeeded to the office of President, and the incoming Secretary falling to the lot of Dr. T. J. Turner, Columbia, Missouri. Dr. Clement was re-elected to the Vice-Presidency, and the retention of the well known Treasurer, Dr. Jas. L. Robertson, followed as the unanimous choice of the organization.

The pleasant trip to the stock-farm of Mr. Dunham on Thursday afternoon, the courtesy of the Illinois veterinarians, was a pleasant episode of the kind. The farm exhibited some worthy representations of the French coaching and Percheron stallions; and the kind hospitality with which the members were entertained by the owner will be always remembered with a great deal of pleasure.

The banquet at the Auditorium Hotel, on Friday evening, was one of the most enjoyable occasions the Association's members have ever indulged in. The royal feast with sweet strains of music, and the witty and pointed toasts by those selected for responses, fittingly closed the first Veterinary Congress of America.

W. H. H.

ORIGINAL ARTICLES.

MILLET DISEASE IN HORSES.

BY T. D. HINEBAUCH, D.V.S., Fargo, N. D.

A Paper presented to the First International Veterinary Congress of America,
(U. S. V. M. A.)

During the winter of '91 and '92 a disease existed among horses that had been fed on millet. It was known as millet disease, and existed to a great extent wherever millet was used as food. There was an average death-rate from seven to ten per cent. On many farms the death rate was considerably higher, while on others no animal succumbed to the disease. A few of the animals affected remained permanently diseased, the disease having settled in the joints.

The condition of the millet at the time of harvesting seemed to make no difference in regard to the virulence of the attack.

That which was cut when about one-fourth headed produced the same results as that which was fully headed, or that which had partly ripened.

The symptoms as observed were as follows: For a number of days previous to the attack the kidneys acted very freely. This continued several days when their action was much less than the normal. Muscles of shoulders, chest, loins and haunches stiff and sore. Later on there is soreness of the joints, usually the stifle and hock. This often changes from one leg to another, or from the hind to the fore extremities. There are well-marked symptoms of pain with a slight amount of fever. The temperature usually varies from 102 to 104 degrees. In exceptional instances it may reach 106 degrees but soon recedes. The pulse is more frequent and hard. The fever is remittent rather than continued, and varies according to the intensity of the pain. At no time is the animal free from pain or fever during the course of the disease. It is a continued succession of ups and downs, gradually growing less marked until the disease finally comes to an end. Membranes of the eye reddened, tongue coated, mouth hot, dry and sticky, having a peculiar sour odor. Bowels constipated, urine scanty, thick and stringy. The pain in the muscles causes the animal to assume a cramped or drawn together position, with back arched and a well-defined line along the lower ends of the ribs. He has no disposition to move, but if made to do so, has a straddling, ungainly, painful gait, frequently groaning at every step. Occasionally the animal lies down and is unable to rise, more from the severe pain than from any changed condition of the muscles or joints. At first there is profuse sweating, especially in the region of the affected muscles. The animal will flinch and show more or less evidence of pain; or, if pressure be applied to the affected joints, the same result will be manifest. If the horse be down he will lie comparatively quiet, and occasionally makes a feeble effort to rise. The intense pain that this movement causes induces quietude again, and it is seldom that he will rise, even if persistently urged to do so. There is loss of appetite, the animal generally assuming a painful ex-

pression. Should any region other than the one just indicated be affected, similar symptoms will manifest themselves by special movement or manipulation of the diseased part.

When the disease occurs in mares there is frequently slight tumefaction of the vulva, which extends into the vagina a variable distance. Underneath the external membrane the connective tissue is engorged with serum, until in some instances the swelling assumes immense volume. Fomenting the swollen parts for a considerable length of time (from one half to two hours) reduces them to nearly their normal condition. The effect, however, is not permanent, the parts becoming infiltrated in the course of two or three hours. The above condition exists regardless of pregnancy, animals not in foal showing the same condition as those which are in foal. I am at a loss to state what should induce the above symptoms unless it be merely external manifestation of a general diseased condition of the generative and urinary organs. Pregnant mares showing the above symptoms do not always abort, but give birth to a healthy foal at the end of the usual period of gestation.

A number of those cases which came under my observation showed well-marked pleuritis and pleurodenia, the pleurisy being very severe and accompanied by a fever ranging from 103 to 104 degrees. With vigorous treatment it usually subsided within twenty-four to forty-eight hours, the joints then gradually becoming affected until the typical form became established.

Duration of the Attack.—There is no definite limit to the time a horse may suffer from a single attack. Mules, which also are subject to the disease, have a severer form which lasts much longer. As far as my experience goes, I have never seen a mule recover entirely under from five weeks to as many months, and are more apt to remain permanently unfit for work.

Some cases recover in a week or ten days, while others linger for several weeks or months. This is especially the case if the acute form gives way to the chronic. Colts yield

more readily to treatment than older horses. In fact the older the horse the more severe will be the disease.

In describing the various cases to which we shall allude, the history, surroundings and treatment of the animals prior to the attack, symptoms, treatment and termination of the disease will be considered in each individual instance. We will not attempt to describe all cases we have treated, but select the first two and the last two, as we consider them a fair average of the total number.

CASE I.

Bay mare eight years old, weight about 1,150 to 1,200 pounds; in foal, due in two months; was found lying on her right side; health previously good; had never been sick while in possession of present owners, who purchased horse at five years old; bred and raised in Iowa.

Surroundings.—Barn low, housed forty mules and horses; no special means of ventilation; ceiling covered with frost which had been gradually melting and dropping down upon the stock, all of which were more or less wet; fed on millet in good condition, cut when about one-fifth headed out; grain consist of bran principally, some receiving one feed of oats per day; during the day the stock ran in a yard, having access to wheat straw.

Symptoms.—Animal was found lying on her right side, rising on haunches like a dog, and groaning as though in intense pain, breathing distressed, number of respirations increased to eighteen per minute, flank and shoulder covered with sweat; manipulation of hock and stifle joints induced severe pain; pulse 80, wiry and full; temperature 104° F.; the animal was raised by means of slings, and after remaining in them half an hour was able to stand without assistance, but would not move; the lips of the vulva were much swollen, having a semi-transparent appearance; the evacuation of the bowels showed the secretion to be normal; urine scanty, clear and light colored; the breath had a disagreeable, sour odor.

The case was diagnosed as rheumatism, and the following treatment prescribed: Fomentation of the vulva until swell-

ing disappears; pure water containing nitrate of potash in quantity sufficient to allow two oz. per day; hay and bran, dry bedding; use of sling, and internally, sodium salicylate, 2 oz., aqua, 8 oz. Give one ounce every six hours.

Saw the animal two days later, when a marked improvement was noticed; temperature, 102.5°F.; pulse, 60; not nearly so wiry; respiration, 12 per minute: appetite good; water taken in moderate quantities; changed the treatment by discontinuing the nitrate of potash, and giving the following: Sodium salicylate, 2 oz.; fl. ext. gentian, 2 oz.; aqua, 8 oz. Give one ounce three times per day.

Did not see the mare again, but was informed that she entirely recovered in about ten days, and when due gave birth to a healthy foal.

CASE II.

Sorrel mare eleven years old, due to foal.

History.—Health good; had never suffered from any disease; had raised two colts, both of which were healthy. For several days previous to my visit the mare showed lameness, which gradually increased in severity; loss of appetite; seemed to drink more than usual; first indication of lameness in left hind leg; was then called to prescribe for the mare.

Surroundings.—Barn contained carriage room, one box and three single stalls; ventilation poor, ceiling covered with frost, which was melting and dropping on the stock; floors so wet that bedding was wet all the time.

Feed.—Millet, hay and straw. The millet and oats had been seeded together, and both were headed when cut for hay. Grain ration consisted of two quarts nice clean oats as a feed three times per day.

Symptoms.—At time of consultation there was but a small quantity of urine secreted, light colored and clear; great lameness in left hind leg; all the joints were affected, the hock, stifle and fetlock being especially sore and tender to the touch; tucked up appearance of the abdomen; respiration, 12 per minute; temperature, 102.5° F.; the animal would stand up part of the time, disliked to lie down, and when down would not rise unless urged to do so; the third day

after the attack she foaled a healthy colt ; through the carelessness of the attendant the colt became chilled by being allowed to lie in the water which came to it, and died in thirty-six hours. The mare refused to get up ; was then placed in slings, and during her endeavors to stand ruptured the tendon of the flexor pedis perforatus of the right hind foot from its insertion. She was then destroyed.

Treatment.—Consisted of stimulants and salicylate of soda and nitrate of potash. There was an improvement up to the time of foaling, but at that time the symptoms became aggravated.

CASE III.

History.—Bay mare, age unknown, had given birth to a healthy foal three weeks prior to my being called. Foal healthy at present time (seven months old).

Surroundings.—Ventilation imperfect ; banked barn ; walls dry ; fed on millet hay two-thirds headed out ; oats, three quarts.

Symptoms.—Found the animal lying down ; endeavored to get up by the use of slings ; would not bear any weight on hind legs ; pain upon pressure of any of the joints of hind leg and also in gluteal region ; temperature, 104° F. ; respiration, 20 ; pulse, 70 ; rigors and distressed appearance.

After thirty-six hours' treatment the attendant attempted to raise the mare and let her drop, killing her almost instantly. During the struggle she ruptured the gastrocnemius externus from its insertion, allowing the summit of the os calcis to protrude through the skin.

POST-MORTEM.

I held a post-mortem on both of the hind legs, and found them essentially the same in morbid appearances. I will describe the lesions as they occurred in the left hind leg, those of the right leg being fully as severe. The insertion of the abductor magnus was torn from its attachment, and carried with it particles of bone ; the portion of bone which was removed was nearly circular in shape, a little pointed at the upper extremity, and in all covered about one and one-half

square inches; the region of the popliteus was torn loose, and also carried with it small particles of bone; the bone exposed was somewhat softened; it was also severed from its attachment to the capsular ligament of the stifle joint; the capsular ligament of the patella showed marked infiltrations, with a diminished supply of synovial fluid; in fact, the absence of synovial fluid was well marked in all the joints, there being scarcely a trace left in some of them; the insertion of the triceps abductor femoris, the tensor fascia lata and quadriceps cruralis were also torn loose from the bone, and, as was the case with the other muscles, carried with them particles of bone; the bursa at the side of the hock through which the tendon of the peroneus muscle passed was dry and contained scarcely a trace of synovial fluid; the parts adhered to each other, showing that the condition had existed for some little time previous to death; the gastrocnemius externus was also ruptured from its attachment, allowing the hock to become flexed; the summit of the os calcis protruded through the soft tissues and skin so that it was exposed to sight; no synovial fluid found in the hock joint; the external straight ligament of the patella, the external middle inferior sesamoidean ligament, the right branch of the superior sesamoidean, the lateral ligaments of the pastern joints and the two posterior ligaments of the same joint were torn from their attachments; the capsular ligament of the fetlock joint perforated at its postero-infero aspect, and also near the center of the postero-internal aspect.

The Joints.—The distal extremity of the femur presented indentations on both condyles and trochlea. On the condyles they were small, pit-like, some round, some oblong, while some were long and narrow, having the appearance of a line. The trochlea was smooth, and at its inferior portion the cartilage had become nearly worn away, so that distinct grooves were noticeable where it came in contact with the patella.

The Patella.—The texture of the patella was spongy, being not nearly so hard and compact as the average. A portion of its ligamentous attachments had given away, exposing the cancellated structure of the bone. Its posterior surface, which

articulates with the trochlea of the femur, especially the innermost concavity, contained numerous indentations, exhibiting a partial destruction of the cartilage. These indentations were nearly all oval, a few of them triangular in shape, pit-like, and some of them quite deep. In the chest inside the lateral borders abrupt eminences composed wholly of cartilage existed.

The Tibia.—The proximal extremity showed indentations similar in character, but not nearly so numerous as those which existed on the distal extremity of the tibia, and also showed more marked deterioration than any of the other joints in the limb. The cartilages in the articular grooves had completely disappeared in the center, leaving the bone exposed. The disease had not existed long enough evidently to allow porcelaneous deposit to take place; it was somewhat roughened in character. The ridges of the astragalus contained numerous small indentations at their acute angle, and showed an almost entire absence of the articular cartilage.

Fetlock Joint.—Changes similar to those of the femoral patella and tibula joint. The pastern joint showed very little change, and that on the distal extremity of the os suffraginus. All the articular surfaces of the os coronæ, of navicular and os pedis were normal, with the exception of two small spots which existed on the articular surface of the os pedis where it articulates with the os corona.

The ill effects of the feeding of millet occurs mostly during cold weather, and in horses that are not at work. Whether cold of itself is an important factor, or not, we are unable to say, but we think it has more or less to do with the diseased condition. One very important factor is the want of proper ventilation. The greatest number of affected animals belonging to any single farm were invariably found in barns where ventilation was the poorest. In fact we cannot call to mind but a very few cases where the ventilation was good. These cases were less severe than those where the stables were illy ventilated. They also recovered much more quickly.

The question of proper ventilation is not so serious a one where extremely low temperatures do not occur. But where there is extreme cold, as in our region, the thermometer going as low as -40 to -50 degrees Fahr., and remaining below -20 degrees F. for several weeks at a time, and accompanied by high winds, then the matter of properly ventilating a barn becomes a serious question.

September 7th, 1893, we began a series of experiments to determine accurately the effects of millet upon horses. We selected three geldings, one three years old, one five years, and the other six years. The three-year-old could not be handled satisfactorily, and was thrown out after having been in the experiment for five days. The other two were continued over a period lasting from September 7th to October 4th inclusive. The first period lasted from September 7th to September 20th, it being a preliminary one. During that time the horses received hay and oats. On September 20th the feed was changed from hay to millet, the same number of pounds of millet being given as they had consumed of hay. The millet was less than half headed out, and was secured in good order: the oats were old, and in good, first-class condition, the same oats being fed during both periods. On October 1st hay was again substituted for millet in order to place the animals again in a normal condition. The results of this experiment will be found tabulated in the following pages.

HORSE HARRY.				HORSE JIM.			
DATE.	NITRO-GEN.	TOTAL SOLIDS.	ASH.	DATE.	NITRO-GEN.	TOTAL SOLIDS.	ASH.
Sept. 13	1.55	9.50	2.05	Sept. 13	1.55	10.52	2.74
" 17	1.58	11.65	2.90	" 17	1.61	10.52	2.34
" 21	1.16	10.08	1.88	" 18	1.44	12.03	3.61
" 25	.96	5.58	1.90	" 21	1.21	9.50	2.26
Oct. 4	1.33	7.48	....	" 22	1.12	....	....
			-	" 25	.68	6.14	2.15
				Oct 4	1.53	8.37	...

HARRY, S. G., 7 YRS. OLD.										JIM, BL. G., 5 YRS. OLD.							
1893.		Tem. Fah.		Water.	Hay.	Oats.	Salt.	Urine.	Weight.	Air.	Horse.	Water.	Hay.	Oats.	Salt.	Urine.	Weight.
		Air.	Horse.														
Sept. 7	A.M.	54	.....	30	8	4	...	...	...	...	...	15	8	4	...	...	...
	N.	64	.....	41	8	4	...	...	...	...	...	13	8	4	...	...	...
	P.M.	67	.....	22	8	4	...	...	...	...	...	40 1/2	8	4	...	...	...
8	A.M.	65	.....	20	8	4	...	...	...	...	99.8	35	8	4	...	...	...
	N.	82	100.6	9	8	4	...	...	...	...	99.8	0	8	4	...	...	...
	P.M.	83	100.2	44	10	4	...	...	...	...	100.4	41	8	4	...	...	...
9	A.M.	65	100-2	29	10	4	...	...	...	...	99.8	36	8	4	...	...	...
	N.	84	100.4	21	10	4	...	...	...	...	100.	11	1	4	...	...	...
	P.M.	80	100.6	13	14	4	...	...	...	...	100.6	43.5	8	4	...	...	...
10	A.M.	65	99.8	40.5	9	4	1oz.	...	...	...	99.4	22	7	4	1oz.	...	...
	N.	83	1 0.8	0	9	4	...	...	...	...	100.2	11	7	4	...	...	...
	P.M.	75	100.4	62	9	4	...	...	...	...	100.	41	7	4	...	...	...
11	A.M.	75	100.4	56	9	4	1oz.	...	1390	...	100.	37	7	4	1oz.	...	...
	N.	89	100.2	28.5	9	4	...	...	...	...	99.8	14.6	7	4	...	...	1258
	P.M.	80	101.8	55.5	9	4	...	...	...	...	101.	53	7	4	...	...	...
12	A.M.	67	100.	15.5	9	4	...	...	1368	...	100.2	11	7	4	...	...	...
	N.	84	100.8	14	9	4	...	...	...	...	100.8	28	7	4	...	...	1238
	P.M.	84	101.6	60.5	9	4	...	...	...	...	101.4	37.6	...	...	...	...	...
13	A.M.	70	101.4	35.5	9	4	1oz.	...	1370	...	101.2	38.6	3.5	4	1oz.	...	...
	N.	82	101.	25	9	4	...	...	...	...	100.8	13	7	4	...	...	...
	P.M.	67	100.6	47	9	4	...	...	...	...	101.	27.5	7	4	...	1b. oz. 12 8	1245
14	A.M.	54	100.4	10.5	9	4	...	...	1360	...	100.6	12	7	4	...	...	...
	N.	77	100.8	23	9	4	...	...	...	...	...	14.6	7	4	...	1b. oz. 8	1250
	P.M.	66	.....	30	9	4	...	...	...	...	...	44	7	4	...	1b. oz. 16 8	1250
15	A.M.	54	.....	20	9	4	...	...	1340	...	.....	26.5	7	4	...	...	...
	N.	62	100.2	11.5	9	4	...	...	...	...	100.	18.5	7	4	...	...	1235
	P.M.	58	100.4	36.5	9	4	1oz.	...	...	...	100.6	25	7	4	1oz.	...	...
16	A.M.	41	100.4	21	9	4	...	...	1350	...	1 0.	15.5	7	4	...	...	...
	N.	62	101.2	22.5	9	4	...	...	...	...	101.	26	7	4	...	...	1245
	P.M.	62	100.6	37.5	9	4	1oz.	...	...	...	100.6	26.5	7	4	1oz.	...	...
17	A.M.	56	100.2	3	9	4	...	...	...	...	100.2	6	7	4	...	...	...
	N.	76	100.4	45.5	9	4	...	...	...	...	99.8	45.5	7	4	...	1b. oz. 3	...
	P.M.	74	100.6	36	9	4	1oz.	1b. oz. 13 8	...	...	101.2	28	7	4	1oz.	1b. oz. 13 3	...
18	A.M.	48	100.8	40	9	4	...	...	1340	...	100.2	28.5	7	4	...	...	...
	N.	59	...	0	9	4	...	...	...	...	.....	9	7	4	...	...	1225
	P.M.	53	100.	38	9	4	1oz.	...	...	...	99.8	27 1/2	7	4	1oz.	15 3 *1.047	1225
19	A.M.	40	100.8	27	9	4	...	...	1335	...	101.	26	7	4	...	...	...
	N.	56	100.2	3	9	4	...	...	...	...	100.	0	7	4	...	...	1230
	P.M.	54	100.4	10	9	4	1oz.	1b. oz. 15 14	...	...	100.4	39 1/2	7	4	1oz.	1b. oz. 10 11	1230
20	A.M.	57	100.2	19 1/2	9	4	...	...	1340	...	100.4	20	7	4	...	...	...
	N.	70	101.	0	9	4	...	...	...	...	101.	0	7	4	...	...	1230
	P.M.	75	100.2	56	9	4	1oz.	1b. oz. 14 0	...	...	100.	53	7	4	1oz.	1b. oz. 10 8 1/2	1230
21	A.M.	51	100.2	44	9	4	...	...	1338	...	101.	35	7	4	...	...	...
	N.	58	100.8	23.5	11	4	...	...	...	...	100.4	23.5	9	4	...	...	1215
	P.M.	56	100.6	53.5	9	4	1oz.	21 0 *1.046	...	...	100.4	34.5	7	4	1oz.	18 8 *1.044	1215

At 6 p.m. of the 20th, millet was substituted for hay, and continued as the coarse feed. The millet was nearly half-headed out. No heads were fully developed. Temperatures are Fahrenheit. Weights are lbs. and oz. Urine record extends from 6 p.m. to 6 p.m. (24 hours). * Specific gravity.

HARRY, S. G., 7 YRS. OLD.										JIM, BL. G., 5 YRS. OLD.									
1893.		Tem. Fah.		Water.	Millet.	Oats.	Salt.	Urine.	Weight.	Tem. Fah.		Water.	Millet.	Oats.	Salt.	Urine.	Weight.		
		Air.	Horse.															Air.	Horse.
Sept. 22	A.M.	41	100.6	0	9	4	23 1/2	1340	100.8	0	7	4	23 1/2	1238		
	N.	57	99.8	39.5	9	4	....	23 1/2		....	98.8	41.5	7	4	....	23 1/2
	P.M.	63	100.4	45	9	4	1oz.	*1.045		....	100.4	35	7	4	1oz.	*1.045		
23	A.M.	36	100.	0	9	4	1oz.	23 1/2	1342	36	99.6	0	7	4	1oz.	27 5	1212		
	N.	50	99.2	35	9	4	....	23 1/2		50	100.	42 3/4	7	4	....	27 5	
	P.M.	49	100.	50	9	4	*1.038		49	100.6	13 1/2	7	4		*1.038	
24	A.M.	37	101.	29	9	4	1oz.	23 1/2	37	100.4	36	7	4	1oz.	28 8 1/2		
	N.	47	99.8	8	9	4	....	23 1/2		47	98.8	0	7	4	....	28 8 1/2	
	P.M.	42	99.8	39 1/2	9	4	*1.031		42	100.	35 1/2	7	4		*1.032	
25	A.M.	32	100.6	33	9	4	1oz.	26 11	1355	22	100.4	32 1/2	7	4	1oz.	24 12	1225		
	N.	48	99.8	43	9	4	....	26 11		48	99.6	26	7	4	....	24 12	
	P.M.	42	99.4	37	9	4	....	26 11		42	100.4	34	7	4	....	24 12	
26	A.M.	35	101.	0	10	4	1oz.	34 3	1350	35	100.6	26 1/2	8	4	1oz.	29 1	1235		
	N.	48	100.6	45 1/2	10	4	....	34 3		48	100.8	33	8	4	....	29 1	
	P.M.	46	101.6	33 1/2	10	4	....	*1.041		46	100.4	34 1/2	9	4	....	*1.037	
27	A.M.	30	101.	34 1/2	10	4	1oz.	35 2	1345	30	100.4	28	9	4	1oz.	36 8	1238		
	N.	50	100.	31	10	4	....	35 2		50	99.8	20	9	4	....	36 8	
	P.M.	48	100.4	52 1/2	10	4	....	*1.041		48	100.6	34	0	4	....	*1.032	
28	A.M.	39	100.4	12	10	4	1oz.	36 1/2	1338	39	100.6	19 1/2	8	4	1oz.	26 8	1235		
	N.	58	100.4	34 1/2	10	4	....	36 1/2		58	100.	27	6	4	....	26 8	
	P.M.	57	101.	56 1/2	10	4	....	*1.030		57	100.4	35	7	4	....	*1.032	
29	A.M.	53	100.6	0	10	4	1oz.	34 3	1360	53	100.8	28	7	4	1oz.	29 1	1250		
	N.	51	100.2	40 1/2	10	4	....	34 3		51	100.4	18	7	4	....	29 1	
	P.M.	49	101.	42 1/2	10	4	....	*1.041		49	100.2	35 1/2	7	4	....	*1.075	
30	A.M.	48	100.4	0	10	4	35 8	1362	48	100.4	11	7	4	29 2	1258		
	N.	52	101.	35	10	4	....	35 8		52	100.4	25	7	4	....	29 2	
	P.M.	41	101.8	69	10	4	....	*1.043		41	100.6	44 1/2	7	4	....	*1.041	
Oct. 1	A.M.	51	100.6	6	9	4	1oz.	98.8	14 1/2	7	4	1oz.		
	N.	51	100.8	27	9	4	....	....		....	100.	0	7	4	....	....	
	P.M.	47	101.	47	9	4	....	....		....	100.4	36	7	4	....	....	
2	A.M.	37	100.4	0	9	4	1oz.	29 5	1362	100.2	23	7	4	1oz.	24 3	1252		
	N.	39	100.8	14	9	4	....	29 5		....	100.4	0	7	4	....	24 3
	P.M.	43	100.4	28	9	4	....	*1.035		....	101.	45 1/2	7	4	....	*1.043
3	A.M.	40	100.4	25	9	4	1oz.	15 11	1364	101.	25	7	4	1oz.	10 4 1/2	1252		
	N.	57	100.4	2	9	4	....	15 11		....	101.	10	7	4	....	10 4 1/2
	P.M.	52	100.6	52 1/2	9	4	....	*1.049		....	100.6	42	7	4	....	*1.051
4	A.M.	44	101.	32	9	4	1oz.	17 14	1358	100.6	15	7	4	1oz.	14 10	1245		
	N.	54	100.2	0	9	4	....	17 14		....	100.4	9 1/2	7	4	....	14 10
	P.M.	52	100.4	49	9	4	....	*1.041		....	100.6	47	7	4	....	*1.045

* Specific gravity.

NOTE.—Both horses were changed from millet to hay the evening of October 1st. On the 27th of September, Harry passed urine 27 times, exhibiting considerable pain. Jim had two attacks of colic, September 22d and 27th. From the 23d to the 27th Jim moved about with a straddling gait when first moved. During the whole trial both horses were either driven or ridden for exercise. The distance was from 8 to 12 miles a day.

During the winter we shall continue our experiments in that line, using millet which is all headed for one lot, another lot partially matured, and a third lot ready for seed. We shall also feed seed as a grain feed instead of oats. Another line of experiment will be for the purpose of determining whether poorly gathered millet produces a more aggravated form of the disease than when it is gathered in good condition. We have found that millet is a very hard crop to secure in excellent condition. It readily moulds if there is much moisture during the process of curing. Should a rain set in at that time, and continue for a day or two, the millet invariably moulds to a greater or less extent. In fact it is practically impossible to secure it so that the dust does not rise from it when it is shaken.

The chemical analyses were kindly made for me by Prof. Ladd and his assistant Mr. Whalen. They were conducted with a view of only determining the amount of nitrogen in each sample, and the amount of dry matter and ash.

PERIODIC OPHTHALMIA.

A NEW METHOD OF TREATING BY SURGICAL INTERFERENCE
(PARACENTESIS OF THE CORNEA) ILLUSTRATED BY CASES.

By R. H. HARRISON, D.V.S., Atchison, Kansas.

A Paper read before the First Veterinary Congress of America (U. S. V. M. A.)

Every surgeon in the East who has to do with animals brought to him for examination for soundness, is often very much annoyed, after giving a certificate of soundness, to have the animal brought back to him later affected in one or both eyes with ophthalmia; also the treatment in these cases is unsatisfactory, for while the eye can be cleared up and brought apparently to a normal condition, the conscientious surgeon is obliged to tell the owner that the trouble is likely to recur and eventually end in blindness from cataract.

The treatment recommended in the old, as well as the new text-books, has been carefully tried, and such meagre results

obtained that I have been experimenting, and after treating over a hundred cases have found a method of treatment which is at least far more satisfactory in its results than the method laid down in the different text-books.

The different methods of treating the human eye and that of the horse are not comparative; for the veterinary surgeon who has studied and dissected minutely the eye of both animals (human and equine) will observe great differences between them in a normal state—while again the habit and conditions of both animals is widely different.

These experiments have extended over a period of eight years, during my practice in Boston and the West, and over one hundred animals, horses and mules, have been operated upon, and the results will be given.

Care should be used in every case that the conjunctival sac and the cornea be thoroughly examined, for although the membrana nictitans is very useful in removing foreign bodies from the cornea, bringing them toward the internal canthus so they may be washed away by the tears, sometimes the foreign body becomes imbedded in the cornea and the membrane cannot remove it, and straightway you have an inflammation of the cornea involving the iris and adjacent tissues. In horses' eyes, which are as a rule brown, a magnifying lens is of much service in detecting foreign bodies.

Tension of the Eye-Ball.—This is a useful and important guide in determining whether to operate or not, and in testing the eye I have found the most practical way is to exert alternating pressure of two fingers placed on the upper lid, testing both eyes at once, using the index and middle fingers of both hands on the eyes. In this way a slight variation of the tension of the two eyes can be detected, and if found harder than normal, the operation is indicated; but if softer, most emphatically contra-indicated, for surgical interference means an early and incurable blindness.

It is a mistake to use the solution of atropia too long after the eye has been operated upon, as it causes too much photophobia, especially if the animal has to be worked during the day.

It is well to remember that when one eye is affected with the disease, that, as a rule, the other will become affected sooner or later. This should be especially remembered, for when you have one eye cleaned up and apparently sound, a month or two later you are called to treat the other eye, affected more or less severely, either from sympathy, direct nerve influence, or by infection.

The effects of cocaine appear to be especially beneficial in this operation. It renders the cornea and the mucous membrane of the conjunctival sac and membrana nictitans non-sensitive to pressure, touch of the fingers or speculum. A great advantage from its use is its action on the small capillaries; they become for a time contracted, and the operation is nearly bloodless. It also renders the use of fixation forceps unnecessary, as the eye-ball can be moved in any direction, or to any position. A solution of cocaine—five per cent.—is most advantageous; discs of gelatine with cocaine are not satisfactory.

The antiseptic solution to be preferred is boric acid, especially in treating the eye, as the bicloride of mercury causes the cornea to become too dry. By its continued use, the epithelial layer is lifted up as a vesicle, and extensive and obstinate opacities may be formed.

In using ointments or powder containing mercury the administration of iodide of potassium internally is to be avoided, as this reaches eventually the tear fluid and the secretions of the conjunctiva, and changes it into the bin-iodide of mercury, which is very irritating and painful to the eye. Also calomel, if allowed to remain in the eye in too great quantities during the night, would be changed into the bichloride of mercury and act as a caustic, and might cause deep burns, followed by extensive sloughs of the conjunctiva, especially of the lower lid.

Cleanliness is very important before, during, and after the operation. Sponges are to be avoided, and absorbent cotton substituted. Instruments are best disinfected by the heat and flare of an alcohol lamp. One of the best and cheapest antiseptic solutions to be used in washing away discharges

is chloride of sodium—teaspoonful to a pint of water; it supplies a collyrium nearest in value to the natural secretions of the eye.

If possible, I always advise an animal to be taken from work, and placed in a well ventilated stall, darkened in front and fed moderate rations of oats and hay, or if in season green meat. Corn is to be avoided. If exercise seems to be necessary have it done after sunset, or on cloudy days. Excessive work, and both trotting and running should be limited.

The collyria used with the greatest advantage and success are: Atropia solution, four grains to an ounce of distilled water; cocaine five per cent. solution of the hydro chlorate; astringent collyrium.

℞ P. zinc sulph., gr. iii,
Aq. lauro cæasi, Aq. distillatæ, aa ℥ iii,
Met. ft. col., mercurial collyrium.

℞ Ung. hydrg. sub. nit., gr. xxx,
Al. amygdalæ, ℥ ii,
Met. ft. col.

The most convenient method of applying collyria to the eye is by the Barnes Eye Dropper, or by a bit of absorbent cotton on the end of a match or toothpick.

Especially in simple or complicated ophthalmia, bandages, ice bags, nitrate of silver, sulphate of copper, local phlebotomy from the lachrymal vein are to be avoided, as they are too irritating and too severe in inexperienced hands. Also the application of urine, and infusion of tea leaves; these only complicate matters.

The use of the ophthalmoscope is useful in making a diagnosis, also in ascertaining the condition of the lens after the operation has been performed, and the eye cleaned up. The normal reflex seems to be restored, although spots or specks are sometimes discerned on the anterior face of the lens, which, if another attack does not take place, apparently remains in *status quo*, and, as far as I have observed, rarely interfere with sight, except when large; then they may make the animal shy, especially at reflected light from different objects.

I might note here that the healthy eye should be examined and studied first so that the normal appearance may be recognized as well as its differences in disease.

Method of Operation.—The patient is prepared by diet, quiet and darkness immediately. Collyria of atropia used morning and night in both eyes, to properly dilate the pupil, and prevent a hernia of the iris. If much photophobia is present col. of boracic acid or chloride of sodium is used, together with a two per cent. solution of cocaine. If much opacity and a tendency to ulceration of the cornea, the col. of mercury is indicated. Continue this treatment for thirty-six to forty-eight hours, then confine your animal for operation, using a twitch, while an assistant holds the ear with one hand and the nose above the false nostril with the other; make application of the five per cent. solution of cocaine to both eyes, by means of absorbent cotton, taking pains to render insensible the entire lacrymal sac, and especially the membrana nictitans. This generally requires from five to ten minutes. When the eye is insensible to the touch of the fingers, the self-retaining eye speculum is introduced, and with the narrow cataract knife of Von Græfs, modified by having it only half the usual length of the blade, an incision is made at the lower margin of the cornea and sclerotic, midway between the external and internal canthus. This operation can be expedited by slight pressure on the cornea (previously oiled with almond oil); by allowing the point of the knife to remain in the wound the aqueous humor will escape. I allow enough to come out so that the cornea has a flattened appearance. Care must be exercised that the flow of aqueous is very gradual or the lens might be torn from its attachments and the iris also involved. The other eye is operated upon in the same manner only less aqueous is allowed to flow out. This operation on an apparently sound eye, at the same time the operation is performed on a diseased one, seems to be indicated by experience, for when only one eye is treated, the other sooner or later becomes involved.

The after-treatment consists in the same rest, quiet and shade, together with an application of the atropia solution

every second or third day, not oftener, or the animal will suffer; together with applications twice a day of the mercurial col. until the opacity is removed. The salt and water solution is to be used daily to remove discharge, and also allowed to run into the conjunctival sac. In operating, care must be used in making the puncture, as a large opening may result in a disastrous fistula; also in the directing of the knife in puncturing, use care so as not to wound the iris. This can easily be avoided by not entering the anterior chamber too deeply, and by directing the knife in the direction of the centre of the cornea. Complications may ensue of hernia of the iris, ulcer of the cornea, or anterior synechia, together with fistula, and escape of the lens and vitreous already mentioned; these, however, can be avoided by care and cleanliness, and judgment in operating.

In the following cases, I have arranged them according to time operated upon:

1886 to 1890.				
Animal.	Age.	No. op.	Times affected as known.	Result as known.
1, b. m.	6	1	Once.	Good.
2, b. m.	5	1	"	"
3, b. g.	8	1	Three years.	Fair.
4, g. g.	8	1	Two years.	Good.
5, r. g.	6	1	One year.	"
6, r. g.	6	1	Once.	"
7, bk. g.	7	2	"	"
8, r. m.	10	3	"	Bad.
9, g. m.	3	1	"	Good.
10, g. m.	7	1	"	"
11, b. s.	4	1	"	"
12, b. f.	2	1	From birth.	Bad.
13, g. f.	3	1	Once.	Good.
14, bk. f.	4	1	"	"
15, r. f.	2	1	"	"
16, r. s.	6	1	Four.	Bad.
17, br. m.	10	2	Once.	Good.
1891.				
1, g. g.	5	1	Once.	Good.

2, bk. s.	12	1	Once.	Good.
3, c. m.	5	1	"	"
4, br. g.	5	1	"	"
5, g. g.	7	2	Every year.	Improvement.
6, g. g.	7	3	"	Bad.
7, bk. g.	9	1	Once.	Good.
8, g. s.	4	1	Two years.	"
9, g. g.	3	1	Once.	"
10, b. g.	4	1	"	"
11, bk. g.	10	1	Three times yearly, 4 yrs.	Bad. Shies.
12, g. g.	7	1	Once.	Good.
13, b. g.	5	1	"	"
14, g. g.	6	1	"	"
15, mule,	3	2	"	"
16, b. m.	8	2	"	"
17, mule,	4	1	Twice.	"
18, mule,	5	1	Three times yearly, 2 yrs.	Bad.
19, r. m.	7	1	Once.	Good.
20, b. m.	8	1	"	"
21, mule, aged.		2	Every other month 1 yr.	Improved. Fair.
22, b. g.	"	1	Four times, one year.	" "
23, br. g.	7	1	Once.	Good.
24, r. g.	6	1	Twice.	"
25, r. m.	6	1	Once.	"
26, bk. g.	5	1	"	"
1892.				
1, jack,	4	1	Once.	Good.
2, b. g.	8	1	"	"
3, br. g.	9	2	Two years.	Improvement.
4, pd. g.	8	1	Once.	Good.
5, mule.	4	2	"	"
6, mule,	5	1	"	"
7, b. g.	6	1	Three times, 1 year.	"
8, c. g.	5	1	Once,	"
9, g. m.	8	2	"	"
10, bk. g.	3	1	"	"
11, b. g.	4	1	"	"
12, b. m.	4	1	"	"
13, bk. s.	10	3	Four years.	Bad. No more attacks, cataracts both eyes.

14, bk. g.	3	1	Once.	Good.
15, r. m.	5	1	"	"
16, r. g.	7	1	"	"
17, r. g.	9	1	"	"
18, mule,	4	2	Two years.	Improvement.
19, jennet,	8	1	Once.	Good.
20, b. g. Aged.		1	"	"
21, r. m.	"	1	"	"
22, b. g.	"	1	"	"
23, r. s.	"	2	Three years.	Bad.
24, g. s.	4	2	Two years.	"
25, r. m.	5	1	Once.	Good.
26, jack.	4	2	"	"
27, b. g.	7	1	"	"
28, b. g.	12	1	One year.	"

1893.

1, b. g.	6	1	Once.	Good.
2, b. g.	7	1	"	"
3, c. m.	6	1	"	"
4, c. g.	5	1	"	"
5, mule,	4	1	"	"
6, b. s.	8	1	"	"
7, br. g. Aged.		2	Four years.	Bad.
8, br. m.	7	1	Once.	Good.
9, b. s.	8	2	Five years.	Bad.
10, b. m.	4	1	Once.	Good.
11, g. m.	6	1	"	"
12, b. f.	2	1	"	"
13, b. c.	1	1	"	"
14, g. c.	2	1	"	"
15, br. g.	4	1	"	"
16, bk. m.	7	2	Two years.	Bad.
17, mule,	5	1	Once.	Good.
18, mule,	5	1	"	"
19, r. m.	4	1	"	"
20, Shetland,	3	1	"	"
21, b. g.	5	1	"	"
22, c. g.	4	1	"	"
23, c. m.	6	1	"	"

24, c. m.	8	2	Four years.	Improvement.
25, r. s.	Aged.	2	Once.	Good.
26, r. g.	"	3	Five years.	Bad.
27, r. c.	3	1	Once.	Good.
28, br. g.	5	1	"	"
29, r. m.	Aged.	2	Four years.	Bad.

Resume.—These cases, of which eighty per cent. have done well, ten per cent. an improvement and ten per cent. badly, have extended over a period of nearly eight years. It should be borne in mind that the changeable nature of horseflesh in regard to barter, should always be considered in giving statistics in the results of operations, and a surgeon's success may be limited to his knowledge as to the history of the case, as long as he can keep track of it. I would state that especially in the last three years, in nearly every instance the case has been followed up as closely as possible, which has been much more easily done here, where horseflesh does not change hands so often as it does in the East. There has been within the last two years twenty-five animals that I have lost track of, as they were shipped either to the Kansas City, St. Louis or Buffalo markets. These I have not entered in the list.

ASTHMA AND PULMONARY EMPHYSEMA.

BY R. B. PLAGEMAN, D.V.S.

The word asthma is commonly used as synonymous with dyspnœa, or difficult breathing. Here is at once a great practical difference from the dyspnœa of pleurisy, of pneumonia, of the diseases of the heart. The dyspnœa of pulmonary emphysema is made with a double expiratory movement, and not accompanied with any wheeze.

Seeing how violently all the muscles of inspiration and expiration partake in the struggle of a severe paroxysm in heaves, we cannot but wonder much at the notions of the older writers, that the disease depended on an excessive and convulsive action of all these muscles.

I think the true pathology of pulmonary emphysema may be traced to asthma, which is a spasmodic contraction of the bronchial tubes, which so much impedes the ingress and egress of air in respiratory forces to effect it. I am aware that many will be opposed to the daring assertion that the bronchial tubes do really possess muscularity and are not merely elastic tubes, and are the seat of spasmodic contraction, experiments having shown that under the influence of a galvanic or chemical stimulus the circular fibres of the bronchi contract readily but slowly; this contractibility extends only to the large bronchi, the finer ones have no peristaltic or vermicular motion, and the expulsion of mucous and other fluids from the bronchial tree, besides the ciliary motion, is the increasing velocity with which the air in expiration passes from the pulmonary cells to the narrow converging bronchi.

The air in entering the lungs passes with decreasing velocity as it spreads out in the minute tubes and cells, the combined area of which greatly exceeds that of the larger branches. In expiration this is reversed, the motion is more rapid and forcible as it converges towards the trachea and glottis, when the process is brought to its consummation in special efforts at coughing.

The subject of this paper was a little pony suffering from chronic emphysema of the lungs in a very aggravated form and recommended to be destroyed by several veterinary surgeons. I asked the owner to send me the pony for experimental purposes, in the course of which experiments I discovered that bronchial contractibility was influenced differently by various medicinal agents.

Thus hydrocyanic acid did not impair it at all, opium and morphia very little, aconite a little more, but belladonna almost destroyed it.

To return to emphysema of the lungs, it is a result of spasmodic asthma, which there is no reason to doubt is due to a tonic spasm of the muscular fibres of the bronchi and constriction of these tubes, and this spasm is due to reflex action of the nervous system; for instance, irritation of the stomach by coarse and indigestible food, and we all know

that proper diet plays an important role in the treatment of this disease. Asthma may originate from a cold or from inhaling irritating matter, certain effluvia, etc., or from indigestion.

We have in human patients a kind known as "Hay Asthma," which is claimed to be excited by pollen-germs, or some effluvium from flowering grass; this is more catarrhal in form.

The pony, a mare, was sent to me June 13th. I commenced my treatment with subcutaneous injections of sulphatrophine on the track of the pneumogastric on a level with the thyroid cartilage in one-eighth grain doses twice a day, increasing it on the fourth day to one-fourth grain; pupils greatly dilated, mouth very dry, salivary secretion almost stopped, thirst reduced to a minimum, abdominal respiration greatly diminished; so then against the bronchial spasm we have a pretty good remedy, and with the theory of a thickening of the bronchial tubes in view, I commenced the administration of drachm doses each of iodide of potass. and bicarb. potash twice daily, continued for ten days, when symptoms of iodism began to develop, viz., conjunctivitis and discharge from the nostrils, swelling of the extremities, and a tendency for tail and mane to become loose.

On the 28th I substituted for the bicarbonate of potash bromide of potash for three days, and then stopped all medicine, as I deemed the animal sufficiently under the influence of iodine.

July 8th to the 12th gave only stramonium leaves in two-drachm doses; the results so far exceeded all my expectations, and I believe that I speak within bounds when I say that with a combination of this kind spasmodic asthma can be cured, that is when there is merely a thickening of the bronchi without an extended pulmonary emphysema.

The efficacy of the alkaline iodide probably depends on its eliminative and deobstruent action increasing the secretion of the kidneys and the bronchial membrane, and promoting the absorption and dispersion of the thickenings and deposit in the tubes, bronchial glands and at the roof of the lungs.

GASTRO-HYSTEROTOMY.

By DR. H. A. SPENCER, San Jose, Cal.

(A paper read before the California Veterinary Medical Association).

It is always gratifying to a practitioner to have something a little out of the ordinary to relate; more especially is this true if in his efforts to do something for the suffering animal creation he has the good fortune to be successful, as your humble servant was recently in the performance of the operation of gastro-hysterotomy on a bitch. I have long entertained the opinion that the veterinary, like the medical profession, were deterred from the performance of what is known as capital operations. Not so much from lack of confidence in their own skill, but from fear of the thoughtless arraignment by a class of people who infest every community, and with pseudo wisdom dilate on the enormities of what they are pleased to term the butchery of a surgeon, who has brains enough to determine on a course of procedure and courage sufficient to put into practice what the dictates of his convictions tell him is right; and I am satisfied that many citizens are cut off annually from lives of usefulness when by intelligent surgical interference they might have been spared to their families and friends were it not for fear of the insatiate, nonsensical tongue-waggle of this gossiping element of society, who are never so happy as when engaged in impugning the motives or belittling the services of those who are unfortunate enough to attract their attention. While it would seem that these observations relate to the tribulations of the human physician, we find that the veterinarian also comes in for no small amount of abuse; in fact I am of the opinion he receives the most, for there are certain social distinctions between the two professions that are sufficiently awe-inspiring to this class of people to make them cautious in spreading their slanders against the medical man. In the practice of our profession we find that though it is often necessary that the patient be prepared, or put in the best possible condition to withstand the shock of an operation, he is not the only one

we must prepare. The owner must likewise be conditioned, and this latter not only requires a large amount of tact and a keen appreciation of human nature, coupled with patience, or faith in our efforts to restore to usefulness a maimed, useless animal. We are apt to realize, when too late, no matter how intelligently we have studied the case, nor how much skill we may have evidenced in our operation, the only balm that can assuage the owner's grief is a plaster of gold notes. But once having a thorough understanding of what the responsibilities consist of, who is to assume them and under what condition? It is our duty to spare no pains to preserve life and to restore to value the patient.

Gastro-hysterotomy, or the cæsarean operation, seems to have been practiced as a *dernier resort* as early as the sixteenth century, and indeed earlier, for history relates that Numa Pompilius decreed that every pregnant woman that died should be opened, and the Senate of Venice enacted that practitioners should perform the operation on pregnant women as soon as they expired. The king of Sicily also decreed that the death punishment should be visited on any medical man who omitted or refused the operation to any woman dying in advanced pregnancy. In 1581, Francis Rousset, a surgeon in Paris, published a treatise in which he brought numerous people of the possibility of safely performing the cæsarean operation on the living mother, and it was he who first gave it its present name. After this publication the operation was frequently performed on the living subject, both in and out of France, and history informs us not infrequently when it was entirely unnecessary. An instance is cited of a sow-gilder operating successfully on his wife; also of an illiterate Irish midwife, Mary Donally, who with a razor operated on a poor farmer's wife in June, 1738, and removed a dead child. Her patient completely recovered, and was able to walk a mile on the twenty-seventh day after. Nay, a negress in Jamaica cut herself open with a butcher knife, removed her infant, and recovered.

In Longshore's "Obstetrics" we find several instances of the same woman submitting to the operation two and three

times. One case, reported by Rigby, was first operated on in June, 1826, in her twenty-ninth year; again in January, 1831; and yet in June, 1836, Prof. W. Gibson, of Philadelphia, operated twice on the same lady; the first time with a daughter, whom they named Mary Cæsarean, and the second time a son, who was called Cæsar Augustus. These children the professor took great pride in exhibiting to his classes at the University of Pennsylvania. On May 12th of this year, I was consulted by Mr. Charles Hughes, of Mayfield, Santa Clara County, with reference to a skye terrier bitch that he brought eighteen miles, ensconced in a basket of leather pillows. She was eight years old, very fat, and heavy in pup; in fact, had passed term, and been in labor thirty-six hours, but nature had failed to relieve her, though if we except the obesity there was no apparent reason therefor. Her throes were very infrequent and lacked energy; repeated doses of ergot failed to augment or accelerate them. I then made a fruitless endeavor by manual manipulation to make a delivery, but at the expiration of an hour resorted to instruments. Not being able to procure a pair of bitch forceps, I had recourse to a pair of large splinter forceps, and delivered her of a live puppy, breach presentation. After waiting without avail for some time I attempted the second, but succeeded only after mutilating it, until we were obliged to destroy it; a third one resisted all my efforts, so with the owner's consent I summoned Dr. Roland A. Lord to my assistance, who with persistency and rare intelligence labored for above an hour, when we suspended operations on account of inability to accomplish anything, and the patient's exhaustion. After consultation, informed Mr. Hughes that we could do nothing more in that direction, and could suggest nothing but the cæsarean section, advising him of the fatal probabilities attending the operation. But he apprised us of his knowledge of the matter, saying he had recently had some experience in a case of ovariectomy in the human family, and had also witnessed the operation of hysterotomy in the bitch at Alfort Veterinary College, and while fully alive to the danger and magnitude of it, requested that we go ahead, as he was very

anxious to save her if possible. With this understanding, we procured a table over which was spread a clean rubber cover thoroughly scrubbed with soap and water and rinsed with a solution of bichloride of mercury; above the table was suspended a large fountain syringe, filled with a solution of creolin and provided with a fine spray. A porcelain dish containing the necessary instruments was filled with the same fluid; another was provided for submerging sponges in a solution of bichloride; the patient was then shaved over the region of the flank after which the locality was scrubbed and rinsed with bichloride 1 to 1,000. Bichloride gauze and bandages were wrapped up in a clean towel and placed in a convenient position; and lastly, our hands were very thoroughly washed in hot water and soap, rinsed with creolin. The patient placed upon the table, Dr. Lord administered the anesthesia, which in this instance was chloroform until anesthesia was apparent, when ether was substituted. I then made a free incision through the skin, commencing an inch below and about the same distance anterior to the point of the ilium, and running obliquely down and forward, exposing the muscles, which were divided in like manner as nearly as possible with their fiber; the peritoneum was then divided by the fingers; the gravid uterus was easily found and drawn through the opening as far as the attachments would permit, so that none of its contents could spill into and contaminate the wound. A clean towel wrung out of creolin solution was spread between the skin and the uterus, which was then incised longitudinally, and its contents, two puppies and placental membranes, together with a quantity of fluid, carefully removed, after which the uterus was thoroughly cleansed with a weak solution of carbolic acid, and sprayed for several seconds with peroxide of hydrogen. I have neglected to state that our creolin spray was continually kept on and about the wound during the whole procedure, and the instruments were religiously cleaned as used, and returned to the pan of antiseptic fluid. The uterus was then closed with interrupted sutures of carbolized catgut, and returned to its place; the muscles were also sutured, and the ends left long enough to

be brought through the incision in the skin for drainage. The skin was then stitched in like manner, the spray removed, wound dried, and spread over with an abundance of dry boracic acid, and covered with a large wad of bichloride gauze and then a piece of absorbent cotton, and, lastly, several wraps of wide bandage to keep the dressing in place. The anesthetic was removed, and a few whiffs of ammonia given, when she slowly revived, quite weak. A small dose of ammonia aromatica was given when she vomited, after which she retained a little diluted brandy, and manifested longing for her puppy, which we placed by her in the basket. Distributing bottles of hot water around her, the owner placed the basket in his cart and started home, stopping at all available places to replenish the hot water supply. The treatment advised was tinct. arnica in drachm doses every four hours, which was persisted in until she was out of danger. Her *regimen* was milk and lime water until the fifth day, when she was permitted to lap a little bouillon.

The second day the owner telephoned for permission to apply ice poultices over the bandages, which we assented to. This he continued night and day for four days, when his curiosity got the best of him, and he removed the dressings; and with the exception of some considerable serum on the gauze, the wound was clean and healthy, and six of the stitches had healed. Not being prepared to dress the wound as we had done, Mr. Hughes contented himself with keeping it clean and spraying with peroxide of hydrogen three times daily. Eighteen days later he brought the bitch to San Jose, and the wound was completely healed; she was as playful as a puppy.

While gratified with the result of the operation, I am fully aware that much of the success was due to the careful and intelligent nursing she received. I might have attributed the favorable termination to good fortune had I not operated on a very large ventral hernia in a three-year-old colt, following the same antiseptic precautions, with most flattering results. I have also recently witnessed an operation of ovariectomy in the mare, performed on the same lines, with the same good luck.

OMPHALO-PHLEBITIS.

BY DR. LEE HOOVER, V.S.

(Paper read before the Indiana Association of Veterinary Graduates at New Castle, Ind., Aug. 21, 1893).

Omphalo-phlebitis is a functional disease of young animals, occurring soon after birth, and has for a long time been recorded in districts where breeding has been largely carried on, the animals affected belonging to the equine, bovine and ovine species, dogs and pigs being occasionally affected. I shall confine my remarks to the disease as found in foals.

In some years it prevails very extensively, and appears in some regions to be almost enzootic. By some authorities it is supposed to be a constitutional disease, by others as scrofulous in its nature, while others again consider it as essentially pyæmic. But when we take into consideration the anatomy of the omphalo-mesenteric vessels and the urachus, especially the former, connected as it is with the very life of the young animal, and the filth which usually surrounds it immediately after birth, it is surprising that more foals are not affected with this disease.

There may or may not be a persistence of the urachus; but omphalo-phlebitis nearly always follows this disorder, more especially if it is allowed to continue any length of time. Neither sex, color nor breed seem to have anything to do with the contracting of this disease.

CAUSES.

Though great diversity of opinion exists as to the etiology of this disease of young animals, all agree that the predisposing cause is the period of youth, as it appears only during lactation. This fact disposes of its constitutional or hereditary nature, and has inclined some pathologists to attribute its cause to an alteration in the composition of the milk of its mother. Bollinger, whose scientific and most valuable researches in comparative pathology entitle his opinions to the greatest consideration, entertains different views as to the origin of this malady. He contests the influence of food in the

production of the disease, as the strong no less than the weak animals are attacked, and are just as liable to succumb, and it appears when every kind of diet is given to the dam. He also denies that it is produced by chills, but attributes its occurrence to pyæmic or septic infection. A great amount of care is betowed on the newly-born infant, and scrupulous attention is paid to the severing and bandaging of the umbilical cord immediately after birth; while the foal has to lie with an open wound in all kinds of filth, and is thus exposed in the readiest manner to inoculation with poisonous or injurious matter, which cannot always be excluded even from stables built expressly for breeding purposes, and kept scrupulously clean.

If the navel wound of the infant were exposed to the filth which young foals have to lie in, it would be quite as liable to contract blood poisoning as are our four-footed animals; and just so long as breeders ignore the prophylactic treatment of this disease, just so long will their annual losses be greater from the ravages of this disease. The prognosis is very unfavorable. There is a greater fatality among foals from the effects of omphalo-phlebitis than from all other diseases. Often on a foal otherwise recovering from an attack of this disease, we find an ankylosis of one or more joints, necessitating the destruction of an otherwise valuable animal.

It is not essentially due to a specific bacteria, but may be and often is caused by the products of decomposition of nitrogenous matter, without the presence of living micro-organisms.

The umbilicus being raw, and but lately the entrance of the life-giving substance into the body, absorbs the septic poisoning directly into the system, and after three to ten days the colt will be found to be very lame in one or more limbs, usually only one hind limb being affected at first, this usually being the only premonitory symptom, the owner declaring that nothing ailed the colt except that the mare had stepped on one of its legs.

Around the epiphysis of the bones, and consequently near the articulation, there is swelling not only of the proper tissue of the joint, but also of the surrounding connective tissue, with hot œdematous infiltration of the region, causing intense

pain. From the commencement the symptoms are very acute, and are rendered more marked by the least movement.

The progress of the disease is sometimes very rapid, death occurring in two to four days after the first symptoms are noticed. This, however, is not the usual course, the patient may live three or four weeks, or even longer; the average duration is about fifteen days.

Suppuration soon manifests itself, which soon becomes general; numerous abscesses form in different parts of the body, and around the joints, whose capsules contain pus as well as purulent deposits, which is exuded in large quantities.

As complications we may have pleurisy, pericarditis, pneumonia and the usual complications of pyæmia; it is seldom that the disease assumes a chronic form.

In fatal cases the patient soon becomes emaciated, the hair is harsh and dead, sometimes there is a nasal discharge with foetid diarrhoea, but we usually find an obstinate constipation.

The foal does not suck as much as usual, and if lively at the commencement of the disease, soon becomes prostrated and extremely weak, and will have to be aided to rise. The temperature which has been 102 to 103° runs as high as 106°. From the closest examination of the pathological anatomy, there can scarcely be a doubt as to the septic or pyæmic origin of the disease.

If the disease has existed for any length of time a serous exudate will be found under the skin and in the various cavities of the body. There will also be found numerous pyæmic abscesses in various parts of the body. The liver is found enlarged and full of minute abscesses, all of the organs of the body being more or less affected. If the disease is of long duration the muscles waste, thus causing the affected joint to appear larger than it really is.

TREATMENT.

As has already been said, curative treatment, even when taken at the very commencement, and under the most favorable circumstances, is often very unsatisfactory. Only by prompt and vigorous prophylactic treatment can we hope to

successfully cope with this disease. The best preventive treatment is to have the mare to foal in a clean pasture, entirely away from old straw-stacks and filthy manure heaps. But as this is not always practicable, the umbilical cord should be ligated near the body and severed a half inch from the ligature; this should be done as soon after birth as possible. Apply a dressing of iodoform and powdered boracic acid, equal parts; over this apply surgical collodion until a thick coating has formed; if this has been properly done no further trouble need be feared.

But when the young animal has contracted the disease medicines that tend to counteract the poison must be given: As salicylic acid is unrivalled for its antiseptic and antipyretic properties, especially in inflammation of the fibrous membranes, its internal administration should be kept up until the physiological effect of the drug is obtained. Salicylate of soda is, perhaps, the best form in which to use it; this should be alternated with other antiseptic remedies, as preparations of carbolic acid, sulphate and hyposulphate of soda, etc.

If the patient becomes weak diffusible stimulants should be administered every two hours. Sulphate of magnesia or aloes (socratrini is best for foals) should be given as needed to overcome all constipation.

Abscesses which form around the joints should be allowed to burst open themselves; others should be lanced as soon as possible, and syringed out with some antiseptic agent, as peroxide of hydrogen, solution of permanganate of potassium, carbolic acid solution, etc.; poultices are of doubtful utility. An anodyne lotion composed of tincture of arnica, distilled extract of hamamelis and tincture of opii is excellent to allay the pain and irritative fever. A cooling lotion is made of muriate of ammonia and nitrate of potassium \mathfrak{z} i of each to the pint of water, applied twice a day, then bandaging the inflamed joints moderately tight.

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."—VETERINARY RECORD.

BROKEN NECK IN A MARE ENDING DIRECTLY IN RECOVERY AND INDIRECTLY IN DEATH.

By GEORGE N. KINNELL, M.R.C.V.S., Pittsfield, Mass.

The subject of this communication was a valuable trotting bred mare, and at the time of her accident was kept along with another mare in a paddock which had been specially fenced and arranged for their safety. During a thunder-storm, on the night of the 20th of last June, both mares ran bang head foremost against the fence. One mare had a few slight cuts and scratches about the head, while the subject of this communication appeared to have got off scot free. During the following day, however, she was noticed dull and stupid; and in the evening of the 21st my attention was called to her. Her pulse and temperature did not indicate anything seriously out of the way, but she had a peculiar indescribable look such as we see in a horse a few hours after having had a fit. Her head was carried just a trifle lower than natural, and her neck had an almost imperceptibly flattened look on the top. I was of the opinion she had received an electric shock, prescribed quiet and low diet, meaning to examine her further next morning.

At 5 A.M. on the morning of the 22d, I was called to see her and found a state of things which surprised me. The mare was drenched in sweat, the muscles of her entire body in a state of violent spasm, she was staggering around and across the box-stall, bumping violently against the walls and altogether behaving in a manner which made it highly dangerous to go near her. Her head was twisted to the off side and at the level of the second and third cervical vertebræ, the neck was acutely bent, there being a big bulging elbow on the left side and a corresponding hollow on the right.

I immediately realized I had a very serious spinal lesion to deal with, but whether a fracture or a dislocation I did not know, or for that matter try to determine. For the time being, all my efforts were directed to preventing her injuring herself or the attendants. In a short time she went down, stretched herself out on the ground, and the whole deformity in her neck at once disappeared.

This was enough for me. I felt convinced no cervical dislocation could become reduced like that. I made up my mind nothing short of a broken neck could explain such a train of symptoms, and gave my convictions accordingly. It did not seem possible she could live, but we set to work to do all that lay in our power.

Medical and surgical treatment consisted in giving a purgative ball, followed by three-drachm doses of bromide of potash repeated at intervals of six hours, the application of hot water fomentations to the whole neck, together with the exhibition of enemas and catheterization at regular intervals. Also, once every six hours, the mare was carefully turned from one side to the other, by rolling her over her back, great care being taken to keep the head and neck in the same relative position to each other and to the body. For the next twenty-four hours the mare became more and more quiet and remained in a semi-unconscious condition for the best part of a day.

On Saturday the 24th, however, she began to show decided signs of improvement, bowels operated freely and her appetite was good. For the first week I may say she was not allowed to lift her head from the ground, her nutriment being given by the attendant, a handful at a time, inserted at the side of her mouth. Her drinking water was given in the same way, partly from a sponge, and partly through a rubber tube.

On Tuesday, the 27th, Professor Liautard saw her in consultation with me. We lifted her in slings but she was utterly unable to help herself in any way. By flexing her neck very distinct crepitation could be detected, and the professor fully concurred with me in the diagnosis of a

fractured vertebræ. The following day I encased her whole neck from the shoulders to the ears in a stiff plaster made with a saturated alcoholic solution of gum lac, and strips of cotton cloth.

The rest of the story is dreary enough. She was kept lying on rubber beds inflated with air such as are used in hospitals. Two of these were used. When she had lain long enough on one side, we pushed the other bed close up to her back and rolled her over on that. Also later we had a lattice work made which stood up some little height from the floor and so arranged that we could remove one or more slats from underneath any place from which we wished to remove pressure. This continued between four and five weeks. The mare gradually improved, paralysis slowly disappearing. About this time she was lifted in slings and made very promising attempts at standing up. A few days later she was again lifted in slings and stood up as nice and straight as any horse ever did.

But alas for complications! In spite of all our care, her six weeks' constant lying in bed had caused the development of enormous sores on both hips. She began to show symptoms of blood poisoning, quickly grew worse, and died in septic convulsions at 9 P.M. on the third day of August, just six weeks from the day of the accident.

Post Mortem Revelations.—The second and third cervical vertebræ were both found to be the seats of fractures. The lesions in the vertebræ dentata were as follows: . About an inch of the free extremity of the right transverse process was broken off, also there was a large amount of calcareous deposit on the superior spinous process and on the posterior two-thirds of the floor of the spinal canal.

The lesions in the third vertebræ were still more severe. The right anterior articular process was knocked clean off by its neck. There was a large amount of osseous deposit around the seat of this fracture and also posterior to it causing almost complete occlusion of the vertebral foramen. The anterior end of the left transverse process was also broken off, and there was a considerable amount of calcareous

deposit on the convexity of the anterior end of the centrum, although none on the concavity at the posterior end of centrum of dentata. Besides these, there were found five or six small detached pieces of bone, varying in size from a grain of oats to a moderate sized pea. These last must, I think, have been detached by wrenching from the superior spinous process of vertebræ dentata.

Remarks on Case.—This is one of the most unusual cases I have ever met with. I do not think there was any direct injury to the spinal cord itself. The symptoms throughout were those produced by external pressure caused by the hemorrhage and inflammatory swelling resulting from the injury to the bones and soft structures at the seat of the fracture. I never before had occasion to keep an animal lying down for such a prolonged period, and if I had to do it again I would from the first utilize the platform arrangement with removable slats in addition to the air beds. I think by thus removing pressure from the points of the hips, an animal could be kept in the recumbent position for a very prolonged period without the development of very serious bed sores.

So far as the fractures were concerned recovery seemed complete. The mare was not allowed to execute any very extensive movements of her head and neck, but the limited movements she was allowed to make were made with the greatest freedom on her part.

ŒSOPHAGEAL OBSTRUCTION.

S. R. HOWARD V.S., Hillsboro, Ohio.

During the afternoon of the 19th of September last, I was called to T. McDonald's farm, Willitsville. Early in the morning of the same day a large draft horse became choked while eating oats. Owner promptly attempted to unchoke him, using the butt end of a buggy whip. During the struggle that ensued, the horse bit off and swallowed a piece of the whip about one foot long.

Upon close inspection and manipulation owner discovered the piece had lodged in the œsophagus at entrance of chest. After much delay I was sent for and arrived at five P.M.

I found horse resting easy, and upon examination I could feel about two or three inches of upper end of piece of whip in œsophagus underneath jugular vein and edge of mastoido humeralis muscle.

Threw him with hobbles. I then pushed my cæcum trocar directly down onto the piece of whip in œsophagus and attempted to work it upward toward mouth. This was not as easy as it might seem, owing to the non-resistance the body gave to the shoving of the trocar. After a number of trials the piece began to move. When I could feel the lower end, I used my thumb pushing it up until I could feel it no more, it having disappeared behind trachea.

I then placed a man with his thumb firmly pressing on œsophagus. I then put in the horse's mouth a speculum with bridle. Dilating speculum, I attempted by spells for at least half an hour to get hold of end of stick in œsophagus. This I finally accomplished with my fingers. I then passed probang to stomach, left him and went to supper.

By this time considerable swelling had taken place at seat of puncture of skin by trocar, due to puncture of jugular vein. This swelling was fomented most of the night with warm water. It disappeared in two days.

I advised plenty water and absolutely no feed for twenty-four hours, then soft feed for two days then to be fed as usual. He is well.

CRIB BITING—CHRONIC ULCERATIVE ENTERITIS.

By R. F. MOORE, Veterinary Student, Bristol, N. H.

I enclose in this package a section of the small intestine taken from a twelve-year-old mare which first came under my father's care three years ago. The first symptoms of anything wrong with the mare were noticed about five years ago when she commenced to crib-bite, which was intermittent with her until death. Three years ago my father was

first called to visit her. She had symptoms of spasmodic colic, and he treated her for it with good results, as the spasms were very severe and lasted for only one hour. During the balance of the year she had five such attacks, but always made a quick recovery. The next year she had these more frequent. The mare was in good flesh and looked healthy until the past spring, when she commenced to lose flesh and grow weak.

My father died in June, and as there was not another veterinary surgeon in this section, I was called to see her. At the time I thought it a case of indigestion and treated her for it, and, for a time, it seemed with good results; but about three weeks later she commenced to refuse her food but would feed well on grass, and continued to grow worse in appearance but had the colicky spells less often.

The owner called in a veterinary surgeon from Boston, Mass., who happened to be in this section, and he prescribed gentian and iron tonic. She continued to go wrong, I was called in the second time two weeks ago. I told the owner that the symptoms were those of an intestinal calculi, that I thought nothing could be done to give permanent relief, and that if she should die during the winter would like him to make an examination and report to me at the college. Yesterday I received a message from him saying that the mare had died that morning, and wished me to come and make the examination. I did so, and found the abdominal cavity filled with a fluid of light red color; the small intestines perforated in two places, and near the colon I found this section which I enclosed in the jar, with three others, one large and the other two somewhat smaller, located about two feet apart. There was an ulcer about four inches wide on the liver, and the liver had a very unhealthy appearance. The other organs seemed to have a healthy appearance.

I thought it an interesting case although a hard one for a junior. As I expect to return to college this week, I thought I would enclose this to you hoping when I see you that you will enlighten me in regard to the case.

EXTRACTS FROM GERMAN JOURNALS.

By RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

MALIGNANT ŒDEMA IN THE COW.

Descriptions of this affection, occurring spontaneously, are unusually scarce in our literature ; perhaps, therefore, the following account may not be uninteresting :

This particular animal belonged to a farmer, whose property was situated high above the sea level. On October 29th, the following symptoms suddenly seized the patient : anorexia with considerable swelling, and protrusion of the membrana nictitans. (The owner's wife had cut through the latter with scissors, before our arrival.) The impression made upon examination on the evening of the same day confirmed the history of a very sick patient. Sounds in the posterior body could not be distinguished ; the horns were warm. Inspection of the mouth and œsophagus also yielded negative results.

In the parotid region of the left side a swelling was evident, with no well circumscribed line of demarkation separating it from the adjacent surface ; also upon the same side at the intermaxillary space a fluctuating tumor the size of a billiard ball.

All movement of the jaw was exceedingly painful to the animal. The contour of the inferior maxilla had become lost the following day by a swelling involving the commissure of the lips and chin, which latter offered a wound of little depth and extent, presumably made by a neighboring cow.

On the third day the symptoms were much more violent, and rendered more serious by a dyspnœa due to œdema in the laryngeal region. Food and water were refused ; most of the individual enlargement had become confluent.

Eyelids thickened, ophthalmic bulb protruding ; cornea devoid of lustre, opaque, and corneal reflex absent.

Arnica infusion was prescribed and applied locally, with decoction of flaxseed internally ; the result of the therapy was beneficial only so far as it influenced the fœcal discharges,

making them more fluid. The owner was advised to slaughter the cow in order that the flesh might be of some value, but death, due to the progress of the disease, intervened.

Post Mortem.—Whole left side of neck had become involved in the œdema, which also extended under the sternum. Close to the trachea small collections of ecchymoses were prevalent. The thickness of the infiltrated subcutis indicated one-half to one inch, color of same grass green, having a disgusting odor. There escaped from the trachea a reddish yellow foam containing blood.

Lungs, heart and digestive organs apparently normal. Blood in the cardiac cavity dark, but well coagulated; much fat surrounding the organ. Membrane of the epiglottis hemorrhagic, infiltrated, the whole larynx discolored. Tonsils hypertrophied. The diagnosis was reached without the assistance of the microscope; the preparations from the cornea and œdema itself, together with other parts of the anatomy which had been sent to Copenhagen to be examined, were lost through the mail *en route*.—*Elmenhoff-Danemark*.

OSTEOMALACIA IN CATTLE.

A cow moderately well nourished, exhibited when led an unnatural gait. Examination of the joints and feet resulted negatively, but the manipulation of certain muscles caused the animal to evince pain. Regaining the feet when down was not accomplished without exertion; other symptoms were lacking. Considering the widespread and general drought, and the retarded growth of food grasses, which at this time afflicted the community, we were inclined to believe the trouble referable to some bone disease due to a lack of nutritious elements in the rations.

We stated our opinion to the owner, and by his wish proceeded to treat the patient. Calcium phosphate and bitter tonics were given internally; applications to the limbs were also advised. After three weeks of this regimen ambulation was somewhat less hampered, so that continuous visits were not necessary.

On the 5th of June the owner sent for us to attend the slaughtering of the animal, that we might pass an opinion as to the edibility of the meat. The cow had become loose in some way and had fallen in the yard; failing to rise after assistance had been given, the owner concluded to dispatch the animal.

With the exception of distoma hepaticum and lanceolatum in the liver, the internal organs showed nothing abnormal; the subcutis at the gluteal region was infiltrated, and the pelvis had been fractured.

The cancellated tissue in the bodies of the vetebrae was hyperæmic; the medullary contents of the long bones had become soft, half liquid and dark red in color. Exostosis at the epiphyses of the long bones not present.

The case was diagnosed one of osteomalacia, a disease but seldom met in bovine practice.—*Berliner Th. Woch.*

BRIEF PATHOLOGICAL OBSERVATION.

Vath noticed in January, 1891-1892, nine cases of cerebral apoplexy in cattle. In five of the animals the cause was ascribed to unknown and peculiar circumstances. One patient fell to the ground and could not regain the feet; two which had fallen while at work were, after the lapse of some time, able to return to the stable.

Generally the sick animals manifested nothing noteworthy in the first two days excepting listlessness and anorexia; body temperature not increased, skin and extremities cold, pulse and respiration normal. Digestive process, as indicated by auscultation, interfered with.

From the third or fourth day unsteadiness of gait was noticed; paralysis of the tongue and throat, with later a palsy of the remaining portions of the alimentary canal. The tongue pendant from the commissures of the mouth; patients apparently suffered at times intense hunger, as shown by the greed with which they plunged into the food, but without being able to obtain or masticate the nourishment.

The paralytic condition being a progressive one, the ani-

mals soon became unable to rise from the reclining position. Fever did not at any time appear. All the animals, among which only one cow, were killed on the fourteenth day. All treatment was in vain. Section showed large hemorrhages and apopletic herds or clots upon the surface of encephalon; also congestion of the larger blood vessels of this organ. The flesh was consumed as food.—*Deutsch. Th. Woch.*

BLOODY URINE.

In the *Æsterreich Thier. Centralblatt*, district veterinarian Czak has reported the discovery of exuberant growths upon the cystic mucous membrane resembling warts. Binder has communicated similar observations. Among several cattle in one stable the affection was so malignant that in one instance slaughter was advised. The section developed a number of buttons attached by means of pedicles to the membrane; these were especially numerous surrounding the origin of the urethra. They were close upon each other and their parenchyma consisted of easily lacerated vascular tissue. The latter quality accounted for the periodic hemorrhages. These were not true cases of hæmaturia. Arnold has made a like report in *Berliner Woch.*, Jahrgang, 1890, p 85.

EFFECTS OF LIGHTNING.

During a heavy thunder shower a certain stable containing five horses was struck by lightning; when the building was opened all of the animals lay prostrate upon the floor. Two sprang to their feet in three minutes, manifesting giddiness, but soon recovered when led in the open air. The third horse regained volition after ten minutes, but could not be used for two days. The fourth animal moaned continually, now and then showing spasmodic contractions, finally ceasing to respire twelve minutes later; no effect of the electric fluid could be detected upon the body. The fifth patient lay upon the straw quietly, but continued to groan; in an hour this animal stood upon its feet, showing the hair at the apices of the ears to have been singed.

The destructive track of the lightning could be traced from the right ear to the shoulder, and thence to the hoof. This last horse pressed forward upon the right side; the right eye and nostril were much widened; movement of the joints evidently normal; mucous membrane very pale; pulse 100, respiration 40, which symptoms receded after the expiration of twelve hours. At night the patient lay quiet, but the following day uncertainty and weakness of gait characterized the movement. On the second day following a march of eighteen miles was made, but when the horse was called upon to trot weakness of the posterior limbs prevented; this latter fact necessitated the animal's exclusion from the army.—*Zeits. f. Vet.*

ŒSTRUS LARVÆ IN THE PHARYNX.

Limann noticed among a number of other horses more or less afflicted with symptoms, of throat irritation, a Remont gelding having evidently but just contracted a laryngitis. In a few days great difficulty was evidenced in the act of deglutition, but no increase in the body heat, or number of respirations. The subaural and parotic regions were not hypertrophied. Nourishing clysters were necessitated by the continued anorexia. Finally pneumonia appeared, and in seven days the patient was a cadaver.

Post-mortem exposed a bilateral pneumonia in the gangrenous stage, and in the stomach, which was much distended, numerous examples of the œstrus; also in the membrane of the pharynx fourteen individual specimens of œstrus.

ATRESIA ANI.

Simader was called to examine a colt just purchased. The animal ate well, and defecated regularly through the labiæ of the vulva. About the breadth of a hand, anterior to the superior angle of the vaginal opening, he detected a fold which contained a congenital foramen. The latter was surrounded by an annular muscle which offered considerable resistance to the introduction of the hand.

In another case, which occurred in the ambulatory clinic connected with the Dresden veterinary school, a two days old pup not only failed to possess a caudal appendage complete or rudimentary, but also neglected to provide itself with any aperture by which feces could be forced from the body. In this animal the scrotum was wanting, but the prepuce was unusually large.—*Repert. d. Thier.*

AMYLOID DEGENERATION IN THE HORSE.

Trasbot communicates that a horse which had suffered twice from acute bronchitis seemed to be troubled subsequently by a more or less distinguishable dyspnoea.

Later on the animal died while upon a very severe journey, under symptoms of internal hemorrhage. Section exposed an emphysematous state of the pulmonary organs, and appreciable dilation of the right heart; the liver was four times its normal dimensions, and weighed over sixty pounds. The same had ruptured, was of a greenish color, and responded to the customary amyloid tests for degeneration in this organ. The abdominal cavity contained twenty quarts of fluid.—*Anacker's Thier.*

SOCIETY MEETINGS.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The semi-annual meeting of the Indiana Association of Veterinary Graduates was held in the parlor of the Bundy House, at Newcastle, Ind., August 21st and 22d, 1893.

The President being absent the Vice-President, C. F. Bell, called the first session to order at 3.30 P.M. August 21st. Members present: Drs. C. F. Bell, F. A. Balser, Lee Hoover, Fred. Bragington, C. M. Stull, W. B. Wallace, J. C. Rodgers, O. G. Whitestone and J. E. Cloud:

Minutes of previous meeting read and approved. The Treasurer's and Secretary's reports were read and accepted.

The name of J. H. Mahoney was presented, and on motion of Dr. Hoover, seconded by Dr. Rodgers, he was elected a member of the Association.

Dr. Hoover presented a carefully written and instructive paper on "Omphalo-Phlebitis," following which a general discussion was participated in by all the members present.

Following this was a paper read by Dr. Stull on "Veterinary Legislation." Considering the lateness of the hour discussion of this paper was postponed, and on motion the meeting adjourned for supper, to convene at 7.30 P.M.

During the earlier part of the evening session a general discussion of the paper presented by Dr. Stull was had. The paper and discussion proved of so much interest that a second reading was called for, after which, on motion of Dr. Rodgers seconded by Dr. Hoover, the Secretary was ordered to have the paper printed in pamphlet form, and send a copy to every graduate in the State.

Another motion was presented, whereby the chair appointed Drs. Bell, Balsler and Stull to act as a permanent Committee on Legislation.

At this time the subject of "the Indiana Veterinary College" was brought before the Association for consideration, and to determine whether the Association should take any action with regard to the same. After the history of the college, and its work of the past year had been laid before the meeting, quite a lengthy discussion followed, which resulted in a motion that the chair appoint a committee of three to draw up resolutions concerning the college, that a copy of the same be sent to the United States Veterinary Congress, to every graduate in the State, also to be printed in the AMERICAN VETERINARY REVIEW. The committee consisted of Drs. Stull, Rodgers and Hoover.

The resolutions as presented to the Association were as follows:

WHEREAS, We have situated in the city of Indianapolis, State of Indiana, an institution called the Indiana Veterinary College, and the prospectus issued by said institute calling for three sessions of thirteen weeks each, and allowing an empiric to become qualified in one session at the said institution, therefore be it.

Resolved, That we as a body, representing the Indiana Association of Veterinary Graduates, do denounce an institution called the Indiana Veterinary College, situated in the city of Indianapolis, State of Indiana, also graduates and honorary graduates of said institute.

Resolved, That we as a body humbly beseech your honorable body to give this due consideration, as we deem it an unfit institute for obtaining a veterinary education.

On motion of Dr. Stull, seconded by Dr. Rodgers, the report of the Committee on the Revision of the Constitution and By-Laws was accepted as presented by said committee, section by section.

The following committees were then appointed:

Committee on Programme, J. C. Rodgers, C. M. Stull and J. E. Cloud.

Committee on Arrangements, F. A. Balser, J. C. Wallace, C. F. Bell.

The meeting adjourned to meet on the morning of the 22d.

The clinical portion of the programme was carried out by Dr. Balser, assisted by Dr. Whitestone, successfully performing a very difficult as well as interesting operation of a fistulous opening of the œsophagus.

The meeting convened at 8 A.M., August 22d, and the delegates to the United States Veterinary Congress to be held in Chicago, October 16th and 20th, were appointed, consisting of Drs. Stull, Balser and Cloud.

On motion, the rules were suspended and a board of censors was appointed, consisting of Drs. Mahoney, Balser and Wallace.

A motion of Dr. Hoover prevailed, whereby the Association should procure a charter, and the Secretary was ordered to procure one and have the same recorded in State and county in which he resides.

On motion of Dr. Stull, Dr. Galbraith, of Macon, Georgia, was elected an associate member of the Indiana Association of Veterinary Graduates.

A bill presented by Secretary for printing programmes was accepted.

On motion the meeting adjourned to meet at Fort Wayne, on December 6th and 7th, 1893.

J. E. CLOUD, *Secretary*.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

Pursuant to call the tenth semi-annual meeting of the Ohio State Veterinary Medical Association convened in Wells Post Hall (G. A. R.), Columbus, Ohio, at 7:30 P. M., Aug. 30, 1893.

Meeting called to order by President Dr. W. E. Wight. In view of the fact that the State Fair was in progress, with the half fare on all railroads, the attendance was less than expected, only about twenty members being present.

W. T. Davis, D.V.S., of Maryville, Ohio, was proposed for membership, and on motion of Dr. Hillock the rules were suspended, and the Secretary instructed to cast a favorable ballot for the gentleman. The doctor is a graduate of the American Veterinary College, class of '93, and was vouched for by Drs. Bull and Gribble. After a few remarks by the newly elected member, several communications from members expressing their inability to be present were read.

A communication from Dr. W. G. Jones, asking for a withdrawal was read, and after remarks by several members, expressing their sorrow at Dr. Jones' request, in view of the fact that if he desired to withdraw they must grant it, but after an explanation by Dr. N. Jones, it was the unanimous desire of all present that the Secretary write to Dr. Jones in reference to the matter and ask him to reconsider his request.

Moved by Dr. Gribble, supported by Dr. Bull, that the communication of Dr. W. G. Jones lie on the table until the next meeting. Carried.

Dr. J. C. Meyer, Sr., in describing a peculiar case, brought up the first subject for discussion, which was "Azoturia," and such a diversity of opinion in reference to this disease was shown that one could almost say that each and every member had a different opinion.

Dr. Cotton said that Prof. Smith's "Physiology" had given him the best light on this disease. Dr. Jones in his home practice had not considered it a very fatal disease, but lately had some experience with it in Cincinnati, and there a large percentage had died, ten out of twelve; he thought it must be more fatal in large cities than in the country. Dr. Hillock's experience had been just the reverse of this. Some members argued that it required rest, heavy feeding, etc., to bring on the trouble, while several present had seen fatal cases where the animal had been taken off grass and exercised; one where it had simply been ridden to drive up the cows. When it came to treatment, it varied with each individual member, being just as diversified as opinions of its pathology.

It now being quite late the meeting adjourned to meet at 9:30 the following morning.

Meeting called to order by President Wight, at 9:30 A. M. Visitors present, Drs. Berry, Dollahunt, Michener and Dougherty.

Dr. Cotton reported a case of a cow in which he had drawn off per trocar and canula about thirty gallons of fluid from the abdomen in two tappings, had come on comparatively sudden, yet at post mortem, internal chronic peritonitis was revealed, showing a case of some time standing.

Quite a discussion arose out of the question, "What to do with a broken limb." Some members had been very successful, while others, with apparently simple cases, had no success. The discussion was very interesting.

Dr. Gribble reported three horses dying on one farm, presenting similar symptoms, and asked what the trouble was. It was a large farm, plenty of pasture ground, good water, good care, etc. *Symptoms*.—Temperature 105°, pulse 80° and small. Respiration short and quick, intense weakness, especially of hind limbs; would eat anything, even up to death's door. One thing observed on all was the relaxed condition of the anus; it was wide open (to express it), and with inspiration and expiration the air would pass in and out of rectum. No cough, no sore throat, no discharge from nostrils. Drs

Wight and Hillock called it a form of influenza, yet this view was not agreed with by many; others, that it was the disease called milk sickness or trembles; others malaria. A case like this once seen is never forgotten; with relaxed anus, intense muscular weakness, and appetite, eating anything within reach, weeds or grass, and such high fever with no apparent cause. Was unable to hold post mortem in all cases on account of distance from home.

Dr. Waddle gave his experience in the treatment of tetanus.

Dr. Carl described a case of a cow with enlarged larynx, causing death.

Many other cases were described and discussed to the advantage of all present.

Dr. Cotton gave notice that at the next meeting he would present to the Association for its consideration an amendment to the constitution, providing for a radical change in the code of ethics, as they were thought by many to be too ironclad.

A motion was made by Dr. Gribble, supported by Dr. Cotton, that at the next annual meeting a committee be appointed to arrange for an annual banquet to be had at that time. Carried.

No further business appearing, and it being near time for dinner, the meeting adjourned *sine die*.

WM. H. GRIBBLE, D.V.S., *Sec'y*.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

A regular quarterly meeting of the California State Veterinary Medical Association was held September 13th, at the Baldwin Hotel, San Francisco, President Dr. W. F. Egan in the chair.

Upon roll call the following gentlemen responded to their names: Drs. Egan, Maclay, Spencer, Sr., Spencer, Jr., Fox, Wadams, Burns, Orvis and Archibald. Visitors—Drs. Patterson, Robin, Jackson, Williams, Hogarty and Dalziel.

Minutes of the previous meeting were read and approved. The reading of papers, discussions, etc., brought Dr. H.

A. Spencer, of San Jose, to his feet with an excellent and instructive paper on "Gastro-hysterotomy." The essayist gave the history of the operation, the origin of which dated back before Christ. He then went on to describe the operation in detail as operated by him on a bitch. He also described his after treatment, etc. The President then declared discussion to be in order. Dr. Maclay arose and complimented the essayist on the successful issue of the operation. Drs. Fox, Spencer, Jr., and the Secretary also joined the discussion and gave their views on the subject. The discussion was followed by a few well chosen remarks by the President.

The Secretary was then called upon to entertain the meeting, which he endeavored to do by reading a few notes on an operation witnessed by him. The operation was the extirpation of a tubo-ovarian cyst. The essayist described the operation as seen by him, giving the after treatment, etc., also giving a short treatise on the cause of the lesion. The paper was followed by a discussion which was participated in by most of the members present.

The Secretary then brought up a subject upon which he desired to obtain the views of the members. The matter was the treatment of sores which jacks and mules are much subject to. He described a case in a two-year-old thoroughbred colt which he was at that time treating. He gave the methods and treatment which he had applied to said case, with results. Dr. A. Robin favored the use of ungu. hyd. nit. Dr. A. S. Williams said that he had had considerable experience with the subject under discussion, and that the most beneficial treatment he had found was ungu. hyd. nit. Dr. Spencer, Jr., uses phytolacca both internally and externally. Dr. Spencer, Sr., claimed to have good results with a paste composed of zinc. chl. sanguinaria and flour. Dr. Wadams uses the actual cautery, followed by iodoform. Dr. Orvis said he never had much success with the disease, but he favored the actual cautery followed by astringents. The Secretary said that he always advised his clients who were unfortunate enough to possess a jack affected with these sores, to put them

in fly-tight, loose boxes during the day, turning them out at night to exercise.

The Secretary then proposed the names of the following practitioners for membership: Drs. A. Paterson, G. F. Falkner, A. Robin, H. Fabbi, H. A. Forrest, A. S. Willians, H. R. Jackson, G. J. Hogarty and I. B. Dalziel. The names were ordered referred to the Board of Examiners.

Under the head of new business, the Secretary read a communication from the Secretary of the United States Veterinary Medical Association, asking the society to appoint delegates to represent the local organization at the International Congress in Chicago. The matter was discussed at some length by the Secretary, who endeavored to point out the benefits the society would receive by sending delegates to the International Congress; he also spoke at some length on the intentions of the national organization, and the manner in which they intended to benefit the veterinary profession in the United States. He implored the members of the society to join the national organization, and pointed out the advantages they would gain by such a procedure. He said the expense of joining the national association was comparatively small, and that any one who joined would be fully repaid in the future.

On motion by Dr. Maclay, the Secretary was instructed to write to the secretary of the national association and thank him for his kind invitation; also to acquaint him of the fact that the society was not in a position financially at the present time to accept his invitation, as the Association had lately gone to considerable expense in legislative matters.

The Secretary then presented a written notice that at next meeting he intended to amend the Constitution and By-Laws, as owing to the passage of an act entitled an "Act to Regulate the Practice of Veterinary Medicine and Surgery in the State of California" at the last legislature, some changes were necessary. The notice was referred to the Board of Directors.

Nominations for officers for the ensuing year being in order, they were made as follows: President, Dr. H. A. Spencer;

Vice-President, Dr. Ward B. Rowland; Secretary, no nominations; Treasurer, Dr. D. F. Fox; Board of Examiners—Drs. Maclay, Yan, Orvis, Rowland and Whittlesey; Board of Directors—the officers of the Association.

On motion of the Secretary the name of J. C. C. Price was dropped from the roll of membership.

On motion by Dr. Wadams a vote of thanks was tendered the essayists for the masterly manner in which they had entertained the meeting.

The following gentlemen were appointed essayists for next meeting: Drs. Maclay, Orvis and Archibald.

There being no further business before the meeting, it adjourned to meet in Sacramento, December 13th, 1893.

R. A. ARCHIBALD, *Sec'y.*

ILEO CYSTIC FISTULA.—Department Veterinarian Heyne reports a cow manifesting general disturbance in health, continued weakness, and finally a progressive diarrhœa, had died in a remarkably short while. The abduction revealed an adhesion about two inches from the ileo-cæcal opening, between the ileum and the bladder, at which point a communication three centimeters in caliber had been established.

The foramen was circumscribed by a tough fibro-cartilaginous ring, the cut section of which was white, smooth and shiny. In the vicinity of the aperture the mucous membrane had become hypertrophied; the walls of the bladder here indicated a thickness of one and a half inches.—*Berliner Thier. Woch.*

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DR. POE, V. S.,

Knoxville, Tennessee.

AMERICAN VETERINARY REVIEW.

DECEMBER, 1893.

EDITORIAL.

ECHOES OF THE THIRTIETH ANNUAL MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.— Greatly to our regret, and notwithstanding our desire to answer the roll call personally, and to secure a favorable response to the urgent appeals we had made to our brethren to be present at this particular meeting of the National Association, we were prevented by unavoidable events from visiting Chicago during the entire period of the meeting. Through the kind exertions of one of our assistants, however, we were able to give in our last issue a proximately complete, though concise, report of the transactions of the First International Veterinary Congress of America. And we must be allowed to review some of the work done, and as well to direct the attention of our friends to some of the resolutions passed on that occasion.

Unfortunately, we cannot with much right claim for the Congress much of an international character, for with the exception of a few European participants in the work, foreign veterinarians were not present. Through some neglect or oversight on the part of some of the committees, measures had not been taken to obtain the attendance of European veterinarians, and even those who were attracted to our shores by the wonders of the great exhibition were allowed to depart without receiving the slightest professional acknowledgement of their presence on American soil. The Committee on Honorary Membership, however, made an effort to

improve the situation, and a large number of names were recommended and unanimously elected to the complimentary position. Still, it is to be regretted that the suggestions of some of the Committee, as well as those made by European veterinary journals, should have been overlooked or ignored, and that the names of a deceased gentleman should have been included among the candidates, and elected to membership. The name of Director Wehenkel, several years deceased, is an error which we hope the Committee on Publication will duly rectify. The other gentlemen elected to honorary membership are :

Prof. Dr. Roll, K. K. Militar, Thierarznei Institute, Vienna, Austria ; Prof. Dr. Bang, Royal Veterinary College, Copenhagen, Denmark ; Prof. E. Nocard, Alfort Veterinary School, Alfort, France ; Dr. Arloing, Director Lyons Veterinary School, Lyons, France ; Prof. W. Dickerhoff, Rector der Thierarztlichen Hoch-Schule, Berlin, Germany ; Herr Prof. Dr. J. Johne, Thierarztlichen Hoch-Schule, Dresden, Germany ; Herr Prof. H. Moller, Thierarztlichen Hoch-Schule, Berlin, Germany ; Prof. Wm. Williams, New Veterinary College, Leithwalk, Edinboro, Scotland ; Prof. J. McFadyean, Royal Veterinary College, Great College St., Camden Town, England ; Prof. Dr. Thomassen, Reichsthierarzneischule, Utrecht, Holland ; and Prof. Perroncito, Royal Veterinary College, Turin, Italy.

A special committee which had been appointed, to be known as the Committee on an Association Emblem, with our esteemed friend, Dr. A. W. Clement, for chairman, reported as the result of their consideration of the subject, the following paper, which was voted upon favorably :

Mr. Chairman :

Your committee would suggest the adoption of the seal of this Association, reduced to the following sizes : one of the size of a quarter of a dollar for bill-heads and letter-heads, and one of the size of a dime, which may be used on visiting cards if so desired. Your committee would recommend that the emblem be not given out until such time as a charter of incorporation of the Association be obtained.

A. W. CLEMENT, *Chairman.*

This was a good move. Veterinarians in America are much in need of a uniform means of recognition, and if the emblem will not rid us of the many varieties of titles so often met with, it will, at least, have the good effect of establishing something that will serve as a link of professional fraternity, with some national meaning and importance, especially when

the possession of such an emblem is not to be acquired until the Association possesses the character of an incorporated national body.

Other resolutions, comprehending subjects of interest and importance, were adopted, among which were the following :

Whereas, The most satisfactory evidence and conclusive testimony has been presented to the First Veterinary Congress of America, assembled in Chicago, that our country is entirely free from a single case of "contagious pleuro-pneumonia," and has, no doubt, been so for the past two years, be it

Resolved, (1) That we ask of Great Britain the entire removal of the quarantine regulations applying to "contagious pleuro-pneumonia" in the United States. And be it futher

Resolved, (2) That it having been clearly demonstrated by the Canadian Department of Agriculture that "contagious pleuro-pneumonia" does not exist in Canada, it is the opinion of the Congress that the quarantine of the United States against Canadian cattle is unnecessary and should be removed, and therefore, be it

Resolved, (3) That we ask of Canada a [similar consideration in regard to the freedom of trade between Canada and the United States.

It is to be hoped that resolutions on contagious pleuro-pneumonia, adopted by the First Veterinary Congress of America, will have an effect extending beyond the limits of Memorial Hall and beyond Chicago, and will be influential in quarters which it is most important to reach, viz., in England, where the true condition of affairs relating to contagious pleuro-pneumonia on this side of the Atlantic seems to be either denied or ignored. It is to the energy of Dr. Gadsden, with the assistance of Prof. McEachran, of Montreal, that these resolutions owe their introduction. The outcome of their passage can not very well be predicted. But it can scarcely be supposed that with such an endorsement of the proclamation of the general Government in Washington, and the official statement of the Canadian governmental representative, by the body of American veterinarians voting in Chicago, that it can be overlooked or ignored. If such should be the case, the world at large could not fail to recognize the fact that there is something which regulates English sanitary medicine beyond the established fact of the presence or absence of a contagious disease in a foreign country.

The second series of resolutions is an important one. Pre-

sented by a gentleman well known for his devotion to the profession, and for his sacrifices to its welfare, it carries with it a great significance, and the call which is made upon all veterinarians throughout the land will, no doubt, receive proper attention. It may appear to some that the resolutions will have a tendency to open a door for the admission of politics into our Association, but there can be no such result. It is just the contrary tendency, since it calls for a protection against that very evil. It asks simply for a recognition and appreciation of the services of the veterinarian in his professional character, and for the exclusion and discountenancing of unqualified men. If the enforcement of the application of the civil service rules is ever required in official appointments, it is nowhere more needed than in the appointment of members of the Veterinary Corps of the Bureau of Animal Industry.

The following are the resolutions in question, presented by Dr. W. H. Hoskins :

Whereas, The many rapid and uncalled for changes recently occurring in the veterinary corps of the Bureau of Animal Industry, and the grave dangers following in their train, to the true recognition and proper advancement of veterinary science, calls from us an expression of opinion at this time in Congress assembled ; therefore be it

Resolved, That we deplore the degrading of this service in this department of our national Government, and in all others where the veterinarian is recognized, to the shameful basis of the "infamous spoils system" which has done so much toward hindering the proper and true growth of our country ; and further be it

Resolved, That we call upon the proper officials of our Government to rescue this service from the grave dangers now threatening the health and wealth of our nation by the appointment of incompetent, unqualified officials to enforce the wise laws provided, which have been so fruitful of good results in the past, and have so well accomplished the removal of the embargoes against our food products in the foreign nations of the world—and further ;

We call upon every veterinary organization, body, society and member of the profession to array himself against the perpetuation of this un-American, unwise and degrading system of entrance to public service, which should be the emulation and pride of every true citizen.

To conclude, at this time, the consideration of some of the resolutions of the Congress, we present this last one :

Resolved, That a special committee of three, in connection with the incom-

ing elective officers, shall be appointed by the incoming president to revise the Constitution and By-laws of this Association.

We hope that Drs. W. B. E. Miller and A. W. Clement, who presented this resolution, may be appointed on the proposed committee, though we wish them no harm; but unless the necessary consideration and action upon the revision thus proposed is to be deferred until after the Association has obtained its act of incorporation as a national organization, we are at a loss to see the propriety of such a measure at all. The experience of years gone by has taught us that much valuable time may be wasted at the meetings where such discussions are indulged in. Is it necessary to go and renew old disputes after so many years in which the Association has been in good running order, has prospered as it has, and has so grown and increased in importance? It may be conceded that the present constitution and by-laws have their imperfections, but, nevertheless, they leave us all the time of the meetings to devote to necessary and useful work.

ORIGINAL ARTICLES.

REPORT OF THE TUBERCULOSIS COMMITTEE.

By DR. A. W. CLEMENT, V.S., Baltimore, Md.

A paper read before the First Veterinary Congress of America,
(U. S. V. M. Association).

The subject of this communication, Tuberculosis, is now universally admitted to be an infectious disease manifested by definite clinical symptoms, and characterized by certain anatomical changes in the tissues due to a specific micro-organism known as the tubercle bacillus.

The first important study of the disease was made in the early part of the present century when Boyle and Lænnec declared tuberculosis to be a separate affection due to the deposit of tubercles, a specific product independent of ordinary inflammations.

Then followed the discovery of inoculation by Lænnec, the inoculation experiments of Villemin, the diagnosis of pulmonary tuberculosis by the presence of elastic tissue in sputa of phthisical patients, and finally the most brilliant achievement of modern medical science—the discovery by Koch, in 1882, of the cause of tubercle and the etiology of the disease. This brilliant discovery set at rest all doubts as to the nature of the disease, and proved beyond all question the identity of the disease in all animals.

The tubercle bacillus gives rise to anatomical changes either in the form of miliary tubercles or in caseous inflammations. It produces secondary infection either by being carried in the blood current to other parts of the body or by traveling along natural channels. The most common form of primary infection in cattle is in a caseous bronchitis or broncho-pneumonia, or in calves more commonly in the form of tabes mesenterica.

The disease is world-wide in its distribution, and probably affects all classes of animals. It has received much, and is daily receiving more and more the attention of governments as an enemy which probably destroyed more lives annually than all of the so-called scourges and wars put together. Many conflicting reports have been published as to the extent of the disease among the cattle of this country, but most of them were based upon too insufficient data to make them of much value. We have no regular inspection of herds nor a complete inspection of meat. It is only possible to glean facts relating to the extent and distribution of the disease, incidentally, when cattle are examined with other ends in view. Even if we had an organized inspection of herds the results of such an inspection would not teach us how much tuberculosis is present among our cattle because the disease is notoriously hard to discover in the living animal, except when advanced, and breeders and farmers who have had some experience with it are clever enough to remove animals that show the first suspicious symptoms. It is only possible by an extensive examination with tuberculin, or through a thorough and well organized system of meat inspection, that

reliable statistics can be obtained. Some herds have been reported as showing a very small proportion of animals affected, while in others the proportion reported has been frightfully high. We are warranted in saying that tuberculosis is quite prevalent in some regions, that occasional cases occur almost everywhere, and that the disease seems to be spreading. The great dangers from tuberculosis in cattle are first, its transmission through the meat and milk to man, and second, its relating to the transmission from diseased to healthy cattle. From the standpoint of public health both of these questions are of vital importance, for the first depends to a great extent upon the latter. The importance of the maintenance of such a system as would keep the public informed of the dangers from animals suffering with disease communicable to man, demands that our profession be represented on city and state boards of health equally with the medical profession.

While it is quite proper that state governments should protect its citizens as much as possible against diseases transmissible from the lower animals to man, yet any effort on their part must of necessity amount to but little without the hearty co-operation of the national Government. Some means for obtaining fairly reliable statistics of the number of animals affected should be devised, and a much more generous spirit should be manifested toward the scientific investigation of these subjects by the Department of Agriculture. The Bureau of Animal Industry should not be hampered by lack of facilities for carrying on the work, and its employees should be chosen on account of their special fitness for the work and not for purely political reasons. Then, and then only, will the work which can be so well done by this bureau have its effect and redound to the credit of the veterinary profession of the United States. Though much has been accomplished by the earnest endeavors of many of those connected with the bureau, yet the public has a right to demand, and we believe soon will demand, that the field of research be more fully covered and that it be conducted on purely professional and scientific principles.

Dr. D. E. Salmon, chief of the bureau, has very kindly furnished this committee with the advance sheets of Bulletin No. 3, entitled "Miscellaneous Investigations concerning Infectious and Parasitic diseases of the Domesticated Animals," in which appears an article on "Some experimental observations on the presence of tubercle bacilli in the milk of tuberculous cows when the udder is not visibly diseased," by Drs. Theobald Smith and E. C. Schroeder.

The milk from six tuberculous cows was inoculated into guinea-pigs with the following results: From cow No. 155, which presented marked symptoms of the disease and which at the autopsy showed very advanced lesions, five guinea-pigs were inoculated, one of which, inoculated two days before death of cow, became infected.

Cow No. 156, which had very extensive tubercles, proved negative in the inoculation of four guinea-pigs. Two pigs fed with the milk of these cows failed to contract the disease.

Cow No. 233, which had advanced general tuberculosis, with slight infection of the udder glands, gave positive results in eight guinea-pigs and negative results in two.

Cow No. 234, which had extensive tuberculosis with udder glands normal, gave negative reaction in nine guinea-pigs inoculated.

Cow No. 303, which presented moderate tuberculosis, but with infection of the lymph glands behind the udder, gave negative results in one guinea-pig, the only one inoculated.

Cow No. 314, having tuberculosis present in a moderate degree, but in which the udder was not affected, gave negative results in one guinea-pig inoculated. To summarize, then, positive results were obtained in guinea-pigs by the inoculation of the milk from two cows, and negative from the other four cows. One of the cows giving a positive result, No. 303, had tuberculosis of the lymph glands just back of the udder. These experiments were conducted under strict antiseptic precautions and are valuable.

Dr. A. W. Clement, Chairman :

DEAR DOCTOR:—In May and June, 1892, I fed two half-grown pigs on milk from a cow with tuberculosis for a period

of seven weeks. The pigs were afterwards kept for nine weeks before being slaughtered. Two other pigs from the same litter and of very nearly the same size were kept in the same stable, but in a different pen and were fed on grain. The four pigs were slaughtered September 30th, 1892. It was found that the pigs which received the milk, having had a balanced ration, had grown rapidly and were large and fat, while the pigs fed on grain (principally corn), had suffered from the absence of proteids in their food and were small and thin. The autopsies showed the two thin pigs, that received no milk, to be healthy, and the two fat pigs, that were given milk, to have tuberculosis of the post-pharyngeal lymphatic glands, and in one of them the mesenteric glands were tuberculous as well. The post-pharyngeal glands in each case were of the size of a goose egg, cheesy, and with softened, creamy centers. The mesenteric glands contained numerous cheesy nodules of the size of a pea. These lesions were shown to be tuberculous by the detection of the bacillus and by guinea-pig inoculations.

The cow that supplied the milk was slaughtered and was found to have extensive pulmonary tuberculosis, but the other organs, including the udder, were healthy.

The second danger from tuberculosis, that which relates to the contagiousness of the disease among cattle, is the side of the question that appeals more especially to the farmer and veterinarian.

An instance illustrating the spread of tuberculosis may be cited from the writer's experience. A farmer who had conducted a dairy for four years and had never had any disease among his cattle, so far as he was able to discover, purchased a heifer calf, together with some other cattle, in October, 1892.

The heifer was evidently in poor health at the time of purchase and was therefore removed from the farmer's herd, after it had been a member of it for a few days, and "to give it a better chance," it was turned into a passageway in the stable that ran along in front of the cows heads. Here the heifer was alone but was able to come in direct contact with

the head of every cow in the herd. There was no manger in the passageway, so the calf was fed from the barrow used to carry the food to the cows.

The heifer's appetite was voracious, but it continued to become thinner and weaker, its coat became dry and staring, it suffered with a racking cough, there was an occasional discharge of creamy matter from the nose, and in six weeks from the time of purchase it died. No autopsy was made. Some six weeks thereafter some of the cows commenced to cough; they gradually grew thin and yielded less milk. Early in March, a cow died that had been affected as above for some weeks. Before the last of September nine cows had either died or had been sold while still able to walk away. Some of these cows were opened and examined by a veterinarian and were found to have died of tuberculosis. In September, less than one year after the introduction of the heifer, the herd was tested with tuberculin; nineteen animals reacted and were slaughtered and all were found to be tuberculous.

In some instances, as the one quoted, the disease spreads with amazing rapidity through almost the entire herd; in other cases the progress is gradual and slow, and after a herd has harbored it for years, but a small percentage of the animals become affected.

The study of the predisposing causes of tuberculosis of cattle is an important one, and one that is at present quite incomplete, although a number of undemonstrated theories in explanation of this subject have been advanced.

Among the points that require special study are the influences of the following factors on the predisposition to tuberculosis: heredity, feeding, stabling, climate, season, breed, productiveness, especially in reference to the dairy cow, and age.

It seems probable that excessive stress has been laid on *some* of the above points, since observations show that continued association with tuberculous animals will lead to infection in a large percentage of cases, notwithstanding the other conditions. But they do, to a certain extent, influence the rapidity of the spread of the disease.

Tuberculosis spreads more rapidly in the winter, when the cattle are housed, than during the pasturing season. Some personal observations indicate that the construction of the stalls has some influence on the dissemination of the disease, since it appears to spread more rapidly in stables so arranged that the cows can bring their heads in contact with their neighbors, and touch noses, than in stables fitted with solid partitions between the cows' heads, or with box-stalls.

That tuberculosis of cattle is rarely inherited is the testimony of all practicing veterinarians, and is clearly shown by the report of the examination of nearly one million calves in the Munich slaughter-house from 1878 to 1882, of which but five were tuberculous, while the percentage of tuberculosis in the old cattle slaughtered ranged from two to eleven per cent. But that heredity plays an important part in predisposition and immunity can not be doubted.

In one herd tested with tuberculin each member of a family of five cows reacted and all were found upon post-mortem examination to be affected. Some cows can mingle with consumptive associates for years and remain free from tuberculosis, and their progeny are usually endowed with the same natural defense.

In another herd, in which forty per cent. of the cows had tuberculosis, one old cow and her three daughters proved to be free from the disease. It has not been shown that the influence of the sire is as powerful as that of the dam, in conferring predisposition to and immunity from tuberculosis.

LEONARD PEARSON.

While it is now generally admitted and proved by experiments that the milk of tuberculous cattle is exceedingly dangerous to man, the question of infection from the meat supply is in dispute. Some experimenters have produced positive results by feeding of the expressed muscle juice of tuberculous animals, but it is feared that the experimenters may not have used proper antiseptic precautions in obtaining the material. On the other hand, anyone who is in the habit of visiting our slaughter-houses will observe that the butchers

are not at all particular about the knives used in dressing, or the cloths used in cleaning the carcasses, but will persistently use the same knife and the same cloths indiscriminately on cattle which are rotten with tuberculosis and those which are healthy. It is pretty generally contended at present that when the flesh of a bullock is not visibly affected, and when there is not general advanced tuberculosis, the meat may be eaten with comparative impunity. This question, however, requires much further study.

MEANS OF CONTROLLING AND ERADICATING THE DISEASE.

Under this head Dr. Pearson further writes as follows:

Meat Inspection.—To protect consumer and determine distribution of disease.

Dairy Inspection.—To protect consumer of milk and remove tuberculous cows from dairies.

After having determined that tuberculosis is present in a herd, it becomes necessary to separate the healthy from the diseased cattle and thoroughly disinfect the stable.

In the past the first of these measures has been a matter of the gravest difficulty, since tuberculosis of cattle is excessively difficult to diagnose, except when advanced, and in the beginning most cases escape the most thorough and painstaking physical examination. Various methods of surmounting this obstacle to a perfect division of the herd have been suggested; such as an examination of the bronchial mucous, collected through an incision in the trachea with a sponge on a wire, the inoculation of guinea-pigs with the milk, the inoculation of such animals with extirpated lymph glands, etc., but all of these methods are time-consuming, difficult and unsatisfactory.

Soon after the publication of Koch's work upon tuberculin, the substance was employed on cattle to determine its value as a diagnostic agent. It was found that following the administration of a proper dose, a febrile reaction occurred in tuberculous animals, while no effect was produced in animals free from tuberculosis.

In the first summary of results, collected by (Centralblatt

fur *Bacteriologie*, ix, Nos. 9 and 10) Eber in 1891, it was shown that out of one hundred and thirty-four animals (cattle) which reacted to tuberculin, and were killed, 85.83 per cent. were tuberculous. Of one hundred and thirteen animals (cattle) which showed no reaction after the injection of tuberculin, and were killed, 89.38 per cent. were free from tuberculosis. It will thus be seen that, in this summary, published very soon after tuberculin was first used for this purpose, there were 14.18 per cent of failures in the first instance and 10.62 per cent. in the second. We must remember that these experiments were made by a number of experimenters in different places, some skilled and some bungling, all of the autopsies were not carefully made, and, above all, the question of the proper dose was not then settled, and many of the failures may be attributed to that. The most recent foreign reports are more uniformly favorable.

In my experience of more than five hundred cases, of which about one hundred have been slaughtered, I can count but one error in diagnosis: an old cow badly diseased, which did not react after a very small dose. All of the other results have been most satisfactory. Every cow that gave a reaction and was killed was shown to have tuberculosis.

By the use of tuberculin, then, it is possible to isolate the diseased animals and make sure that those remaining are free from tuberculosis. If the stable be now disinfected and the herd retested after an interval of six months, to find cases that might, by some almost impossible chance, have escaped the first examination, we shall have freed the herd from tuberculosis, and it only remains to exclude diseased additions to keep clear of the scourge.

An important question that presents itself is: What shall be done with the cows that react? Our previous experience and present knowledge allow but one answer to this question, and it is, destroy them. All animals that react, ignoring the very few possible exceptions, are tuberculous, but it should be remembered that some of them suffer to but a very slight degree.

In some of the animals we may, upon making the autopsy,

find nothing but a few tuberculous areas of the size of a pea, and perhaps these are situated in the lymph glands. In such a condition, an animal cannot scatter the tubercle bacilli, and it might be objected that slaughter is unnecessary waste, but how are we to know that the tubercles, which we are sure exist in the body, are not in the lungs, the kidneys, the uterus, the testicles or even the udder? The most careful and exact physical examination could easily fail to elicit their presence at some stage of their growth.

We know that nearly all cases of tuberculosis in cattle tend to advance, and that a slight depression or illness may lead to the rapid development of a more general tuberculous condition, starting from the lesion we know is present.

The sale of an animal known to have tuberculosis, though ever so slightly, cannot be justified either morally or legally, and to keep such an animal in a herd is to harbor a foe of unknown strength.

The writer has never seen the least bad results follow the injection of a quantity of tuberculin sufficient to answer the purposes of diagnosis. It is well known that in a tuberculous man an excessive dose of tuberculin may tend to aid in the distribution of the tubercle bacilli in the body and thus cause milliary tuberculosis and hasten death. That an excessive dose will do the same in tuberculous cattle is shown by an experiment, in which 0.6 c.c. was administered to a yearling Jersey heifer that was known, from the marked symptoms, to have pulmonary tuberculosis. The temperature was 101.6°. Following the administration of the tuberculin, a febrile reaction to 106.2° F. came on in nine hours. The temperature remained above 104° F. for six days, when the heifer died, and acute milliary tuberculosis of the lungs, peritoneum, kidneys, walls of the uterus and all of the lymph glands connected with the thoracic and abdominal organs was found. This result was evidently due to the large dose, which was six times the normal for an animal of the size of the subject of the experiment.

The normal dose, instead of doing harm may produce good effects, and I have several cows under observation that gave

decided reactions when first tested, clearly indicating the presence of tubercles, but after receiving three or four injections of tuberculin the reactions ceased, the general condition of the animals improved and at present it is impossible to elicit evidence of tuberculosis, either by the physical examination or by the tuberculin test.

Aug. 11th, 1892, a Jersey cow five years old received 0.25 c.c. tuberculin beneath the skin and the temperature rose 2° F. within twelve hours. The cow was in medium condition, had a cough and her general appearance was a little below the average of the herd.

Dec. 22, 1892, she received another light dose and reacted $1\frac{3}{5}^{\circ}$ F. within twelve hours. Her condition now improved, she became fatter and her coat became glossy. She was heavy with calf at the time and that may have had some beneficial effect on her general condition.

Feb. 25, 1893, she calved, and March 1st died of milk fever; an autopsy was made the same day and the only evidence of tuberculosis was a calcareous deposit as large as a hickory nut in the mediastinal lymph gland, and a hard, fibrous and dry, cheesy area of the size of a large walnut in the tip of the middle lobe of the left lung.

These lesions showed no sign of acute change; the fibrous walls containing the dry, hard, cheesy areas were one third of an inch thick and exceedingly firm. The calcareous deposit, mixed with dry, cheesy matter in the mediastinal gland was also surrounded by a very dense, fibrous capsule. Last December a yearling Jersey bull presented the following symptoms: Condition medium, coat dry, appetite good, temperature 102° F., respiration accelerated, and each accompanied by a grunting sound to be distinctly heard forty feet from the animal; head extended. In the inter-maxillary space were two hard lumps as large as a goose egg and two similar lumps, not sensitive to pressure, were high up on each side of the larynx. After an injection of tuberculin (0.1 c.c.) a marked reaction took place, followed in two days by slight improvement in the general symptoms. In three months the bull received 1.2 c.c. of tuberculin in six doses, and improved con-

stantly until the breathing was natural and the enlarged lymphatic glands were reduced to their normal size. The animal was then killed and examined. The thoracic and abdominal organs were normal. The larynx mucous membrane was normal, the lymphatic glands, which were felt from without, each contained dry, cheesy, masses of the size of a pea, surrounded by dense fibrous membranes, and one of them contained a slight calcareous deposit.

Twelve cows were treated last spring, each with nine injections of tuberculin, in all about 5 c.c., during a period of fourteen weeks. All had previously reacted to tuberculin and were known to be tuberculous. Nine of the cows ceased to react after two to five injections had been given, but the other three continued to react after each injection. All were killed, and in the nine cows lesions of the greatest variety were found in nearly all of the organs; the lungs, pleura, liver, kidney, wall of rumen and peritoneum, were surrounded by fibrous capsules, markedly thicker than that ordinarily found. Three of the nine had but slight lesions and they were made up almost entirely of dense, fibrous tissue with minute masses of cheesy material at the centers.

The three cows that continued to react showed generalized tuberculosis of both body cavities and affecting, especially, the serous lining of these cavities.

These experiments seem to indicate that tuberculin has a curative action in some cases, especially when the disease is slight. Certainly the symptoms frequently improve after the use of tuberculin, and further experiments will be necessary to determine the exact action at the point of disease and the permanency of the relief. The subject is important enough, and the indications that valuable results will be obtained are strong enough to justify the expenditure of a large sum of money on the work. We are indebted to Mr. Jos. E. Gillingham for the financial assistance, without which these experiments would have been impossible.

Upon the subject further is the report of Dr. Peters, as follows :

JAMAICA PLAIN, MASS., Aug. 10th, 1893.

Dr. A. W. Clement, Chairman:

DEAR DOCTOR.—I propose in this brief report to you, to state the manner in which the work of eradicating tuberculosis from cattle in New York State has been systematized, as it is, so far as I know, the first State Board of Health in this country to actually make a beginning at grappling with this subject in earnest. I think that a short account of the practical working of the law may prove of interest, together with a few words as to its benefit to the community, errors in diagnosis and the like.

Granting that the New York State Board of Health acknowledges the work already done in investigating the danger to human life from the use of the milk from tuberculous cattle demonstrates it to be unfit as an article of food, there is no need of arguing the pros and cons of the question any further, or of giving details of experiments which have been printed over and over again, and repeatedly quoted.

The law passed by the legislature of 1892 works admirably. The veterinary inspector is amply protected in his duties by being empowered to call upon a deputy sheriff or sheriffs for protection in case he is interfered with, and having a penalty attached for the punishment of any person who obstructs him in the discharge of his duties. The owners of cattle are also protected in their rights by being allowed a claim against the State for any animals destroyed, which is as it should be. It may be argued that a tuberculous cow is valueless, and therefore the owner is not entitled to compensation. This is a very small argument to make when a State kills cattle for the public good. The animals are killed for the benefit of the people, and the owner should be paid in full for the value which they represent to a non-professional eye before slaughter.

The law also provides for the disinfection of stables, cars, boats and the like, a wise provision, especially for application to infected stables. In the enforcement of such a law a system of procedure must in time elaborate itself, and finally, as the result of the combined judgment of Dr. Cooper Curtice,

Inspector of Cattle for New York State Board of Health, the president and secretary of the board, and the writer, suitable rules and regulations were prescribed by the State Board of Health and a method of work was adopted which need not be gone into detail in this report, but which may be ascertained by application to the secretary of the board.

After the cattle are tagged, and while the inspector is waiting for the order to kill to arrive, the owner of the creatures calls in one or more neighbors familiar with the value of cattle, who appraise their value, and then swear to the truth of the appraisal before a justice of the peace or a notary public.

The owner of the animals then writes to the clerk of the Court of Claims, at Albany, for instructions for filing his claim against the State, and when he receives his instructions he forwards his application for remuneration, with the certificate that the cattle were killed, and the sworn appraisal to the clerk of the Court of Claims, and when the Court sits it awards such a sum for the loss of the farmer's stock as seems to it just and proper.

The inspector of the State Board of Health has nothing to do with appraising the value of any animals killed. It is his duty to see that diseased stock is destroyed, but it is none of his business what it may be worth. Near New York City the animals were given to a renderer to compensate him for sending men to take them to his rendering works, slaughtering, and helping in making the autopsies. In more rural districts no difficulty was found in finding a man willing to kill a cow and cut her up for her hide. In the former case the carcasses were converted into fertilizer, in the latter the meat was rendered unsalable by sprinkling the cadaver with kerosene oil (an idea of Dr. R. A. McLean's, I believe). No attempt was made to convert any of the animals into beef, as after they are tagged they become the property of the State of New York, and it was thought that in work of this kind it would not do for the State to attempt to save money, even by selling the flesh of actually healthy animals killed on suspicion, as it might give rise to unfavorable comments.

The system adopted works admirably in actual practice, and may well serve as a model for other States to copy from in attempts to secure legislation for the suppression of bovine tuberculosis. Where a State Court of Claims does not exist, other arrangements for recompensing owners for cattle destroyed would have to be made, such as having the Legislature make a special appropriation for cattle slaughtered, or something of that kind. Five thousand dollars does not seem a large sum for beginning such an undertaking as provided for in the bill, but it is wonderful how much can be accomplished with such a sum, as fully 20,000 cattle were examined, to say nothing of 125 or 150 autopsies that had to be made. Another winter a larger sum will be available to continue the good work so well begun.

But little opposition was met with in carrying on the inspection and tagging, and the services of a deputy sheriff were not required more than three or four times, but the work done so far has been chiefly in Orange and Westchester Counties, where the United States Bureau of Animal Industry was engaged in stamping out contagious pleuro-pneumonia a few years ago, and the farmers and milkmen in these localities are used to having their cattle examined and slaughtered, whether they liked it or not. In a district where there had never been any inspection of cattle, and destruction of the diseased, it is possible that more opposition might be met with.

The work done is of great value in many ways.

First; It shows that in a typical dairy farming community like Orange County, bovine tuberculosis is not as prevalent as many veterinarians believe, there having been only thirty-five cows killed out of about ten thousand examined; that is thirty-five one-hundredths per cent. were found to be diseased under ordinary means of inspection.

Second. Among hardy grade cattle, with a Holstein, short-horn or Ayrshire cross, kept under ordinary farm conditions, tuberculosis is not as infectious as it is usually believed to be. In every instance but two, only one or two animals were found to be diseased in herds numbering, as a rule, anywhere

from twenty to fifty head. In two instances, more than two were found to be diseased in a herd; in one case, three were killed; in another, five were slaughtered. In Westchester County, out of about 10,000 examined, in the neighborhood of eighty-five head were slaughtered, but there were more errors in diagnosis made here than in Orange County; a number of mistakes, six or eight, perhaps, having been made. In Orange County, out of thirty-five cows killed, only one was not tuberculous, and the diagnosis in her case was not positive, as before she was killed it was suspected that she might be suffering from pneumonia, which proved to be the case.

The value of dairy inspection was better demonstrated in Westchester County, as here several herds were found badly infected with tuberculosis. In one instance it was found necessary to destroy an entire herd, not counting a few that died before final arrangements were made for killing the remainder (eleven head having been killed in December); fifty-two animals, all told, were slaughtered on two different occasions, one bull tuberculous, thirty-nine cows, all more or less tuberculous, except one, four two-year-old and eight yearling heifers, fifty per cent. of them being tuberculous. This herd had formerly consisted of fine Jerseys, but a number of so-called natives had been bought during the past few years to take the place of cows that died. The milk from this farm was being sold in New York City as very fine Jersey milk at the high price of twelve cents a quart.

In another lot of cattle, consisting of twenty-four head, the milk being peddled in the neighborhood where they were kept, six cows were killed and found to be tuberculous, a total of twenty-five per cent. In another local milkman's herd, consisting of fifteen animals, five were slaughtered, and proved to be tuberculous by post-mortem examination, making thirty-three and one-third per cent. of the number on the farm.

The other animals killed in Westchester County were all scattering cases, only one, two, or three from a farm, and a few of these which were killed on suspicion proved to be errors in diagnosis. Possible errors of diagnosis were found

to be chronic bronchitis, and cases convalescing from catarrhal pneumonia, or capillary bronchitis. Bronchial troubles among cattle were enzootic in Westchester County during the latter part of the winter and early spring of the present year, which made the examination of the animals extremely difficult. In many instances it was necessary to re-inspect suspicious cases once or even twice at intervals of two or three weeks before it could be decided whether the trouble was bronchitis or tuberculosis. One animal killed as suspicious, and found to be suffering from chronic bronchitis in one lung, was not destroyed until two months after she was first inspected, yet the piping sound in the lung was as constant at the end of that time as on the first day she was examined.

One case killed on suspicion of being phthisical was found to have a small bit of a brier bush of some kind (apparently either from a raspberry or blackberry bush) in the upper posterior part of the right lung, near the outer border. This bit of stick was between one inch and two inches long, and had been taken into the bronchi with the points of two or three thorns on it directed toward the cow's head, acting as barbs, and preventing it from working in any direction except farther and farther into the lung. It had evidently been in the location where found for some time, as it was surrounded with a calcareous deposit. At the time it was first carried down into the trachea, and for some time afterward, it must have caused a great deal of irritation along the course it took.

Another cow was killed as a "roarer," but upon post-mortem examination no tuberculous lymphatic glands could be found around the larynx, pharynx, or in the mediastinum. The trachea was then removed, and it was found to have several of its rings fractured at a point midway between the larynx and thorax, making it oval instead of round, and causing a roaring in respiration which after any exertion on her part could be heard for about half a mile across the fields. It is very possible that this accident to the trachea may have been caused in an attempt at some time to smash an apple.

turnip, or some similar body in the œsophagus between a block of wood and a mallet.

Tuberculin as a diagnostic agent was not extensively used, two herds only having been tested with it, one in Westchester County in March, on the herd where all the animals were killed; the other near Poughkeepsie, Dutchess County, in May, the animals being killed early in June. In both herds the results were quite satisfactory, but the latter one was much the better to use for the experiment, as it contained a few healthy creatures, and their general condition was better than in the first instance when it was tried. The Poughkeepsie herd consisted of two bulls and thirty-one cows and heifers, which were tested with tuberculin, besides which there were three yearling heifers which were not inoculated, and two young calves. Of the thirty-three animals, all but four cows reacted to the tuberculin, and one was unsatisfactory, as she was not well, and had a temperature of 106° at the time of the inoculation. Hence twenty-eight animals out of thirty-three may be looked upon as tuberculous according to tuberculin. A physical examination of this herd indicates one cow with general tuberculosis, one cow and two heifers (one of them a yearling not tested with tuberculin), "roarers," from enlarged tuberculous glands back of the pharynx, and three cows suspicious, because of their coughing and having a bad history connected with the farm.

All the animals that reacted to the tuberculin were killed (and also the heifer that was a roarer, but not tested), and found in every instance to be more or less tuberculous. One cow that did not react was killed and found to be perfectly healthy.

The question in this trial seems to be: Is tuberculin too fine a diagnostic agent for use in the examination of dairy herds, unless used as an assistance to our other powers of observation?

One cow had only three small nodules in the liver, another a small cheesy posterior-pharyngeal gland, two or three others tuberculous posterior mediastinal glands. Now, the question is: Are such animals any danger to other cattle or to the

public health? No! not in that condition. But, on the other hand, no one can tell when the disease may not become more active, and the inspector may leave behind him an animal as harmless to-day, which a few months hence may be in a condition to be a great danger to the well being of the community.

The tuberculin used in the Poughkeepsie test came from the Bureau of Animal Industry Laboratory at Washington. I was not present when the tests were made in May, but secured the orders to kill from the Secretary of the New York State Board of Health, and took charge of the slaughtering and autopsies about three weeks later, in June, on which occasion I was assisted by Dr. John Faust, his sons, Dr. Otto Faust and William Faust, a medical student, and Dr. Norgaard, of the United States Bureau of Animal Industry. These four gentlemen conducted the tuberculin tests about the middle of May.

Although I have been a skeptic regarding the utility of tuberculin, the experience I have recently had with it has changed my views a great deal, and I now believe that it may be a very valuable agent if properly used.

In suspicious cases where doubt is felt as to whether an animal is tuberculous or not, it is well worthy of a trial; and in herds where a number of cases of tuberculosis are found, I believe it to be advisable to test the entire herd with it. I do not, however, believe it necessary or practicable to go to every farm in the country and test every single cow to be found with tuberculin, but if a herd be inspected in the ordinary way and found to be healthy, I consider that sufficient.

In a breeding herd, no doubt, it might be advisable to kill every animal that reacted to tuberculin, no matter what its apparent condition of health might be. I am yours,

Very sincerely,

AUSTIN PETERS, M.R.C.V.S.,

Chief Inspector of Cattle for the New York State Board of Health.

To summarize this report, your committee concludes that tuberculosis is a world-wide disease affecting in all probability all classes of animals, due to a specific micro-organism known

as the tubercle bacillus. That the disease causes great losses in our domesticated animals, and millions of deaths usually in the human family. That the disease may be transmitted from the lower animals to man through the milk, and under certain circumstances through the flesh used as food. That the diagnosis is now made possible in all cases by the use of tuberculin.

That the different city and state boards of health should have a veterinarian as member of the board, and that these officers should be in direct and constant correspondence with the proper officials of the central Government who in their turn should have final jurisdiction.

That while it may not be practicable at present to undertake the complete eradication of the disease, each State should at least institute a thorough examination of the herd to determine its prevalence. The question of a radical attempt to stamp it out should be agitated; owners of cattle should be apprised of its dangers, all tuberculous cows should be removed from dairies, and all meat should be subjected to a veterinary examination at the time of slaughter.

ADDRESS.

By PRESIDENT DR. W. H. HOSKINS, Philadelphia, Pa.

(Delivered before the Pennsylvania Veterinary Medical Association.)

This meeting, our semi-annual gathering for this year of 1893, marks the seventeenth mile post for our Association and adds another green spot in our memories, when we recall the rise and progress of our Society.

Meeting to-day in this busy center of industry, among these diligent, enterprising people who have so wonderfully demonstrated the treasures buried below the surface of the earth, and who have so enriched our own country in the added pleasure and comfort of our homes, and in so doing built this busy, successful and strong city, and thus enriched themselves, it seems fitting that our own busy, aggressive organization should have selected this place for our gather-

ing. Not that we needed a new stimulus for earnest work, for our career is resplendent with strong achievements, but that it well becomes our place to be in keeping with such, and to thus acknowledge our indebtedness to this center which has added so materially in new blood to the strength of our organization.

Meeting as we do on the close of this year, when our thoughts are mingled with those of four hundred years ago, and on the eve of our celebration of the fourth century birth of this nation to which we give allegiance, this nation, the stupendous wonder of the world, the marvel of the nineteenth century, whose matchless progress, unlimited resources and stability of government have already outlived the prophecies of historians and writers, and on the eve of the First International Veterinary Congress within our borders, surely these are proud thoughts for us to indulge in and should add zeal and pleasure to our coming ; aside from the always pleasant associations of renewing our friendships and greeting the faces of those whom it is ever pleasant for us to meet.

From none of these gatherings have I yet been prevented from attending, and I count it as a gain, the added strength of fellow feeling, the increased knowledge, the firmer grasp I have thus gained on the profession, and it has brought others as well as myself a richer reward than our hopes dreamed of or our fertile brain conjectured. It has gained for our profession a recognized place and position in the Keystone State and our men are honored in their calling throughout the length and breadth of our commonwealth. We are favored within our borders with one of the foremost veterinary schools in our country, and whose strong place in the galaxy of schools is a fitting compliment to the high purposes and aims of the veterinary profession in Pennsylvania.

What may I say at this time for the workers in original fields of research in our organization, who are daily brushing away the clouds of doubt and uncertainty, lifting the barriers that have stayed the hands of progress in the management and control of some of our infectious and contagious diseases. Words of praise seem empty offerings, but the fuller light of

the near future, when the value of these achievements may be properly measured, will render to them the just meed of appreciation they so richly deserve. Who of us in the glorious breaking day of modern medicine and surgery, but yearns to live many years to view its future completeness and taste of the well-spring of renewed youth. What a revolution in veterinary science we have witnessed in the last ten years. What a wealth of achievement has been turned to our country's worth and prosperity by our own profession. What they have done for America in stamping out that bovine scourge "Contagious Pleuro-Pneumonia," has not been done for any other country in the world on whose soil it has found lodgment. What are the possibilities of the future we can only conjecture, but surely we can hope that through their continued zeal and labor, every embargo against our food products may be lifted, and the whole world become the welcome recipient of our animal productions. But one grave danger threatens this achievement, and I cannot lose this opportunity of calling your attention to it. It is of our own creation, it is of our own perpetuation, and the cure of this evil lies within our own powers. I refer to the curse of the infamous "Spoils System," that drives well-fitted and equipped men from the positions of vital importance to our country, and of equal import to the integrity of the profession, simply because they are republicans or democrats as the case may be. What an insult to our boasted intelligence that we should tolerate such a system, much less uphold and encourage it. What sound business man would tolerate such an unreasonable system in his counting-house, store or factory. What shall we say in extenuation of the evil day that is sure to come when the blighted fruit of our own planting shall be offered us as the outgrowth of our seeding. Is it not time for us as an association, as a dignified profession, to raise our protest against such a system that would be barbarous in any country other than our own. Should we not demand that our Government bestow these positions under the merit system, rather than rewards for partisan services or as a prey to ward-workers and place-hunters. Think of

one hundred appeals being on file for a cattle tagger, and not one scintilla of evidence as to his capability and fitness for such a position. Think of a congressman, a dignified member of that higher house of our Government (the Senate) making his own place secure by plodding through his own district and offering as a bargain for certain support and influence the scalp of one of the most highly qualified, scientific and conscientious workers in the Bureau of Animal Industry, and delivering the same to a political boss's constituent, where it rests in the hands of one (to be most charitable with him) who has no other qualification than the fact of being a veterinarian, and his father having a strong political pull. Such a state of affairs seems ludicrous, were it not for the serious side, that all faulty, imperfect work of this Bureau must be shouldered by the veterinary profession, and shall we look on without protest or objection and witness in time the wiping out of this branch of our Government service, because of the faulty work thus done, and in its train see every foreign country raise its bars and barriers against our food products.

Such positions as these should be worthy the aim and effort of every young man who has qualified himself to fill them, and it should be a mark of honor for any man to have filled acceptably a position of this kind for his paternal government. How far from all this is it to-day? Look around and about you and count the many wrecked futures and checkered careers of those whom you know who have been allured to secure these positions by virtue of the political influence and power at their command. Let us be true to ourselves and lift our voices with one accord against its longer perpetuation, and I am sure that even those who have tasted of its sweetness and drank its dregs of disappointment will welcome, as strong as any of us, a return to the only system that is worthy of a free and intelligent people.

A few more words and I will close these remarks, that we may proceed to indulge in the feast provided for us. Perhaps during the past year we have had some three-score of veterinarians enter the borders of our State to become a part of the veterinary profession here. How many of you, fellow

members, have sought these new men in your communities and endeavored to enlist them in our organization? Remember your secretary, diligent, earnest, zealous and efficient as he is, cannot do this work for you, neither should you expect him, but it is an obligation imposed upon you by your membership in our organization. We have now over one hundred members, we want one hundred and fifty before our annual gathering in '94. Resolve yourselves into committees of one, and each bring a new applicant for membership, and thus strengthen and complete our ranks, that our power and influence may be strengthened and extended to broader fields.

During the past six months but few flagrant violations of our law have come to our notice throughout the State, and I feel that each new period strengthens our position and adds value to the future worth of our act. In the eastern section of our State we have heard of no migration within our borders save from those who have equipped themselves in some one of our colleges. We still regret the continuation of the two-year schools, and it becomes our bounden duty to urge upon all prospective students the fact that these schools are not equipped to so completely their education as will properly prepare them for the future practice of veterinary surgery, and every honorable means should be used on our part to discourage their continuance so long as they are a menace to the future strength and value of our profession.

In October next the First International Veterinary Congress of America will convene in Chicago, in connection with the World's Fair Auxiliary Congresses. The chief topics for consideration at that time are Veterinary Education, Animal Food Supply and Tuberculosis, all of great interest to us as a profession and of special importance to us as individuals. * We should be enrolled as members of this Congress, special provision having been made for this occasion. The minor subjects are of much interest and value, and I am glad to say that our State will take a prominent part in the deliberations. The entire proceedings will be published, and each member of the Congress will be entitled to a copy of the same.

With these few random thoughts I desire to again render

my token of appreciation of the unstinted aid and support I have had during the past six months from my fellow officers, and to commend our members in general for their steadfast adherence to the best interests of the profession. I thank you for your kind attention.

NOTES ON THE CASTRATION OF SOLIPEDS.

By THOMAS B. RODGERS, D.V.S., Woodbury, N. J.

(A paper read before the Pennsylvania State Veterinary Medical Association.)

The essayist desires to state at the outset that the opinions herein expressed are the results of his individual experience and are given free from envy, hatred and all uncharitableness.

The operation of castration is a very simple one; it involves (in most cases) little anatomical knowledge, it is attended by a low rate of mortality (about one per cent.), yet when I say to you that it is an operation to be approached with more misgivings than any other operation in surgery, I know that I express the opinion of all of you who have had an extensive surgical experience. When you perform a neurotomy, a tarsal tenotomy, or excise an arytenoid cartilage for the relief of roaring, you are operating on animals rendered more or less worthless by disease, the owner is prepared to take the chances of failure or of death, and a neat and successful operation redounds to your credit. Far different are the circumstances under which you perform castration; your patient is necessarily in the bloom of health and usually in the flower of youth; his owner may have great, possibly extravagant expectations about what the colt will do when he develops; he has considered whether he shall confide the patient to you or to some itinerant gelder of repute, and has perhaps given the diplomaed veterinarian the preference despite the opinions of all the long-eared Solons in his neighborhood. Failure means loss of professional credit; success represents no gain, for perhaps on the adjoining farm the quack's operation turned out as successfully as yours. The age usually selected in my country for the performance of

the operation is from one to two years. If the veterinarian is consulted as to the proper age he will not err in recommending two years, all things being equal, as the best and safest time for all concerned; the yearling is easier to handle but the testicles in many yearlings have not fully descended, and it is hardly possible to get the incisions just in the right place and clean—*vice versa*, the two-year-old is harder to handle, easier to cut. Are there periods of life when the dangers of castration are intensified? I think so, and consider that the time from three to six years represents the period of greatest risk, as the horse is then reaching the acme of his sexual development, and his generative apparatus is in its greatest functional activity.

Old horses have always done well for me, indeed, I do not recollect any trouble arising from the operation in patients between eight and eighteen years of age. It has been urged that the best time of life is when the colt is sucking, and I have cut a number of these little fellows, but do not feel that I can recommend this course; when cut so young the penis may not become sufficiently developed to protrude well from the sheath during micturition, and the consequence is a dirty sheath if no worse; it also tends to make a colt light in front, and it is well to see what a well-bred youngster will develop into before making him a gelding.

It may be well to consider in this connection as to what answer we shall give to the oft-asked question, Doctor would you cut this colt or let him run for the stud? I trust no member of the Pennsylvania State Veterinary Association would advise the castration of a horse for the sake of the fee, but I do know practitioners who would urge the gelding of Ormonde if they could get a five dollar note out of it. I generally tell the owner that unless the horse is bred in good lines, has size and shape, color, action and disposition he will not be likely to stand the competition of to-day. Time was when anything was good enough for a stallion, but that day is fast passing away.

Precautions before operating.—Examine for hernia, for

strangles or other constitutional troubles and if in doubt take the patient's temperature.

Do not operate during enzootics of tetanus, or in cases where the patient himself being well, is stabled with cases of strangles, influenza or typhoid, or in cases where the hygienic surroundings preclude a reasonable hope of recovery. See to it that you carry no taint on your person or your instruments, and here a word :

Some years ago I had a run of bad luck, castration wounds healed badly, the discharges were profuse and ichorous, in some cases the patient had sharp attacks of limited peritonitis, and in one case the peritoneal inflammation was diffuse. I used antiseptics, was careful about the condition of my hands and nails, still the trouble continued, and at last I found the cause, it was the chain of the ecraseur, I always washed it after operating, but one day I noticed between the links, and between the plates composing the links of the chain, some deposit of foreign matter. I think it took me an hour to clean that chain, but it paid ; the trouble ceased and now I see to it that this source of infection is absent anyhow.

Caution the owner regarding the risk of casting.—I have a set formula. I say, "It has been my good fortune to never injure an animal cast for this operation, but it is within the range of possibility that I may break this horse's back, if you don't care to assume the risk now is the time to say so." Perhaps this is the place to give you my opinion about castration standing—it is only an opinion, you must take it for what it is worth. I cannot consider it good surgery, the only rational claim for it being that it does away with the danger of casting—*a risk so slight that I have put down nearly one thousand horses of all ages for this operation and have never injured one of them.* When you weigh against this the dangers arising from undiscovered hernias, from undue traction on the cord, from cutting the cord too long, leaving its end to be embraced by the edges of the wound, and cause stiffness, or champignon ; when you consider the difficulty encountered in some young animals in getting down the testes, and retaining a hold on them long enough to ensure the incision

being in the right place, and on the right plane, I hope that most of you will agree with me that castration standing is not a legitimate operation of surgery.

The fact of the matter is that when we come down to the bottom, castration standing is with most practitioners an advertisement—this only—and (with all due respect to the practitioners of it), an advertisement on a par with that of any sleight-of-hand performance. You might just as well tell your clients that you were prepared to do it with one hand tied behind you, and standing on your head. Do not forget, gentlemen, that you are professional men, and that until you are satisfied beyond cavil that a new surgical procedure groups around it all the known elements of safety, you have no right to use it for your personal aggrandizement. A great daily newspaper recently said that this was an age of quackery, let us keep the skirts of our profession clear of it. *How shall we cast?* Perhaps a prior question should be, how shall we get on the hobbles, for I have seen this present no little difficulty.

They can often be readily put on by the colt's habitual attendant, even when the veterinarian cannot get near him; and it is often easier to put them on in the stall than after the colt is brought out. I always put on the hind hobbles first. When difficulty arises in putting on the hind hobbles it may often be surmounted by passing a long rope under the fetlock of the offending leg, and drawing it forward and outward. It can usually be thus held long enough to buckle on the hobbles. Lastly, if you can't get them on or don't put them on, use the method of Rohard.

I cast by Liautard's method, modified to suit my convenience. I place the main hobble on the off front foot and pass the chain successively through the D's of the near front, near hind and off hind hobbles, throwing the colt of course on his near side. I take this course in preference to bringing back the chain through the D of the main hobble in order to let the patient kick freely when he first goes down; when he is freely using his legs he won't hurt his back. I cannot let this opportunity pass without urging on you a pet theory of

mine, (not original—*vide* Williams' surgery), *i. e.*, that it is tight tying up that breaks horses' backs. Don't tie up a horse any tighter than will allow you to do what you desire to him without injury to himself or your assistants. Don't, with a big D, leave all the feet locked together so as to give him a point to strain on. If you have a heavy weight to lift from the floor, your first move is to get your heels together so that you can use the muscles of your back and loins; put one foot six inches higher than the other and you must lift the weight through the agency of the muscles of your arms and shoulders, and you can't well strain your back trying to do it. So with the horse, fix him so he *can't* break his back.

Have a good man at the head—the place for the operator is at the tail—bring the legs gradually together, keeping rope and chain taut so the legs do not become entangled in them; let the assistant at the head push the horse gently backward, when the legs are well together a tug on the tail throws him off his balance, and he comes down gently on the near hind quarter. When down let him kick—you can usually shorten this part of the ceremony by lifting strongly upward on the tail—when the struggling ceases draw up the chain and snap on the lock (I have used the patent hobbles, *i. e.*, those holding their own slack, in a friend's practice, and if the makers would build them light enough for the castrator they would be useful).

Loop a platlonge round the off hind fetlock, place a long hobble strap with D round the lower third of the tibia of the same side, pass the free end of the longe under the neck from above to below and through the D of the hobble on the tibia, release the leg from its casting hobble, draw it well forward onto the shoulder, and secure it with a turn round the fetlock, give the end to an assistant to hold telling him to pull well forward, and the horse is secured in position to castrate.

The Operation.—If one testicle has fully descended and the other not, expose the hidden one first; if it is not possible to bring it down without first incising the skin, see to it that the incision is made well forward parallel to the raphe and about three inches long. The proper way to go through the con-

nective tissue layers intervening between the skin and the hidden vaginal tunic is to place the dorsal surface of the two forefingers together, pass them down the canal until the tunic vaginalis is felt, then separate them in the line of the incision; you will thus avoid making pockets in the connective tissue to retain wound secretions and complicate healing.

Incise the vaginal tunic, carrying the incision well back over the epididymis. Cut through the white muscular fibres of Bouley at their attachment behind the epididymis, and by pulling them backward and the testicle and cord forward, free the testicle from their influence of traction. Free the other testicle in like manner. Pass the chain round both cords, about one and a half inches above the epididymis, keeping it (the chain) at right angles to the cord (this is important in reducing the danger of hemorrhage and leaving the least possible wound surface), and slowly crush off the cords, twist and stop, twist and stop, pushing the ecraseur forward so that a sudden struggle shall not stretch or tear the cord. A point here: If your ecraseur is new, go slow, the more crisply the cord cuts the greater the danger of hemorrhage; after the slot of the instrument has become worn and the cord pulls into it a little before giving way entirely, the danger of bleeding is much lessened. Wash out the wounds with creolin solution or with solution of bichloride of mercury, grease them with idoform ointment, take off the hobbles and allow the patient to rise. Let him stand quiet for a day, then wash and grease him twice daily, keeping the incisions open as long as possible. Give exercise in fit weather and see that his stall is kept clean.

THE CASTRATION OF CRYPTORCHIDS.

It has been reserved for a layman ("Farmer Miles") to make a greater reputation, and accumulate more wealth, in the practice of this specialty than any professional man in this country. I have seen him operate and should be unjust to deny him great natural aptitude for his vocation, entire coolness, great manual dexterity acquired by much practice, and an excellent, though rather slow, method of casting and preparing for the operation. It has also been my fortune to

have the acquaintance of some veterinarians who have received "sealed instructions" from him; and they one and all throw a cloud of mystery round the operation, as though there was some secret about it not known to our teachers. I believe that I have solved their cipher, and that their mountain of quackery having conceived has brought forth just this little mouse—*i. e.*: Ninety per cent. of so-called ridgling horses are nothing but close colts, having the testicle and cord (or some part of them) somewhere between the upper and lower ring. Now all that is needed to enable a man to operate successfully in these cases is to remember the course of the inguinal canal and follow it. What do you find? Sometimes a fair-sized testicle presenting naturally; more often a funnel-shaped tunica vaginalis, the cord doubled on itself and occupying the apex of the funnel, the testicle (very small) laying at or above the upper ring. Cut through the tunic, hook a finger round the cord, make gentle traction on it and the testicle comes down. In the classic language of Mr. Miles, "the child is born and its name is Moses." Now don't let me leave you with the impression that you will have no troubles, encounter no difficulties—you will; but there are few cases which a cool head, a steady hand and a determined purpose will fail to conquer.

You may have true ectopia of the testicle, then it will be largely a matter of blind groping. I have seen a case in a boar where the testicle occupied the femoral canal, another where it was attached to the sublumbar region, and I may mention in passing that I have seen three cases where the ovaries in the sow occupied the same region where we find the testicles of the boar. I have twice utterly failed in the attempt to castrate ridglings; perhaps some one else might have succeeded. What shall we do with the cases of abdominal cryptorchidy?

Unless the patient is unmanageable on account of his condition, I think the best advice to give the owner is to let some other fellow have him, as I cannot regard rupturing the upper ring as complacently as do some people. It is dangerous, and a brilliant operation does not compensate the owner for

a dead horse. If the operation be insisted on, go through as carefully as possible, or if you have a hand like a ham get some one else to do it for you.

From a surgical standpoint I believe the proper operation would be to incise the flank, high up, using rigorous antiseptics, but I am afraid to carry out my conviction.

There has been a tall amount of lying about this operation with regard to the percentage of abdominal cryptorchidy, the death-rate from operations, etc., and it is time we raised a protest against the statements made in society meetings and in the journals. I castrate horses, I spay bitches, and some of them die. I have friends, eminent surgeons, and they tell me they have the same experience. I perform neurotomy, I lose feet; my lockjaw cases die, my cases of milk fever die; and yet, if I must believe all I hear, Jones never loses a colt or bitch, Smith has done a fabulous number of neurotomies and lost no feet. Brown has forty-five recoveries out of forty-eight cases of tetanus. Robinson saves forty successive cases of milk fever—liars, every mother's son of them—and the truth is not in them. Now if Jones means that all his colts and bitches lived until he got off the premises, he may lay the flattering unction to his soul that he is not lying. If Smith means that he performed a lot of neurotomies in a clinic and they went out of the gate with all four hooves on, all well. Brown's lockjaw cases, perhaps, were like the scarlet fever cases of a homœopathic physician I used to know—he never lost a case; sometimes an inconsiderate boy or girl died from acute albuminaria, or convulsions, or from heart failure; and infants passed into the subsequently from congestion of the brain, but lose a case of scarlet fever, never. Robinson (of course his name was not Robinson), told me that he had forty successive recoveries in parturient apoplexy. I told him that he made about forty mistakes in diagnosis, or lied; brutal! but not undeserved, and I think the time has come to call a halt on these reckless misstatements.

I have operated on a few cases where scrotal hernia complicated castration, all save one did well (he died from tetanus), and I noticed that the operation was followed by very little

swelling. Cut through the skin, go carefully through the loose, meshed, connective tissue layers between skin and vaginal tunic, pressing them downward as you pull the testicle and intact tunic upward, until the cord is sufficiently isolated to admit the placing on it of a curved wooden clamp (the gut being kept back by an assistant), and allow the compressed parts to slough off. See to it that the clamp is tight enough to destroy the vitality of the tissue compressed by it, but not so tight that it will cut through too quickly before union of the opposing edges has taken place. Williams suggests that the clamp be placed over the intact skin, but apart from the difficulty of getting it on high enough up, I should expect it to be often followed by scirrhus cord.

COMMON COMPLICATIONS.—*Hemorrhage*.—Primary hemorrhage following castration is usually due to the slipping of a clamp when the old-fashioned method of castration has been followed, to a partial failure of the tunica media and intima of the artery to curve inward after being crushed off by the chain, or to a congenital absence of the contracted elements of the middle tunic making the patient a bleeder.

If the bleeding follows immediately after the operation, does not exceed a quart or two, is somewhat intermittent, and gradually grows less, it is of no moment, calls for no interference, and is probably beneficial; if large in amount, plug the wound with antiseptic cotton, and stitch up the scrotum, or tie the artery, a thing often easy to advise, hard to do. I have only met with two severe cases of primary hemorrhage, I plugged one, the other ceased spontaneously when the patient became faint. I have never seen a secondary hemorrhage of large amount, but if you have a secondary bleeding dark in color, intermittent in character and coagulating slowly, you will usually find it due to imperfect antisepsis—it is a bad symptom, and should be met by thorough disinfection of the wound, and the internal administration of quinia and iron. Colicky pains yield to a dose of chloral, but it is well to remember that the fear and pain of a surgical operation undergone soon after a meal, may stop digestion and result in fermentative colics.

I have nothing to say about tetanus.

The discharge during healing should be first serous, then purulent, should not be large in amount or ill-smelling. The œdema should be greatest about the fifth or sixth day; if in large amount scarify the parts smartly, and use hot applications and exercise. I have seen a horse swollen from scrotum to head; he looked like an exaggerated case of purpura, but got well. Occasionally great œdema is followed by sloughing of skin, usually beneath the belly or on the sheath.

Peritonitis.—My cases have come like lightning out of a clear sky; the colt does well until about the fifth day and is then found with his feet bunched together, hair standing toward his ears, pulse first wiry, then soft and often intermittent, temperature of rectum hardly reliable (on account of contiguity of wound surfaces), extremities cold, or alternately hot and cold rigors occur. The wound secretion ceases, or becomes sanious and ill-smelling. The hippocratic visage is as marked as in man; the drawn face, distended nostrils and staring eyes, once seen are not readily forgotten.

Make pressure on the body and you almost lift the patient off his feet. The respiration is performed as quickly as possible and is as nearly thoracic as the suffering brute can make it. Urine is passed infrequently and not till the demand is urgent, on account of the pain incurred in stretching out to make it.

The rectal discharges are at first normal, afterward often coated with mucous, or with caste of fibrin material. Suddenly the pain ceases, the breath becomes cold, the surface clammy, the animal may eat listlessly. Sometimes at this stage you may have a full, soft, steady pulse, and there is no surer precursor of the death that will certainly come than this steadily beating heart when all else points to disaster.

I have had a case recover under heroic doses of opium with calomel (I am old-fashioned enough to believe that calomel is of service, of great service in peritonitis); aconite is useful early, in comforting, not depressing doses, and I think hot applications to the belly are grateful to the patient. During convalescence great care must be used in regard to diet

and exposure, and the colt treated as an invalid until perfectly well.

I have seen enough of peritonitis to hazard the statement that the greater the peritoneal exudation the less the pain, and vice versa. Protrusion of the penis I treat by scarifying the organ, using warm fomentations, and exercise, and the treatment is promptly effective. Paralysis of the organ should be treated by cold, and by the use of strychnia in *tonic* doses. Secondary swelling of the sheath usually means retention of wound secretions: open at the incision and wash out freely.

Slight but persistent stiffness, with hard swelling of the scrotum, means retention of the cord in the edge of the wound, free it and excise any part that may be hardened. This complication will occur but rarely if you are careful to cut the cord short enough in the first place.

WHAT IS THE DIFFERENCE?

By DR. C. M. STULL, State Veterinarian, South Bend, Ind.

(Paper read before the Indiana Association of Veterinary Graduates.)

At our last meeting I was invited by our honorable president, Prof. Williams, to read a paper on some subject pertaining to the veterinary profession before our next meeting, and as the time has come and we are assembled here together to exchange ideas, I thought, perhaps, that a paper a little out of the usual line of cases that we find in our professional work might possibly be of some interest to the members at this gathering.

The paper I have prepared to read before you to-day is one that I hope will bring about an interchange of ideas upon the subject. I have not written the paper expecting you to gain any great amount of knowledge from the paper itself, but I hope it will bring about a thorough discussion of the subject.

I have aimed in this writing to find out whether or not the veterinarians of Indiana want legislation, and if so, what

kind of legislation do we want, and in order to get this paper properly before you, I have headed it, "What is the Difference?"

What is the difference between the veterinarian of the present day, and the so-called horse-doctor of the past and the present?

To the unobserving public they are one and the same, but to the shrewd and close calculating stock-raiser and farmer there is a vast difference, namely, the success of the individual practitioner and the methods used to bring about the same.

Education is the foundation of success in any line of business, and why should it not apply to this particular subject as well? If a man is adapted to any of the different vocations of this life, is it not his first duty to accumulate as near as possible for him to do so all the available knowledge on that particular subject? And is it possible for him to do this without first calling to his assistance some of the many noted men who have made that particular subject a life-time study?

Think of the long hours of hard study, and the trials of the close student of the veterinary science. It is true, I will admit, that men who would have made good veterinarians have never been able to prepare and educate themselves in the work, owing to a lack of financial means. And again, there is an old adage that poverty is the foundation of all wealth, and I am glad to say that some of our ablest men have worked their way from very poor boys to shining lights in their profession, so that naturally I can see no excuse for a man to offer who is a hypocrite in any profession, the veterinary profession not excepted.

The question has been asked me by self-made men as to the value of a diploma, and to it I have replied that the mere fact of one being in possession of a diploma does not make him a success in the profession, but there is a proof in the possession of one that the individual has made a start in the right direction, and if, after succeeding thus far he should make a failure in life, he is indeed to be pitied. It is also a great mistake to make for one to think that when he is

through his college courses he has learned all that there is in his profession, for he is then only prepared to grasp the ideas, and profit by them, that come before him in his daily practice, and the history of the lives of our great men may be summed up in the axiom that the more knowledge the man obtains, the broader the field to harvest from. Now I want to ask, is it right that the young man who has worked hard to accumulate scanty means to procure a proper education, has entered a recognized college, studied hard, deprived himself of many of the luxuries of life, has left his home and friends and given himself up to the surroundings of college life as they may be, good or bad, and has succeeded in passing a rigid examination, both written and oral, on all subjects pertaining to his profession, that he shall be looked upon as one who dwells only with the lower classes of humanity? Is there a comparison between such a man, who intends to devote his whole life to alleviating the sufferings of the lower animals, and one who thinks his mind so great and broad that all he needs to succeed in life is the title which he gives to himself and the unmitigated gall that is quite prevalent among the existing practory of the present day?

You will excuse me, if you please, if I repeat the old adage, that if anything is worth doing at all it is worth doing well, and I think that it will apply very appropriately to the veterinary profession. So few people are aware of the knowledge required of a man who can intelligently treat the diseases of the dumb animals of this existing creation that it is a wonder that we have succeeded in securing the title we have. But I am glad to say that the eyes of the common public are becoming opened, and that, when our exertions have been combined and in the right direction, the legislators of some of the many States of this united republic have given us greater encouragement to go on with our work by enacting laws to protect us.

We have literature that compares very favorably with the best medical works of to-day, in fact it is one and the same in many instances. Our anatomies are simply comparative, and I may say the same of our materia medicas and dispensa-

tories; our works on pathological anatomy and pathogenesis are superior to any of the works of the kind written by and for the M.D.

While in surgery, it is true, I will admit, we are blocked somewhat by financial value being placed upon our patients, and also by the surrounding uncleanness in many instances, over which we have no control, but I can gladly say that with our advance in medicine we are bringing surgery to the top with amazing rapidity.

It is my opinion that the legislators of the different States should in some way be made to know the exact condition of affairs as regards the existing so-called professional men, who have neither knowledge nor skill in the veterinary profession, but who go about the country, stopping just long enough in one locality to fleece the citizens, and then move on to greener pastures, if I may use these terms to express it. There should be some weight brought to bear upon the honorable body of gentlemen who make our State laws, and it should be done in such a manner that the result would be that they would give to us such laws as they have always given to the M.Ds. But to do this it is necessary that we, as a recognized body, must work together. We must formulate our plans, and then bring them before the representatives in such a way as to have some force in the right direction. And if this can be done, and I believe it can, I can see no reason why we cannot succeed in eradicating the veterinary profession of its greatest evil, viz.: If the self-made professional men would only do harm to themselves, then I would not feel as I do regarding the matter; but while they are lowering themselves in the estimation of the common public, they are also dragging down the reputation of honest men, old and young, who are trying to do some good to the world at large, as well as to themselves.

Some of you, gentlemen, may think that we are yet in our infancy as an organized body, and that to ask for legislation would only be met by defeat; but after having consulted a good number of our last legislators I can truly say I have not had the first man to oppose me, and a number have gone so

far as to volunteer their services to prepare a bill in our favor, but not knowing just what we wanted, did not for that reason only.

Now, in closing, I wish to say that we can have one or two meetings before the next legislature convenes, which will give us ample time to exchange ideas and find out what kind of a law we want enacted, and I shall be very much pleased to have this matter thoroughly discussed at this present meeting, so that some conclusions can be arrived at, and if my paper meets with the approval of this association, I have been only too glad to read it; but if not, I am sorry, and hope that none have taken offence.

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.”—VETERINARY RECORD.

MEDULLARY CANCER IN THE POSTERIOR VENA CAVA.

BY DR. E. J. LIST, Havana, Ill.

On the 25th of July I was called to see a small cart mare which was driven to a milk wagon. I arrived about half an hour later, to find the mare dead. Upon casual observation it was found that she had died from internal hemorrhage, as mucous membranes were very pale and livid. She had passed considerable blood per anus. Upon inquiry I learned from the owner that the animal was in perfect health seemingly before she was hitched, eating her usual feed and starting off in good spirit, but after three or four blocks she began to lag back; presently she was noticed to pass blood per anus. As soon as she was found to be sick she was taken back to the barn with difficulty, and I was called. In all she had been bleeding about three quarters of an hour before she died. Being accompanied by Dr. Robinson, my assistant, we set about to hold a post-mortem. On cutting through into the abdominal cavity in the usual manner, and removing

stomach and intestines as far as possible, there was found a hard, tumorous mass of fibrous tissue at the connection of the mesentery with the superior abdominal wall, the posterior vena cava passing through it about the center; after careful dissection this tumor, including the mesentery and posterior vena cava for about eight inches in length, weighed ten and three-fourths pounds. Desirous to know what could have caused this condition, I dissected it through its center, and to my great surprise discovered a smaller tumor weighing one pound and two ounces, conical in shape, its apex being anterior, the base posterior, located inside the vena cava, and loosely attached by its base to the inner wall of the vein. In order to admit the tumor and allow the passage of blood, the coats of the vein were ruptured and greatly distended, so large that it would admit one's closed hand. The small tumor presented a degenerative appearance, as did the coats of the vein at this part. I think that from this condition the coats of the vein were so weakened that they gave way, causing a complete rupture slightly posterior to the tumor, whence the hemorrhage with the results above mentioned.

COMMUNED FRACTURE OF THE OS MAGNUM AND TRAPEZOID.

BY R. H. HARRISON, D.V.S., Atchison, Kansas.

I send you by express to-day, prepaid, a specimen of a carpus, with the following history:

Subject.—Roan mare one foot two hands, eighteen years old.

History.—Had been unshod for several years. On the 13th Sept., '93, broke out of box stall, and in running on turf slipped, and pulled up lame on three legs. Called immediately by owner, J. V. Bryning, M.D., and found condition, viz: not able to bear weight on the off fore extremity, limb in position of abduction and extension, with toe resting on ground; crepitus at inside of carpal joint, and a swelling the size of a hazel nut, not particularly tender to pressure, manipulation or pressure not very painful; diagnosis made of

rupture of internal lateral carpal ligament, with a reservation of a possibility of error; animal placed in slings, and a plaster of paris cast applied to complete joint, extending above and below on upper extremity of metacarpus and lower extremity of radius. Removed from slings October 14th, and destroyed; plaster of paris cast not removed until after death; carpus as per specimen. *Note.*—There was no abrasion of skin, as the animal did not fall at time of injury, only slipped on a smooth lawn; other bones seem to be normal; on post-mortem there was some extravasated blood in synovia which seemed to be increased in quantity; the ligaments were all normal and sound. You will note some exostosis around end of metacarpus.

Is this not an unusual accident and sequence? The owner, Dr. Bryning, is an old practitioner in human medicine, and he was as surprised as myself at the injury shown on autopsy.

[The bones of the knee sent by Dr. Harrison were all in healthy condition except the os magnum and the trapezoid, which were crushed in numerous pieces.—EDIT.]

EXTRACTS FROM GERMAN JOURNALS.

By RICHARD MIDDLETON, D.V.S., Philadelphia, Pa.

CARCINOMA OF THE BLADDER.

A hunting dog which had for some time passed bloody urine, was found upon examination to have a more or less painful swelling, the size of a double fist, in the region of the symphysis pubis; this tumor was of irregular contour, and by means of palpation evidently knotty. A few drops of blood would appear at the termination of each act of urination; the urine was reddened and contained blood coagula.

From the fact that integral red corpuscles could be detected in the contents of the bladder, the affection was ascribed to alteration in the bladder itself, or urethra, while the exterior swelling spoke very strongly for the first organ.

Upon post mortem a cancer of the bladder was found which so completely occupied the organ as to induce hyper-

trophy of the walls and enlargement of the ureters. The latter condition had caused a secondary hydronephritis.

By reference to the literature on this subject, we find that in man, fibroma of a papillary nature to be the most often met, which also causes a periodic hemorrhage.

Primary carcinoma of the bladder is seldom seen; in the male it is secondary to the same condition of the prostate; in the female to the uterus and vagina cancers. In zoology tumors of the bladder are infrequently met, a fact earlier emphasized by Pflug and Roll.—*Monatshr. f. Thierheilk.*

EPITHELIOMA IN THE MAXILLARY SINUS.

Diseases of the maxillary sinus, and in fact of the sinuses in general, are of sufficient rarity to excite more than a passing interest to the profession. This is due in part to the great similarity existing between the semiology of the affections and glanders; the abundant nasal discharge of a thick character, the hypertrophy of the submaxillary lymphatics and occasionally the swelling of the facial bones all tend to confound the layman and even the young practitioner.

For the observation of the case below described, we are indebted to our colleague, Mr. Haune, of Barum, who drove us on the 17th of March to examine a supposed glandered horse.

The animal, a brown gelding, nine years of age, exhibited on the right side a bulging of the superior maxillary bone. The center of the same was pierced by a foramen which led to the maxillary sinus or antrum of highmore; by introduction of the digit no definite conclusion concerning the origin and disposition of the pathological process could be arrived at. It seemed as though the space were only partially filled with a soft tissue mass; a muco-purulent fluid escaped the right nostril, which contained flakes of a whitish color; a similar dejectus had been seen for a few days from the left nostril.

In the oval cavity the third superior molar on the right side was missing, and the first and second molars were but loosely implanted. From between the cheek and teeth a

blood coagulum was removed, which measured sixteen cubic centimeters in length and 6 ccm. in breadth; the posterior end of this originated in the alveolus of the absent tooth. By the removal of this body an abundant hemorrhage was induced. The mass of the latter must have been considerable during the previous few days, as the sides of the stall and manger were covered with it. Right lymphatic glands in the laryngeal region were enlarged. Those on the left side were not altered. In so far as the speculum revealed the nasal membrane no lesion could be detected; nothing but the extraordinary anæmic aspect of the septum could be remarked.

Patient exhibited excessive weakness when set in motion; appetite at all times poor, became less, and food was slowly masticated; hair dry and erect. Temperature 102.2° F.

The probable course of the case was explained to the owner, as well as the possibility of an operation to expose the sinus, in which event the expense and time of the reparative process would make the sum total of the cost amount to almost the value of the horse; he very promptly decided to have the animal destroyed, which we did.

Post mortem.—In opening the antrum of highmove, with saw and chisel, a greyish sero-purulent material escaped. The cavity was completely occupied by a mass of tissue which toward the orbital foramen was of the consistence, color and appearance of the encephalon; that portion of the tumor found in the largest part of the sinus seemed to arise from the alveolus of the third molar, was harder and more grey in tint. The osseous walls, which separated this from adjacent sinuses and oval cavity, were in greater part obliterated by absorption, the same could be said of the processus palatinus.

Under the microscope the formation was essentially composed of bundles of fasciculi, enclosing large and small collections of cells of variable contour. The latter generally contained abundant plasma and a globular nucleus; the larger collection was formed of cylindrical epithelium, having an elongated nucleus, while the smaller and more internal collections were made up of polygonal-cells, showing a less tangible nucleus.

Since the epithelium of the maxillary sinus is cylindrical, it is very probable that the new formation was an abnormal prolongation of the alveolus, which ultimately involved the lining membrane in a secondary disease.—*Berliner Wochenschrift*.

GENERAL SARCOMA OF THE HORSE.

A horse lately acquired by purchase had from the beginning been deficient in appetite, and ever since that time had shown a certain weakness of the posterior extremities and difficulty in defecation. These symptoms continued for ten days when the animal expired. Post mortem was made about ten hours subsequent in the presence of the seller, with the following result:

Brown mare, twelve years of age, medium height and weight. In the anal region a swelling, approaching in size a man's head, had so contorted the rectal opening as to materially lessen the caliber of the same. The base of the tail was likewise much beyond its normal dimensions. The anal swelling previously mentioned lay in the subcutis of the left side, slightly above, and extended from this point forward to the last lumbar vertebræ; the same was of well defined contour, knotty and uneven, yellowish white with occasional interspersed red stripes. The cut surface was of the color of unstriped muscle fiber, moist and dotted here and there with blood vessels containing coagulated blood. The consistence was soft, with the absence of any interior cavity; strands and divisions of connective tissue might be discovered traversing the formation, and partitioning its substance into numerous alveoli. The scraped surface yielded a white, opaque liquid.

Anterior to this tumor, and separated from it, appeared another, which came in contact with the middle lumbar processes, and which was more deeply situated and surrounded by muscular tissue. The character of the interior, as well as the genenal morphology, corresponded *in toto* to the larger formation.

The muscles along the lower part of the tail were also surrounded by masses of tissue showing the same salient

points as the larger. The spleen, twice its normal size, of a steel blue color with knotty surface; peritoneal covering smooth, bright and not thickened; spleen pulp apparently of healthy quality, punctated by small tumors scattered through its parenchyma. The latter growth varied from a pea to a goose egg in dimensions; the largest of these was yellowish white externally, but when cut contained a cavity holding a brown fluid; the smaller tumors had no fluctuating tendency and were hard.

The liver likewise contained swelling, but in lesser quantity, and was otherwise healthy. Lungs were also characterized by metastatic tumors, a few of which, as in the spleen, exhibited the cystic formation. In the vicinity of the pleura pericardialis, innumerable small tumors not unlike tubercular formation in aspect, which when cut contained a red fluid.

The microscopic examination, which embraced the teased tissues and fluids stained with picro-carmin, was successful in exposing large, round cells having a nucleus and granular contents. The fluid contents of the tumors were constituted by the same cells and detritus.—*Berliner Wochenschrift*.

ACTINOMYCES EQUI.

On August 8th of this year, a young horse was brought to us with the history that for about six weeks he had acquired upon his left hip a tumor of appreciable size—about ten centimeters in diameter. The latter was of a regularly rounded contour, hard, and without pain upon manipulation; movable under the cuticle, and very loosely attached to the subcutaneous tissues.

In my opinion we had to do with either a fibroma, or a collection of serum from a contusion. We proceeded to consider the most advantageous manner of removing the enlargement, and commenced in the following way: The new formation was pushed as far up on the gluteal muscles as possible, and incised in a perpendicular direction, coming by this means upon a hard, fibrous capsule. Continuing, we finally exposed a tough, yellowish mass, spotted in one place by a

material of a brownish hue. Upon the knife blade there remained a sebaceous deposit containing minute granules; the latter character could be affirmed to cover the entire cut surface of the tumor itself. From a more minute examination—microscopic—we were greatly surprised to observe the presence of the actinomyces, which, when the other constituent material of the tumor is remembered, we might classify as a actinomyco-lipoma, or actinomyco-stratoma.

Fat cells were closely adherent one with another under the microscope, and the individual actinomyces could be seen dispersed among them, and to apparently anastomose with each other, so intimately were they arranged.

By scraping the cut surface and placing the liquid upon the object-glass, great numbers of the club-shaped threads, as well as quantities of the species itself, were brought to view. To differentiate between the affection in the horse and cow, it may be stated that the radiating ends possessed by the actinomyces equi partake less of the characteristic club-shape than the actinomyces bovi.

Regarding the etiology and genesis of the disease, the owner affects to have noticed a slight abrasion or scratch upon the skin at this point some time antedating the appearance of the tumor. The brown spot upon the otherwise uniformly yellowish mass may be accounted for in this way. Undoubtedly a much longer time than that given by the owner—six weeks—was required for the development of the swelling.

After removing some of the fibrous capsules and syringing the cavity with a creolin solution, the same was closed except at the inferior commissure, at which point a drainage was established.—*B. Th. Woch.*

REMARKABLE INTESTINAL RUPTURE.

On the morning of March 29th, a mare fifteen years of age, which the owner had reared from a filly, had shown the first signs of illness in her existence. The animal had lost the usual good appetite, manifested pain in the abdominal region,

with restlessness of body. On the following day the health was improved, and the symptoms had vanished. On the night of the 30th, the same restlessness appeared, patient looking at flank endeavoring to evacuate feces, but without success. The next day symptoms, if possible, more intense; on April 1st we were called in.

The mare stood in the stall with feet stretched apart—the characteristic attitude of constipation—anxious countenance, eyes bright and dilated, conjunctiva hyperæmic, tongue coated, body distended, hard, and at the navel somewhat bulged; manipulation caused pain. In my presence the patient exhibited signs of unusual pain, casting herself on the ground and endeavoring to pass manure; pulse 74, and scarcely distinguishable. Under these circumstances of extreme tenesmus and swelling, we prescribed anodyne clysters, warm applications to the abdomen, and a good soft bed.

In the afternoon word came that the injections could not be given on account of large quantities of blood, and a portion of what was supposed to be the intestine occupying the anus. We returned with the messenger and found the mare lying upon the floor; ears and extremities cold; pulse small, frequent and regular; the body, which that morning had been bloated, now exhibited nothing of this sort, but was apparently contracted, especially in the umbilical region; palpation in no wise painful. The anus, protruding and œdematous, held a ragged end of small intestine about four inches in length. From the latter, as well as from the rectum itself, there escaped a continual, though insignificant, flow of blood. A great length of intestine was found upon the straw and washed, after which we could determine the same to be a portion of the small bowel upon which still clung a ragged edge of the mesentery. It is needless to say the animal succumbed.—*Berl. Thier. Woch.*

MEAT POISONING IN THE DOG.

In the Gottinger slaughter-house a fourteen-day-old calf, which evidently was not well, was brought to be killed. Previous to death no outward sign of disease was apparent ex-

cepting an infiltration of the abdominal wall in the vicinity of the umbilicus. On inspection of the carcass the veins of the cord were found to be occupied by a brown, odorless and desiccated mass; these vessels as they approached the liver became wider, and a dry thrombus of some age could be located. The hepatic organ was cloudy, yellowish brown and heavy; the portal lymphatic glands swollen; Peyers patches very plain, mesentery lymph-glands swollen; malpighian corpuscles of the spleen are also distinct.

Lungs adherent to thoracic walls and slight interstitial pneumonia, but alveoli containing air. On the surface of the kidneys numerous nodes the size of a mustard seed, which were caseous, yellow and half fluid in consistence; nephritic lymphatic glands hypertrophied; cardiac muscle pale and cloudy, the interspersed adipose tissue of the organ of a dirty red white color containing small quantities of water.

From the above enumeration it will be seen that the calf had suffered *intra-vitam*, with a septicopyæmia due to a phlebitis of the umbilical vein. The meat was condemned and confiscated by the inspector of the abattoir. To test the virulence of the flesh, the same was cooked and fed to a vigorous dog of large species—Ulmer breed—about two years old; also to two hunting puppies each eight months of age. All three became sick shortly after with symptoms of a gastroenteritis; vomiting very violently, and showing a diarrhœa composed of dark brown feces. The dogs refused all feed for several days, finally recovering their normal condition in about one week. The recorded accounts of the effect of septic meat are very divergent.—*Zeitsch. f. Fl. u. Milch. Hyg.*

DERMATOL.

Next to iodoform Grasshaindel considers dermatol, made by Lucius and Brunning, of Hochst, to have attained the highest point of efficacy. Continued trials in the clinics of Dr. Baier in Vienna have given the following results:

When the injury was fresh, dermatol was applied pure—without the least incorporation or admixture of any sub-

stance. The same proved itself to be desiccating, unirritating, and highly favorable to the restoration of the wounded surface. Upon all wounds proposed to be healed by first intention, the powder has been used with excellent results. In older wounds and chronic ulcers where the amount of the suppurative product is unusual, a simple application is not sufficient. In such cases the preparation must be applied with friction, which induces local heat and pain of the cutis. The greatest failing of dermatol is in the direction of its deodorizing ability, which is null. It is contra-indicated in all suppurative processes of the feet, since through its quality of forming a film by dehydrating the unguis surface, thus retaining the pus beneath an artificial crust. Any necrosed portions are longer held *in situ* when dermatol is used, which necessitates frequent removal of the bandage and dressing. When large quantities of powder are held in contact with the horn matrix for several days, the latter exhibits a characteristic growth similar to cork.

In burns, scalds and erysepelas of the skin, dermatol is mixed with starch meal 1-5, and acts very satisfactory. The dusting powder of commercial fame is a combination of dermatol and chalk. In chronic conjunctivitis and in otitis externa, it supplies the most approved desiccant. Finally, it is preferable to iodoform on account of its odorless quality.—*Oesterreiches Thier. Centralblatt.*

SHORT COMMUNICATIONS.

Phthisis verminalis.—Kudelka observed this affection as an epizootic in October, 1892. In nineteen different localities in his district he records six cows and twenty calves to have been attacked by the disease; the young seemed the more seriously to suffer. A few animals were thin and more or less cachectic, the remainder were, however, in good condition.

The body temperature had risen in many instances; dyspnoea and accelerating of respiration were also present—some as high as eighty per minute. By percussion the thoracic walls were resonant, but in the worst cases hyper-resonant; in no case dullness. Auscultation elicited a well marked

vesicular murmur, with dry and moist rales. Cough in all patients deep, loose, painful, and accompanied by discharge; all of these animals had been pastured upon the inundated tract of the Tapa River. The lungs of a calf which had died of the disease were in places emphysematous and reddened, with depressions and collapsed portions brown in color. *Filaria* forty to sixty millimeters in length were found, mostly in the collapsed portions.—*Æstterreich Centralblatt*.

Trepanation in Cœnurus Cerebralis.—In a heifer which had for some time exhibited symptoms of cerebral disarrangement, it was decided to relieve the same by trephining the skull. By percussion over the lower portion of the left half of the forehead a dullness was found to be present. In this region two openings were made and the cyst exposed—from which nearly seven ounces of liquid were collected. The tedious task of extirpating this membrane was performed successfully without injuring the encephalon; the patient afterward ceased to manifest any of the signs due to pressure upon the brain.

The after treatment consisted of iodoform dressing and suture of the skin flaps. A most important aid in this operation is the fact that the cyst lies upon that side of the brain toward which the animal turns.—*Mitth. v. Kunz Schweiz. Archiv*.

The following is the composition of a liquid which evaporates rapidly, leaving behind a thin film possessing highly disinfecting properties. As in collodion, other medicaments may be incorporated in it. Dissolve twenty parts of camphor in the same quantity of alcohol; in this dissolve one part pyroxylin—pyroxylin is cotton treated with concentrated nitric acid.

Boschetti gives an account in the *Moderno Zoojatro* of the successful treatment of a very much debilitated and exhausted calf by the diurnal injection of testicle liquid. The dose was gradually increased from four to thirty cubic centimeters.

VETERINARY LEGISLATION.

AN ACT ENTITLED AN ACT TO REGULATE THE PRACTICE OF VETERINARY MEDICINE AND SURGERY IN THE STATE OF CALIFORNIA.

The People of the State of California, represented in Senate and Assembly, do enact as follows :

SECTION 1. It shall be unlawful for any person or persons to practice veterinary medicine and surgery in any city, city and county, or town in this State, having a population of two (2) thousand or more, without having previously obtained a diploma from a college duly authorized to grant such to students in veterinary medicine and surgery, or to those who have passed satisfactory examinations before the State Veterinary Medical Board, as hereinafter provided for.

SEC. 2. No 1.—This Board of Examiners shall be known as the State Veterinary Medical Board, and shall consist of five duly qualified practitioners in veterinary medicine and surgery, whose duty it shall be to carry out the purposes and enforce the provisions of this Act.

2.—The members of the State Veterinary Medical Board shall be appointed by the Governor of the State.

3.—The Board so appointed shall hold their offices for four (4) years, and the compensation of each member of said State Veterinary Medical Board shall be five dollars per diem, exclusive of all necessary expenses, while actually engaged in the duty of their office at the meetings of said Board.

4.—A meeting of the State Veterinary Medical Board shall be held at least once in every six months after the appointment of said Board by the Governor of the State of California, such meetings to be held alternately in San Francisco and Los Angeles.

5.—Three members of the State Veterinary Medical Board shall constitute a quorum.

6.—Said compensation to be paid out of the fees and penalties received under the provisions of this Act, and no part

of the salary or other expenses of the State Veterinary Medical Board shall be paid out of the State Treasury.

7.—All moneys received by said State Veterinary Medical Board as fees and penalties, in excess of the compensation and expense of the State Veterinary Medical Board, shall be annually paid into the State Treasury, and become a part of the General Fund of the State.

SEC. 3. 1.—Said State Veterinary Medical Board shall examine all diplomas as to their genuineness. Each applicant not holding a diploma shall submit to a theoretical and practical examination before the State Veterinary Medical Board; said examination to be written or oral, or both, and sufficiently strict to satisfy said Board that the applicant is competent to practice veterinary medicine and surgery.

2.—An examination fee of five dollars shall be paid to the State Veterinary Medical Board by the holder of a diploma, and ten dollars by an applicant not holding a diploma; said money shall be paid by the applicant before examination.

3.—In case of failure of approval, said fee shall be forfeited to the State Veterinary Medical Board.

SEC. 4. All examinations of persons not graduates shall be made directly by the State Veterinary Medical Board, and the certificates given by said Board shall authorize the possessor to practice veterinary medicine and surgery in the State of California. All examinations of ungraduated practitioners must take place before the thirty-first day of December, eighteen hundred and ninety-three. After that date no certificate shall be granted except to persons presenting diplomas from legally chartered colleges.

SEC. 5. Upon the approval of credentials, or upon the examination of an applicant, said Veterinary Medical Board shall grant him or her a license to practice in this State, and shall receive therefor a fee of five dollars; said license shall be signed by a majority of the Board.

SEC. 6. Any person qualified, as required by this Act, shall, upon receipt of his license to practice, have said license prominently displayed in his office, and a true copy thereof shall be filed in the office of the clerk of the county in which

he resides. Any person removing to another county to practice shall file the license in like manner in the county to which he removes. The holder shall pay to the County Clerk the usual fees for filing. Any person holding such license who shall refuse and neglect to prominently display in his office, or file a copy of the same with the County Clerk, as above directed, within six months after receiving such license, shall forfeit his license; and no license when once forfeited shall be restored to the original holder except on payment to said State Veterinary Medical Board the sum of twenty-five dollars as a penalty for such failure, neglect, or refusal.

SEC. 7 Any person shall be regarded as practicing veterinary medicine and surgery, within the meaning of this Act, who shall have received a license as mentioned in section five. But nothing in this Act shall be construed to prohibit members of the medical profession for prescribing for domestic animals in case of emergency, and collecting a fee therefor; nor to prohibit gratuitous services in an emergency, nor prevent any person from practicing veterinary medicine or surgery on any animal belonging to himself or herself. And this Act shall not apply to commissioned veterinary surgeons in the United States Army.

SEC. 8. Any person practicing veterinary medicine or surgery in this State contrary to the provisions of this Act shall be guilty of a misdemeanor, the penalty of which shall be a fine of not less than one hundred dollars (\$100) nor more than five hundred dollars (\$500), or by imprisonment of not exceeding six (6) months, or both.

SEC. 9. This Act shall take effect sixty days from on and after its passage.

SOCIETY MEETINGS.

NEW YORK STATE VETERINARY MEDICAL ASSOCIATION.

The fourth semi-annual meeting of this association was held in Buffalo, on the 11th and 12th of October. On the first day the meeting was called to order at 10.15 A.M., Vice-

President, John Wende in the chair, who welcomed the delegates with the following address :

Gentlemen: For the second time I have the honor of assisting in opening the proceedings of this Society, added to which I have the pleasure of welcoming you to our city.

I trust that this session will prove as beneficial, instructive and pleasant as those which have preceded it. The increased attendance shows the growth of the interest and importance of our organization, and it is a source of no small degree of pride to each of us to see this evidence of our professional advancement and importance in the community.

It is within the recollection of many of us when it would have been beyond our anticipation to look forward to the present era of veterinary education, practice, ethics, and organization, and our rapid development should act as a stimulus to promote its welfare in every way. Our craft was formerly self-educated, if educated at all; our therapeutics much like those of the Chinese of to-day. Colic was treated with chicken's guts, or the abdomen was kneaded with a No. 10 boot, or rubbed with a fence rail.

Ethics were unknown, and probably few could have spelt the word, while organization was never considered. The importance of our profession to the community is now established in many directions. Notably, the inspection of cattle, meat, food, and the recognition and stamping out of contagious diseases are only a few of the many important duties which now devolve upon us. There is probably no professional field which presents more opportunities for original work than ours to-day, and particularly in pathology and surgery. The application of the principles of antiseptic surgery as applied to human beings may be modified to suit our practice. The time also seems opportune when some effort should be made toward the education and licensing of horse-shoers. The man who can improve the present system of shoeing horses so that it will be more durable and less destructive to the feet, particularly in large cities with the new asphalt pavements, will probably have not only fame but fortune as his reward. And instances might be multiplied like this.

We are glad to see you in Buffalo, which is a fitting place for a meeting of veterinarians, for we are in the very center of some of the most celebrated stock-farms on earth. In closing I wish you all a joyful and interesting time during the Convention.

After much applause this was followed by the reading and approval of the minutes of the last meeting, and the applications for membership which had been duly acted upon by the Board of Censors, and voted upon, followed.

Under the head of unfinished business, the question of the propriety of changing the regular place of meeting from Syracuse, hitherto the usual place, to some other city in the State, was considered, and also the propriety of having only an annual meeting, which proposition was adopted by a unan-

ymous vote, after much discussion, in which several of the members present, with Dr. Hoskins, Secretary of the U. S. V. M. A. took part; and hereafter, the meetings in August or September will be subject to the call of the Comitia Minora.

A lengthy discussion on carrying out the programme previously laid out consumed the morning, and a recess was ordered until 4.50 in the afternoon. Dr. Norris then asked for a reconsideration of the recommendation of some of the candidates presented in the morning, who were graduates of the Ohio Veterinary College or the New York College of Veterinary Surgeons, on several charges against those institutions, and principally that of the New York School. After much discussion, the subject was referred to the Board of Censors for investigation and further action.

On motion of Dr. Chase a committee was appointed to draft suitable resolutions relating to the death of Dr. W. M. Kirk, of Niagara Falls, and E. J. Williams, R. H. McMullen and J. M. Chase were named as the committee. The following was reported:

Whereas, Almighty God has seen fit to take from us by death Wm. M. Kirk, V.S., of Niagara Falls. And whereas, he has, as a member of our profession and society, ever proven himself an estimable gentleman and an earnest and conscientious worker for the elevation and honor of our profession.

Resolved, That the members of the New York State Veterinary Medical Society recognize in his death a keen sense of loss to our profession and to this Society. His death touches us still more deeply as of a personal friend, whose loss we shall ever deplore and whose example in life we shall strive to emulate.

Resolved, That copies of these resolutions be placed upon the records of this Society, and forwarded to the widow of the deceased.

C. J. WILLGANZ, V.S.

R. H. McMULLEN, V.S.

J. M. CHASE, V.S.

Committee.

Dr. Morris made a report of his sad experience in relation to the bill presented to the Legislature referring to the regulation of veterinary medicine in the State.

The Committee on Constitution and By-Laws presented its report, with a copy of the proposed new By-Laws. These were the subject of a very long discussion, which extended

to the latter part of the day, and was renewed on the following morning, the second day of the meeting, and after some slight alterations, the report was unanimously adopted.

In the afternoon the paper of Dr. Norris on Osteo Porosis* was read, and listened to with great attention. It was illustrated by the exhibition of a number of interesting specimens, and elicited a most pleasant and instructive discussion by Drs. Wende, Sutherly and Hinkley, and some remarks from Dr. W. H. Hoskins, who, however, unfortunately made reference to the famous case of the trotting horse Prospero, in which the disease had been diagnosed *from the start* as one of osteo sarcoma, and not osteo porosis.

After a number of miscellaneous resolutions and a vote of thanks appropriate to the occasion the meeting adjourned.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Pennsylvania State Veterinary Medical Association assembled in Scranton, September 5th, 1893, in the parlors of the Young Men's Christian Association. President Hoskins called the meeting to order at ten o'clock A. M.

The following members were present at roll-call: Benner, Du Bois, Gladfelter, J. R. Hart, Helmer, Hoskins, Kooker, Houldsworth, Meller, Pearson, Thos. B. Rayner, Jas. B. Rayner, Ridge, Stanton, and Timberman.

As delegates from the New Jersey Veterinary Medical Association, Drs. Dustan and Lockwood.

Letters and telegrams were read from Mayor Wm. B. Connell, Secretary Edge, of the Board of Agriculture, Drs. Zuill, Harger, and Robt. Ward.

Minutes of previous meeting were read and adopted.

The President then read his address,† starting out by calling attention to the wonderful growth of the city of Scranton, largely from one industry alone; he then referred to the importance of the First Veterinary Congress of

* To be published in our next issue.

† Printed in this issue of the REVIEW.

America and of the wonderful growth of veterinary societies. In severe language he referred to the introduction of the infamous spoils system into the Bureau of Animal Industry and laid the responsibility at the doors of the veterinarians, and hoped that they would apply the remedy in their own hands before this Bureau would be endangered in its existence as it had been lessened in its value as a scientific body. He further urged the members to use their good influence in guiding young men to the best veterinary schools, as the recent rapid multiplication of veterinary colleges was no proof of their need or surety as to their ability and equipment to discharge such grave responsibilities.

The Secretary read the following list of applicants for membership: D. B. Fitzpatrick, V.M.D.; W. D. Rhodes, V.M.D.; H. B. Felton, V.M.D.; J. B. Seitler, V.M.D.; S. J. Neckelson, M.D., V.M.D.; W. T. Miller, D.V.S.; W. J. Tomlinson, D.V.S.; R. J. Fox, V.S.; A. O. Cawley, D.V.S.

The following veterinarians made application at the meeting: H. R. Church, V.S.; H. D. Marsack, V.S.

A recess was then taken that the Board of Trustees might convene to examine applicants.

There being three absentees of the Board the President appointed Drs. Helmer, Timberman and Thos. B. Rayner to fill the vacancies.

The Board of Trustees favorably recommended H. R. Church, D. B. Fitzpatrick, W. D. Rhodes, J. B. Seitler, S. J. Neckelson, W. T. Miller, H. L. Marsack, and laid over for further consideration Drs. Cawley, Fox and Tomlinson, and that they be requested to be present at the March meeting of the Board in Philadelphia.

The recommendations of Board of Trustees were approved and the new applicants elected by Secretary casting ballot under a suspension of the rules.

Corresponding Secretary's report gave a brief record of the work of the past six months, noting among other matters the action of Messrs. Housmann & Dunn, instrument makers, of Chicago, in publishing Dr. S. J. J. Harger's article read before this Association on Laryngotomy—

without crediting the author with the same or this Association, to whom the said article was extended. That our membership had increased forty under the present officers, making the total to date one hundred and twelve, and further asked that each member try and bring one new one at the March meeting.

The Legislative Committee made a brief report, and some discussion followed as to the wisdom of amending the act.

Delegates to our meeting were asked to address the members, and Dr. Dustan, of the New Jersey Veterinary Medical Association, responded, regretting that there was not more active, more harmonious work and a stronger fraternal feeling among the profession generally.

The Secretary's report was then received and a vote of thanks accorded him.

Under the head of intelligence and education, reference was made to the Washington City Veterinary School, which was continuing its short term of instruction, and was reported as having determined to run it as a money-making institution and not in behalf of high veterinary education.

On motion, the Chair appointed a committee to draft suitable resolutions relative to the school at Washington, and also in regard to the action of Housmann & Dunn. This committee consisted of Drs. Leonard, Pearson, Jacob Helmer and W. B. E. Miller. They subsequently reported the following resolutions:

Whereas, The almost unanimous sentiment of the veterinary profession demands the professional schools to require of their students at least three years' attendance upon instruction and to constantly increase their equipments as science advances; and

Whereas, This Association hears with regret that the National Veterinary College in Washington is to be continued as a two year, short term school, with a poor and imperfect equipment; be it

Resolved, That this Association renews its condemnation of this school, which we think tends to lower and degrade the standard of veterinary science.

Whereas, The firm of Housmann, McComb, & Dunn, has printed without authority the article on Roaring, prepared by Dr. S. J. J. Harger for this Association, and has used the said article as an advertisement for instruments manufactured by them and without giving credit to the author, or the Association for which it was prepared; be it

Resolved, That the attention of the veterinary profession be called to this disreputable act by the publication of this preamble and resolution in the veterinary journals.

Through the Corresponding Secretary, Dr. Thos. B. Rodgers offered a paper on "Castration."* The Association by vote accepted the same for reading and subsequently accorded the author a vote of thanks.

Treasurer made a verbal report and suggested the purchase of a special book to keep accounts of members in; he was authorized to procure the same. At 1 P. M. meeting adjourned for lunch.

On reconvening at 2 P. M. Dr. Helmer read his valuable paper on "Inflammation of the Internal Structures of the Eye."

This was followed by paper from the pen of Dr. Leonard Pearson on "Anthrax," having an added interest through his recent investigation of several serious outbreaks in this State and Delaware.

J. H. Timberman, on "Punctured Wounds of the Foot,"† recorded some remarkably successful results, when the bursæ were involved, by the use of chloride of zinc in mild solution and careful dressing to close the wound from external influences. Dr. Miller kindly read the paper on "Castration," contributed by Dr. Rodgers. The author severely criticized the operation standing, and laid many scirrhus cords at its door. He referred to the false claims about cryptorchids, citing many instances where they could not be truly termed a ridgling, and it was no trouble to operate.

This was followed by Dr. Ridge on "Dystocia," † and the employment of force in these cases. He recorded a number of experiences where extraordinary means had been used to the great suffering of the animal, and always the loss of the young where they offered such presentations as made birth impossible, and only the return of the fœtus and its position changed to a normal one brought an easy birth and great re-

* Printed in this issue.

† To be published in our next number.

lief to the parent. His paper was full of valuable practicable suggestions.

The discussions of these papers, eliciting many interesting points, was taken part in by Drs. Miller, Pearson, Kooker, Helmer, Timberman, Thos. B. Rayner, Dustan and others.

A resolution was then passed that the reports, papers, etc., be given to the AMERICAN VETERINARY REVIEW, and that arrangements be made therewith for the printing of three hundred and fifty copies of the same.

A vote of thanks was extended the Wyoming Valley Veterinary Medical Association for their kindness in caring for the members and arranging for the meeting.

A similar vote of thanks was extended to those who had made reports and offered papers.

The meeting adjourned at 6:00 P.M. At 8:30 P.M., through the courtesy of the Wyoming Valley Veterinary Medical Association, a trip was made into one of the coal mines, which was a pleasant experience to all who availed themselves of the opportunity.

The following morning at 8:30 A. M., the members were treated to a trip to Far View, ascending the mountain from Carbondale by a series of fourteen plains. It proved a delightful day, a rich view of beautiful scenery, and many pleasant experiences long to be remembered.

<p>W. HORACE HOSKINS, <i>President.</i></p>	<p>ROBT. GLADFELTER, <i>Rec. Sec'y.</i></p>
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AMERICAN VETERINARY REVIEW,

JANUARY, 1894.

EDITORIAL.

VETERINARY SOCIETIES.—We have on many occasions called the attention of our brethren in the profession to the importance and value of the principle of organization, and to the benefits which would necessarily result from well directed associated effort by the members of the veterinary profession. These may be easily assured to every individual practitioner who desires the formation of such associations in his district, and especially if he shall prove to be not only a nominal member, but an active worker of the organization.

The success which has attended the operations of such organizations as the Pennsylvania, the New York, the Illinois, and other State associations, conclusively shows that our expectations were not extravagant, and a mere glance at the strength of the United States Veterinary Medical Association, and the important position which it is called to fill, with the work which it has already accomplished in the veterinary field, ought to stimulate the members of the profession at large to the accomplishment of more work, and still greater results, by operating in the same direction.

It cannot be that our colleagues are blind to these facts. Evidently not, for it is but recently that our fellow practitioners of German origin and graduation have not only organized a German association, but have even decided to publish a monthly review in their own language. And the few regular members who are practicing in Virginia have organ-

ized themselves into a State association. And now, one of the oldest practitioners of metropolitan New York asks for such a local organization as the great city is undoubtedly entitled to, if not for other reasons, at least in consideration of the large number of veterinarians practicing within its boundaries.

Dr. L. McLean writes us as follows :

BROOKLYN, N. Y., November 22d, 1893.

Dr. A. Liautard, Editor of the American Veterinary Review :

DEAR SIR.—It seems a lamentable condition of affairs that in such large cities as New York and Brooklyn there is no form of organization among veterinarians. When we consider the benefits derived by the members from societies in other cities, as well as from State and national societies, we certainly must conclude that the veterinarians in and about New York and Brooklyn are decided losers in having no organization for their protection and the advancement of the science.

I would suggest that a society be formed of the New York and Brooklyn veterinarians; by this means we can protect ourselves from infringements upon our legal rights as a profession, and in no other way can we acquire the strength and recognition that would be derived from such union. I trust that this letter will arouse some one to take the necessary steps to form such an organization.

Yours truly,

L. McLEAN, M.R.C.V.S.

Yes, Dr. McLean, you are right. There should be a society composed of the veterinarians of the cities of New York and Brooklyn, and we are gratified that the suggestion and the recommendation have come from you. A New York State Veterinary Medical Society was started in 1875, but died in a few years under circumstances which it is unnecessary to recall, though still its existence has not been wholly without result, and it has been resuscitated, as it were, by others, though under a similar name. But this need not prevent the formation of an organization in this city and Brooklyn; let us have it.

The New York State Veterinary Medical Society, as we have said, is the representative of the profession in the State, and has already done good work. It was well represented at the Chicago meeting. It is with pleasure, therefore, that we publish the invitation which Secretary N. P. Hinkley requests us do, though at so late a date :

NOTICE TO THE VETERINARIANS OF THE STATE OF NEW YORK.

The New York State Veterinary Medical Society will hold its fourth annual meeting in the assembly room of the Vanderbilt House, Syracuse, N. Y., on Tuesday and Wednesday, January 9th and 10th, 1894, commencing at 11 A.M. January 9th.

This meeting will be the last one to be held in the month of January, as according to the revised by-laws adopted by the Society at the last meeting, held in Buffalo, October 11th-12th, 1893, the Society will hereafter hold its meetings during the month of September of each year, the place of holding said meeting to be decided by a vote of a majority of the members present at the close of the annual meeting.

The January meeting will be an interesting one to all veterinarians. There will be several papers read and discussed, and the business portion of the meeting, consisting of the election of officers, reports of secretaries, treasurer and committees, and auditing of accounts will be made as short as possible, for the purpose of giving more time to the reading and discussing of the papers. The names of the authors of the papers with their subjects will be announced in the December number of the REVIEW. Veterinarians desiring to apply for membership should address the secretary at once. Printed notices will be mailed to all veterinarians.

Respectfully,

N. P. HINKLEY, D.V.S , *Secretary.*

395 Ellicott St., Buffalo, N. Y.

ECHOES OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—One of the best papers read at the First Veterinary Congress of America will be found in the present number of the REVIEW. Minute in its details, though not unnecessarily so, correct in its anatomical descriptions, precise in its description of the symptoms, and generous on the question of indication for treatment, Dr. Reynolds' paper is entitled to a degree of consideration quite beyond what it has obtained.

Of course it was listened to—at least we believe so—and could hardly have been read without eliciting a long and serious discussion. But is this all it deserved? We know not how this is, but we do consider the paper to be entitled to a better appreciation than it has met with.

Why should it not have been presented in competition for the prize offered by the Association? And further, on this point, what about the report of the Committee on Prizes? Was there any made, or was the worthy chairman of that important committee equally disabled as to this, as he was in

respect to other work on other committees? The prizes were certainly worth competing for, and they were sufficiently brought to the consideration of our friends, and it is at least a remarkable fact that not one application should have been made for any of them.

We have no doubt that the offer of prizes made by the Association still stands good, and we certainly desire it; would be pleased to be allowed to contribute toward such prizes as were offered previous to the Chicago meeting.

Among the reports offered at the Congress was the following, presented by the Committee on Finance:

Gentlemen :—Your Committee on Finance would respectfully report that they have examined the accounts of the Secretary and Treasurer, and find the same correct.

We would further submit that the books, papers, vouchers, etc., of the Secretary have been kept in such manner, and the work of his office has been performed in such able and efficient manner that they are worthy of especial notice, and said officer is deserving of the thanks of this Association for the able and careful attention he has always given to the duties of his office. To him more than to any one member of this Association are we at this time indebted for the wonderful success that has attended our efforts to advance the interest in this Association, and to place it in the position which it to-day occupies in the history of veterinary science in this country.

Respectfully submitted,

C. C. LYFORD,
W. M. DOUGHERTY, } *Committee.*
W. B. E. MILLER, }

It is unnecessary to say that this recommendation was unanimously voted, and we are pleased to see that the Secretary was rewarded for his efforts by being called to another office far more important, and involving a very different kind of attention and care in the fulfilment of its duties, in being promoted from the secretaryship to the presidency, a post of more honor, but also of more serious labor and greater responsibility, with less thanks or other returns. And yet he will doubtless administer his new office quite as ably and satisfactorily as he has done that which he has vacated.

The publication of the papers now in our hands as read at the meeting will be completed in our next issue, together with our last installment of the "echoes."

ORIGINAL ARTICLES.

FISTULA.

BY PROF. M. H. REYNOLDS, M.D.V.M., University of Minnesota.

Read before the United States Veterinary Medical Association, and International Veterinary Congress, Chicago, Oct. 18th, 1893.

There are few questions in the whole field of veterinary science of which the young practitioner feels that he knows more—and the older wishes he did know more—than those of fistula. Aside from castrations, there is probably no one class of patients with which rural practitioners deal more commonly, and none are more disagreeable or more unsatisfactory. We discuss them at every meeting of our State Association, so do our sister associations, and yet we use about the same old treatment as did our predecessors half a century ago. They are just as dirty and just as disagreeable, just as slow and just as liable to recur.

A thorough discussion of the anatomy concerned in the question of fistula of the cervical and anterior dorsal regions calls for a study of thirty-two pairs of muscles, nineteen pairs of nerves, one ligament and twenty pairs of arteries and their associated veins; but only the more important can be discussed in a paper of this length.

The muscles are counted as follows: *Paniculus carnosus*, one; all the superior cervical, numbering seventeen; all of the inferior cervical, numbering eleven; *supra* and *infra spinatus* of the external scapular, and one internal scapular, the *subscapularis*; four from the dorsal region, *trapezius*, small anterior *serratus*, *ilio-spinalis* and common intercostal. In the costal region, we will count about four of the external intercostals. In ordinary practice, however, we rarely find but seventeen pairs of muscles in the entire body associated with this pathological condition.

For brevity's sake, the blood and nerve supply is given with the myology. An operator who cares to become an expert in the treatment of these cases must know where

those muscles are, their origin, insertion, direction of fibres and their function. He must have definite ideas of the location, course and distribution of the larger blood vessels and nerves if he would make very deep incisions and punctures, as he sometimes must do. It is very unpleasant to cut the dorsal, superior cervical or even larger branches of the vertebral, under several inches of muscular tissue.

The *panculus* is a broad sheet of muscular and aponeurotic tissue, somewhat triangular in shape, just under the skin and applied to the sides of thorax and abdomen. The subcutaneous thoracic, a branch from the brachial plexus, with superficial branches of the cervico- and dorso-spinal nerves, furnish nerve force. Its blood comes through the dorsal, vertebral, external thoracic and superior scapular, with all the dorsæ-spinal intercostals.

The cervical ligament, through its surgical importance demands more than passing notice. All the superior cervical muscles are arranged in layers beneath the funicular and on either side of the lamellar portion. The peculiar anatomical features of this great ligament and its association with related muscles, explain, in part, the prevalence and persistence of *fistulæ* in the cervical region. It is easily divided for study into two portions, the funicular and lamellar. The former is simply a wide band of yellow elastic fibres with one end inserted in the spinous process of the first dorsal vertebræ with the dorso-lumbar ligament; the other at the cervical tuberosity of the occipital bone. Its function is to support the head. The lamellar consists of two equal plates of similar tissue closely applied, placed vertically in the median line and filling the triangular space between the funicular portion and the cervical vertebræ. It is attached below to the spinous processes of last six cervical, to second and third dorsal vertebræ, and above to the funicular. They are in relation externally to one branch of the ilio-spinal ligament, the transverse-spinous muscle of the neck and great complexus. The superior cervical muscles, seventeen in number on each side, are arranged in four fairly well defined layers.

The *trapezius* is a thin, triangular muscle, covering the

withers and cervical base, attached above to the funicular ligament and transverse processes of the anterior dorsal vertebræ, and below by its apical aponeurosis to the acromion, spine and scapular aponeurosis. This muscle is covered by two aponeurotic plates, whose fibres run in opposite directions, and it, in turn, covers portions of the rhomboideus, splenius, angularis, supra and infra spinatus. Its blood comes mainly from the dorsal artery, and its nerve force from the spinal accessory. Fibres of the cervical portion run downward and backward.

The rhomboideus has the form of a long triangle-apex forward. It is covered by the cervical trapezius, scapular cartilage, and aponeurosis of the great dorsal. It covers the postero-superior, excavated portion of the splenius, whose fibres it crosses at an acute angle, in running backward and slightly downward. Its origin is on the posterior two-thirds of the cervical ligament and by fasciculi to the superior spinous processes of the second, third, fourth and fifth dorsal vertebræ. Its insertion is by the lower extremity to superior and internal surface of scapular cartilage. Its blood supply is from the dorsal and superior cervical; nerve supply is sixth cervical and muscular branch of the brachial plexus. The anterior fibres run nearly backward and the posterior downward.

Levator anguli scapulæ.—Short, powerful, triangular. Thick posterior and inferior borders, thin above, and placed just in front of scapula. Its origin is on the transverse processes of third, fourth, fifth, sixth and seventh cervical vertebræ by five fasciculi, whose fibres converge to a common tendon which inserts on the anterior triangular surface, internal face of scapula. Externally, in relation with cervical trapezius, mastoido-humeralis and the small pectoral, and internally with the splenius, ilio-spinalis and common intercostal. Its fibres all run downward and forward. Blood supply, dorsal and superior cervical; nerves, sixth cervical and muscular branch of the brachial plexus.

The *splenius* is one of the larger muscles of this region. Flattened, triangular, bounded above by the cervical cord,

below by the first four cervical vertebræ and inferior branch of the ilio-spinalis, attached by its postero-superior border to the cervical cord and spinous processes of the anterior dorsal vertebræ, by its anterior-inferior border, to mastoid crest and transverse processes of first five cervical vertebræ except the axis. Externally this muscle is in contact with rhomboideus, angularis, trapezius and mastoido-humeral. Internally, with both complexus muscles and the great and small oblique muscles of the head. Its fibres run parallel with the cervical cord. Its nutrition comes through the dorsal, superior cervical and vertebral arteries. Interesting features of this blood supply are the several anastomoses which the vertebral makes in this region, with the retrograde branch of the occipital muscular, and the middle spinal arteries. The anastomoses are essentially responsible for the persistent hemorrhages which we sometimes get when making incisions in the poll-evil region. The splenius receives nerve supply through both the superficial and deep cervical plexi.

Great complexus, a very large, strong muscle, placed between the splenius and lamellar portion of the cervical ligament. It consists of two fairly distinct portions, which lie side by side, and together form an elongated triangle. It covers the cervical ligament, the superior portion of the ilio-spinalis, the transverse spinous of the neck, the oblique and post straight muscles of the head, and it in turn is covered by the splenius and small complexus. The anterior portion has, for origin, the transverse processes of first and second dorsal and the articular tubercles of the cervical vertebræ. The posterior portion has its origin on the spinous processes of first four dorsal vertebræ. Both portions insert on the occipital tuberosity and between them passes the trunk of the superior cervical artery. Fibres of the posterior and larger portion run forward and upward nearly parallel with the cervical cord. Those of the anterior portion have a direction more nearly upward and thus fuse with those of the posterior. Blood supply, dorsal, superior cervical and branches from the deep cervical plexus.

The *small complexus* is also composed of two distinct por-

tions, between which deep-seated collections of pus can burrow, and be almost out of surgical reach ; unlike many of the cervical muscles, it is not triangular but long, almost fusiform. The two portions of this muscle have their fixed insertion in common with the smaller portion of the great complexus, on the transverse processes of first two dorsal and articular tubercles of the cervical vertebræ. One portion has its fixed insertion on mastoid process of the temporal bone ; the others on the transverse process of the atlas. The small complexus is overlaid by the splenius and is related internally to the great complexus and the two oblique muscles. The fibres are parallel with the cervical cord. Its nourishment comes through the same arteries and it receives nerve force from the same cervical nerves as its larger fellow.

That portion of the superior cervical region, which is bounded above by the external occipital protuberance, below, by the superior spinous process of the axis, in front, by the inferior tubercle of the atlas and inferior spinous process of the axis, and behind by the cervical cord, is frequently interesting and profitable, but sometimes a very troublesome region to the veterinarian. Its anatomy calls for close study and frequent reviews if we would treat poll evil with the best success. Many stiff necks and enlarged polls are standing criticisms on somebody's poor surgery.

The *great oblique* muscle of the head is the short, strong muscle which rotates the head around the odontoid process of the axis. It is covered by the splenius and both complexus muscles. Its inward relation is with the atlas, axis and atloaxoid articulation. The fixed insertion is on one side of the superior spinous process of the axis. Its movable insertion is on the transverse process of the atlas. Blood supply is through the prevertebral, mastoid and retrograde branches of the occipital artery and small muscular branches of the vertebral. The second cervical nerve furnishes its main communication with the great nerve centers. Its fibres run obliquely forward and outward.

Small oblique is a little, square muscle, aponeurotic in structure, lying over the occipito-styloid and digastricus

muscles. It is in relation outwardly with tendinous and aponeurotic portions of the small complexus, the splenius and mastoido-humeralis muscles. Its fibres run forward and upward. They originate on the transverse process of the atlas and terminate at the mastoid crest and on styloid process and external surface of the occipital bone. Its office is to produce a slight lateral flexion of the head on the atlas. This muscle has the same source of blood supply as the great oblique; but its nerve is the first cervical instead of second.

The small posterior straight is a little, triangular, flattened muscle which lies just over the occipito-atloid articulation. Its under surface covers the fibrous capsulo of this articulation. The outer surface related to the great posterior straight muscle, which is prismatic, and consists of two portions. It rests below on the preceding and relates to the great complexus and oblique muscles. Both straight muscles have their insertion on the occipital bone, behind the superior insertion of the great complexus. The larger has its origin on the superior spinous process of the axis and the smaller on the superior face of the atlas. Their fibres run forward and upward. Blood is supplied through the occipital and vertebral arteries. Nerves, first cervical and branch from deep cervical plexus. The duty of these muscles is to extend the head

The great and small anterior straight muscles, and the *lateral straight* muscle will be omitted to spare your patience; and the mastoido-humeralis briefly discussed, in conclusion, because of its functional importance and frequent involvement in poll evil cases. This muscle is composed of two portions, distinct in origin, but having a common insertion. The anterior, and most superficial portion, has its origin on the mastoid crest and process of the temporal bone. The posterior takes its origin from the transverse processes of first four cervical vertebræ and unites with the anterior in forming a cap over the scapulo-humeral articulation. The common tendon, or rather aponeurosis, inserts on the anterior border of the humeral furrow of torsion, just beneath the deltoid imprint. This muscle runs obliquely across the cervical

muscles downward and backward. The arterial supply, in the anterior cervical region, is through the occipital, and its main nerve is the spinal accessory. It is covered by the subcutaneous muscles, parotid gland and cervico-auricularis muscles. It, in turn, covers portions of the splenius, small complexus, both oblique, omo-hyoid, digastric, the great posterior straight, angularis, scalenius, small pectoral, both spinatus muscles, long abductor of the arm and coraco-radial.

The arterial supply of the entire cervical region comes mainly through the dorsals, superior cervicals, vertebrales and occipitals, first being collateral branches of the axillary arteries and the occipitals, terminal branches of the common carotids. The *dorsal* is given off opposite the second intercostal space, the *superior cervical* opposite the head of second rib, and the *vertebral* leaves the parent trunk nearly under the upper portion of the first intercostal space and passes forward *under* the transverse process of the seventh cervical and thence into the vertebral foramen of sixth cervical vertebræ.

The occipital leaves the common carotid trunk on a line drawn from the auricular base to the posterior portion of the larynx. From this point it passes forward, upward, backward and forward again, like a letter S, and goes under the transverse process of atlas, back to the guttural pouch, beneath the small lateral straight muscle, thence through the anterior foramen of the atlas, where its terminal division occurs. The dorsal and its larger branches may be readily located as follows: draw one line to the highest point of the withers from the head of first rib. Draw a second from the same point directly upward to the cervical cord. Intersect this second line midway and draw a third line two-thirds of the distance toward the base of ear.

The *superior cervical* may be located, for surgical purposes, by drawing a line from the head of first rib to highest point of withers (which point also locates the superior spinous processes of the fourth and fifth dorsal vertebræ). Intersect this line midway and draw another toward the auricular base, to a point opposite the third cervical vertebræ. Both

the dorsal and superior cervical arteries have their origin near the median line and constantly approach the surface. The vertebral is easily located and remembered, because after passing beneath the transverse process of seventh cervical vertebræ (which has no vertebral foramen) it simply follows the vertebral foramina of the next five cervical transverse processes, and anastomoses with the retrograde branch of the occipital. Its only importance in this connection lies in its superior and external branches to the muscles we have been studying.

The lymphatic vessels call for some attention in this discussion, because of the special part they play in distributing certain pyogenic bacteria, notably the streptococci. In external portions of the body, they are arranged in two primary sets, superficial and deep. The superficial again being divided into two networks, one of very fine meshes in superficial layer of the dermis; the other includes larger vessels and is placed quite beneath the skin. The ultimate origin of these vessels is still a matter of dispute, but all agree in tracing them back to lymphatic capillaries or rootlets, described by Klein as situated in epithelial tissue—Von Recklinghausen says in serous membrane. Even those observers who agree on connective tissue, disagree on other points, for Virchow says in plasmatic cells, while Ranvier says those cells are not cells at all, but radiating, connected spaces. Regardless of this ultimate-origin question, it is that delicate plexus in the superficial derma that interests us now, and which will be made use of in discussing modes of bacterial entrance. The larger and deeper lymphatic vessels are also divided into two classes, a superficial, ramifying in the tissues of the deeper aponeuroses, and a deep, following the larger veins, and lodged in the vasculo-nervous intermuscular sheaths. Every vessel traverses one or more lymphatic glands before emptying into the thoracic duct or right lymphatic vein. Those of the head, neck and front legs are all directed toward the prepectoral, at the chest entrance. Most of the large vessels in the region also pass through a smaller collection of glands, which lie beneath the mastoido-humeralis

and extend to insertion of the sterno-maxillaris. These are described by anatomists under the name of prescapular glands.

ETIOLOGY.—The next question is that of cause, and, like Darwin's first drop of protoplasm, some points are not easily explained. In discussing this subject under the four topics, origin—bacterial, sources from whence these microbes are received, mode of entrance, and factors which determine the location of the pre-fistular abscess, I wish to make, incidentally, the following points: That suppuration rarely or never occurs without the presence of pyogenic microbes or their products; that the initial abscess is usually the result of a local auto-infection; that fistulæ may be indirectly transmissible, due to any one or to a combination of several pyogenic microbes, and therefore not specific; that one attack gives no immunity, but predisposes to others; that external injuries may serve to fix their location but are not to be regarded as primary causes.

ORIGIN—*Bacterial*.—In the early days of antisepsis, when healing without pus was first demonstrated possible, we received the old dictum—"No micro-organism—no pus." Since those days, this question has been argued back and forth by Ogston, Fehleisen, Zuckerman, Nathan, Watson Cheyne and De Bary, who uphold it, and Grawitz, Councilman, Uskoff, Rosenbach, Orthman and Janowski, who oppose it. Dr. Senn, in his surgical bacteriology, concludes that pus microbes are the essential causes of suppuration; while Fraenkel, in his text-book on bacteriology, concludes that the weight of evidence is on the other side. Some admit that suppuration may occasionally be produced by deep injections of germ-free irritants like silver nitrate, ammonia, turpentine or cadaverine; but I think the great majority of competent observers hold that the great and common cause is the presence and activity of pyogenic micro-organisms in susceptible tissues, and that certain of these organisms may be regarded as specific exciters of suppurative tissue changes.

Ogston, as early as 1881, patiently examined the contents of sixty-nine abscesses for micro-organisms and found

streptococci in seventeen, staphylococci in thirty-one; both in sixteen. He also noted that the former followed the lymphatic channels and produced diffuse and extensive suppurations, while the staphylococci produced and appeared more commonly in distinct abscesses. Rosenbach carried his work farther, with better facilities, classifying and naming pyogenic microbes and adding to the list. Zuckerman tabulated 495 abscesses, showing that 71 per cent. contained staphylococcus, 16 per cent. contained streptococcus, both were found in 5.5 per cent. and the other pyogenic microbes rarely. Tricomi, in 1888, reported an examination of eighty abscesses, five phlegmonous inflammations and five furuncles, and found in all, one or several of the recognized pyogenic microbes. A vast amount of statistics have been published which prove beyond question that under natural conditions certain micro-organisms are always associated with the origin of pus. And it is equally plain from every-day observation, that bruises or external irritants of any kind do not alone produce abscesses. True, Fehleisen, Grawitz, Scheuerlen and other investigators have produced a limited suppuration by injections of ptomaines; but this is no argument against a theory of bacterial origin.

Finally, fistulæ frequently appear in an endemic form. I have had five cases on the same pasture that developed rapidly and in close succession; in every case there was present decided elevation of temperature, loss of appetite, thirst and rapid loss of flesh. Twenty-one veterinarians of my acquaintance have written me in response to inquiry, that they have each seen three or more cases develop under similar conditions in rapid succession on the same farm.

INFECTION—*Sources*.—It is not difficult to enumerate sources from which infection may be received, but it is frequently impossible to prove a specific origin in an individual case. Pyogenic bacteria have a wide diffusion in nature, for they have been demonstrated in air, soil, water and a variety of foods. There is the old question of hereditary transmission with the still unsettled points: transmitted tissue susceptibility, or transmitted living germs, and the latter seems to be gaining

ground, with plenty of clinical evidence in its favor. Lebedeff reports a case where he found streptococci in various tissues of a child prematurely born of a mother who recently had erysipelas. Sangalli reported the finding of bacillus anthracis in the blood of a foetus whose mother had died of carbuncle. Ahlfeld and Marchand, together, reported two autopsies, which showed that a child had died four days after birth from anthrax, and the mother died eight hours after delivery from the same cause. Netter, Bollinger, Strauss, Koubassoff and Levy have presented similar cases of pathogenic germs acquired in utero. Johne, in 1890, published a calf case more interesting to Iowa veterinarians than our celebrated Jones county calf case, to Iowa lawyers. In this case an eight months' foetus was taken from the body of a tubercular cow. The foetal lungs and liver both contained tubercles and bacilli of tuberculosis. Levy reports a case wherein the pneumonia diplococcus of Frankel and Weichselbaum played a similar part. In view of all this evidence, we can hardly doubt the possibility of actual germ inheritance, and especially since Nepveu has shown, in two cases, that pyogenic organisms may remain dormant or encysted for years, awaiting favorable conditions for development, and then cause profound disturbance. Gussenbauer, Rinne and Senn have all reported similar cases, which clearly prove that apparent pathological conditions do not necessarily follow, immediately, the introduction of those microbes, and which prove, also, that the absence of such conditions does not demonstrate an absence of pyogenic organism. To sum up this discussion of source, we can easily say that these troublesome micro-organisms are derived from the soil, air, food and maternal circulation.

MODES OF ENTRANCE.—That the actual transmission of living micro-organisms from mother to foetus *in utero* is possible and probably frequent, has been fairly established by competent observers, whose notes and opinions have already been given.

Fraenkel, in explaining the sources of errors which may interfere with inoculation experiments, says:

“There are three ways in which micro-organisms usually penetrate into our bodies : First, from the surface of the skin, generally after it has been injured in some way. It does not, however, indeed always require such special door of entry (i. e., abrasion.) Second, the digestive canal into which the bacteria pass along with the food. Many, it is true, cannot pass through the stomach in their usual form, being destroyed by the action of its acid contents. Other kinds are less sensitive, and when spores are present, or when disease has altered the character of the digestive fluid and weakened its bacteria-killing power, there is no further obstacle to the passage of the parasites. Third, the respiratory organs can afford entrance to the bacteria.”

Zuckerman, in summing up his experiments on suppuration, says plainly that pus-microbes can enter the body through the skin, intestinal mucous membrane or by way of the respiratory organs ; but the most frequent entrance is through the skin. Longard, in discussing certain superficial abscesses, declares as his opinion that they are caused by pus microbes which gained access through the sweat glands, and gives as his reason for the latter proposition, that these certain microbes were found in abundance on the inner surface of the *membrana propria* of these glands, where they remained harmless till they penetrated to the underlying connective tissue ; anyway, may not this be correct ? This continuous lumen of the coiled tube, which constitutes a sweat gland, and the sudoriferous canal, which connects the gland with the body surface, is covered internally with a very thin, delicate membrane. This membrane is covered by two or three layers of polyhedral, epithelial cells, and over these lies the *membrana propria*. Now if those pyogenic microbes had reached the *membrana propria*, why may they not reach the underlying connective tissue of the corium, or even the subcutaneous tissues ? Each gland has an afferent arteriole from which is formed a delicate plexus of capillaries, surrounding the gland tube. Thus are furnished the necessary conditions for receiving and distributing these pyogenic organisms.

Kraske has made a special study of acute osteomyelitis, and reached a positive conclusion that infection may take place through abrasions of the skin, through the respiratory organs or intestinal mucous membrane, but most commonly through the abraded skin. In one case he traces an acute attack to infection from a furuncle of the lip. Garre, Braunschweig, Schimmelbush, Roth and others have all demonstrated that healthy skin is not impenetrable to living microorganisms. The experiments of Buchner show positively that the respiratory organs may furnish an entrance to a variety of microscopic germs. There can be no doubt that abrasions of either the respiratory or intestinal mucous membranes, or of the skin, greatly facilitate their entrance, but it is equally certain that their entrance is possible and common when no such conditions are offered.

LOCATING FACTORS.—After discussing the bacterial origin, sources from which infection may be drawn and mode of entrance, there remains the query, what determines the location of the pre-fistular abscess? It has long been a matter of dispute whether pathogenic microbes exist in healthy animal tissues. I think the view is gaining general support that such conditions are possible, but that these same microbes do not exhibit their pathogenic properties so long as they remain in circulating blood and every body tissue remains healthy. Then to furnish the requisite conditions under which these pyogenic microbes may exhibit their pathogenic functions, some susceptible tissue must become injured or diseased. The blood or lymphatic fluid must be checked in its flow at that point, thromboses be formed, and the microbes be permitted to locate and multiply. In other words, to locate pre-fistular abscess there must be furnished a *locus minoris resistentiæ*, which Senn defines as being an area of lessened resistance due to a tissue injury, which so changes the tissue that pathogenic microbes previously present in the circulation become arrested, and find favorable conditions for multiplication. Huber asserts that several infectious diseases, as tubercular ostitis and arthritis, osteomyelitis and pyæmia may follow trauma in the absence of any possible local external infection.

His experiments on rabbits with anthrax bacilli are well worthy of study. He produced an inflammation of one ear by applying croton oil, leaving the other untouched. He then injected a pure culture of bacillus anthracis, and compared results on the two ears. His conclusions are that "the bacillus of anthrax finds in a soil prepared by an inflammation, induced by croton oil, a locus minoris resistentiæ, which presents more favorable conditions for its growth than tissues in other parts of the body." His conclusions may be summarized as follows: "Localization of pre-existing micro-organisms in tissues prepared by injury or disease takes place, provided that the necessary conditions for their growth are present."

But recent tissue lesions are not the only factors which may serve to produce such an area of lessened tissue resistance. The presence of old pathological products, exposure, feeble performance of any organic function, and a variety of general and illy-defined factors seem to produce conditions favorable to local infection. The regions which fistulæ usually select are such as are liable to receive blows and bruises, given by angry attendants, received in passing under low sheds and through low doors, or while rolling. Again, the soft tissues of these parts are mainly connective, and connective tissue areas are very prone to chronic suppurative processes and slow healing. Such then are the factors which serve to locate suppurative processes.

NEED OF CONTINUED RESEARCH IN THIS FIELD.—There yet remain many questions regarding the history and work of pyogenic microbes for bacteriologists and chemists to answer. We all wish to know to what depth beyond the surface of a pyogenic membrane do these pus-producing germs reach. Why does pus "burrow?" Is it by pressure and absorption? Is it due to a peptonizing activity of bacterial waste products, or is it due to some mysterious part played by the pyogenic microbes in their effect upon protoplasmic cell contents? We do not know so much as we would wish regarding the metastatic tendency of suppurative processes. Fistulæ sometimes heal rapidly and abscesses develop in the atlo-axoid region. There are some strange features in

such cases. Why do not domestic animals other than solipeds commonly develop fistulæ? Is it a question of tissue resistance, anatomical peculiarity, or a difference in histological elements? The chemist might give us a non-toxic, diffusible antiseptic, that will pass through the circulation and be excreted unchanged and capable all the while of destroying pathogenic microbes. There is a mysterious part played by certain portions of the lymphatic system that we could wish made plain. We do not even feel certain that we know why fistulæ occur more frequently in the superior cervical than in the gluteal or dorsal regions.

TREATMENT.—Many annoying features appear in the treatment of these cases which may be well understood and yet difficult to handle, for example, the well known tendency to recur after indefinite periods of apparent soundness—just such cases as a physician must deal with in a latent and local tuberculosis—which may, under certain conditions—become suddenly general and active. Or, like the case reported by Gussenbauer, in which an apparently strong, healthy young man developed a case of lymphangitis and lymph-adenitis of left arm, followed by a circumscribed gangrene of skin and flexor tendons. Lymphatic glands did not suppurate but enlarged. After eight months of good health a large, acute abscess in left axilla, which convinced Gussenbauer that pyogenic organisms had remained in those glands latent for eight months. Nepveau reports two similar cases in which the latent periods were much longer.

Internal treatment, consisting of alteratives and tonics, may sometimes be used with advantage. Twenty-nine practitioners out of the forty-nine with whom I have corresponded on this subject advise more common use of such treatment. Generous food and tonics are always in order if patient is unthrifty.

The conditions which experience has taught me are necessary to successful treatment of fistulæ are briefly :

- (a) Free escape of pus to carry out microbes and ptomaines.
- (b) Destruction of the pyogenic membrane lining old sinuses and cavities.

(c) Destruction of accessible pyogenic microbes.

(d) Removal of foreign substances, as splinters of wood or necrosed bone.

(e) Establishment of an active granulating process.

The first I strive to attain at any cost. I accomplish such drainage by the knife, trocar and canula, setons of cloth or rubber drainage tubing and a surgeon's large pump. We sometimes need a seton that will remain in place for a long period and not decay. Horsehair, rubber tubing, shoemakers' linen thread or leather will answer this condition perfectly. I have never tried to trephine the scapula, but believe it can be done with advantage in those cases where a sinus runs down into the sub-scapular region; at least, I shall certainly try the operation when the first favorable case presents. In a few cases bottom drainage seems impossible. The only satisfactory substitute with me has been hydrogen peroxide. The next condition is secured by digestant solutions, by curette, or by severe, but self-limiting caustics, like pure carbolic acid, or concentrated alcoholic solution of bichloride; copper, zinc and the other metallic salts have not proven so satisfactory to me. Diluted nitric acid has given me good results, but my preference is ninety-five per cent. carbolic acid and the sharp uterine curette (human). Dilute bichloride, dilute carbolic and peroxide have proven the most practical antiseptics. The only way to get rid of foreign substances is by bold surgery. The production of active, healthy granulations sometimes calls for all the ingenuity a surgeon can muster. Turpentine, ammonia, common salt solutions and diluted white liniment have all given good results, but the practitioner must be cautious in using them. Long continued and repeated irrigations with hot dilute antiseptic solutions and even hot water, or hot and cold water quickly alternating in a steady current, will frequently transform a hopeless old chronic into a very interesting patient. A severe blister covering a large surface will sometimes bring about similar results, but is painful and frequently needless. I only use it in those cases where the discharge nearly ceases, but is annoyingly persistent.

Through the kindness of Iowa veterinarians, I have accurate reports on three hundred and fifty cases of *fistulous withers*, one hundred and thirty-three *poll-evils*, seventy-two cases where both appeared on same patient, and one hundred and three fistulous sores in other regions, and in addition the twenty cases of fistulous withers given under experimental work,

RESULTS AND TIME REQUIRED.—Of the 350 cases of *fistulous withers* 87.5 per cent. healed under various forms of treatment. The shortest time required 17 days, longest 126. Average of all cases reported 53 days.

Of the 133 cases *poll evil* 84.9 per cent. healed with similar treatment, average time required 42 days. Of the 72 cases where both appeared on same patient, 77.7 per cent. healed; I cannot give accurate figures on time required, but evidently it exceeded that of either *fistula* or *poll-evil*. Of the 103 cases of *fistula* sores in other regions, 92 per cent. healed rapidly. Those appeared as follows: Scrotal 6, mammary glands 5, ear 11, superior maxilla 8, inferior maxilla 7, rectal 6, dorsal region 9, mid-cervical 2, costal 9, brachial 2, tibial 3, patella 1, parotid 1, tarsal 2, flank 6, vagina 1, scapula 1, trachea 1, pectoral 8, Steno's duct 2, femoral 5, sacral 1.

The records of thirteen successive cases of fistulous withers, which occurred in my own practice during a certain period, and which were treated according to the general method given, show 92 per cent. cured, average period of treatment 46.5 days.

PROGNOSIS.—A study of these cases and the results reported for each shows plainly that the prognosis does not so much depend on the shape of head or style of withers, as frequently stated, as on the location of pre-fistular abscess and subsequent sinuses.

Next in importance is the physical condition of patient.

EXPERIMENTAL TREATMENT.—My own work during the past year has been such that I could not personally carry any continued series of experiments, so I had recourse to friends interested in the same work, who tried for me a certain line of treatment and reported results. I have no copy of the letter sent them, but taken from memory it was in general as

follows: The separate items used in the order given, once daily; abundant bottom drainage, irrigate thoroughly with 3 per cent. carbolic acid, or 1-1500 bichloride, rinse out the sinuses with pure water, plug the inferior opening and fill sinuses with a warm aqueous solution of hydrochloric acid 2 per cent., and any reliable scale pepsin (e.g. Dike's or Fairchild's), 10 per cent., leave undisturbed three hours, remove plug and irrigate again with antiseptic solution, to be continued as seems necessary to secure the desired condition.

I have records of 20 cases so treated. These show 19 or 25 per cent. cured, in an average of 36.2 days. The details must, of course, be varied to suit individual cases, and even for differing stages in the same case. Larger experience may teach that less pepsin is necessary, and that more or less of the acid will be more satisfactory.

Those who have tried this method agree that results are more rapid and satisfactory than with the older lines of treatment. There seem to be two objections: First, expensiveness; second, patient must be under the immediate care of operator. The last can have but little weight because that is where every case of fistula should be.

CASES.—I have full notes on the history and treatment of thirteen cases with criticisms on my own work, which I had hoped to present, but this paper has already reached such length that I will give only a few of the most interesting and difficult.

CASE A.—Bay horse, ten years old, eleven hundred pounds and thin in flesh; had been treated for five years by empirics and considered hopeless. An examination April 5th, 1889, developed four sinuses with common outlet located as follows: the first sinus was four inches deep, with an outlet two inches anterior to the cervical angles of the scapulæ at the median line. Probe passed straight down between lamellar portion of cervical ligament on one side and rhomboideus, angularis, great and small complexus muscles on the other. The second was located between the same structures; but had its direction backward and downward to anterior border of scapula—two and one-half inches long. The third sinus,

five inches long, extended from the common outlet, downward, forward and to the right, passing through the complexus magnus and splenius, and terminated between the cervical trapezius. Fourth, ten inches long, extended from the outlet, downward, forward and toward the left and terminated beneath the cuticularis colli. The treatment of this case was quite simple. Sinuses 3 and 4 were given inferior drainage by very large incisions at the lowest point. Sinuses 1 and 2 were drained by large setons passed from similar points to the surface in a downward direction. These sinuses were washed out daily with 1-3000 bichloride solution. The setons were left in place two weeks and daily moved up and down. Each week the patient was brought to town for examination and treatment. The treatment usually consisted of a thorough flushing with cold water, after which each sinus received a small injection of a mild, white ligament. August 10th an examination showed a sound horse, and there has been no recurrence during the three and a half years. The outlet and both drainage incisions were reopened by the knife every two or three weeks. Criticism: (a) Later experience has taught me that quicker results would have been obtained with less washing and irrigation. (b) The setons should have been left in place at least a month. (c) I should have insisted in having the horse under daily observation.

Case D, iron gray filly, two years old, never had a collar on, sheds and doors all high, running in a woodland pasture with case C. Examination August 20th, 1890, showed merely a large hygroma on left side, two inches in front of cervical angle or scapula. Contents thin, serum-like fluid without offensive odor; free incisions were made above and below; the cavity cleansed and packed with bichloride cotton. Somewhere at this point I made an error, for the case was on hand uncured all fall and winter. There was either an early-developed and undiscovered sinus down beside the cervical lamina, or a piece of cotton was left in the large cavity. In this case I expected a rapid recovery, and gave very little treatment during the fall; was away from my practice all winter, and on my return in April found case D had developed into

an old chronic, and was discharging freely from several openings. One sinus passed straight down beside the laminar portion of cervical ligament five inches and just in front of the anterior scapular borders. There were several short and superficial sinuses which I could lay open from top to bottom, but that deep sinus was a puzzle, owing to its peculiar location. The treatment decided upon was a long seton of rubber drainage tubing passed from the outlet diagonally downward, forward, and to the right a distance through and between muscles of fourteen inches. The shallow sinuses closed in twelve days. The long sinus and drainage tube were flushed out occasionally with mild antiseptic solutions. The tube was drawn down and clipped off an inch every other day. This process was required about five weeks and gave good results, for the sinus closed above as the tube was withdrawn. Notes show case D to have been dismissed June 1st, 1891. September 23d a small abscess was formed on right side near the cervical and near the old outlet, which soon ruptured. The opening was slightly enlarged, and the cavity with its short sinus was filled with ninety-five per cent. carbolic acid. There was profuse discharge for a week, then rapid and permanent healing. October 15th D was sound again, and has so remained ever since. Here was a case of dormant pyogenic microbes becoming active after a *locus minoris resistentiæ* had been formed, perhaps by bruise or other tissue injury. Criticisms:

(a) A lesson-teaching incident occurred when the drainage tube had been partly removed. A sudden swelling and stiffness of the front leg on that side occurred when the drainage tube had been partly removed, evidently a septic inflammation. Vigorous examination by the probe discovered, and opened a large pus cavity at one side of the artificial sinus. My only explanation is that the broad-bladed seton needle passed through the body of the small complexus parallel with the muscle fibres, and when the seton was drawn below they closed and healed rapidly, confining pus above.

(b) I made a very grave mistake in opening the cyst as long as there was a possibility of securing absorption.

(c) I should have made a more careful internal examination of the abscess in the first place and taken nothing for granted. I should also have removed the cotton personally.

(d) We make a mistake always when attempting to treat a fistula at long range.

Cases E and F were fully as interesting and difficult. My notes show B and G to have been very easy and rapidly successful. The next five cases appear among horses in the same pasture, all but one of which had poll-evil or fistula, and some both, during one spring and the early summer. I was first called July 1st, 1891. The history of this outbreak is rather meager. I was only able to learn that case I was a brown mare, seven years old, previously in good health and flesh, exhibited a decided swelling over the atlo-axoid region about March 20th, 1890. This swelling subsided before March, 1891. Another swelling developed rapidly, soon ruptured and discharged very profusely over the pastures and feed boxes. Some lung difficulty, probably septic in origin, developed, followed by a nasal discharge, and the patient died in June of the same year. Other cases followed rapidly.

Case J, gray mare, 1400 $\frac{1}{2}$, six years old, very fat at first, exhibited a double poll-evil and a fistula on right side of withers, lost flesh very rapidly, and on my arrival was found to be very thin, weak and stiff.

Case K, dark gray mare, five years old, 1100 $\frac{5}{8}$, also in good flesh at first. A double poll-evil began to develop June 16th, 1891; very large at the time of examination, condition fair. Appetite poor in all these cases, and all showed 1.5 to 2.5° elevations of temperature.

Case L, dark gray, three years, 1200 $\frac{5}{8}$ began, to swell on both sides of withers June 29th, 1891; in good flesh January 1st, appetite good and no discharge.

Sodium sulphite was alternated with arsenic, one dose of each daily. In none of these cases was the local treatment difficult to manage, and consisted of self-drainage by free incisions and a limited amount of antiseptic flushing by syringe with weekly stimulations. All recovered except I, which had died in June.

NOTES.—Cases C and D were two unbroken colts in the same pasture. C developed and discharged two months before anything wrong was noticed with D. These colts did not even have access to a shed. The cases I, J, K and L had access only to a first-class barn and shed, with wide, high doors. Nothing of interest could be discovered in the pasture except an artificial pond, which contained stagnant water, and out of which the horses must have drunk, for there was no other water accessible. It seems plain to me that such suppurative processes may be indirectly transmissible and more than local in effect.

A proposition which Chauveau, Orth, Rosenbach and Wyssokowitsch have proven correct regarding source, locating factors and results of pus microbes in other conditions, and which Huber proved true for bacillus anthracis, and which Volkman, Schueller, Szuman and Verchère have proven for tuberculosis is certainly worthy of consideration as applied to the pathological condition under discussion.

Finally, I wish to express my indebtedness to the printed works of Chauveau, Crookshank, Frankel, Vaughn, Steinberg, to the veterinarians of Iowa who aided me by accurate reports, and especially to Drs. Edwards, of Iowa City, Hammond, LeMars, Williams, of Manning, and Derwent, of Marshalltown, who conducted the pepsin experiments.

PUNCTURED WOUNDS OF THE FOOT.

BY DR. J. H. TIMBERMAN.

(A Paper read before the Pennsylvania State Veterinary Medical Association.)

The subject of punctured wounds of the foot is one which, in some of its aspects at least, has at times caused me no little anxious thought, and while I have no doubt it is receiving all the attention from each one of you gentlemen which its merits or demands require, I venture to hope that I may succeed in impregnating a few remarks on this subject with sufficient interest to atone somewhat for the use of a little of the valuable time of this meeting.

You will agree with me, no doubt, that the very nature of the construction of the horse's foot, the delicate and vascular structure of the tissues entering into the formation of the soft parts thereof, confined as they are within the horny, box-like hoof, is a condition of things which renders wounds of this organ more or less troublesome, always calling for special treatment, differing somewhat, in its practical application at least, from that employed in the treatment of wounds of any other part of the body. Let a nail or any other sufficiently hard and pointed substance penetrate through the sole or frog, and though it may have only slightly punctured the sensitive parts, it has caused a wound of those structures which nature must go about repairing according to the same laws which operate in the healing of wounds in any other part of the body. The nail or other substance has, when it is withdrawn, affected the horn of the horse's foot very much in the same manner as a needle would if made to penetrate a cork, it has left little if any opening in the horn; the wound in the sensitive tissues has caused the escape of more or less blood or serum from their proper channels, which now lies as so much foreign matter in the part, and for which there is no channel of escape. If the quantity of blood or serosity is too great to be absorbed, suppuration must inevitably follow. The foot not being opened from below, nature in her efforts to get rid of the little blood, together with the products of the inflammation which these efforts have cost her, by her laws from which she cannot deviate, works the destruction of more and more tissue until she finds a place above the horn where the diminished density of the structure will facilitate breaking through. Sometimes, owing no doubt to the location of the puncture, these efforts of nature have caused so much destruction of tissue as to cause the hoof to drop off, to say nothing of septicæmia, etc., which sometimes results from mismanagement of the cases. By the use of the term mismanagement I do not mean to reflect on the treatment or management of these cases by any member of this profession, especially any of the gentlemen present, for we find too often that all the mismanagement necessary to work the destruc-

tion of the animal has taken place before we were called. We frequently find cases in which we are told that the animal picked up a nail a few days ago, it was pulled out and turpentine put in, and he did not go a bit lame till this morning, when he was found so lame that he couldn't put his foot to the floor. On examination we will find that for a considerable space in the vicinity of the wound the sole or frog will be underrun with serosity or pus, sometimes the whole of one side, or the frog being separated from the sensitive frog. I make it a rule in these cases to remove all or most of the sole or frog which is separated from the sensitive parts, especially when the seat of puncture, which is more often the case than otherwise, is in one of the commissures of the frog, not forgetting that any commissure or concavity on the plantar surface of the foot is a convexity or sharp eminence within, and the pus in seeking a depending opening will gravitate from such points down toward the toe, causing more and more destruction of tissue; therefore in opening a foot I do not hesitate to remove all the separated horn, especially if the puncture is anywhere along the side of the frog or in any of the commissures, when it is imperatively necessary that this should be done, as a small opening around the puncture will not allow the escape of the pus which has already found a resting place nearer the ground.

Free opening as early in the case as possible, which means the removal of all the separated horn, followed by sufficient poulticing to cleanse the parts properly, and this by proper antiseptic treatment, insures success in these cases. But what shall we say of those cases in which the puncturing substance has gone directly into the vicinity of the navicular articulation?

I once made a post mortem in a case where something in the shape of a boiler rivet with a medium sharp point had caused fracture of the navicular bone. I have also seen a few cases of puncture of the navicular bursa or sheath. As a matter of course these are grave cases, and they may or may not be complicated with suppuration and underrunning of the sole, though this is entirely lost sight of in the gravity of the main trouble.

The separated portions of the horn are as a matter of course to be removed as in the other cases, but the treatment, such as poulticing, etc., will not suffice in these cases. The treatment which I have adopted in these cases has resulted in a fair share of success. I will endeavor to cite as well as I can from memory a case of this kind which I treated about four years ago. I was called on a Sunday morning to see a very fine road or driving mare belonging to Mr. P., of Wilkesbarre, which had on a drive the day before from Wilkesbarre to Newport, a distance of fifteen miles, gone lame when she had traveled about half the distance; they drove her the remaining half of the journey, and when they arrived at the colliery, which was their destination, the stableboy pulled a nail out of the foot; they drove her home, though she must have been very lame, but if I remember right they told me that she did not seem so dreadfully lame after they got her started, which may have been more or less tone, as she was quite a spirited mare. Suffice it to say that I found her very lame, sweating at every pore, grunting and manifesting every sign of extreme pain. I cannot now give the pulse and temperature readings, as I did not take notes in the case. My impression is that they corresponded with the other features of the case. On examination I found that though it had been but eighteen hours since she had picked up the nail, there was already considerable suppuration or underrunning of the horn in the vicinity of the puncture. On opening the foot (and by the way the nail had penetrated the foot about half an inch back from the point of the frog), I found that I had a discharge of synovial fluid; I removed all the separated horn, and had a poultice of flaxseed meal put on, thinking it well to treat for a time as an ordinary case. The following day, however, I had a sponge cut to the size and shape of the bottom of the foot, placing another crescent-shaped piece around the back of the heel, the whole saturated with a solution of zinc chloride, twenty grains to the pint, and a light bandage applied to keep sponges in place. I might mention that this is a favorite treatment of mine for synovitis at any part, the sponge saturated with

zinc chloride solution of this strength, and lightly applied to the parts, the solution causing coagulation, and by being careful not to remove the clot, we are often successful in checking the flow of synovia. The mare was quite a pet, and took the best of care of herself, rendering a sling, which I consider a necessary evil, not a necessity in this case. She was placed in a roomy box-stall, where she would lie down most of the time; the box being well bedded she did not get in the least sore, she never got the dressing displaced, and would allow dressing to be changed without offering to rise, all of which rendered the case more favorable than it would otherwise have been. I never got any further suppuration after having opened the foot thoroughly, and as near as I can remember, the discharge was stopped in about ten days; the animal was put to work in about nine weeks from the time of the injury, having continued lame for some time after parts appeared to be healed, which a few blisters seemed to relieve. Some time after this, perhaps two years ago, I had a similar case, synovitis, setting in a few days after the injury when the case had for a time seemed to be progressing favorably, lameness subsiding, suppuration checked, etc.; applied the same treatment, though it was necessary to use a sling in this case, the animal being quite restless even with the sling, still I managed to keep the dressings from becoming displaced; success was not so marked in this case; the synovial stopped, however, about as soon as one could expect. I think I had ankylosis in this case, the animal remaining quite lame for some time, though he eventually became fit for slow work, being a draft horse. I had quite a number of these cases which I treated in this way with more or less success, and in my practice I have never had septicæmia, or a case where a hoof sloughed off from a punctured wound of the foot, though I remember one in which I removed the entire sole and frog and in which two-thirds of the wall was loose. I think a free opening in these cases, allowing no loose horn to remain, especially in a location where it will allow pus to be retained, robs ordinary cases of their terrors. I suppose, gentlemen, it is unnecessary for me

to state that the chloride of zinc treatment is not original with me, but is mentioned in Morton's work on Veterinary Pharmacy. I have used it for years, however, and believe that when thoroughly and faithfully applied, it is the most rational and effective treatment we have for open joints.

EMPLOYMENT OF FORCE IN DYSTOCIA.

By DR. W. H. RIDGE.

A Paper read before the Pennsylvania State Veterinary Medical Association.

Force may be divided into two kinds—*internal* and *external*. The internal being due to the contractions of muscular tissue of the parent, while the external force is developed by mechanical aids.

There are varied opinions in regard to the amount and kind of force to be used, some using extreme force, as hitching a horse to the foetus and tearing it away, while others use only one or two men at most, to pull on the foetus. We will first study internal force; this we know is due to the contractions of the muscular fibers of the uterus, assisted by the additional and diaphragmatic muscles. We can increase this contraction of the muscular fibres of the uterus by oxytoxics—drugs which have the power of acting on the involuntary muscular fibres. And further than this, we have drugs that stimulate this contraction.

Alcohol and quinine have the power of increasing the force of the contractions. Ergot is mostly given as fluid extract. As dystocia is a difficult parturition, we must choose our force to overcome the difficulty. We all know that by giving ergot in a transverse presentation we would be making matters much worse, as ergot would add to the contractions, most likely producing tonic contractions so strong that we could never rectify the presentation, also giving the animal great pain, and, by the contractions being constant, would drive most of the blood from the uterus, which added to the pressure on the umbilical cord would kill the foetus. The case in which ergot is indicated is inertia of the uterus,

the inertia being due to hydræmic innervation, produced by sickness or exhaustion. But a more safe plan would be to give quinine and stimulants until the foetus has well dilated the cervix, and proved to be in the proper presentation and position.

I think it is very rare that ergot will be needed. Never when the dystocia is caused by a malposition. I use internal force so seldom that, so far as relieving the dystocia is concerned, I could well get along without ergot. The only safe time then to give it is when the head and front legs are delivered and the uterus seems to contract so feebly that we may expect a large amount of fluid to remain in the uterus. After the birth of the foetus it is never desirable for the uterus to remain flabby and in a non-contractile state, as the fluid it contains is in contact with the air, and is the best of culture-mediums that one could desire.

Now I desire to call your attention to the action of quinine; in just such cases it stimulates the contraction of the uterus, not the tonic contraction of ergot, but increases the normal contractions, and acts very well in exhaustion, while you are not liable to produce those excessive after pains, that are most likely to end in eversion of the uterus.

Now the external force is what we are most interested in. As I have stated, we are divided in opinion in regard to the amount of force we can use with propriety, for if one *should* hitch a horse to a foetus and tear it away from the mother (as I have cases cited to me) and the mother live, the case is reported for years as a favorable method. Not keeping a record of the cases where injury had been done, with probably only a fractional part of the force used, then how much force can we use? I will start with traction by the operator upon the cow and mare. With well directed traction, and the foetus in proper presentation and position, traction by the operator will very rarely do injury, the traction of man being about the same force as the uterus. If I were asked how much force can be used, I would say never more than two men beside the operator, in the cow or mare, these pulling direct on the foetus without the use of pulleys, etc. But

now you will say: oh! I can cite you a number of cases where more force than that had been used and with no bad results. Yes, and I can show more cases where two men have ruined the animal than favorable ones. And as for pulleys, etc., they are most decidedly dangerous to the mother, also cruel, unless used under an anæsthetic; and where the fœtus is of more value than the mother, or where the animal being a mare, the cæsarean operation is equally fatal.

Now you can see that I am not much of an advocate of force. I am more of an advocate of correct presentation and position. Gentlemen, you cannot place too much stress upon this one point. I have seen too many cases where several men have been pulling the poor animal around the stable for hours, when by repelling and rectifying a malposition, one man easily delivered the fœtus. Now this is the chief point with this paper: never pull on the fœtus until it is placed in proper position; this pulling on a fœtus before position is rectified, jams it into the pelvis, and this irritation producing spasms of the uterus throws it into tonic contractions, causing such a condition that an experienced obstetrician may be unable to relieve.

The means of attachment are made by the rope, hooks and forceps; make it a rule to cord all parts presenting before rectifying a malposition. I use cords about four feet long to attach to the fetlocks; there should be a loop at one end to make a slip-knot, one rope for the head halter (Binz) should be seven or eight feet long. I find that Binz's halter is the easiest to apply. The manner of pulling on the cord has a great deal to do with our success. Never have constant traction; pull by changing the direction of the traction, first upward toward the tail, then changing downward, the operator always guiding the parts of the fœtus. If the animal has been in labor some time, and the amniotic fluid has escaped, inject some bland fluid into the uterus, then lubricate the vagina with oil or lard before attempting to deliver the fœtus. Now, after rectifying all malpositions, you find that either the size of the fœtus, or deformity of the pelvis of the mother,

make our efforts fruitless, then perform embryotomy—rather than resort to undue violence at traction. I would say a few words in regard to the double volsella forceps; the trouble with those is the difficulty in opening them while in the uterus, and we should have a pair that could be separated, having a male and female blade. These would be very useful when the head and neck are turned back out of reach, we could then pass one blade under, the other blade over the neck, when we could in many cases draw the head in a position so that we could reach it by hand. These means of force should be studied closely, as a few pounds of traction at this time would rectify a malposition that all the traction on the legs we might choose to employ would be fruitless.

There is one force, a retrograde force, that we should study closely. I think the value of it is not known sufficiently, at least is not employed as much as it should be, that is the force of the repeller. Every practitioner should have one; the one I employ is three feet long, divided into three parts, having a handle on one end, and a cross-piece like a crutch (with a spear in the centre about one fourth of an inch long) on the other; this spear is to keep the repeller from slipping when pressed against the foetus. The wound this spear makes is so trivial that I have never had any trouble from it. Of all the instruments I use, there is none so valuable in a dystocia as a repeller.

Three-fourths of our cases of dystocia are produced by some malposition of the foetus and the easiest way to rectify this position is by pushing the foetus into the abdominal cavity, so as to have room to turn or change it. If we repel by our hand, as soon as we take the pressure off the contraction of the uterus sends the foetus back into the pelvis again, and oftentimes the pressure is so great that you are unable to change the position. Now is the time, after fruitless endeavors, you resort to extreme traction, when by the use of the repeller you could have an assistant pushing on it holding the foetus back when you have room to change the position as desired.

I have frequently had two men pushing on the repeller while rectifying the position of the legs, with no accident.

There is danger of the repeller slipping off the foetus and wounding the uterus, but the operator will have to guard against this.

The dangers in extreme force or badly managed force are several, as death of foetus, laceration of the genital passages, contusions of the genital passages and injury to blood vessels, allowing the escape of blood in the subconnective tissue, injuries to the nerves, exhaustion, eversion of bladder, eversion of the uterus.

The study of these would make our paper too long. I will cite a few cases, cases that you all see frequently.

May 15th, was called at night, the owner saying that his cow had been in labor all day. He had called a man in the first stages who thought he knew all about such matters. After pulling for several hours making no headway, he gave an unfavorable prognosis. When I was called I found the foetus in a posterior presentation, lumbo-sacral position, with hind limbs completely retained; the genital passages dry and greatly swollen, the calf emphysematous. The animal had been pulled around the stall by several men for a half a day, the cords being placed at patella. The cow was able to rise with help. I injected carbolized water, then applied lard to passages, the cow being in standing position. I now placed the repeller against the perineum of the foetus, had two men push against it, pushing between the labor pains; by this means, with my guiding the repeller I was able to return it into the abdominal cavity, making it stand upon its head, when it was easy to rectify the malposition, and deliver, the foetus being dead, the whole time not being over twenty minutes, without any pulling, except myself guiding the foetus. The next day the animal was unable to rise, the genital canal being swollen greatly, discharging a foetid fluid.

I washed out genital passages with pot. perm. col., gave internally

℞ Tr. aconite,	3 i,
Tr. belladonna,	3 ii,
Cinchonæ sulph.	3 i,
Spt. nitr.	2s 3 ii.

M.—Sig.—Teaspoonful every hour.

The next day was trying to rise, but could not; same treatment.

May 18th.—Got up last night, does not eat, strains, back ached, muzzle dry, fæces becoming hard. Gave pot. nit. ζ i night and morning, also

℞ Ext. dig, fl. ζ ss,
Cinchonæ sulph. ζ i,
Acid sulph. ζ ii,
Spt. vini. rect.
Aqua fort. aa ζ ii.

M.—Sig.—Two teaspoonfuls every two hours.

Made a good recovery.

Mare started in labor 5 A. M. Trainer soon saw that she was not progressing. Assisted her by pulling on the fœtus, soon delivering fore feet and head, when it stopped. He added more men pulling until eight men were pulling the mare around the box-stall, and in three hours had her completely exhausted. When I arrived she was unable to raise her head from the bedding. He had ropes to the head and feet. The mare was torn at lower commissure of vulva; it is needless to say the foal was dead. The trainer was having a hook placed in the wall behind the mare, and had triple blocks and ropes to tear it away. On making an examination I found the foal in anterior presentation, with a vertebro-sacral position, fore feet and head normal, but the hind feet had entered the pelvis beside the shoulder; of course all the pulling he could do would only tighten the wedge-shape mass. I cut the foal's body off close to vulva, leaving enough skin to cover the bones; using the repeller, returned the half of the body completely turning (performing version), when the mare gave birth to the foal in a posterior presentation, lumpo pubic position, inside of five minutes, without any help beside myself.

This mare strained so hard after delivery that I gave ext. canabis indicus fl. ζ iii, bathed the vulva with hot water with creolin in it; mare suffered metritis for a month, then made good recovery.

Another case where the owner had several men pull a calf

away, the cow was unable to rise. I was called after the cow had been down two days; cow would not eat, continually moaned, and strained as in act of defecation; genital parts swollen. On opening the vagina, there were patches larger than one's hand where the mucous membrane was nearly an inch thick, and loosening, leaving a raw surface looking like a diphtheritic membrane. Injected a warm solution of permanganate of potass. Gave dig. cinchonæ, sulphuric acid mixture. This animal suffered much.

I could cite several cases where force had been used, the animal never rising after, the hind parts becoming completely paralyzed. Also numerous cases of eversion of uterus from this cause.

OSTEO-POROSIS.

BY DR. C. D. MORRIS.

Paper read before the New York State Veterinary Medical Association.

In the presentation of this subject, I bring before the gentlemen here assembled in this Society, in a manner not at all satisfactory, and I fear, as viewed by you at the conclusion, a lame discussion on a disease not very prevalent in this country to any extent in an aggravated form—and yet which I believe is prevalent to some extent in certain localities in a mild form, and when existing in a degree sufficient to warrant diagnosis, the baneful effects of the disease have made such inroads upon the animal economy as to baffle the skill and energy of the veterinarian to the extent that osteo-porosis is catalogued as one of the incurable diseases affecting the lower animals. However, I cannot believe it is a disease whose only sequel should be ultimate dissolution. The literature bearing on this disease is not abundant. In 1860 Prof. Varnell wrote an interesting article on osteo-porosis, and it is claimed that Varnell was the first to describe the disease. Later his article appeared in the *Veterinarian* of that year. About 1870 Sir James Baggett relates before the Pathological Society, London, his experience with a disease termed by

him as *ostitis-deformans*, and from the description he gives, stating symptoms, post mortem appearances, etc., I think there is no doubt as to its identity with the disease previously described by Varnell. Again, in Dr. Lippincott's report of 1875-76, Philadelphia, he relates the history of a disease under the head of *ostitis-deformans* which bears a striking resemblance to that of *osteo-porosis*. Also Lane, in Grey's hospital report, *Trans. of the Pathological Society, London, 1886*, describes at length *osteo-porosis*, and I will here quote one paragraph from his very interesting and valuable paper in that report before discussing the disease from American pathology. Lane holds that the thickening of the skull is a process of repair, and not a direct result of the disease, and in *mollities ossium* the thickening of the skull is dependent upon an endosteal, and later upon a periosteal deposit of decalcified lamellæ of fibrous tissue, this being not a direct product of the condition, but an effort on the part of the organism to oppose and limit the baneful influences of the process of decalcification in so far as it affects the cranial vault. He applied the same argument to the analogous condition of the skull present in *ostitis-deformans*, rickets, and congenital syphilis. What is *osteo-porosis* as understood on the American continent? It is a non-inflammatory disease of bone, characterized by defective action in one or more of the joints, affecting one or two of the limbs in an alternate manner, a much tucked-up condition of the abdomen, an arched spinal column, a straightening of the limbs, and, as the disease progresses, an enlargement of the facial and sub-maxillary bones, with defective mastication, accompanied with tenderness upon manipulating the bones of the face. During the entire stage of the disease the pulse remains about normal, with slight variation of temperature, obscure pains, metallic in character, resembling that of rheumatism.

I beg to give you a brief history of this disease as was manifest in these specimens before us. On the 14th of last February I was called to examine a two-year-old stallion suffering with lameness in the right fore extremity. Examination revealed tenderness and some degree of heat in the

heel. As this animal was being conditioned for fast work, I thought it not at all strange under the existing circumstances that he should bruise the heel, which seemed a valid cause for his lameness. I diagnosed the trouble navicular arthritis.

On the 10th of March I was called again; the lameness had then left the fore extremity, and at that time was very pronounced in the left hip. It was at this time that I began to mistrust the impending trouble, whereupon a thorough examination was made which proved beyond doubt my suspicion. This case was watched daily from this time until May 25th, when it was deemed as only human to end the sufferings of the animal. During this period the disease presented the following symptoms: A constant degree of lameness in some one or more of the extremities at the same time, the peculiarity of which was, when lame in two limbs at the same time, it would be that of the hind and fore limbs of the opposite side. The greatest degree of lameness existing was in the left hind leg, which became straight as the disease progressed, to such extent that a straight line drawn from the trochanter-major extremities to the os pedis would touch the entire length of all the long bones of the leg. A general atrophy of the muscles of the limbs, and at times an inability to rise without assistance; appetite, but toward the last there was a disinclination to masticate ordinary food, gruels being administered instead. The bowels remained normal throughout, urine natural in quantity and color.

Post mortem examination presented a most interesting revelation. I will relate a few of the most prominent lesions. The animal was bled for the purpose of dissection. The muscles of the legs were paler than natural, and maculate. In disarticulating the limbs from the trunk, and especially the bones of each limb one from the other, the interior of the joints presented a contrast. The articular cartilage was of a purplish hue, much thinner than natural and in some instances entirely lost, leaving the margin of the articulation at that point quite exposed. In others the articular cartilage was of natural thickness, but easily detached from the bone. In these the synovial fluid was darker in color and in some instances streaked with

blood. The synovial membrane was much thickened at the parts most vascular; then again these same structures in other joints were much paler than natural. The periosteal covering of the long bones was quite vascular and easily detached, especially the bones of the skull. Some of the flat and irregular bones were soft and could be readily cut with the knife. One very noticeable feature being that all ligamentous and tendinous attachments were easily separated, bringing portions of bone as they were torn loose.

These attachments were much discolored, indicating that local inflammation or extravasation of blood had taken place. I am of the opinion that there must have existed considerable inflammation in the soft structures affected, and was sufficient cause for the manifestations of lameness which existed in certain articulations. Another post-mortem characteristic is, that the weight of the bones is greatly diminished, apparently one-third their weight being lost. The increased size of the medullary canal is well marked in the long bones, and what seems to be a complete breaking down of the cancellated structure is visible throughout. The same degree of destruction exists in the compact tissue. The haversian canals, the lacunæ and canaliculi appear as homogeneous.

Another noticeable feature of this disease presented itself while cleaning the bones—perhaps due to their extreme softness—the different processes (epiphyses) were detached from the bone. The application of the slightest force upon a tendon or ligament was sufficient to effect their removal. Contrasting a healthy bone with one affected with this disease, we observe that at the ends of the long and flat bones the disease has permeated the compact as well as the cancellated structure. The increased size of the haversian canals is very patent, as is the foramina for the passage of the blood-vessels. The same exists in the periosteal membrane, causing the bone at the extremities to assume a honeycombed appearance. Thus I might proceed at length to narrate post-mortem lesions, believing, however, that a few briefly stated facts will prove more interesting than a paper treating at length on all the details. From all sources obtainable in the literature

treating on osteo-porosis, and from limited experience, the causes and morbid development of the disease is still enshrouded in more or less mystery. However, I am forced to believe, from crude reasoning, that osteo-porosis consists in a degeneration of the normal developement of bone; the process being assisted primarily by decalcification, a gradual absorption of the calcareous materials, a diminution in the function to assimilate bone-producing foods, and latterly an unnatural development of the vascular and fibrous tissues of bone devoid of the true elements—osseous and cartilaginous structures. I base this reasoning on one fact, that osteo-porosis is a disease of development which occurs only during the growth of the animal, there being (so far as I can learn) no record of the disease in the adult animal. If osteo-porosis is a disease where incipency originates in faulty digestion, which must necessarily entail a deranged absorbent system, thus attenuating the functional activity of assimilation, would it be unreasonable to suppose that the osseous structures ought to suffer quite as much as any other structure or vital organ of the economy? If food and oxygen are the source of all physical energies when properly appropriated in their relation to the maintenance of animal life in obedience to nature's laws, there is then but one expectancy.

It seems to me that therein lies the panacea to all physical ills. As I view the azure and crimson twilight in this, the evening of the nineteenth century, in the great work wrought by medical science preparatory to taking her place in the front rank at the dawn of the twentieth century as the science of sciences in its benefactions to animal existence, high or low, I cannot forbear the belief that within the next few decades, disease must succumb in the contest now waging as between the mysteries of insidious disease and the knowledge to which the medical science shall have attained. Then the declaration so oft repeated by the physician, which is but a warning to the timid and an acknowledgment of human weakness—"There now remains no further aid that man can afford"—this sentence shall then give place to one of broader, more intelligent, and more complete mastery over disease, "Go live in peace your allotted time."

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.”—VETERINARY RECORD.

A PECULIAR CASE OF POISONING—ONE OF THE THINGS DYNAMITE WILL DO.

By GEORGE N. KINNEL, M.R.C.V.S., Pittsfield, Massachusetts.

On the 26th of May, 1892, I was called to investigate the cause of death of a cow, this animal being the second that had died within a week, both having been members of the same herd and both having shown the same symptoms prior to death. The history in each case was that the animals became very dull and languid, suffered from profuse urination and thirst, gradually became comatose, and died in from twenty-four to thirty-six hours. The herd had been kept in a large pasture at one side of which there was an unfenced limestone quarry. The owner told me the cows were in the habit of spending a good deal of their time around this quarry. They liked to lick the fresh surface of the blasted stone, and also to pick up any sprinklings of blasting powder that might be spilt around.

I at once suspected the cows had got at a keg and helped themselves to their hearts' content, as the nitrate of potash, which constitutes seventy-five per cent. of the weight of blasting powder, would account for all the symptoms presented. On opening the cow I found the fourth stomach and first part of the small intestines very much inflamed, the inflammation being most acute in the stomach and becoming less so as it progressed into the intestines.

Throughout the stomach and intestines there was a quantity of black, slimy substance, such as can be got by mixing together mucus and powder, but there was not enough of it present to satisfy my mind that the cause of death was poisoning with blasting powder.

The kidneys were enlarged, flabby, friable, and almost in

a state of disintegration. The bladder was empty, thickened and contracted. On examining the contents of the rumen I found a piece of whitish substance about the size and shape of my thumb, which I at first thought was a piece of a root. On cutting it up, however, I found it to be a white, streaky, structureless substance, more like a piece of a wax candle than anything else.

Just then the foreman from the quarry came over to see what was going on, and the minute he saw what I was whit-tling yelled at me to stop. What I had been paring was the head of a dynamite cartridge. It need not be mentioned that it was at once very tenderly laid in the bottom of the grave which had been dug for the cow.

It seems that dynamite, when kept long, has a tendency to become hard and dry, in which condition it does not explode so effectually as when soft and moist. Consequently before using them the laborers set the cartridges out in the sun for a while, and it was in this way they came within reach of the cows.

The owner asked what he should do in the event of any more of his cows being taken with the same trouble. I told him the chief thing for him to do was to have the quarry fenced off, but that in such cases benefit could be had by giving large quantities of milk, eggs and flour gruel.

Next morning the owner turned out the cows as usual, thinking he could keep an eye on them, and herded them away from the quarry. But before he could realize what was taking place, a sly old cow had sneaked over to the ledge and right before his eyes picked up a fourteen-ounce dynamite cartridge, and although they chased her to try and take it from her she munched it as she ran and swallowed it all. They lost no time in getting to work, and for the next ten days the cow got milk galore and eggs without number. She, like the others, became quite sick and remained so for several weeks, but gradually improved and made a good recovery. I have never heard of dynamite being used as a medicine, and for that matter would hardly relish the idea of having it in my medicine case; but that it is at least a powerful diuretic

I have no longer any doubt, and from its composition this is nothing more than we might expect. The owner of the quarry compensated the farmer for his loss, and paid my bill as well. He also put a good, substantial fence around his quarry.

A CASE OF TETANUS.

By WM. RUSHWORTH, M.D.C., Monte Viste, Col.

The patient was a nine-year-old black coach stallion. I was called by the owner to see the same; he said he thought his horse was foundered. Found the animal standing in his stall, with all the symptoms of a case of tetanus, the head extended on the neck, the membrana nictitans passing over the eye on the slightest upward motion of the head, and the animal moved stiff and appeared uneasy. As far as the history of the case was concerned, I found by questioning the owner that some three weeks previous, the right fore-foot had been severely pricked in shoeing. Diagnosed the case as tetanus, brought on from punctured wound in the foot; prescribed an aloetic purge, and ordered the foot to be poulticed with linseed, the poultice to be made aseptic; also ordered the stall to be darkened and patient to be kept as quiet as possible. Next day found all the symptoms increased in severity, trismus partial, opisthotonos well marked. On making an examination of the foot, I found firmly imbedded in the cleft of the frog a wire nail at least three inches long; this was evidently the cause of the disease, and not the nail prick. I now prescribed fl. ex. gelsemium and pot. bromide aa. ζ ss., to be given in Oss. of milk, as an enema, three times a day. On the third day the symptoms appeared ameliorated, and continued the gelsemium and bromide treatment. On the fourth day trismus was complete, the least noise being sufficient to aggravate the muscular spasms to such an extent as to almost throw the animal down: the temperature, which up to this time had been only slightly elevated above normal, now commenced to rise, running up to 103 F.; peristaltic motion had ceased; the urine was

voided frequently, scant in quantity and of course high-colored.

On the fifth day, finding the gelsemium and bromide were beginning to affect the respiration, changed to antipyrin with hypodermics of morphia sulph. The use of the morphine, while it might seem contrary-indicated on account of its tendency to constipate, I find in these cases to be one of the best agents we possess to relieve pain. The patient being very weak, nourishment was now given by means of rectal medication—one quart of fresh milk, three eggs and half a pint of whiskey being given twice a day, mornings and evenings. On the sixth day some improvement was noticed, but I was not too sanguine, as tetanus frequently eases up, only to get a fresh grip, and attack the patient with greater severity; such was the case here, all the symptoms being aggravated on the following day. Up to this time the foot had been continuously poulticed. I now had this removed, bottomed out the wound, and used the sol. ex. belladonna freely, and then renewed the poultice; to move the bowels, I now gave an enema of glycerine, which had the desired effect, causing a copious evacuation of fæces. The ninth day the patient appeared to improve, and the temperature had fallen to 101° F.; reduced the dose of antipyrin, which up to this time had been given in $\mathfrak{z}\text{i}$. doses every four hours, to $\mathfrak{z}\text{ss}$. doses, t.i.d., and used injections of chloral hydrate in milk, at night. The patient from now on improved steadily, the jaws partially relaxed, and he was able to swallow a little water; sloppy bran mashes were now kept before him, and in the course of a week from the time that improvement set in the patient could swallow with ease. All rigidity of the facial muscles had disappeared, mastication was fully restored, although some difficulty in deglutition yet remained, which gradually disappeared. Ulceration of the cornea in both eyes followed as a sequel, which was successfully controlled by cauterization. In six weeks the animal had perfectly recovered. In tetanus with high fever, antipyrin seems to have the desired result in relaxing the spasms and reducing the temperature.

SUPERNUMERARY TEETH.

By T. B. POTE, D.V.S., Mt. Vernon, Indiana.

A mule about thirteen years of age was brought to me for examination, with the following history: had lost flesh steadily for several months; difficulty in masticating food, seemingly always hungry; was able to work, but easily tired. On making examination of mule my attention was first directed to the mouth with the following result: Four extra second molar teeth, one on the right side on the buccal surface of the alveolar ridge, and one on the lingual surface—the same condition being noted on the left side relatively to the second molar.

Advised extraction, which was done, and on examining the teeth they showed all the resemblance of the normal molar excepting that they were smaller. They showed no signs of being split and were beyond doubt supernumerary teeth. After removal of the teeth the mule rapidly gained flesh, and in a few days one would not recognize him as the same animal.

CONVULSIONS IN A DOG.

By S. GLASSON, JR., D.V.S., Peekskill, N. Y.

On July 13th, I was called to see a dog belonging to Mr. C——, of Brooklyn. The history of the case was as follows: The dog, a well bred Irish setter about five years of age, had had convulsions almost regularly every two weeks for about eighteen months, for which there was no apparent cause. No less than four veterinarians and a so-called dog specialist had examined the patient, and could do nothing to mitigate the poor brute's suffering. One veterinary surgeon had treated the dog for intestinal parasites, and the so-called specialist had pronounced it a case of chronic indigestion. All, however, had concurred in the opinion that the animal ought to be destroyed. The owner, who valued the dog at \$500, refused to part with him, hence I was called to treat the case.

After examining the patient, and finding no apparent cause for the fits, I prescribed nitrate and iodide of kalium without

appreciable effect. I then concluded that the seat of trouble was located in the nervous system and administered nerve tonics, the result of which was the elapse of five weeks before another seizure of convulsions. The poor brute had twenty-six convulsions in two days, then went thirty-one days and was taken again, and during his fifteenth fit I terminated his sufferings.

A post-mortem examination revealed the intestinal tract to be nearly normal, the lower portion of both lungs slightly diseased and all the other vital organs apparently normal. In the right ventricle of the heart, however, I found an intricate mass of worms resembling *strongyli filaria*. The average length of these parasites was about six inches, and they numbered about twenty. Some of them had eaten into the tissue of the ventricle. Continuing my examination I found the ventricles of the brain softer than normal. Now there can be no doubt that this mass of parasites obstructed the venous circulation, and it is probable that this impediment to circulation caused the convulsions.

BIOLOGICAL REVIEW.

CONSIDERATIONS UPON THE FIRST PRÉMOLAR OF SOME DOMESTIC MAMMALIA. By H. LESBRE.

The first premolar in the dentition of mammalia is often absent, and when it exists it is always subject to caducity or to replacement. When it grows only once, it is by some considered as a tooth of the first, and by others that of the second dentition. The author considers the first premolar of solipeds, of swine and of dogs as a milk tooth which has acquired permanence, and not as a product of the second dentition which has changed from a milk tooth. He says:

“In solipeds the first premolar exists only on the upper jaw, and is only very exceptionally found in the lower; it is a more or less rudimentary tooth, which he has found in all subjects of the age, at least, of thirty months. It resembles the milk molar in its form by having a neck and by the date of its eruption, which takes place not later than two or three

months after the others, while it precedes by two years the growth of the permanent molars; and again, by its shelling off, which ordinarily occurs at the same time as the following tooth. It is rarely seen in the adult.

“In cattle and sheep, the same rudimentary tooth sometimes appears, almost always dropping with the three following molar teeth, and it is never replaced.

“In swine, the first premolar makes its appearance towards the fifth month, three or four months later than the second. Properly it is not a permanent tooth; it is very cadult and very aged animals have it, especially in the lower jaw.

“In dogs, the first premolar is also monophysar in both jaws, but cadult.

“In camelidæ, the first premolar, isolated from the other teeth and of canine shape, is also monophysar; but it is not a milk but an adult tooth; it appears only toward the sixth or seventh year when dentition is completed, and in the young there is in its place a slight tumefaction of the maxillary, followed by a small follicular cavity representing, no doubt, an indication of the milk tooth.”—*Soc. of Biology*.

PHYSIOLOGICAL ACTION OF MORPHIA UPON BOVINES. By L. GUINARD.

Far from being a sedative and hypnotic for some of the animal species, it is, on the contrary, one of the most remarkable stimulants. In bovines, of whatever age and size, the author has never observed a stage of opium narcotism similar to that so easily produced in dogs. He has always seen the exciting drunkenness and the agitation, with hyper-excitability, follow each other in a length of time proportional to the doses. When it has had a quieting effect it has been only in nine or ten hours after the beginning of the experiment or even longer, and yet the quietness has had no resemblance to that ordinarily described as the sleep of opium.

In injecting small doses of chlorhydrate of morphia, only a slight excitation or a mere horripilation, with salivary and lacrymal hypersecretion is produced. If the dose is carried to five or six grammes these manifestations are exaggerated, and the animal dies during a crisis of convulsion.—*Ibid.*

ASCARIDES IN THE PANCREAS OF A PIG. By RAILLIET AND MOROT.

Pancreatic parasites have been only exceptionally mentioned either in man or in animals. Among these, echinococci are very rare in man as well as in ruminants; cysticercus cellulosæ have been found in men and in dogs; the sclerostoma equinum has been quite frequently found in the pancreas of horses; the ascaris lumbricoides has been found exceptionally in man. No observation has ever been recorded of the presence of ascarides in the pancreas of animals.

At a recent post-mortem made of a pig that had died with apoplexy an ascaris scilla was found in a dilated duct of the pancreas, into which it had evidently penetrated in passing through the canal of Wirsung.—*Ibid.*

MORPHOLOGICAL STUDY OF FAVUS. By CONSTANTIN AND SABRAZER.

The authors have studied the characters of favus in men, dogs and fowls. They have determined as to the presence of three favuses of three different species. That of man and the dog closely resemble each other, but are distinguished by the constant appearance of the cultures and by the invariable structure of the mycelium and its coloration. The favus of fowls is entirely different, forming a special kind.—*Ibid.*

MICROBIC ACTION OF DIGESTIVE SECRETIONS UPON THE BACILLUS OF KOCH—TRANSMISSION OF TUBERCULOSIS BY FÆCAL MATTERS. By CADEAO AND BOURNAY.

Does the normal gastric juice act and destroy the bacillus of tuberculosis? The experiments of Wesener, Miller, Bollinger and Hirschberger seem to confirm it affirmatively, while Strauss, Wurtz, Flack, Baumgarten, Fisher and Zagari have shown that the microbicide action of the gastric juice is very doubtful, at least concerning the bacillus of Koch. The experiments of the authors show its inefficacy and corroborate the opinion of the last experimenters. The results they have obtained authorize them to affirm that dogs and pigeons which eat tuberculous mixtures become centers of infection and true disseminators of the bacillus of Koch, most commonly through its lodgement in stables, barns and fields. These experiments prove the necessity of burying the tuberculous substances to prevent their being eaten by dogs.—*Ibid.*

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting of the Keystone Veterinary Medical Association was held Nov. 16th, 1893.

The meeting was called to order by the President, Dr. R. G. Webster. There answered roll call Drs. Hoskins, Webster, Bridge, Lintz, Goentner, Hooker, Weber, J. R. Hart, W. L. Hart.

The minutes of the previous meeting were read and approved.

The application of Dr. W. L. Rhoads, Lansdowne, Pa., American Veterinary College, for membership was received and was referred to the trustees to be reported at the next meeting.

It was moved by Dr. Hoskins, and seconded, that the Board of Censors be authorized to look after the Prothonotary office to make the necessary changes and notify all those that have not registered to register.

Dr. Hoskins gave a very interesting report of the Veterinary Congress held in Chicago, for which the members present gave a vote of thanks.

The following were elected officers to serve for the coming year: President, Dr. Chas. P. Goentner, Vice-President, Dr. S. E. Weber, Secretary, Walter L. Hart, Treasurer, Dr. Francis Bridge.

The next meeting will be held at the office of Dr. Hoskins, 3452 Ludlow Street, second Tuesday in December, Dr. S. E. Weber, Essayist.

The meeting was then ajourned.

W. L. HART, *Secretary.*

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The following resolutions were passed at a semi-annual meeting of the Indiana Association of Veterinary Graduates, held at New Castle, Aug. 21-22, 1893.

WHEREAS, We have an institute situated in the city of

Indianapolis called the "Indiana Veterinary College," and the prospectus issued by said institute calling for three sessions of 13—"thirteen"—weeks each, and allowing an empiric to become qualified in one session at the aforesaid institute. Therefore be it

Resolved, We, as a body representing the Indiana Association of Veterinary Graduates, do denounce an institution called the Indiana Veterinary College, situated in the city of Indianapolis, State of Indiana, also graduates and honorary graduates of said Institute.

Resolved, We, as a body, humbly beseech your honorable body to give this due consideration, as we deem it an unfit institute for obtaining a veterinary education.

By order of Association.

J. E. CLOUD, D.V.S., *Secretary*.

GERMAN VETERINARY MEDICAL ASSOCIATION OF NEW YORK.

This Association, which was organized not long since, have held several meetings, at which interesting business relating to subjects pertaining to Americo German veterinary interests were considered. At one of these meetings a resolution was adopted in favor of publishing a monthly review under the name of "Zeitschrift fur Thierheilkunde and Vergleichende Medicin." Another important resolution was adopted, recommending the drafting of a bill by the members of the Society and other members of the profession in other States, which should embody the recommendation that the Government should pay an indemnity for every horse which should be destroyed on account of glanders and farcy.

The last meeting was held on the 31st of October, at Orange, N. J.

VIRGINIA VETERINARY MEDICAL ASSOCIATION.

The first meeting of this organization was held in Staunton, Va., on the 3d of October, 1893. The officers are J. A. Myers, D.V.S., President; C. K. Rhodes, V.S., V.D., Secretary.

NEW YORK STATE VETERINARY MEDICAL ASSOCIATION.

The fourth annual meeting of this Association will be held in the assembly rooms of the Vanderbilt House, Syracuse, on Tuesday and Wednesday, the 9th and 10th of January, 1894. The profession at large is invited.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The thirtieth regular meeting of the Veterinary Medical Association of New Jersey was held in Morristown on Thursday, December 14th, 1893.

Dr. J. Gerth, the President, being absent, the meeting was called to order by Dr. Drummond, of Woodbridge, N. J., second Vice-President. On call of the roll the following members answered to their names: Drs. W. B. E. Miller, J. W. Hawk, Jas C. Dustan, B. F. King, W. Runge, R. O. Hasbrouck, R. R. Letts, J. M. Everetts, M. M. Stage, A. W. Ax-ford, H. Exton, B. L. Drummond, S. Lockwood, Ira Kilburn, Prof. Leonard Pearson. Delegates from Pennsylvania State Association, J. W. Stickler, M.D., A. V. Baldwin, M.D., G. Swain, M.D., and about twenty visitors—stockgrowers, dairymen and farmers, who were interested in the question of tuberculosis, which was of special order at this meeting.

The regular order of business was first gone over, and an interesting and instructive paper on "Influenza in the Horse" was read by Dr. Miller, of Camden. Prof. Pearson read an interesting paper on "Tuberculosis, and the Use of Tubercu-line in Diagnosing the Disease." He gave a history of a number of experiments with the same; also of a number of experiments on pigs and rabbits. He also spoke of the dangers from tuberculosis and the necessity of both State and national legislation for this disease.

Dr. Stickler, of Orange, followed with some very interesting and instructive remarks on the disease, and gave an alarming report of the number of deaths from the disease in the last ten years in this State, averaging over three thousand each year; he also urged the necessity for better and more

effective legislation. Dr. Baldwin, of New Brunswick, followed with other pertinent remarks and figures; he also gave an interesting account of a number of experiments that he had seen and assisted in at the experimental station near New Brunswick; he also urged the necessity of proper legislation. Remarks were also made by Drs. Hawk, Miller, Dustan, Lockwood, Swain and others, all pertaining to the subject.

A characteristic specimen of the disease was presented before the Association by Dr. Hawk in a pair of lungs from a registered Jersey cow owned near Orange, N. J., which he had slaughtered a few days ago and which had been kept as a family cow. The lungs were a solid mass of tubercles throughout.

Dr. Stickler requested the Association to appoint a committee to confer with a committee from the State Medical Association and other associations for the purpose of formulating a bill to be presented to the next legislature, having for its object the eradication of the disease from the dairy herds known to be infected in various parts of the State, and to prevent the sale of milk from such herds.

The Association also adopted resolutions of condolence with the family of the Hon. J. M. Rusk, deceased, late Secretary of Agriculture, who was an honorary member of the Association.

Resolutions were also passed approving the action of the late International Veterinary Congress, held in Chicago, Ills., and of the resolutions adopted there relating to the spoils system in the veterinary appointments recently made by the Bureau of Animal Industry. A resolution was also passed disapproving the action of the officers of the National Veterinary College at Washington in making their course one of two years instead of a more lengthy one, believing it prejudicial to the best interests of veterinary science to graduate students after such a short course of study.

Dr. Dustan, Letts and Drummond were appointed essayists for the second Thursday in April, 1894. Some interesting cases were then reported by some of the members, and thanks were extended to the visitors and others for their attendance

and interesting remarks made; also to Mr. A. E. Voorhees for the use of his elegant parlors in which to hold the meeting, after which the meeting adjourned.

S. LOCKWOOD, *Secretary*.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Ohio State Veterinary Medical Association will be held in Columbus, Ohio, on Tuesday and Wednesday, January 9th-10th. The election of officers for 1894 will be held, and arrangements have been made for a social banquet. All members are especially invited to meet with us, pay up their dues and have a good social time, besides listening to several good papers. All graduates residing in the State are eligible to membership.

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

MASSACHUSETTS VETERINARY ASSOCIATION.

Meetings were held in January, February, March, April, May and June. According to the by-laws of this organization the regular meetings were held at No. 19 Roylston Place, Boston, with Dr. L. H. Howard, President, in the chair, with a good number of the members in attendance.

Among the most interesting subjects discussed at those various meetings, were a paper on "Punctured Wounds of the Foot," read by Dr. L. Ban; an interesting case of azoturia, by Dr. Parker, which was like other cases of this disease, with the exception that it came on without any noticeable exercise to induce it, the animal having been idle for a week, and falling down with azoturia while walking from the water trough to his stall. A very interesting paper on "Scouring in Calves," was read by Dr. Parker (which has been published in the REVIEW); also the report of a case of thrombosis of the external iliac. The clot in the artery was several inches long, and comparatively filled the lumen of the vessel,

and there were two parasitic aneurisms on the cœlic artery. The thrombus could not be felt, antemortem, per rectum, the plug being too low down, but the leg was cold and the horse was lame on it, and there was inflammation of the laminæ, separation between hair and hoof, periostitis of the os pedis, and caries of part of it. The animal had colicky pains at times, and at others would have attacks of dizziness, in which he would throw himself down and thrash around.

Dr. Bryden, in the June meeting, read an interesting paper on "Hoof Culture." (Already published).

JOHN M. PARKER, *Secretary*.

OBITUARY.

W. T. CARMODY, M.R.C.V.S.

Dr. William T. Carmody, M.R.C.V.S., died at his home, No. 65 West Thirty-seventh street, New York City, on Tuesday, Nov. 21st, from pneumonia, after a week's illness.

He had to examine all the horses entered at the recent horse show held in Madison Square Garden. He begun his task on Sunday, November 12, as the animals began to arrive and were put in their stalls in the Garden.

He worked at his task of examining the animals on Monday, Tuesday and Wednesday of the show week. On Tuesday he neglected to take proper care of himself, and he contracted a slight cold, which on Wednesday made him take to his bed.

Dr. Carmody was born in London, England, on December 7th, 1851. He was educated in the Douai College, Douai, France, and during the Franco-Prussian War, while still a student at college, served in the ambulance corps. After his graduation he returned to England and studied his profession in London, where he graduated.

SANITARY MEASURES.

INSTRUCTIONS TO LIVE-STOCK INSPECTORS.—The following supplementary regulations for the inspection of live-stock and their products have been issued by the United States Department of Agriculture to inspectors in charge of abattoirs under the regulations of the United States Department of Agriculture of March 25, 1891 :

You are hereby notified that beginning October 1st, 1893, the inspection of all hogs slaughtered at the abattoir which you are in charge of will be inaugurated.

This inspection will be carried on in accordance with the aforesaid regulations of March 25th, 1891, covered from rule 2 down to and including rule 12 of said regulations, and will be similar in all respects to the system now in operation applied to the inspection of cattle and sheep. It will include a careful ante-mortem examination of all hogs, as required by rule 6, and a subsequent post-mortem examination, as required by rule 7.

The carcasses of all hogs that are to enter into inter-State trade as dressed pork will be tagged in the same manner as cattle are now marked for identification. The products of hog carcasses which enter into inter-State trade will be stamped in the same manner as are the products of cattle.

No microscopic examination will be made of hogs slaughtered for inter-State trade, but this examination will be confined to those intended for the export trade and will be carried on as heretofore, and only at abattoirs which export pork products to countries requiring a certificate from this Government to secure the admission of such meats. Hereafter all inspectors issuing certificates for export of pork products which have been microscopically examined will enter upon the same the number of each stamp marking the packages for which said export certificate is issued.

All hogs found upon either ante-mortem or post-mortem examination to be diseased or for any reason unfit for human food will be condemned by the inspector in charge of the

abattoir, who will see that the carcasses of the same are tanked by the owners of the abattoir. In case the owners of the abattoir refuse to tank such carcasses then the inspector will tag said animals with tags for condemned meat, which will be furnished by this department.

Owners of abattoirs are warned against removing the tags so attached to condemned carcasses, and are notified that they will be prosecuted under section 4 of the Act of Congress of March 3d, 1891, for any such attempt to tamper with the device for marking condemned animals as prescribed by this regulation.

Accompanying and forming part of this order are directions to inspectors, designating the diseases and conditions which render animals unfit for human food, and for which they shall be condemned by the inspector.

J. STERLING MORTON, Secretary.

Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, has issued the following to inspectors of the Bureau of Animal Industry in charge of the inspection of animals slaughtered at abattoirs throughout the United States :

Supplementary to the order of the Secretary of Agriculture of this date, directing the ante and post-mortem examination of all swine slaughtered at the abattoirs where the Department of Agriculture is carrying on inspection, the following instructions are issued as a guide to inspectors in the condemnation of cattle, sheep and swine and their carcasses.

All animals found on either ante or post-mortem examination to be affected as follows are to be condemned and the carcasses thereof stamped with the "condemnation" stamp supplied by the department, and inspectors will see that said carcasses are placed in the rendering tanks of the abattoirs :

- (1) Hog cholera.
- (2) Swine plague.
- (3) Charbon or anthrax.
- (4) Malignant epizootic catarrh.
- (5) Pyæmia and septicæmia.
- (6) Mange or scab in advanced stages.
- (7) Advanced stages of actinomycosis or lumpy jaw.
- (8) Inflammation of the lungs or of the intestines.
- (9) Texas fever.
- (10) Extensive

or generalized tuberculosis. (11) Animals in an advanced state of pregnancy or which have recently given birth to young. (12) Any disease or injury causing elevation of temperature or affecting the system of the animal to a degree which would make the flesh unfit for human food.

Any organ or part of a carcass which is badly bruised or affected by tuberculosis, actinomycosis, abscesses, suppurating sores, or tapeworm cysts should be condemned.—*Breeder's Gazette*.

SUNDRIES.

I.—HORSE VERY SICK.

“Name, oh doctor! name your fee!
 Ask—I'll pay whate'er it be!
 Skill like yours, I know, comes high,
 Only do not let him die!
 Get him out of this and I
 The cash will pay you instantly.

II.—HORSE CONVALESCENT.

“Cut, oh doctor! cut that fee!
 Cut, or not a dime from me!
 I am not a millionaire,
 But I'll do whatever's square;
 Only make a bill that's fair,
 And I'll settle presently.

III.—HORSE WELL.

“Book, oh doctor! book your fee!
 Charge—I'll pay it futurely,
 When the crops all by are laid,
 When every other bill is paid,
 (Or when of loss again afraid)
 I'll pay it ——— grudgingly.”

S. R. HOWARD, V.S., Hillsboro, Ohio.

THE CHICAGO PASTEUR INSTITUTE.—The director has issued a circular, dated Nov. 18th, giving the results of the preventive inoculations against hydrophobia practiced in this institution since its inauguration on July 2d, 1890. 302 persons have been treated, classified as follows: 104 bitten by animals recognized and ascertained to be rabid by the experimental proof made in the laboratory or by the death of other persons or of animals bitten by the same animal; 126 bitten by animals recognized to be rabid by the symptoms of the disease shown during life; 72 bitten by animals strongly suspected to be rabid; 282 bitten by dogs, 7 by horses, 7 by cats, 3 by skunks, 2 by wolves, and 1 by a mule. The persons treated came from the following States: 185 from Illinois, 32 from Iowa, 23 from Indiana, 21 from Kansas, 9 from Ohio, 5 from Missouri, 5 from Arizona, 4 from Minnesota, 4 from Michigan, 4 from Louisiana, 3 from Tennessee, 3 from Kentucky, 2 from Texas, 1 from Wisconsin and 1 from South Dakota. One death was reported among the patients treated, thus giving a mortality of only 0.33 per cent.—*N. Y. Med. Journal*.

RECOVERY FROM CHRONIC GLANDERS.—Holmes holds that glanders is rare in man, and that it presents itself in two forms—one acute and rapidly fatal, terminating, as a rule, within two or three months; the other chronic, from which the patient may recover after one, two, four or five years.

The author reports the following case: The patient, a well-developed man, aged twenty-two, had always been well and strong, and lived on a farm all his life. Two of the horses under his care died of glanders. Some time during the middle of December, 1889, a felon appeared on one of his fingers. There was no adenitis nor lymphangitis, and no rise of temperature nor chill. Before the felon was entirely healed five suppurating foci appeared on different parts of the body—one at the elbow, one at the vertex, one on the right side of the lower maxilla, one in the right thigh, and one in the right calf. These foci appeared three weeks after the beginning of the so-called felon. They each began with

a sharp, stinging pain, much like a bee-sting, with deep swelling and little or no œdema or redness. When the patient was first seen the temperature was 100° F. and the pulse 92. When the sores opened they presented somewhat the appearance of tubercular abscesses, but with this difference: the abscess wall was covered with a firm, hard, almost shot-like, bright-red granulation tissue, and the extending secretion was sanguinolent. Inoculation on guinea-pigs and rabbits proved the presence of glanders. The treatment of this case is most important, since it ended in recovery. The five abscesses were opened under ether, curetted, and swabbed out with a saturated solution of sulphate of zinc. They were then packed with iodoform gauze wet with a saturated solution of iodide of potassium. The wounds healed slowly. During the entire course of the disease the patient had fourteen foci of ulceration.—*Therapeutic Progress.*

VETERINARIAN WANTED.—We notice in your paper advertisements of veterinary surgeons. Please send us the name of some young, reliable man, that we can locate in our stable, and indorse. There is a good opening here and would like to locate one.

DURFEY & ASHER, Jackson, Mo.

FOR SALE.

A good paying practice in a city of 5,000 inhabitants, 300 miles west of Chicago. No other graduate in the county. Will sell practice, including new operating table, for \$300. Address,

SABISTON, MURRAY & Co.,

916 Sixth Avenue, New York.

AMERICAN VETERINARY REVIEW,

FEBRUARY, 1894.

EDITORIAL.

ECHOES OF THE THIRTIETH ANNUAL MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—In this issue we conclude the publication of the papers read at the First Veterinary Congress, with the address of welcome offered by ex-President Dr. W. L. Williams. The report of the special committee on veterinary education, and that of the standing committee on intelligence and education, are here presented to our readers.

While the suggestions offered in both papers differ somewhat, and those recommended by the chairman of the special committee are more extensive, they both agree as to the necessity of first obtaining an act of incorporation as the essential basis for the accomplishment of the other changes, and to that object the main efforts of the Association must now be directed. We understand that a committee has already been appointed, and it is to be hoped that the gentlemen to whom this work has been entrusted will give their serious attention to it.

It is customary on occasions similar to that of the Veterinary Congress, that all special subjects should receive, when brought before the assembly, immediate discussion. But, for peculiar reasons, this was not done in Chicago, and the reports

of the three special committees were allowed to pass without any amount of consideration. The report on veterinary education is now before the profession. All of us are interested, all of us have a right to make remarks and to expose our criticisms. The REVIEW is open to all, and we hope our friends will take advantage of the opportunity offered. The radical changes suggested cannot be undertaken without free discussion and without uniform decision, and no great good would be realized when the committee appointed at the suggestion of Dr. Osgood meets unless they have been made thoroughly acquainted with an expression of the opinions of all veterinarians in the country, whether they be practitioners engaged only in private practice or connected with our veterinary colleges.

VETERINARY SOCIETIES.—We cannot help feeling highly gratified as to the results that will follow the repeated suggestions of the REVIEW to the important necessity for the organization of veterinary societies as a means of elevating our profession, in creating among our brethren better feelings of sociability and of exchanges of professional views. Often have we called the special attention of our colleagues in the State to the fact that New York stood, on that subject, behind other States in the Union, and to our remarks no doubt the organization known as the New York State Veterinary Society owes the first steps taken for the unification of the splendid body of veterinarians which now compose it.

But one society only—even though it be a State one—in New York was scarcely sufficient, so calls came often for the creation of others, and no doubt the letter of our worthy friend, Dr. L. McLean, published in our last issue, must have proved the last spark necessary to start the big fire which is now raging in the Empire City.

Dr. Hanson thought he would start the ball, and to that effect laid his first plans to organize a veterinary society in the cities of New York and Brooklyn. On his side Dr. Giffen, as Secretary of the State Society for the County of New York,

acted in the same direction, and while both gentlemen were acting individually, ignorant of each other's action, a call was made for a meeting to take place at the office of Dr. Huidekoper on the 25th of January.

The meeting took place, and the *Veterinary Medical Association of New York County* was organized.

Dr. Hanson, who had already notified a number of members of the work in which he was engaged, and had received from them promises of assistance, secured a room for the meeting and selected a date suitable to all; he saw at once the possible danger which might result from an attempt to form a double organization, and gave up his project, deciding to notify his friends to join the ranks of the County Society, by attending its first meeting, which is to take place on the first Tuesday of February, further notice of which will be given.

We have received the following concise report from the Secretary :

ORGANIZATION OF THE "VETERINARY MEDICAL ASSOCIATION OF
NEW YORK COUNTY.

A meeting of the veterinarians of New York City, pursuant to an invitation received from Dr. Th. Giffen, County Secretary of the New York State Veterinary Medical Society, was called at Dr. Huidekoper's office on the 25th of January, 1894, to organize the above named Association.

Among those present were: Drs. Huidekoper, Robertson, Giffen, Ryder, Conklin, Gill, Neher, Beckett, Hanson, Buckley, Richards, Loomis, Sherwood, Delaney, Farley, Swan, O'Shea, Bieser, Parkerson, Doyle, C. Cattanach, Turner, Burchstedt, Amelying, Dickson, J. S. Cattanach, J. J. Cattanach and several others. Dr. W. H. Hoskins, President of the United States Veterinary Medical Association, was also present.

Dr. Th. Giffen called the meeting to order and stated that the object of the meeting was to organize an association upon the following basis :

I. To hold regular meetings to discuss professional subjects for mutual improvement, and to improve the status of the veterinary profession by bringing its members into more intimate relationship, and consolidating them as a distinctive professional body in the community.

II. To regulate veterinary affairs and methods in the education and practice of veterinary medicine, to be in harmony with the conformity to the regulations

of the New York State Veterinary Society and the United States Veterinary Medical Association.

At the suggestion, and by motion of Dr. Th. Giffen, Dr. Hoskins was nominated temporary Chairman of the meeting; he thanked the members present for the honor conferred upon him, and suggested, as first business, the election of officers, which resulted as follows: President, R. S. Huidekoper; Vice-President, J. L. Robertson; Secretary, J. Elmer Ryder; Treasurer, Thos. Giffen. A committee of nine was then appointed to draft a constitution and by-laws for the organization, of which Dr. Robertson was named Chairman.

A long discussion then took place on the propriety of allowing or rejecting for admission into the Society non-graduates practicing in New York. Dr. Giffen then moved that "two months be allowed to legalized (registered) practitioners to present their names for admission when the same shall be subject to the action of the Society. All other members must be graduates of recognized veterinary schools in good standing before being recognized by the Society." Carried.

A Board of Censors was then appointed by the President, with Dr. A. Liautard as Chairman.

On motion of Dr. Neher, Dr. Hoskins was unanimously elected honorary member of the Association.

On the evening of the first Tuesday of each month the regular meetings will be held, and until further directions from the Society the same will take place at Dr. Huidekoper's.

A NEW VETERINARY JOURNAL.—The first number of the *Veterinary Magazine* has just been issued. It is edited by the veterinary faculty of the Veterinary Department of the University of Pennsylvania. We wish to this recent addition to our professional literature a long life and a brilliant and successful career, a wish which we feel confident will be realized, judging from the appearance and contents of the January number.

CANIDÆ WITHOUT ENCEPHALON.—Goetz has been successful in removing the large brain from dogs, and having them live some days thereafter, a feat which, up to the present time, has been thought impossible. The first animal remained fifty-one days alive, the second ninety-two days, and the third subject was killed eighteen months after extirpation, in perfect health.—*Ber. Th. Woch.*

ORIGINAL ARTICLES.

ADDRESS*

TO THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

BY DR. W. L. WILLIAMS, V.S.

GENTLEMEN:—It is highly gratifying to all to meet so large a number here to-day, which is surely the largest attendance in the history of our Association, and the largest gathering of veterinarians ever held in America.

We meet to-day for the fourth time under a new departure in the customs of our Association, the initial step having been taken by holding our twenty-seventh annual meeting in this city three years ago.

Prior to that date the membership and meetings were practically confined to the Atlantic States, and although bearing a national name had few of the characteristics of a national organization.

The meetings were poorly attended, the papers presented were few, and the interest taken in the organization was entirely too weak.

When, however, our Association broke from its old moorings, and held part of its meetings in the West, great changes came, new interest was awakened, and substantial progress made. Our meetings have been attended by more than double the number of members previous to the new era, and instead of one-day sessions we began three years ago with a two-day meeting, increasing last year to three days, and this year, under special conditions, to four days, and yet we have not had at any of these meetings sufficient time for the proper consideration of highly interesting and instructive papers and reports presented.

It seems doubtful now if our meetings in future will be of less than four days' duration.

Our membership has increased during this era from nearly two hundred to three hundred and fifty-five, an increase of 75 per cent., and to-day you are asked to consider

*Delivered before the First Veterinary Congress of America.

applications for membership from nearly eighty veterinarians.

Aside from enlarging the scope of the Association and reaching over large territory, the chief change has been in regard to the admission of members. Not alone has close scrutiny been exercised in admitting members, by which for the first time in the history of our Association many applicants have been refused admittance, but our organic laws have been changed, elevating the standard for membership, and defining clearly the conditions under which applicants may be admitted, requiring that they must be graduates of a veterinary college requiring not less than three years' attendance of six months each, and having on its teaching staff no less than four duly qualified veterinarians.

This act excludes from possible membership the future graduates of a vast majority of veterinary colleges in America. To some this appears a radical measure, and has created a very considerable interest in our Association. Your comitia minora will report also a refusal to recognize graduates of some existing veterinary colleges who do not fall immediately within the amendment. It is very clear to you all that we have in this country a number of veterinary colleges which are mere diploma mills, without professional existence or aspiration.

Several of these are anxious to have a cloak of respectability thrown over them through the recognition by us of their graduates. Your officers have had numerous anxious letters of inquiry from some of these college authorities asking by what means their graduates could be admitted to their ranks. We could only reply that they must, if they desired recognition by us, bring their colleges up to the standard fixed by us. They reply that as private institutions they cannot exist because of lack of financial aid except they give an inferior education.

They admittedly sacrifice professional training to money-making. The interest manifested by some of the colleges excluded is good evidence of the growing power of our Association, and of the correctness of our move for a higher standard of education.

Our colleges of the money-making class are rapidly crowding our professional ranks with incompetent men distinctly in excess of the demand, and are bringing us to the same point eventually attained by everything in Nature—a question of the survival of the fittest. In most parts of our country the overcrowding is resulting seriously to our professional welfare, causing extreme hardships to our members from want of support, driving some of them out of the profession, and, still worse, pushing others into disreputable practices in order to gain a livelihood.

This is a time of peril to our profession and Association, and it behooves every man to stand firmly for these, striving incessantly for higher education, professional integrity and ethics.

We have nothing to do with veterinary education as it may be conducted by a given school, but we can and must dictate what education shall be required for admission to our Association, and we should constantly encourage as a body higher and better education, and constantly assure colleges standing for this advancement to-day, that they will be the schools which the profession will support in the future.

Our experience during the past three years of expansion of our Association in membership and territory, demonstrates quite clearly that our laws are of such character as to seriously interfere with the working of our organization.

The provision of our Constitution requiring semi-annual meetings of your comitia minora was not a hardship while all members resided within a radius of from three hundred to four hundred miles, but now we find them scattered almost across the continent, and this semi-annual meeting demands of a portion of these a very considerable outlay of money, and a loss of five or six days with the incident hardship of travel, for the purpose of meeting with this committee for a few hours. This semi-annual meeting should be abolished, and other means found for transacting the Association's business; or, if the present system must prevail, provision should be made for at least paying from the Association funds the necessary traveling expenses of attending members.

At the last semi-annual meeting of our comitia minora some members attended at a personal outlay of nearly \$100 each, an expenditure which you should ask of no member.

The question of making our Association a representative body based upon State and local veterinary organization has at times been mentioned, and it is respectfully suggested that if it is to be attempted the matter should not be long delayed.

Our advanced requirements for membership make it impracticable to affiliate with or base our organization upon State Associations so long as their requirements for admission fall below ours.

Preferring rather to permit you to proceed with the very interesting and extensive programme before you than to detain you further, I bid you all a most hearty welcome to our Congress, trusting that you will be highly entertained and instructed.

VETERINARY EDUCATION.

BY DR. A. LIAUTARD, V.M., Chairman.*

MR. PRESIDENT AND GENTLEMEN: When at our last meeting in Boston I suggested the propriety of having three special topics presented for discussion to-day, and when among those I named "Veterinary Education" as one which might interest all of us, I was carelessly overlooking the fact that in all probability our worthy President would name me as one of the committee, and not only has Dr. Williams called me to that duty, but he was in his turn careless enough to name me Chairman. This is my excuse for rising at this moment, ready to do my duty, but also well prepared to ask of you the greatest indulgence for the deficiency of my remarks.

In making the appointment of the Committee, Dr. Williams, besides myself, named Prof. C. P. Lyman and Prof. Stalker, and upon us the task of considering this vast sub-

*Report of the Committee on Veterinary Education read before the First Veterinary Congress of America

ject of Veterinary Education devolved. At a meeting of the Comita Minoria held in New York, Prof. Lyman and myself being present, we presented a plan to treat the subject, which would give to each one of the members a special period to consider, which we propose to name: Veterinary Education, *as it was;—as it is;—and as it should be*, at least in our estimation. Prof. Stalker, notified of his appointment and of the part he was to write upon, was unable to do justice to the subject and declined to serve. On his notifying the President, Prof. N. B. Niles, of Ames, Iowa, was named in his place, and then I, as chairman, began to urge my co-members in the writing of their parts. There was some misunderstanding, however, as to which parts each of those gentlemen would take, but this was soon arranged, I believe, satisfactorily, and everything went smoothly until a short while ago, when one of the gentlemen, on account of ill health, gave up his part. This left your committee with two active members, and it is the result of their labors I am about to present.

VETERINARY EDUCATION AS IT WAS!

The history of Veterinary Education in America can be briefly written. For many years after the settlement of the country there were no veterinarians or veterinary colleges. It was not until the value of domestic animals reached an enormous sum, and the success of the veterinary colleges in Europe had been noted, that the great need of veterinarians began to be felt. In 1806, Dr. Benjamin Rush, who had traveled in Europe, and noted the success of the schools there, wrote a letter to the Agriculture Society of Philadelphia, regarding the necessity of establishing a veterinary department in connection with the University of Pennsylvania.

His letter was discussed, but no steps were taken to establish the department. In 1851, Mr. G. H. Dadd started a veterinary journal in Boston; this continued only about one year, but was eventually revived under another name. Soon after this, Mr. Dadd and some of his associates started the first veterinary college in the country, which, like the journal, was short-lived. In 1857, a veterinary college was organized

in New York City, and chartered as the New York College of Veterinary Surgeons. This school, although not very successful in securing students, continued its existence until 1875, when it closed its doors. Soon after this, however, it was again started and has continued to the present time. About 1862, some members of the Board of Agriculture in Upper Canada recognizing the need of teaching veterinary science, to further the plan of organizing a college sent one of their members to Europe to confer with Prof. Dick, of Edinburgh.

Dr. Andrew Smith was recommended for the principal of the new college, was secured, and began work in 1862 by giving lectures to agricultural students. A complete course was soon arranged, and the first graduates sent out in 1866. The growth of this school was at first slow but steady, and it became the first successful school founded in America. The year 1866 seems to have been an auspicious one for the advancement of veterinary science, for we find two colleges started during the year. The Montreal Veterinary College which has continued a successful career with Dr. McEachran as principal, and the Philadelphia Veterinary College, which kept up an organization for some time but without a regular course of instruction. In 1868, Dr. James Law was added to the Faculty of Cornell University as Professor of Veterinary Science, and Dr. Prentice to that of the Free Industrial University. Soon after this, lectures on veterinary science were given to agricultural students at the Ohio, Massachusetts and Iowa agricultural and mechanical colleges.

The American Veterinary College began its existence in 1875 with Dr. A. Liautard, a French graduate, at its head. This school was a success from the start and became an important factor in advancing veterinary medicine. In 1879 the Iowa Agricultural and Mechanical College arranged a complete course of instruction on veterinary science with Dr. M. Stalker, who had been for some time lecturing to agricultural students, as dean of the department. This was the first veterinary school organized in connection with a State educational institution and under State supervision. Being

in connection with an agricultural college, it was vigorously assailed by some, but its growth has been steady and its graduates have taken high rank.

In 1883, the Chicago Veterinary College was chartered, being organized by Dr. A. H. Baker and others. This same year a veterinary department was added to Harvard University with Dr. Lyman at its head. In 1884 the University of Pennsylvania followed suit by organizing a similar department under the charge of Dr. R. S. Huidekoper. Prior to this, about 1882, Dr. C. C. Lyford and some associates organized at Minneapolis a veterinary college in connection with one of the medical schools. This continued until 1890, when the work stopped. About 1889, a department of veterinary medicine was added to the Ohio State University with Prof. H. J. Detmers in charge. The fall of 1890 saw the establishment of a similar department in the University of Minnesota with Dr. Schwartzkopff as dean. This department gave instruction for about two years when it was discontinued. The opening of the National Veterinary College in Washington is known to all of us. During this year a college called the Kansas City Veterinary College was started at Kansas City, Missouri. Since 1890 several colleges have been organized in different parts of the country some of which are still in operation, and some of which have suspended. Within the past few years most of the agricultural and mechanical colleges have added a chair of veterinary science to their faculties, and many of the experiment stations have a veterinarian on the working staff, in some instances the professor of veterinary science is also veterinarian to the station, and in others the two positions are distinct.

With the exception, possibly, of a few schools of which I have no information, such is briefly the history of our veterinary institutions. It will be noticed that while quite early in the history of the country the wealth invested in domestic animals was great, veterinary schools were slow to be established and were not well patronized when once started; that the interest in, and the facilities for obtaining a veterinary education did not advance nearly as rapidly as many other

branches of education. However, when this wealth became menaced by contagious diseases imported from abroad, and the improvement in our domestic animals leading to the increase in value of individual animals, the demand for qualified veterinarians increased. This led to an increase in the number of students at the existing colleges. The financial success of the colleges, and the success of their graduates, and the increasing demand for qualified veterinarians led to the marked increase in the number of colleges in recent years.

VETERINARY EDUCATION AS IT IS.

We have shown that there is at present about fifteen veterinary colleges in America. These colleges may be divided into two classes: 1st, those organized and chartered by individuals or corporations and depending upon the fees of students for support; and 2d, those organized in connection with State educational institutions and controlled and supported by the State. The first schools organized belong to the first class. The most important schools of this class are the American Veterinary College, New York College of Veterinary Surgeons, Toronto Veterinary College, Chicago Veterinary College, Kansas City Veterinary College and Ohio Veterinary College.

The most important of the second class, named in order of date of organization, are the Iowa Agricultural and Mechanical College, Veterinary Department Harvard University, Veterinary Department University of Pennsylvania, Veterinary Department University of Ohio. With the exception of the American Veterinary College (and we may here say parenthetically that this school will from now on, judging by the last catalogue, more nearly resemble the schools of the second class, inasmuch as the course is now graded and extends over three sessions), there is a vast difference in the two classes of colleges. Both have their friends and both have been criticised by those interested in the advancement of veterinary education. We will briefly discuss each, and note some of the criticisms which have been offered.

In the private schools, the course of instruction extends through two sessions of a little less than six months each. The course is not graded and a low standing is in many cases sufficient for entrance. The subjects taught in this class of colleges are similar in each, and the following list, taken from the latest catalogue of the Chicago Veterinary College, will serve as a sample: Theory and practice of veterinary medicine, anatomy, chemistry, physiology, materia medica, helminthology, veterinary surgery, obstetrics, lameness, shoeing and examination for soundness, hygiene and management of diseased animals.

In the schools connected with State institutions, and also in the American Veterinary College and McGill University, the course of instruction extends over three sessions. In the State schools these sessions are eight months each, thus making the time actually twice as long as in the private schools. The work is graded, examinations being held at the close of each year. Students must pass an entrance examination if it be not otherwise shown that the applicant is competent to carry on the work. To graduate, the student must have passed an examination on every subject taught with a grade of seventy-five per cent. or more. The subjects taught in these schools are similar in each.

The following list, taken from the catalogue of the Iowa Agricultural and Mechanical College Veterinary Department, will serve as an illustration:

First Year.—Anatomy, English language, histology, principles of heredity, elementary botany, veterinary medicine, physiology, zoology, military drill, dissection and clinics, library work.

Second Year.—Pharmaceutical botany, chemistry (general), materia medica, physiology, composition, zoology, anatomy, chemistry, veterinary medicine, ophthalmology, pathology, (general), animal parasites, dissection and clinics, military drill.

Third Year. Bacteriology, chemistry (toxicology, etc.), pathology, composition, therapeutics, veterinary medicine, (principles and practice), operative surgery, surgery (general), anatomy, obstetrics, examinations for soundness, shoeing, principles of animal nutrition, clinics, thesis.

A comparison will show that there is no great difference in the curriculum of the two classes of schools. The principal subjects omitted are botany, zoology, and bacteriology. The omission of the last is worthy of special notice as this subject is the real foundation for a true knowledge of pathology.

Being, then, no marked difference in the list of subjects taught, where does the difference lie? How can some schools graduate students in one-half the time required by others? A careful study of the facilities of the different colleges to teach the subjects laid down in their curriculums, shows that there is a great difference regarding this point. The facilities for teaching some branches in the two-year colleges are good, while those for teaching others are very poor. It has been said that although the staff of instructors is large and may contain noted members of the profession, that as a principal part of their mediums are derived from private practice, they give but little time to the work of the college and that consequently the college does not receive the best work the instructor is capable of doing. The facilities for teaching anatomy, surgery and veterinary medicine we find good in most of these schools, but the facilities for teaching the correlative branches, subjects which if understood enable the student to better understand the strictly veterinary studies, are in all very poor.

Proper laboratory room and the necessary apparatus are not at hand, and where these subjects are taught at all it is simply by lectures; as work in the laboratory is the essential feature in teaching such subjects as bacteriology, chemistry, botany, zoology, etc., it is not strange that the graduates of these schools know so little of these subjects.

In the schools connected with the State educational institutions the facilities for teaching all the correlative branches we find exceedingly good. These institutions have well equipped laboratories which are accessible to the students of all the departments. These students are taught by men who have qualified themselves by years of careful study bearing on one particular science. Their entire time is given to the work, and when necessary to better the instruction classes are divided into sections.

The facilities for instructing in anatomy, medicine, and surgery and other practical studies are nearly equal if not on a par with the other schools. Some have said that they are superior, and others have claimed that their facilities contain too few practising veterinarians and that the supply of chemical material is in some inadequate, and that consequently while the graduates might be scientific, they were not practical.

It is of course understood by all that the veterinarian should possess both a scientific and a practical knowledge of veterinary medicine and surgery; as but few students have obtained a knowledge bearing on the science of medicine before entering our veterinary colleges, such knowledge must be acquired at college. It is evident that if not acquired at college it will never be obtained. Even if the practitioner of medicine be inclined to study science he has not at hand the necessary opportunities and other accommodations which are essential.

The practical knowledge which the veterinarian should possess is acquired during the college course, and is continued after graduation as long as veterinary medicine be intelligently practiced. The friends of State colleges answer the critic who says that there are too few veterinarians in the teaching corps and not enough clinical material, by saying that those who are in the faculty devote almost their entire time to the work, and that as many clinical cases as can be studied by the students are at hand; that more cases than can be observed and studied are of no advantage, that even admitting a possible tendency to become scholastic, it is much to be preferred to empiricism which must follow, to a considerable extent, where the sciences are neglected.

Briefly summarizing, we find that veterinary education is far in advance of what it has been in the past. That increasing demands for a higher and a more complete education have led to great improvement in our colleges during recent years. That by the organization of new schools having better facilities and longer courses of instruction, and through the untiring efforts of some of the older members of our profession, veterinary education has advanced to the place

which it now occupies. That there are now several places on this continent where a good scientific and practical veterinary education can be obtained we think will be admitted by all. But we recognize also that there is much room for further improvement, and when we consider all the factors now at work in advancing veterinary education, we should not forget to include in the list of factors the action of this Society in advancing qualifications for membership last year, nor the teaching of the rudiments of veterinary science in most of our agricultural colleges, which leads to a better appreciation of the services of the veterinarian.

We believe the outlook for the future is good. That we can in time approach somewhere near our ideal of what veterinary education should be.

VETERINARY EDUCATION AS IT SHOULD BE.

The report that I have presented to you as coming from the pen of our able colleague is interesting in many points. While in the first part he has concisely considered the subject up to shortly after our first Centennial Exhibition in Philadelphia as, say, the first period of veterinary education *as it was*, he closed his excellent paper by the consideration of his subject from then to date, or veterinary education *as it is*.

To enter into the consideration of the third part of the programme, the question that presented itself first to our mind was, what could be the best plan to follow. Was it to consider what was done in similar schools of Europe only—was it to criticize these or was it simply to present to you what we thought deficient in our American organizations, and offer our suggestions for improvement?

This last, we thought, was fulfilling the object better, and was, we believed, more in the spirit of our motion when made in Boston, September, 1892.

I propose, therefore, to take for objects of our critics and as requiring modifications the four following subjects:

- 1st. Recruiting of the Faculties of a School.
- 2d. Admission to Matriculation.
- 3d. Composition and Length of the Curriculum.
- 4th. Examination for Graduation and Degree Granted.

1ST QUESTION—*Recruiting the Faculties of a School.*

The faculties of most of the veterinary schools all through the world are composed of gentlemen who, assuming the teachings of the various departments of medical education, are qualified as professors in the different chairs, and also of others who, more modest in their callings, are satisfied with the denomination of lecturers. On the professors devolves the greatest responsibility of the teachings—they are supposed to be thorough masters of their subjects, or at least sufficiently competent to deliver frequent lectures to initiate the students in the requirements of their department. In other words, a professor is, or at least ought to be, an expert on his special subject—and unless he is that expert, is he properly fitted for the position, is he deserving the professorship?

If we are right, let us consider if in our veterinary schools the recruiting of members of our faculties is carried out as it ought to be—always considering the subject of advantage to our veterinary students in their pursuit of veterinary education.

We all know how easily veterinary schools can be organized in the United States, how little proper legislation of any value is required to allow a few persons to write a pompous and illustrated announcement, and how then the corps of teachers, of professors (I do not say experts) is made known publicly. It is unnecessary, and it would be improper, to mention special names; but I ask you, is there a school amongst those that are found in America, excluding perhaps those which have existed for several years back, is there one which possesses in its faculty a gentleman who truly deserves the title of professor, who has the right to claim it? Look at the announcements of the schools born of yesterday, of one, two, four or five years ago, and you will, I am sure, find in them, in their first as well as their last, the names of persons whose breeches were, when called to the professorship chair, still warm with the heat of the benches of the lecture room, from where they just got out before being called to pass their examination for graduation.

And not only that—these newly elected professors are not even satisfied with these, allow me to say, usurped and false pretensions, but some go further; they who graduated yesterday become specialists—a plain, single knowledge of general medicine or of a branch of medicine is not sufficient—this they may by an extra amount of study, of intellectual labor, of extra work have gained possession of; but a specialty, a mastership, so to speak, which ought to require time, perhaps years, to obtain, he who graduated in the early spring and budded out then as a simple veterinarian, is found in the summer a bloomed specialist.

With one exception among our American schools, I know of none where a kind of apprenticeship, say two short years only, is required before a professorship can be looked for.

What is done in Europe?

In the French, German, Italian, Swiss, Belgian and Austrian schools, which are those from which I have obtained proper information—I say nothing of the English-speaking colleges and I have not been able to learn anything on the subject—in the continental schools the vacant chairs are obtained by competition. A stated time is announced and advertised through the various professional journals a long time beforehand, the requirements are presented in print, the length of the examination, written and oral, is mentioned, lectures are to be delivered by the candidates, etc., etc., and to the best man the prize is granted.

There the value of the man is fairly tested; he may be a recent graduate, he may be a practitioner in active work and already out of the school for some time, but unless he has passed satisfactorily before a proper board of examiners he does not receive the coveted nomination.

We know well enough that there is a great difference between European and American institutions. The former, or at least those which we have taken for examples, are governmental schools—the latter are almost entirely all private—and the fact that the English schools are of the same nature may account for the fact that we believe the same state of affairs exists with them as does on the continent.

Is this to the advantage of the student—is it one to veterinary education? We fear not, and on this account will draw the conclusions that are presented at the end of this report.

2D QUESTION—*Admission to Matriculation.*

If there be a measure essentially important to the advancement of veterinary education and the elevation of our profession it is here—in the recruiting of young men properly fitted for the work.

Compare the candidate to veterinary education of years ago to the one of our day and see the result obtained by him, whether at home or abroad.

In France, already in my days, the intended student had to go into a preparatory school where special studies were required of him. To-day no one is allowed to compete unless he possesses the diploma of B.S., of M.A., or one from some secondary classical or special college.

In England the requirements for admission are quite severe, consisting in Reading, Dictation, English Grammar, English History or Geography, Arithmetic, and either French, German or Latin.

In Belgium the candidate must have received an education which will allow him to receive the degree of Doctor of Natural Sciences.

In Italy students are admitted only after having completed their studies in a high school.

In Germany graduation from a high school is required, but as most students are intended to serve afterwards in the army, they are recruited accordingly and from the military ranks.

On this continent the requirement of an examination before matriculation was first demanded by the American Veterinary College, and this step was followed by all those colleges which came after her, with the exception of the New York College of Veterinary Surgeons, the Chicago Veterinary College, and one or two others, which require none, and though the examination required by Harvard University seems to read in the announcement as being more severe than in any of the other schools, all seem to be by their catalogues demanding simply at least an evidence of a fair hand-writing and semi-pass-

able spelling requirement, more or less neatly worded by asking either "an evidence of preliminary education sufficient to enable the student to follow the course of instruction," or simply "an examination upon the ordinary branches of English education," or again a still easier examination on "reading, writing and spelling."

This concise review shows us that the majority of the American schools are fully aware of the necessity of earlier education, and we are sure that none of them would dare to say that their requirements are sufficient in the state of advancement that we have reached.

How far we are from the days when a gentleman could go to a dean of a faculty asking to have his name entered as a student, would pay his fees, go into the lecture room and listen to the demonstration of subjects which in a very short time he would recognize as entirely beyond his comprehension, and would leave the institution a poorer and no doubt a wiser man. Yes, those days are gone, and well it is for the sake of the profession, if not for the names of those who did not tell him from the start how unfit he was to study and unfit to ever become a veterinarian.

And yet is enough exacted? Do we ask enough? Truly a young student who will come to us with a handsome handwriting and with a faultless orthography may be considered as possessing a sufficient amount of education and of intelligence to enter our schools. He may be supposed and is undoubtedly far above the candidate of older days. But for himself and for the future of the profession, would it not be better to require more? If such a high standing is demanded by the principal schools of the continent, if the knowledge of more than one language is exacted from the French and from the English colleges, can we remain satisfied with what we demand to-day, and merely leave the possession of an additional foreign language as an optional subject for the examination of matriculation?

3D QUESTION--*Composition and Length of the Curriculum.*

This third question is a delicate one to consider; while for some years the length of studies has been for the majority of

our schools of only two sessions, varying from $4\frac{1}{2}$ to 6 months, with the exception of the two veterinary departments of Pennsylvania and Harvard Universities, this has been considered by many insufficient. The subject has been carefully considered by one of those schools and the result has been that the requirement of attendance has been extended to three years, and, as you know, this Association has by a unanimous vote decided to enforce this three years regulation and impose it on all the schools by denying admission to any graduate who could not show a diploma for at least a three years' school attendance. It is not our object to consider this action of the Association. She has a right to make her own laws, she has a right to exclude whom she pleases, and yet the question might be put, would it not have been better to bring the two year schools to adopt a three year term by showing them that it was in their interests and in those of the profession that such a change was demanded?

We are sure that there is not in our Association one man who can ignore the advantages that the student will obtain, and therefore the profession, by a longer stay at college. And if for one instant the candidate to matriculation, the intended student, would only be made aware of the various studies which he will have to go through, there is no doubt in our mind that he would turn his back to a school where his own intelligence would tell him that two sessions of six months, less the vacations and holidays, would be all that would be required of him. He would undoubtedly see for himself that he could not be graduated and be equal in knowledge, in theory or in practice with the one who would have given more time.

Is it to say that three years are sufficient? Evidently no. A glance at the programmes of some of the various schools of Europe, England, France, Germany, Italy and Belgium shows that with but little alteration the various subjects are taught at those schools, viz: Veterinary Medicine, Comparative Pathology, Materia Medica, Therapeutics, Pharmacology, Veterinary Surgery, Operative Surgery, Obstetrics, Anatomy, Pathological, Surgical and Descriptive Histology, Physiology, Chemistry, Physics, Toxicology, Botany, Helminthology,

Natural History, Zoology, Meat Inspection, Sanitary Medicine, Shoeing, Biology, Bacteriology, External form of the horse, Teratology, Jurisprudence and Zootechny.

It is unnecessary to say that none of our schools claim such a curriculum, when they consider that European colleges demand all of them four years of ten months each—the schools of Sweden and Denmark asking even six years.

We know that there is a great difference between the organization of European and American veterinary institutions; as we have said, the former are governmental, the others are most of them private undertakings; but is that a reason, would the private interests suffer if all the schools should ask three or four years, as they will in a short time to come? We have no hesitancy to say no, and as proof of it we can say that we know of one school that to-day, after having started this three years requirement, does already see the benefit of it by the increase in the number of its students.

The competition that must exist among the schools must be one of advantages and opportunities to the student, and on that account the result must be striking to the careful observer. A better curriculum will mean a larger and more select attendance of students and an advancement for the profession.

4TH QUESTION—*Examination for Graduation and Degrees Granted.*

Facility of matriculation and short attendance at the school must necessarily be followed by another want of reform. This is the fourth question :

The announcements of our various schools count among their requirements for graduation a written and oral, and, for some, a practical examination. These are carried on in different ways, but the oral enjoys some privileges—*it is private*. It is a little ten or fifteen minutes chat between the bashful, nervous, over-worked or perhaps ignorant candidate and one of his teachers. The student has answered the question, he is passed after waiting anxiously several hours or several days for the return, and for the paper which will allow him to come up at the next commencement. Poor recent graduate, this commencement, the last day of his college life, is the first of his

struggle for life. He has come out of his alma mater a V.S., a D.V.S., a D.V.M.S., M.C.D., M.D.V., M.V.D., V.M.D. or a D.C.M.; why not a D.C.M.D.A., Doctor of Comparative Medicine of Domestic Animals? And when a short time later he goes and puts his shingle up, if he meets a colleague who has a title different from his, he does not know if he ought to ignore him or to recognize him as a friend, as a brother of the family of veterinarians.

Does it not seem to you, gentlemen, that there is need for imperative reform, and that the day has come when uniformity in the end ought to go with uniformity in the beginning, and that if the noble efforts made by all of us, either as practitioners in active life, or as teachers, professors and lecturers, is to be counted to his whole value, it would become us from this day to submit all our students to a uniform examination and grant them a uniform title—a name for one and all?

Let us again go back to Europe and see what is done there and what degree the new graduate receives.

The examinations in the schools of the continent, in France and in Italy, I know are made before a board of examiners, the same in England. The title is uniform for one and all in the entire country; if in France, it is the *Medecin Veterinaire*; it is the *Thierarzt* of Germany; it is the *M.R.C.V.S.* of England.

Why not adopt the same in this country, why not have a national board of examiners with a national name and doing a national work?

There is, besides the advantages that such a reform would bring, another point which is of no less importance. How does the American veterinarian stand in other countries? Is he allowed to practice, and to assume the title that he has received from his alma mater—It is sad to say; but the negative answer to that question stands as a shame to our American degrees and a reproach to our American institutions.

Where is the remedy? In the creation of a national board of examiners, whom we have no doubt could obtain in their powers an obligation that no one should be allowed to practice veterinary medicine in the United States unless he was pos-

essor of a degree granted by such a board. The action taken by this Association to obtain an act of organization is the first step in that direction. Let us have no more foreign veterinarians, let us do away with the titles that exist, and were created with more or less wisdom and more or less good intention of professional standing. Let us have a board of examiners with a national name, the *Veterinary College of America*, with one title for its alumni, an M.V.C.A. (Member of Veterinary College of America.)

CONCLUSIONS.

Gentlemen, in presenting to you the subject of Veterinary Education as it should be, and in making the remarks which a careful consideration of the subject has brought to our mind, we have never desired to find fault with what has been done, nor with what is being done now. The work carried out by our institutions has been a noble work, and all those who have been connected with it are entitled to feel proud of the results they have accomplished, and in years to come their names will be mentioned as those of men who have deserved well of their profession; but the day has come when *better* must be the word of the day, and that *better* cannot be obtained except by a uniform and unanimous consent of all those who are connected with veterinary education, and it is with the hope that the questions presented to you will receive a careful consideration that we respectfully beg to recommend the following:

1. That the attention of the officers (Trustees and Faculties) of the various schools of the United States where teaching of veterinary medicine is carried on, be called to the necessity that appointment to vacant professorships be made only by competition.

2. That a stated and uniform requirement for the examination of candidates to matriculation be required, the same to be decided upon by a special committee appointed to that effect.

3. That in the interest of the private welfare of the schools now in existence, in the interest of the numerous students who

now fill our lecture rooms, and in the interest of the advancement of our profession, the length of studies should be increased to three years by all schools, and the curriculum to include lectures on a stated given number of branches.

4. That as soon as possible a national board of examiners, to be known as the *Veterinary College of America*, shall be organized with power of granting a national, uniform degree, which will be the only one recognized in this country, and the only one granting the privilege to practice.

REPORT OF COMMITTEE ON INTELLIGENCE AND EDUCATION.

By PROF. F. OSGOOD, M.D., C.V.S., Chairman, Boston, Mass.*

When we reflect that thirty years ago, when this Association was organized, how few college graduates there were in this country, what the facilities were for the education of the veterinarian, that the calling to which we have devoted ourselves was to a great extent in the hands of inferior and incompetent men, and compare the conditions with those prevailing to-day, we need have no misgivings as to the future of the profession. When we are inclined to discouragement we shall do well to remember that the Veterinary Profession had no definite recognition until within a period of a little more than a hundred years.

It was not until Bourgelat, in 1760 or thereabouts, began his teachings, which had their signal fruition in the founding of the Veterinary School at Lyons, which three years later passed to the control of the State, that veterinary science can be said to have had any standing as a branch of medical learning. We are told that in the middle ages the practice of animal medicine was an employment of shepherds and blacksmiths who employed the crudest superstitious arts in the cure of animal disease. The Greeks had some knowledge of veterinary science, as is evidenced by the collection of the writings of Greek veterinarians which have come down to

* Read before the First Veterinary Congress of America.

us in the compilation made in the tenth century by direction of the Emperor Constantine Porphyrogennetos.

Fragmentary notes upon the diseases of cattle, sheep, swine and goats are found in the writings of the Greek agriculturists Cato, Varro, Celsus and Columella.

The sixteenth century witnesses the great Renaissance movement in literature, arts and science. This renewed interest in science caused investigation into the anatomy and physiology of domestic animals; the most important record of which is Ruini's treatise on the anatomy and defects of the horse, published in Bologna, in 1590. This book is thought to embody the existing knowledge of the subject of animal medicine.

Bourgelat's fame, and the services of Lafosse, the leading veterinarians of the last century, inspired a movement throughout Europe which bore fruit in the establishment of veterinary schools in the principal educational centres: Copenhagen in 1773; Vienna in 1777; Hanover in 1778; Dresden in 1730; Berlin and Munich in 1790, and London in 1791.

I have thought to illustrate what progress has been made in veterinary education, and in the study of the science since its inception, and particularly in recent years, to assist us in formulating some plan for future action by presenting to you certain facts that I have collected from the best available sources regarding the status of the science abroad, the educational requirements at the principal universities, the regulations which govern the practice of veterinary medicine, and the position of the veterinarian in the British and Continental armies.

EDUCATIONAL SYSTEMS IN EUROPE.

While in our own country we have with difficulty made some advances in the betterment of our educational requirements by the establishment of the three years graded course in a number of our veterinary institutions, and in more rigid matriculation examinations, they have in Great Britain, without serious opposition, been able to place the educational requirements upon a more satisfactory basis.

We learn from the Proceedings of the Royal College of

Veterinary Surgeons that the council have gone vigorously to work to improve the educational status of the profession; first by adding a written test to the professional examination, which came into operation in May last, and has proved a remarkable success. Subsequently the matriculation examination was placed on the same footing as that required for the medical profession, and the four years graded course adopted.

The requirements for the fellowship degree will in future be of such a character as to demand scientific attainments of no mean order. The Royal College now reports a great increase in the number of students, there being one hundred and eleven matriculants in the class of 1892-3 against seventy in 1891-2.

In Belgium there has been lately adopted what may be called a model system for the education and control of veterinary practitioners. I am enabled to give an exposition of the regulations which have gone into effect in that country by means of an article by Monsieur J. Boullaire in the "Annuaire de legislation etrangere, volume 20."

REGULATION OF VETERINARY EDUCATION AND PRACTICE IN BELGIUM.

Prior to 1850 any one provided with a license could take the title of veterinary surgeon, and treat all diseases of animals without any guarantee of capacity. The law of 1850 modified this to the extent of prescribing the examinations and granting the diplomas which were required for the practice of veterinary medicine. The law was unsatisfactory in so far that it did not arrange a programme of studies, and recognized no institution, either official or private, as having a course of organized study and subject to inspection, where candidates could qualify themselves for diplomas. The law of 1860 remedied this by creating a Government school of veterinary medicine, of which the programme of studies and the subjects for examination for the grades of candidates, and of veterinary physicians, were controlled by the State. The law lately put into force has for its object the increase of the

curriculum of study and the improvement in the qualification of veterinarians so as to keep abreast with the progress of science in recent years. The larger number of veterinary physicians are graduates from the Government veterinary school, but in accordance with the principles of liberty in higher education prevailing in Belgium, it is not obligatory to pursue a course of study at this school, so that degrees may be obtained in any place where equivalent studies have been followed. The effect of the law is to secure to the veterinary students a general scientific education. It also has the intent of giving a more enlarged scope to the members of the veterinary profession, and of qualifying them by means of more extended special studies for the practice of human medicine, pharmacy and agricultural science.

By a royal decree of December 10th, 1890, a corps of veterinary inspectors was created independent of local control, which acts as a sanitary police, with extensive and definite powers relating to the prevention or control of the contagious diseases of domestic animals, as well as the inspection of meat. These inspectors receive from 4,800 to 6,000 francs.

There are two grades of veterinarians provided for in the general scheme, that of veterinary candidate, and that of veterinary physician. The requisite to the grade of veterinary candidate is the possession of the degree of candidate of natural science, or its equivalent; and no one is admitted to the examination for the degree of veterinary physician who does not receive the degree of veterinary candidate. The examination for the degree of veterinary candidate embraces the following subjects: Therapeutics (including pharmacodynamics) pathological anatomy; general pathology, (including bacteriology and parasitology); medical and surgical pathology; sanitary police; legal medicine; commercial legislation and deontology; zootechnics; hygiene, and elements of agriculture.

In addition to this examination, which is oral, tests in demonstration are made in pharmacy, operative medicine, clinics, obstetrics, external anatomy and macroscopical pathological anatomy.

The curriculum at the Government school comprises descriptive anatomy of animals, systematic and comparative; topographical anatomy; general and special histology; physiology (including embryology) experimental physics and physiological chemistry; pharmacognosis and pharmacy; therapeutics (including pharmacodynamics); pathological anatomy, general pathology (including bacteriology and parasitology); medical and surgical pathology; zootechnics, hygiene and principles of agriculture; sanitary police, legal medicine, commercial legislation, and deontology; toxicology (including chemical analysis in clinics); farriery; operative medicine; obstetrics clinics; inspection of meats. The benefits which the veterinary profession derives from this new system, enforced as it is by effective legislative supervision and prohibition, can hardly be estimated.

REGULATIONS OF VETERINARY EDUCATION AND PRACTICE IN FRANCE.

The first veterinary school was founded at Lyons by the celebrated Bourgelat. The notoriety of his book upon Hippiatry brought about the founding of a school for teaching the method of treating domestic animals. In 1753 this school received the title of "Ecole royale veterinaire." Two of Bourgelat's scholars, Chabert and Bredin, founded a school at Alfort in 1776. Similar institutions were projected in various other places. Though suppressed in 1793, the schools of Lyons and Alfort were reorganized in 1795. The Convention gave them a new existence in the third year of the Republic. The school at Alfort became the most important and was made illustrious by masters of the highest reputation. It was reorganized by decree of June 5th, 1813, and above all by the order of September 1st, 1825, which has been called a veritable charter of veterinary science.

The third school was established at Toulouse in 1828. The veterinary schools are governed at the present time by the decree of October 1st, 1881, and the arrete of March 1st, 1891.

The examinations for admission to the veterinary schools are held at the principal towns of each territorial department. Those who have obtained the diploma of the "Institut Agronomique," or of the National Schools of Agriculture, are not required to pass examinations, but are admitted in virtue of their diplomas. No one is allowed to compete in the examinations who is not a possessor of either of the three diplomas named below: "Baccalaureat es sciences, es lettres, or l'enseignement secondaire special." The matriculation examination consists of written tests in French composition, solution of problems in arithmetic, algebra, or geometry; composition on physics and chemistry, and on natural history. The course of study extends over a period of four years, comprising the following subjects: Anatomy of domestic animals, exterior of the horse; physics, chemistry, pharmacy, and toxicology; natural history and materia medica; physiology of domestic animals, terratology and therapeutics; general pathology, medical and chirurgical pathology; clinics, manual operations, and farriery; pathology of contagious diseases, sanitary police, inspection of meats, legal medicine, commercial legislation, hygiene and zootechnics.

After four years of study the successful candidate receives the diploma of veterinarian. Those who have had military scholarships are admitted into the first stage of veterinary aids, and after having passed satisfactory examinations are sent to the cavalry school for a period of one year. At the end of this year, if they have passed satisfactory examinations for graduating from the same, they are appointed as veterinary aids and attached to the army. Military students agree to serve six years in the army after they are commissioned as veterinary aids.

In France until 1890 the practice of veterinary science, except as regarded contagious diseases, was without Government control or supervision. The possession of a license of expert farrier enabled its holder to treat all diseases of domestic animals with the exception of those of a contagious nature; the law of 1890 forbids the practice of veterinary medicine by any but those provided with diplomas from the national vet-

erinary schools at Alfort, Lyons and Toulouse, or those given by the Minister of Agriculture to students who have passed examinations equivalent to the requirements for the graduating class of the national veterinary school. The other countries that require diplomas for the practice of veterinary science are Denmark since 1857, Russia since 1857, Switzerland since 1865, Italy since 1865, Holland since 1874, England since 1881, and the German Empire from its foundation.

GERMANY.

In Germany veterinary schools were founded in Hanover, 1778; Berlin, 1790; Munich, 1790; Stuttgart, 1821, and the veterinary institution at Dresden in 1730. The course of instruction at these schools covered a period of from one to three years, and while it was not unrecognized that the mastery of veterinary science required a thorough scientific education, yet it was thought that, in the interest of cattle owners, as large a number as possible of veterinary surgeons should be created, and to this purpose there must be some with a limited education, therefore two classes of veterinary surgeons were recognized, those having a scientific education being qualified in the first division, and less educated in the second. In 1869, following the example of the German government, Prussia first withheld its approbation of veterinarians of the second class, and the military administration began to take an increased interest in the education of veterinarians, and regulations tending to its improvement were adopted by the governments of the German Empire. The control of the education of veterinarians in the German Empire is now confided to the Minister of the Interior, and the course of studies has been extended to seven semesters or terms. The average attendance at the German schools is as follows: Berlin, four hundred and fifty, of whom about one-third belong to the army; Hanover, two hundred and twenty; Dresden, eighty; Munich, ninety; Stuttgart, seventy-five. The practice of veterinary medicine is forbidden except to those holding diplomas.

In Switzerland the curriculum is very much the same as that of the French schools, but the course is by recent legislation extended over a period of six years.

Having thus briefly surveyed the educational conditions which prevail abroad, we can gain some idea of the standard we must strive to attain. I do not apprehend that we need resort to violent methods to remedy the evils and shortcomings of our educational system, or to overcome any detriment to the profession that may now be caused by the intrusion of incompetent and unqualified practitioners. The medical profession does not escape the entrance of incompetent persons into its ranks, but the achievements of the accredited members overcome any pernicious effect from this cause. Our efforts to improve must largely be made by keeping our own standard high, and inferior practitioners will be gradually eliminated by the law of natural selection. Our aim must be to build up what we have, not to destroy, to improve our educational institutions, to which end much has lately been done.

Our educational institutions have been spontaneous, individual, and I fear, in many cases, lacking in high and disinterested purpose. A marked result of all this is a lack of cohesion among our colleges. There is not only little uniformity and sympathy, but actual discordance at many points. If the American veterinarian would have universal recognition, we must have a uniform standard throughout our country adopted by all our schools, A uniform matriculation examination, which must be rigidly enforced; a uniform curriculum, and a uniform length of study.

This standard should be high, so that the uniform American degree would be recognized the world over. What is our condition to-day? America, with more veterinary schools than any country on the face of the earth, does not confer a degree that is recognized as a guarantee of scientific education and training, outside our own country, simply because we have all grades of schools, and the world is not going to inquire as to the standard of each school; but when it becomes a recognized fact that the American degree has a definite

value, and that of the same standard throughout all American schools, we shall get the recognition we deserve, whatever it may be.

All the foreign schools are subsidized, with the exception of those of Great Britain, where the educational institutions, with one partial exception, are private enterprises, as are our own. But even in Great Britain, under these circumstances, a plan was devised by which the English diploma is made to represent a certain fixed value without regard to the school in which its possessor was trained. The plan has been in successful operation for some years, and to this fact it is undoubtedly due that the English schools now find themselves in a condition to impose the full, or four years course of study, thus bringing their diploma up to the grade of the continental institutions. I believe that it is just as possible for us, with our present conditions, to formulate a plan that will lead to the same general and desirable results.

As a means of arriving at this result I would suggest, first, that a committee be appointed, with sufficient amount of money appropriated to cover the necessary expenses incurred for the accomplishment of such objects, to obtain, if possible, a charter of incorporation for the Association from the general Government; and, second, that a committee, none of whom shall be connected with the governing board or teaching staff of any veterinary educational institution, be appointed with the same power, to incur necessary expense, to arrange for a Congress of Faculties, at which each school may be represented by properly accredited delegates, where the subject of future educational requirements and training may be freely discussed, and possible plans devised by which a uniform standard for teaching may be arranged and adopted.

When we look at the natural prospects of the profession we find that in recent years the demand for scientifically trained students of comparative medicine is greater than the supply. The United States Government is constantly seeking for men who are capable of filling various positions under its Bureau of Animal Industry. Various State governments are seeking the proper men to act for them as cattle commission-

ers, or otherwise to recommend such legislation, and to organize proper methods to enable them to get rid, so far as possible, of the contagious diseases of animals, many of which are communicable to mankind with such distressing results. Cities and towns are seeking for men who are able to detect disease, and unsafe qualities in the animal food products, meat and milk. In several of our States veterinarians are now appointed in the militia, and given rank and recognition as commissioned officers. In fact with each year there is an increased demand for these men, and even now positions which did not heretofore exist, or were exclusively held by men of the medical profession, are now satisfactorily filled by veterinarians. How great this satisfaction is is well shown by the increasing demand. In relation to the importance of these recent appointments in the military organizations of some of the States, it may not be out of place for me to call attention to the great differences which exist in the forms of our Government and those of many of the European States. With us all legislation must commence at the peripheries, if I may use the term, and central legislation only comes as a result of the expressed desires of the States to the general Government, while in Europe legislation commences at the centre, originates with the general Government, and is executed by the different Governmental divisions of the country.

We have, for years, been trying to get the general Government to recognize the army veterinarian by giving him a commission, and with it, all that belongs to an officer of equal rank. So far without success. May it not be that this very perfecting of the militia service in this direction will prove to be the one necessary step that will lead to this desired recognition of our science by the Government at Washington?

In connection with the subject of the appointment of veterinarians to military positions, I think it may be of interest to give some account of the standard of veterinarians in the armies of continental Europe and Great Britain.

In France the veterinary department of the army has charge of the preservation of the health of animals, the treatment of their diseases, and the inspection of meat intended for

the army. The effective force of veterinarians is as follows:

The recruitment of veterinarians for the army is assured by means of military scholarships instituted in the schools at Alfort, Lyons and Toulouse. The army veterinarians are subject to a regular system of promotion governed partly by seniority and partly by capacity; they are retired from the service according to the military system, fifty-eight years being the oldest for principal veterinarians of the first-class; fifty-six the second class; fifty-three the first-class and fifty-two the second class are for the veterinary aids.

In Belgium the veterinary department is governed by an inspecting veterinary surgeon under the orders of the inspector-general of the medical service, and consists of the corps of veterinary surgeons of first, second and third class, thirty-four in all.

In Germany the veterinarian ranks as first corps veterinary surgeon, equal to captain; upper veterinary surgeon, equal to first lieutenant; veterinary surgeon, equal to second lieutenant; under veterinary surgeon, equal to sergeant in cavalry.

In the Netherlands the director-general of medical service is head of the medical and veterinary department, and has the rank of major-general.

In Spain the veterinary department of the army is under the director-general of cavalry, and consists of one chief professor with assimilated rank of lieutenant-colonel; two inspectors with assimilated rank of lieutenant-colonel; two inspectors with assimilated rank of major; forty-three first-class professors with rank of captain; seventy-five second class professors with rank of lieutenant; eighty-nine third class professors with rank of ensign. Veterinary surgeons are attached to the mounted corps and also to cavalry depots.

In Great Britain the royal warrant of the army provides for the appointment of veterinarians of the following classes:

Principal veterinary surgeon, with rank of colonel, with pay of \$4,122.00 a year; inspecting veterinary surgeons, with rank of lieutenant-colonel, with pay of from \$2,200 to \$2,650 a year; veterinary surgeons, first class, with rank of captain,

with pay of from \$1,324 to \$2,200 a year; veterinary surgeons, with rank of lieutenant, with pay of \$1,000 a year.

A candidate for the veterinary department of the army must hold the diploma of the Royal College of Veterinary Surgeons, and is required to pass an examination before a board of military veterinary surgeons. Ability and merit are the requisites for promotion.

An officer of the veterinary department placed on half pay by reduction of establishment, or on account of physical inability caused in and by the discharge of his duty, or having reached the age of fifty-five shall be entitled to half pay or retired pay at the following rates:

Principal veterinary surgeon, \$2,420; inspecting veterinary surgeon, \$1,557 to \$1,854; veterinary surgeon, first-class, \$883 to \$1,412; veterinary surgeon, \$360 to \$839.

The law provides for voluntary retirement after twenty years service with half pay, and after twenty-five years 7-10ths pay.

The law provides for the promotion of veterinary surgeons for distinguished service.

The rate of pay for veterinary surgeons in India is from 432 to 1,183 Rs.

QUITTOR.

By WILLIAMSON BRYDEN, V.S.

The Veterinary Journal for September, 1894, contains the last of Prof. MacQueen's article on "Quittor," read by him before the Midland Counties Veterinary Medical Association, England. Its completion in the *Journal* was awaited with the interest and expectation one waits for what a popular teacher has to say when the subject reviewed is illy understood by the profession, and often difficult to treat satisfactorily in practice.

From ten to twelve years ago, I engaged in a controversy with members of the teaching and hospital staff of the American Veterinary College, New York, on the subject of quittor,

but dropped the matter as my contention did not appear to be understood. I beg to submit, therefore, that I am somewhat disappointed to find Prof. MacQueen still practically taking the side I then opposed: Vide AMERICAN VETERINARY REVIEW, page 373, November, 1881; 479, January, 1882; 531, February, 1882; 572, 573, 575, 577, March, 1882. In this he was not only sustained, but endorsed and applauded by all present at the meeting where his article was read and discussed.

Judging from my own practical experiences with true quittor, I beg your permission, and also Prof. MacQueen's, to state that I regret the fact that the confusing of quittor and a number of other diseases, thought to resemble it, has been most unfortunate, some of them being the result of accidental and other injuries, the ætiology and therapeutics of which are entirely different from one another. This confusion seems largely to prevail in Europe as well as in America. Pathology regarded in this general way loses its significance, and never can lead to anything but confusion of the student, and illogical treatment of the patient; never! to that professional progress demanded by earnest friends of the veterinary surgeon, who dare to think for themselves. From the evidence before us, the veterinary practice in this respect in 1893, is little, if any, in advance of the days of Markham and Solleysel.

Prof. Gamgee in his "Diseases of our Domestic Animals," seems to me to have had a truer conception of the ætiology of quittor than any of the veterinary authors I have chanced to read so far.

In presuming to take the positive stand I do with reference to what I have (rightly or wrongly) called the physiopathological class of diseases of the horse's feet, legs, and other parts I beg to explain, especially to practitioners like myself, who have only received the ordinary veterinary education of some twenty-five years ago, that although I may not describe the many interesting phenomena and adverse tissue changes taking place within a part like the hoof, in the limb, and in the "horny box" itself, with the exactness of a trained pathologist, I can state in all candor, however, that

my observations are the result of actual experiences in practice, one of more than ordinary proportions, during a period of over twenty years, and embracing never less than from 500 to 1,000 street railway horses, in addition to a mixed practice among all kinds of horses and cattle, larger than the average number. Pardon my making the foregoing remarks about my practice, and also for suggesting that one of the important features of any diseased condition, to the student, is to have a proper appreciation of its ætiology (its history), from the first adverse tissue change. When the hoof, from unfavorable conditions, begins to change (all or, in part) in form, size, or quality, and to crowd and encroach on the sub-horny, sub-coronary, and other structures that secrete and nourish healthy tissues, or that renew and repair such as have become degenerated and imperfect, even to those that are the deepest seated, lining the nutrient foramen, etc., so deep-seated, indeed, that no operation that is safe and practicable could possibly reach, or that nature could renew or repair in less than the average time which she demands to remove such defective tissues, and reproduce or transform into new. These adverse changes (degenerations) having been going on for perhaps a year or more, and having involved the whole quarter to its innermost recesses, she (nature) finally rebels, and a swelling with lameness and some discharge appears at the quarter coronet. This is true quittor. In my experience *such a sinus could no more be cured in a month*, or even hastened, than an egg could be hatched by some patent incubator in one-eighth, one-quarter, or one-half of the time it could be done by an old hen. Such a quittor could *no more be cured in a month* than a case of seedy-toe that had undermined the wall to within an inch of the coronet could be *renewed in a month*. These are prerogatives of old nature that she never tolerates being trifled with or coaxed from her control, not even by a bluff operation. I contend, therefore, that what is claimed to be excision of the cartilage has no more to do with the cure of quittor than punctured wounds of the foot or treads on the quarter have in causing quittor. I mean true quittor, which *cannot be cured by incision* until after Tom, Dick and

Harry have treated it for over six months. Then some operator pretends to cut it out, charges a large fee, and it gets well in a month or so. He also gets the credit for a cure that he has no right to. The fact of the matter is, it has then, as it were, "run out," and would have got well in common course in spite of their interference. It could not then be prevented from getting well, unless complicated by some unusual interference, sometimes called surgery, heroic surgery—a very bastard surgery, too, I consider such work.

The other cases that get well after an operation are those said to be caused by treads and accidents, which could not possibly cause true quittor, not even by a coincidence. How could it? The early history of the case is entirely inconsistent and incompatible; the adverse changes in the tissues of the quarter had not prepared it for this form of disease.

Let us take, for example, a case where, from a defective coronet, the coffin-bone has become adversely affected, the cartilage elements of the pedal articulation being most involved; the process or function of "selection and appropriation" has not been properly performed, and in the disturbed state of the parts, this cartilage element has been transplanted or transferred by the circulation to the wings of the os pedis; such a piece of cartilage might be pared off with impunity, but this is uncalled-for patchwork, and quite another affair from a case where the quarter is all degenerated, a change that has been going on perhaps for months or years.

During the early adverse tissue changes of true quittor the disease can be arrested, but not after the sinus has opened in the usual way; then an average period, of over seven and a half months, is demanded, according to my experience and philosophy; then a cure can be guaranteed, and so can the time required to effect it be predicted with almost unvarying exactness. These are facts that can be demonstrated in every case.

What will the pathologist of the future think of the veterinarians who flourished in 1893, and who could not discriminate between fistulæ, sinuses of the foot, the different sinuses of the withers, or the different sinuses of the poll? Their

different ætiologies have not been considered separately, but have all been, in each case, mixed together, and an average struck. Of what use are such averages? It never seems to have occurred to practitioners that cases like these, or that cases like so-called navicular disease, and cases of disease of the navicular bone were entirely different things. In August, 1892, I was called to a finely-bred mare due to foal last spring; she had a faulty gait—she was a “paddler”—but carried her master some three miles to the station once or twice daily till November. She developed in August a condition of the withers which indicated fistula, which it finally proved to be. I ordered it not to be opened until “fly-time” was past. A flaxseed poultice, made with 5 per cent. solution of carbolic acid was put in a thin bag and attached under the front of an old, thin blanket every night; an abscess like a swelling soon organized, which I opened by drawing tapes through it in November. In a short time it was entirely cured. Her foal came along in due course, and she was again ready for service by the horse—a very vigorous young one.

Immediately after, I was again notified that the mare had another fistula. Instead of true fistula, which it resembled, however, it proved to be the result of an accident, the stallion having bitten the withers when serving her. This recovered in about three or four weeks, from the fact that it was merely a simple wound to the tissues, that were healthy when bitten. Then again, we have all seen cases where, from the fact that the feet having become tender, and the muscles, ligaments, and other tissues of the shoulders having become gradually changed from sympathy, or otherwise, the dorsal spines become injured, when lying or rolling against the wall or floor, from repeated bruises, or other causes, tardy-healing sores are the result.

Almost a similar class of cases is found in connection with poll-evil, which could not all have come from a simple blow, as formerly taught.

Sincerely hoping that my remarks will offend no one, for they are only intended to stimulate investigation in newer lines; to train the eyes that they may see differently and more

accurately ; to cultivate our powers of observation, that we may be better able to interpret nature's laws in health and disease, and be able to discriminate between the different tissue changes, and know the history of such changes from the very beginning—then can we hope to logically predict the result of the treatment and the time required to accomplish cure or repair most successfully.

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.”—VETERINARY RECORD.

RECTAL OBSTRUCTIONS.

By A. E. METZGER, M.D.C., Clyde, Ohio.

Although quite a few cases of rectal obstruction of one form or other have been reported through your columns, the one I wish to call your attention to may help to impress upon those of the profession who do not already make early rectal examinations, of its necessity in cases where symptoms of impaction are present. The subject, a bay mare, eight years old, was brought to my hospital December 2, 1893, with the history that she had been very uneasy since midnight, either lying down or stretching constantly, also that she had been seen to strain at intervals, but was unable to void fæces. Upon examination pulse was found somewhat quickened, temperature normal, also borborygmus present, which fact led me to suspect some rectal obstruction. I made an examination per rectum, discovering a large fluctuating tumor at the entrance of the pelvis above and to the left of the rectum, which from its pressure completely obstructed the passage of fæces. Ol. lini. 1 quart was administered with enemas of warm water, with the hope of being able to soften the fæces sufficiently to admit of their passage, but all such treatment proved of no avail so long as the tumor remained, and the mare grew constantly worse until 7 P. M., when I informed the owner that the only thing that remained to be done was to puncture the tumor with a trocar

and allow the escape of any fluid that it might contain. He accordingly gave his consent, and with an ordinary trocar and canula I punctured it, allowing the escape of a bloody serum into the rectum. The tumor at once disappeared, and after giving a clyster of slippery elm water she passed a small amount of fæcal matter. To allay the pain that was becoming more intense I administered chlo. hydr. ℥j, ol. lini. Oss, after which she ate a small quantity of hay and corn, during the remainder of the night she rested quietly, voiding fæces several times, but manifesting considerable pain at each passage. Another clyster was given during the following day, the pains subsided, and when night came she was on her feet ready for her rations seemingly as well as ever. Can any one give information as to the nature of the tumors?

A FATAL DEMONSTRATION.

By JAMES A. WAUGH, V.S., Allegheny, Pa.

Mr. Christian Fleiner, a well-known and self-educated veterinary practitioner of South Side, Pittsburgh, Pa., undertook early last June to show a liveryman and undertaker the proper way to treat a shoe-boil or elbow tumor without confining the subject with any of the usual methods of restraint. He grasped the shoe-boil or elbow tumor firmly with the left hand and then made a bold and free slash with a knife in the right hand, and the unfortunate beast struggled and the demonstrator's knife slipped and cut a very large gash in his own wrist, also severed a large artery about the same time; then the stable hands hastily threaded some needles and he put eleven stitches in the wound, but was unable to arrest or control the hemorrhage, and fainted; a medical man was summoned and dressed the wound and ordered the patient home. He attempted to treat himself without further medical or surgical assistance. Erysipelas developed shortly and he was removed to the South Side Hospital, where he died of septicemia, June 29, 1893. He was a very large and fine looking German, aged about 40 years, and was educated for the profession of chemistry, but abandoned it for the practice of veterinary medicine and surgery, without undergoing or embracing the

advantages of a course of instruction in any veterinary school or college, or even with any preceptor; and it is regretted that he finally fell a victim to his ignorance of the principles and practice of modern veterinary and human surgery. It would be impossible to compute the financial losses due to this man's practice. However, it is sincerely hoped that these few remarks may deter others from attempting foolhardy experiments with dumb animals, and that all aspirants for veterinary practice may matriculate at some veterinary college or school in the country.

TUBERCULOSIS IN A HERD OF DAIRY CATTLE AT WASHINGTON,
PA.

BY THE SAME.

Dr. C. S. McKenna, M.D.C., was called to treat some sick cows at a dairy farm near Washington, Pa., and diagnosed the disease as tuberculosis, and two of the patients died in a few days and post-mortem examination confirmed the diagnosis. The matter was duly reported to the State Board of Agriculture, and Secretary Thomas J. Edge has taken charge of the herd and quarantined the cattle, as five head are already very sick. This matter will be fully described in a future issue of the REVIEW.

EXTRACTS FROM FOREIGN JOURNALS.

ACCIDENTAL RUPTURE OF THE KIDNEY IN A MARE.

BY MR. CARONI.

A six-year-old mare had her right hind foot partly torn away by a heavy iron roller. At the time of the accident she had a heavy fall, from which she recovered with difficulty. When she got up, she was taken to her stable, where she laid down and was made to rise not without great difficulty. The foot was attended to by her owner (a blacksmith), and three days afterwards Mr. Caroni was called.

The mare was found lying down, suffering with dull abdominal pains; when raised from the ground, she moved

with a great deal of pain, carrying more weight on the left leg, though the right was the seat of extensive lesions. Respiration was hurried; mucous membrane congested; pulse hard and quick; temperature 39.1° ; loins arched, unyielding to pressure; urine abundant and reddish colored. The animal stood up but a short time and dropped on the floor.

For two days the colics increased, and resisted all opiate treatment. The animal when placed in slings was even then unable to stand. She died on the night of the seventh day following the injury.

Post Mortem.—Lungs congested, entirely black, easily torn, especially the left; heart fibres very soft; stomach normal; intestines show slight enteritis; right kidney congested, with a few purulent centers; the left was also congested, and torn in its whole extent. The tear extended obliquely, from forward backward, from the hilus to the external border; it seemed to be divided into two portions, united only by the external envelope on the outside border; the medullar portions had several purulent collections containing a thick, greenish-white collection. A clot of blood united the torn pieces of the kidney, and extended between the peritoneum and the inferior face of the organ. The surrounding fatty tissue was reddish in color. It was evidently an ante-mortem laceration.—*Rec. d. Med. Vet.*

TREATMENT OF ATROPHY OF THE CRURAL MUSCLES.

BY MESSRS. ELBEUF AND RAUVIER.

The following mode of treatment is recommended not only in atrophy of the crural muscles as observed in the sequelæ of azoturia, which is seen in the affection commonly known as paralysis of the anterior femoral nerves, but has also proven of great advantage in atrophy of other muscles, especially those of the shoulders.

On the 19th of January a horse is suddenly taken with paraplegia. Two days after he stood up but carries but little weight on the near hind leg. On the 26th the crural atrophy

is well marked. Twenty grammes of a saturated solution of chloride of sodium is injected in four places over the atrophied surface. During the following days the inflammatory reaction was quite severe, and walking not improved, a subcutaneous injection of a solution of sulphate of strychnine is then made. A marked improvement follows. A few days later a second and third injection was made. Improvement soon followed. The animal was put to moderate work. Kept on gradually improving and made a radical recovery.

In a second case, a stallion, suffering with crural atrophy of four months' standing, for a month had been treated with three injections of saturated saline solutions, without result. The treatment with the sulphate of strychnine was followed by complete recovery after a short time.

A slight atrophy of the anterior spinatus and of the posterior spinatus of the shoulder was also relieved by one or two injections of sulphate of strychnine made several days apart.—*Ibid.*

TREATMENT OF CHRONIC FUNICULITIS (CHAMPIGNON OF THE HORSE) WITH IODIDE OF POTASSIUM.

BY MR. THOMASSEN.

In a paper presented to the Central Society of Veterinary Medicine in Paris, the author reports the success which he has obtained in the treatment of champignon with iodide of potash, its use having been suggested by observing the result obtained in the treatment of actinomycosis with the same medicine.

A large horse, five years old, altered about seven months previous, had the scrotum and sheaths largely swollen; the left cord was swollen hard; the left leg moved with difficulty; a fistulous tract allowed the escape of abundant suppuration which soiled both legs. Rectal examination revealed a large and hard tumor, evidence that the champignon was extending in the abdominal cavity.

Surgical interference being out of the question, treatment with the iodide was suggested and begun. Ten grammes of

the medicine was prescribed to be given twice a day for two weeks, to be reduced to six grammes once a day. Injections of tincture of iodine into the tract were now and then made. After ten days of this treatment the tumor began to diminish, and after one month of treatment it had almost disappeared.—*Ibid.*

INTERESTING PROFESSIONAL ITEMS.

By N. N. S.

It is with pleasure that we learn of the convalescence of Secretary Turner, of the United States Veterinary Medical Association, from a severe attack of acute rheumatism, which dates its development from the time of the recent Veterinary Congress.

Since the changes of affairs at Washington, there have been many changes in the corps of veterinarians connected with the Bureau of Animal Industry, and it is a sad comment that many of these have been made for political reasons only, as it will take many months for many of the new appointees to become as proficient in their work as their predecessors, aside from the danger that may result to our foreign trade in animal products.

A few of the more prominent changes are as follows: The removal of Dr. W. B. E. Miller at the port of Philadelphia, and the appointment of Dr. E. H. Flood. The resignation of Dr. Wm. B. Werntz, and the appointment as his successor of Dr. Chas. Schaufler. The removal of Dr. A. W. Clement, of Baltimore, Md., and the appointment of Dr. H. A. Hedrick. The removal of the assistant Chief, Dr. C. B. Michener, and the discontinuance of that position. The removal of Dr. J. C. McNeil, of Pittsburgh, Pennsylvania, and the appointment of Dr. John Doris, Jr. The removal of Dr. John T. Claris, port of Buffalo and Niagara Falls, and the appointment of Dr. Nelson P. Hinkley as his successor. The removal of Dr. G. A. Johnson, of Sioux City, Iowa, and the appointment of Dr. John Airth as his successor,

We are pleased to note the convalescence of our esteemed friend and fellow worker, Dr. John W. Gadsden, Philadelphia, Pa., who has just undergone a second painful and serious operation.

Professor D. McEachran, of Montreal, Canada, is booked to sail for England this month, and we have no doubt that the recent action of the United States Veterinary Medical Association in demanding the removal of the embargo against American and Canadian cattle will not be lost sight of during his stay abroad.

In this connection we also note the resignation of Professor G. T. Brown, C.D., chief veterinary officer of the Veterinary Department of the Board of Agriculture of Great Britain. It will be recalled that Professor Brown is the authority who officially declared that the United States were sending to England cases of "C. P. P." Professor Brown has been connected for twenty-eight years with the Department of Agriculture, and for the last two years has been chief of the same.

We note with pleasure the publication in the English veterinary journals of warm comments upon the work of the recent Veterinary Congress of America. We also note the same veterinary journals have taken cognizance of the resolutions adopted by the Congress on the subject of "Contagious Pleuro-Pneumonia."

A veterinary college on the Chautauqua plan has blossomed forth in the wild and woolly west. In the language of Billings, "what next"?

Some eleven animals were destroyed at Trenton last week, all of which had been tested by tuberculin last September, but had failed to react, they being the balance of the herd of thirty, nineteen of which had shown a reaction, and were destroyed, all of which proved tuberculous. Of the eleven just destroyed, but one showed any tubercular lesions whatever, and these were some very small tubercles and undoubtedly of very recent origin. The proof grows stronger every day

of the value of tuberculin as a diagnostic agent in the bovine species.

Are the veterinarians of the United States and our various associations fully alive to the necessity of aiding the passage of the present army bill now pending before Congress?

The Veterinary Medical Association of New Jersey considered at its meeting on the 14th of December the subject of "Tuberculosis," and will recommend to the lawmakers of New Jersey the adoption of some definite plan for its extermination throughout the entire State. Which State will move next?

The editorial in the *Comparative Veterinary Journal* bearing upon the question of the various titles now extant in our country among veterinarians, is a warm endorsement of the adoption of the conclusions advocated by the Committee on Veterinary Education at our recent Veterinary Congress.

It looks as if New Jersey would be the next State to take active and efficient methods to eradicate tuberculosis from her herds—thanks to the agitation for many years of her always progressive veterinarians. With a union of the medical and veterinary forces, sustained by the warm support of a number of her leading journals, the future is bright.

If the two veterinary associations of New Jersey were united it would greatly strengthen the prospects of the successful agitation for better laws to govern tuberculosis among her cattle. Who will move first in the matter?

What has become of that promising veterinary association in Alleghany County? It was a grand local center for a strong organization.

What has become of the Long Island Veterinary Society? It did good work, it strengthened fraternal bonds. Why not try it again fellow veterinarians?

The Columbian Engraving Company, in its magnificent work of art, gives space for a short biography of several leading veterinarians in its pages. Step by step, a justly de-

served recognition is being accorded the once despised veterinary profession in America.

Why do we not hear through our veterinary channels of the report of the Board of Regents, of the condition, needs and work of the veterinary colleges of New York State?

The entire profession will with one accord deeply sympathize with our esteemed friend, Professor Lyman, in the irreparable loss by fire of his home and its valuable contents.

With three veterinary journals, what a center of veterinary progress New York City should be. What a Mecca of veterinary enthusiasm and light should shine forth for the profession throughout the whole land.

Will someone rise up to name a single branch of education that has received so little support by legacy, gift or appropriation as the veterinary profession? Will someone explain why? Will someone name one of equal importance to the health, wealth and prosperity of our people?

SOCIETY MEETINGS.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The annual meeting of the Indiana Association of the Veterinary Graduates assembled at Fort Wayne, December 6th and 7th, 1893, in the parlors of the Wayne Hotel.

The President, Dr. C. F. Bell, being absent, J. H. Honan was selected as Chairman *pro tem.*, and called the meeting to order at 3 P.M.

After roll call the minutes of the previous meeting were read and approved. There not being a full attendance, it was deemed advisable to waive the rules and proceed to the admission of new members that were present, which were Drs. Meyers, Langtry and Fitch, of Fort Wayne; D. E. Stauffer, of North Manchester; J. W. Cook, of Goshen; Wm. Mabee, of Warsaw, and Geo. M. O'Leary, of Huntington.

The written application of Dr. Jas. L. Smith, of South Bend, was acted on favorably.

The Secretary's report being accepted, the Society tendered him a vote of thanks for the very efficient manner in which he performed the arduous duties connected with his office.

The chair then asked Dr. Stull to read the paper of Dr. Bell, which he did. The paper being on State Veterinary Legislation, brought out a very animated discussion. The paper was ably written, and showed the author had given much thought to the subject, and all regretted that he could not be present in person to bring out some points more clearly.

Then adjourned until after supper and convened promptly at 7:30, the chair at once calling on G. W. Vernon, M.D., Secretary of the Indiana Veterinary College, to present his matter to the Society, which he did in a very fair, unbiased manner, stating he had no reason for faulting the action of the Association at their July meeting in passing the resolutions condemning the so-called Indiana Veterinary College, and hoped the mistakes made in '92 due to youth would not bias the opinion of the Association in dealing with the college as corrected in '93; the corrections were the re-organization of the college to a two-year course consisting of six months each, and a more thorough matriculation examination; also the addition of more qualified veterinary surgeons to the corps of instructors.

After assuring the Society that it was his intention, and the intention of all interested, to bring it up to the standard of the immediate competing colleges, he was asked to retire that the Association could have unhampered freedom to express their earnest views on this subject, and after considerable discussion it was decided to lay the matter on the table for the semi-annual meeting in July.

Election of officers was next in order.

The chair, in calling for nominations for President, brought to his feet Dr. Stull, who, in a very neat speech on the special merits of Dr. J. F. Cloud, of Richmond, our worthy Secretary, placed his name in nomination for this honored position; he then being elected by acclamation.

Dr. Stull, of South Bend, was elected for Vice-President

without a dissenting vote; for Secretary Dr. J. H. Honan, of Hammond. Dr. F. A. Balser, of New Castle, re-elected as Treasurer. Board of Censors, Drs. Wallace, Langtry and Stauffer. Committee on Arrangements, Drs. Meyer, Mabee and Fitch. Committee on Programme, Drs. Honan, Chamberlain and Pate. Drs. Bell, Stull and Balser retained as Legislative Committee.

All the standing committees being appointed, then adjourned to meet Thursday morning at 8 o'clock.

On reconvening Thursday morning, under the head of miscellaneous, a few bills for stationery were taken up and allowed.

The chair then called on Dr. Chamberlain to read the paper on "Tuberculosis," by Dr. Boor, who, by force of circumstances, was prevented from being present. The paper was full of interesting points showing the author to be thoroughly conversant with the subject, dwelling particularly on the point of its communicability from animal to man. The very spirited discussion that followed the reading of this paper showed the keenest interest the veterinarians of to-day have in this disease that is now eliciting the interest of the pathologist over the civilized world. Following this was a paper on "Actinomycosis," which was well discussed.

The Legislative Committee was ordered to draft a bill on veterinary legislation to be presented to the next meeting for consideration. As this subject will be discussed, every qualified veterinarian in the State should attend this meeting if possible.

The meeting then adjourned to meet at Indianapolis, in July 1894.

J. H. HONAN, *Secretary.*

J. E. CLOUD, *President.*

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.*

The eleventh annual meeting was held at the Sherman House, Chicago, November 22d and 23d, 1893.

* Crowded out of January issue for lack of room.

Meeting was called to order by President Dr. S. S. Baker. The roll being called the following members responded to their names:

Drs. A. G. Alverson, A. H. Baker, S. S. Baker, James Bond, W. J. Martin, J. F. Ryan, John Scott, R. J. Withers, M. Wilson, R. G. Walker.

The minutes of the last meeting were read and approved. The President then read his annual address.

The Treasurer's report showed a balance on hand of \$30.47.

The following committees then reported through their chairmen: Committee on Legislation, International Congress Entertainment Committee, and Committee on Certificate of Membership.

On motion the various reports were accepted, and the committees discharged.

Moved by Dr. Alverson, seconded by Dr. Walker, that the rules be suspended for the time being, and applications for membership be received. Carried.

The following names were presented for membership:

Dr. Lawrence Campbell, Chicago, 1892, 67 West Monroe Street, Chicago; Dr. J. Willmington, Chicago, 1891, Lake Villa, Illinois; Dr. John L. Tyler, Chicago, 1891, Chebanse, Illinois. The foregoing gentlemen were then elected to membership by acclamation.

Bills to the amount of forty-one dollars and eighty cents (\$41.80) were audited and ordered paid.

It was moved by Dr. Walker, seconded by Dr. Martin, that an entertainment fund be established and that the balance of thirty dollars from entertainment fund of the International Congress be placed therein. Carried.

Meeting adjourned to November 23d.

Meeting called to order at 12 o'clock noon, by the President.

Correspondence from absent members was read regretting their inability to be present.

Dr. Martin was then called upon for his paper on "Some Remote Ancestors of the Horse."

Dr. Steddom being absent, the Secretary read his paper on "Eserine."

Meeting adjourned till 2 P. M.

Upon re-convening Dr. Alverson read his paper on "Symptoms and Treatment of Diseases following Parturition." *

The Secretary then read Dr. Wingate's paper on "Azoturia."

Dr. Wilson then read his paper on "Fever."

Dr. Scott taking the chair, the President read his paper on "Distemper in the Dog."

Election of officers was declared to be the next order of business, resulting in the following being elected to the various offices: President, Dr. John Scott, Peoria, Illinois; Vice-President, Dr. R. G. Walker, Chicago, Illinois; Secretary, Matthew Wilson, Mendota, Illinois; Treasurer, A. G. Alverson, Bloomington, Illinois; Censors, Drs. S. S. Baker, R. J. Withers and John L. Tyler.

President Scott then taking the chair, appointed the following standing committees:

Committee on Programme, Drs. John Scott, *ex-officio*, M. Wilson, *ex-officio*, J. T. Nattress, J. F. Ryan and G. Z. Barnes.

Committee on Arrangements: Dr. R. G. Walker, *ex-officio*, Drs. A. Babb, S. S. Baker, C. D. Hartman.

Committee on Membership: Dr. A. H. Baker, Dr. N. I. Stringer, Dr. W. S. Wingate.

Moved by Dr. S. S. Baker, seconded by Dr. Tyler, that the following names be stricken from the roll for not conforming to the rules and regulations of the Association, and that the Secretary be instructed to notify them to that effect:

Dr. F. N. Bergin, Dr. M. Cushing, Dr. F. J. McMahan, Dr. J. H. Hill, Dr. J. Y. Lohman, Dr. A. J. McGuire, Dr. John Newton, Dr. P. Quitman, Dr. H. Thompson, Dr. L. C. Tiffany.
Motion carried.

Notice was given by Dr. S. S. Baker of an addition to the by-laws to the effect that no member shall be eligible to vote except his dues are paid up to date.

* The papers read at this meeting will appear in our March issue.

It was moved and seconded that no duplicates of certificates be given, nor any issued to any one who is in arrears for dues. Carried.

Moved and seconded that the Secretary be instructed to have slips printed annually containing names of members and location. Carried.

A vote of thanks was tendered the retiring officers, also one to the essayists and to the proprietors of the hotel for their accommodation.

The meeting adjourned until February, 1894, to come together at the call of the committee, in Springfield, Illinois.

MATTHEW WILSON, M.R.C.V.S.,
Secretary.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting of the Keystone Veterinary Medical Association was held December 12, 1893.

The meeting was called to order by the President, Dr. Charles T. Gøentner. There answered roll call Drs. James B. Raynor, Hoskins, J. R. Hart, W. H. Hart and Gøentner; also Dr. H. J. McClellan, of Lansdowne, Pa., applicant for membership was present. The minutes of the previous meeting were read and approved.

The Board of Censors who were appointed at the last meeting to look after the prothonotary officer to make necessary changes in his mode of registering, reported through Dr. Hoskins that they had interviewed the clerk in the office of the prothonotary, who has charge of the register as to the changes made in the profession, and found, according to his records, that none had occurred; he informed him that several had occurred and that they would notify him of all changes that had occurred and that would occur hereafter, so that he would be able to keep proper record of the same. It was moved and seconded that the resignation of Dr. H. B. Felton be laid over until next meeting, to give Secretary time to look over previous minutes to see if it had been accepted, before giving the matter to Board of Censors for coming year, Drs. James B. Raynor, Hoskins and W. W. Hart.

Dr. W. G. Kooker was elected delegate to represent the Association at the meeting of the New Jersey Medical Association to be held at Morristown, N. J., December 14, 1893.

The applications of Drs. W. L. Rhoads and H. J. McClellan, of Lansdowne, Pa., graduates of American Veterinary College, were reported favorably by Board of Censors, and they were elected unanimously. It was moved by Dr. Hoskins, and seconded by Dr. Gœntner, that the Association request Board of Censors to draw up suitable resolutions of the Association's approval of that part of President Cleveland's message relating to the merit system in the appointments of veterinary surgeons in the Bureau of Animal Industry, and of his efforts to stamp out contagious diseases.

Adjourned to meet second Tuesday in January, 1894.

W. W. HART,
Secretary.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

On December 13th, 1893, the California Veterinary Medical Association held its annual meeting at the State House Hotel, Sacramento, Cal.

Owing to the absence of the president the meeting was called to order by the vice-president, Dr. H. F. Spencer. Upon roll-call the following gentlemen responded to their names, viz.: Drs. Maclay, Orvis, McCollum, Spencer, Sr., Spencer, Jr., Fox, Pierce, Williams, Hogarty and Archibald. The minutes of the previous meeting were read and approved.

The treasurer's report was then read. The report showed the Association to be in a rather straitened condition financially, owing to the large amount of money paid out in the past year on expenses incurred in legislative matters, etc. The report also showed that there was considerable money standing out due the Association by members who are in arrears. On motion by Dr. Fox. the report was accepted.

The secretary's report was then read. On motion by Dr. Orvis the report was accepted.

The board of examiners reported favorably on the names of the applicants for membership referred to them at last meeting, with the exception of I. B. Dalzeil, of San Francisco. The board said that this applicant was a veterinary dentist and had not received a license from the State board of examiners, therefore was not eligible for membership. On motion by Dr. Fox the board's report was accepted, and upon motion by Dr. Pierce the applicants that were recommended by the board of examiners were elected as active members of the Association. The names of those elected are as follows: Dr. H. Lemke, Bakersfield; Dr. A. Paterson, Dr. H. Fabbi, Dr. A. Robin, San Francisco; Dr. G. F. Faulkner, Salinas; Dr. H. A. Forest, Santa Cruz; Dr. A. T. Williams, Maysville; Dr. H. R. Jackson and J. J. Hogarty, Oakland; Dr. D. J. H. Eddy, Stockton.

The board of directors reported favorably and recommended the adoption of the proposed amendment to the constitution and by-laws referred to them at last meeting.

On motion by Dr. Maclay the board's report was accepted, and the amendments as recommended were adopted.

On motion by Dr. Maclay the secretary was instructed to procure printed copies of the constitution and by-laws as amended, and that he be empowered to draw on the treasurer for the amount necessary for same.

The secretary then read a communication from Dr. R. H. Power, Stockton, in which he stated that he desired to withdraw from the Association.

On motion by Dr. Fox, Dr. Power's resignation was accepted.

Several communications from absent members were read by the secretary expressing regrets for being unable to attend the meeting.

The chair declared that nominations for officers for the ensuing year were in order, because at last meeting it was impossible to find a member who was willing to accept the office of secretary. Dr. Maclay nominated Dr. R. A. Archibald for secretary, whereupon, on motion by Dr. Orvis, the nominations were closed.

The secretary was then requested to read the results of the nomination which were as follows: President, Dr. H. A. Spencer, San Jose; vice-president, Dr. Ward B. Rowland, Pasadena; secretary, Dr. R. A. Archibald, Sacramento; treasurer, Dr. D. F. Fox, Sacramento; board of examiners, Drs. Maclay, Egan, Orvis, Whittlesey and Rowland; board of directors, the several officers of the Association.

Dr. Fox moved, seconded by Dr. Orvis, that the newly elected president take his seat. Carried.

The newly elected president, upon taking his seat, made a few appropriate and well-chosen remarks. He thanked the members for the great honor they had done him, and promised to do all in his power to make the meetings interesting and instructive, and in that way further the interests of the Association.

He deplored the lack of attendance at the meetings and said he would leave no stone unturned to bring the members of the veterinary profession in the State of California together and have them work hand-in-hand for the advancement of the profession in this great and glorious State.

Under the head of "reading of papers, etc., and discussions," the secretary was called upon to read a few notes he had prepared, his subject being, "The Excision of the Thyroarytenoidean Ligament and a portion of the Arytenoid Cartilage for Roaring."

Before reading his essay, the essayist extended a cordial invitation to the members to witness the operation of laryngotomy as performed by him at 9 A. M. next day.

The essayist went on to describe his method of performing the operation; he also noted the chief differences between Prof. Fleming's operation and the operation as performed by him.

The paper was followed by an interesting discussion.

Dr. Orvis criticised the operation as performed by the essayist in every detail; he said he was unwilling at that time to admit that the essayist's method was preferable to the Fleming method. He said he had performed the Fleming operation and had failed to find any of the bad results men-

tioned by the essayist follow the operation. At the same time, owing to lack of experience in this matter, he was not prepared to condemn the operation as performed.

Dr. Maclay stated that the subject of "Laryngotomy" was one in which he had not had much experience, but he agreed with the essayist in that Fleming's method had not been successful. He complimented the essayist very highly on the originality of his remarks; he said he believed that the matter could be more thoroughly discussed after they had witnessed the essayist perform the operation.

The essayist, in defending his paper, gave his reasons for believing his method of operating to be superior to the Fleming method; he produced a dried larynx of a horse, and pointed out on the specimen where he believed Prof. Fleming erred when he performed the operation.

Dr. Orvis then arose, and said that if the operation as performed by the essayist was followed by beneficial results, he was willing to admit that it was superior to the Fleming method. He said this was a subject in which he was greatly interested, and that he would like to have it discussed by every member present.

Dr. Maclay said that as no one present knew much about the operation it was useless to discuss it.

Dr. Orvis desired to know how we were to learn anything about this operation unless we discuss it, as it was very seldom we could procure a roarer to operate on. Also that we have to rely on these discussions to gain knowledge on this subject, as there was no literature on it.

After the subject matter had been discussed by most of the members present, the President closed with a few remarks. He agreed with Dr. Maclay that the subject could be discussed more thoroughly after they had witnessed the operation. He said the essayist was to be commended for the originality of his revision of this operation, inasmuch as he had given us food for study and reflection, and which, if we determine it to be the best mode of procedure, certainly reduces the magnitude of the operation and simplifies it, also unquestionably makes recovery more rapid.

Dr. Maclay moved that the meeting adjourn to meet next day at 3 P.M. The motion was seconded by Dr. Fox and carried.

SACRAMENTO, CAL., December 14th, 1893.

On the above date, at 9 A.M., the members of the California State Veterinary Medical Association assembled at the Sacramento Veterinary Hospital to witness the operation of laryngotomy, demonstrated by Dr. R. A. Archibald. He performed the operation after the method described by him in his essay. The members were unanimously pleased with his manner of operating, and all expressed a conviction that if the operation was followed by beneficial results it was a superior method of operating to that described by Fleming.

The members then witnessed Dr. Orvis perform the operation of ovariectomy on a bitch. The members complimented the operator on the skillful manner in which he performed the operation.

Adjourned for lunch.

The meeting re-convened at 3 P.M. The President, Dr. H. A. Spencer, called the meeting to order.

Business was resumed by the reading of an interesting paper on "Glanders," by Dr. C. B. Orvis. He gave a description of the disease and cited a number of cases which he believed had recovered from this fatal malady. He also advanced the idea that one attack of glanders rendered an immunity from a second attack. He also stated that it was his belief that horses who apparently recovered, and did not show any symptoms of the disease for one year, had fully recovered and he would pronounce such a horse sound. He closed with the reading of an item from the AMERICAN VETERINARY REVIEW, which gave an account of a spontaneous recovery of a horse, written by a Russian veterinarian.

Dr. McCollum said he did not believe glanders could be cured. He cited a number of cases in support of his belief. He said, in those so-called cases of spontaneous recovery, the germ is latent in the animal's system and well developed when

the animal is exposed to hardships. He cited an instance of an animal that was supposed to have recovered, and that changed hands a great many times and finally after a lapse of five years died from acute glanders; he and a brother practitioner visited the different places where the animal had been kept, and they found that said case was the cause of seventeen deaths among horses.

The Secretary said that although he was unwilling at the present time to say that glanders could be cured, he was of the opinion that the few cases that would succumb to treatment would not compensate for the risk run in letting these so-called cases of spontaneous recovery run at large. He believed these cases to be more dangerous to a community than cases which showed more aggravated symptoms, as they would be less liable to cause suspicion. He cited a number of cases to show that these cases were very dangerous to any community. He said this was a matter which would be advisable to keep from the public, as there was a great many people who would take advantage of the knowledge of the fact that horses affected with glanders may recover and make it very unpleasant for those whose duty it was to condemn and destroy these cases.

Dr. Maclay said the time was come to have some one appointed to look after these matters, this person to be paid a salary sufficiently large so he could afford to do his duty. It was impossible for us to do our duty the way these matters are arranged at the present time. In support of this statement he cited an instance. Supposing a member of this Association in passing down the street sees a horse affected with glanders tied to a hitching-post; his duty as a man and citizen in that case would be to have the owner of this animal arrested; but what would be the consequence? He would lose the custom and friendship of that man and all his friends. The time is come to appoint one who could afford to make enemies in such cases.

The essayist said he did not want to advance the theory that glanders was curable, but he mentioned these cases in order to provoke a discussion.

The Secretary asked the essayist if he had ever used mallein in these supposed recovered cases. He believed that if these cases that had been affected with glanders were subjected to a test with mallein they would develop the disease. He cited a number of cases in support of his idea. The essayist said he had never used mallein in these cases. Dr. McCollum said he believed that the use of mallein was invaluable in the diagnosis of glanders, especially in these mild cases.

Dr. Fox mentioned a case of glanders in a human being. A man in Monterey County, who refused to destroy some horses condemned by him, contracted the disease and died. He again examined the stock belonging to this man, and found a great number had contracted the disease since his former examination.

The Secretary cited a number of cases in which human beings had contracted the disease. He said it was his belief that a great many people died from glanders that we never hear of because there were so many physicians who would not recognize the disease when they saw it.

Dr. Pierce related a case in which he showed how a simple case may spread the disease to a community. He said gypsies and horse traders were the means of carrying the disease from place to place.

The President closed the discussion by relating a case of a black horse which was brought to his hospital showing a very mild case of glanders. He used mallein and sent the animal home. Next day he visited the horse and found him nearly dead. The owner told him that the animal had suffered terribly since he brought him from the hospital, and that he had rigors every hour or so. He also mentioned a case where he had condemned twenty-one horses on a ranch belonging to Mr. D. Murphy. Six months after he again examined the stock and found seven cases. After both examinations he had the premises thoroughly disinfected. The fences, barns, etc., were whitewashed. The disease confined itself to the working horses, and the horses running in the pasture had escaped the ravages of the disease. The

cause of this he believed was that the germs of the disease were distributed through the barns and stables only.

On motion by Dr. Fox, the meeting adjourned to meet that evening at 7:30 P. M.

The meeting of the California State Veterinary Medical Association convened at 7:30 P. M. The meeting was called to order by the President, Dr. H. A. Spencer.

The President called upon Dr. Maclay to entertain the meeting with a paper. Dr. Maclay arose and said that his paper was entitled "The Relation of Animal Diseases to the Public Health." Before reading the paper he stated that he had tried to make his essay as concise as possible, but that it was impossible to deal with the subject without writing an extensive treatise. He warned the members that it would take him about an hour to read the paper, and that if any of them were tired they had better leave before he began to read. He went on to read his essay, which proved to be one of the most interesting and instructive papers that had ever been read before the Association. He mentioned the following diseases, viz.: Trichinosis, hog cholera, *trenia medeocanellata*, eczema, epizootica, tuberculosis, anthrax, anthracoid diseases, glanders, etc., giving a description of each disease, also detailing the different methods of preventing and eradicating them. He then went on and described the popular methods of regulating sanitation and protecting the public from the ravages of these diseases in the State. He reviewed the laws pertaining to these matters, pointing out where the laws were inadequate to control them. He said the Governor should be empowered to select a commission of veterinarians and lawyers to draft proper laws and regulations for the purpose of suppressing contagious diseases. A state veterinarian or inspector-general should be appointed to look after these matters, and enforce laws passed by the legislature. The position should not, as is generally the case, be filled by those whose only recommendation is a political pull. It was true some of these diseases do not exist in the State at the present time, yet we never know when they may be intro-

duced here, and that we should be prepared for them when they do come. He reviewed the condition of San Francisco, Oakland, Sacramento, Los Angeles and other large cities from a sanitary standpoint. He cited numerous instances where these diseases had been transmitted to the human family. He closed with a few remarks on the injurious effects to be got from eating the flesh of animals which had been killed while suffering from sporadic diseases, such as actinomycosis, puerperal fever, etc.

The president opened the discussion with a few well-chosen remarks. He complimented the essayist very highly on the able manner in which he had treated this matter. He said it was a cause of grief that a paper so comprehensive and so carefully prepared should have been listened to by so few. He wished the matter could be laid before every legislator. He was glad of the privilege of listening to the paper.

Dr. McCollum said this was only one of a number of splendid papers on various subjects that had been read before the Association. It was a magnificent production, and one on which the public should have its eyes opened. He had been at the slaughter-house and seen diseased animals slaughtered and hung up beside healthy carcasses, and he had seen calves from diseased cows killed and sold in the markets, also sheep whose bodies were covered with scab. Yet he said that if a member of this Association was to go to his local board of health or county supervisors and ask them to appoint a competent man to look after these matters, they would imagine he was looking for a job and he would get no credit or satisfaction for asking it for the sake of his fellow-beings.

The secretary said he felt it his duty to compliment the essayist on the able and masterly manner in which he had treated this subject. He also thanked the essayist for the pleasure he had received in listening to his paper. He intended, before the meeting adjourned, to move that the Association instruct the secretary to have copies of the paper printed and a copy be sent to each and every member of the Association and to the members of the State and local boards of health.

On the subject of tuberculosis, he said that from what he had read and what little experience he had had on this matter he had come to the conclusion that tuberculosis was a disease peculiar to the bovine, and that the germ of tuberculosis had greater difficulty in maintaining itself in the human family than in the bovine. In support of his theory he cited instances in certain countries where the inhabitants do not use the meat and milk of cattle tuberculosis was an unknown disease; but after the introduction of cattle into these countries the disease became common among the natives. He believed that civilization was the greatest propagator of disease known to him. You often see a healthy man and wife with three or four children, one or two of these children are puny little beings, while the others are strong and healthy; if you investigate the matter you will find in every instance that at the time the mother gave birth to these puny children she was so circumstantiated that she was unable to nurse these puny children, but brought them up on cow's milk, and it generally happened that she secured the milk from a Jersey cow, which breed of cows he believed that fifty per cent. were affected with tuberculosis. He also believed that twenty-five per cent. of the dairy cattle in this State were affected with tuberculosis.

He mentioned a case where there were twenty horses affected with glanders dumped into the Sacramento river a short time ago, this being the source from which the people of Sacramento obtained their drinking water. He mentioned a case of anthrax he had seen a short time ago, in which the horse had contracted the disease from drinking water from a stream which flowed through a slough in which some cattle who had died from anthrax had been dumped some time before.

Dr. Fox cited a number of cases of glanders he had investigated when he was county inspector of Monterey County.

Dr. Spencer, Jr., mentioned a case of glanders in a man. Dr. McCollum mentioned a case where he saw a man suffering from trichinosis; he said it was one of the most loathsome sights he had ever witnessed.

There was considerable discussion had on the subject, all tending to the same point, that there should be some steps taken to prevent the transmission of these diseases to the human family.

Under the head of new business the Secretary moved, seconded by Dr. Fox, that the Secretary be instructed to have copies of Dr. Maclay's paper printed, and that a copy of it be sent to each member of the Association, and a copy be sent to the members of the State Board of Health and local boards of health, and that an assessment of one dollar be levied to defray the expense of printing same. Carried.

The President appointed the following gentlemen to prepare essays and read them at the next meeting, viz., Drs. Fox, Spencer, Jr., Whittlesey and Prince.

In connection with this the President made a few remarks; he said that when he appointed a member to read an essay he intended that he should read a paper. On motion by Dr. Fox, a vote of thanks was tendered the essayists for the able manner in which they had entertained the meeting.

There being no further business before the meeting it adjourned to meet in San Francisco, March 11th, 1894, at the Baldwin Hotel.

R. A. ARCHIBALD, *Secretary*.

ONTARIO VETERINARY ASSOCIATION.

The annual meeting of this Association was held in the Veterinary College, Toronto, Thursday, December 21st, 1893. The President, Mr. John Wende, of Buffalo, N. Y., in the chair. In his opening address, Mr. Wende spoke with much feeling of his gratification at being placed in the honorable position he occupied, and he impressed on the members present the advantages of associations of the various professions; and indeed of all the callings in life, and of their meeting for mutual improvement and discussion.

The Secretary's, Registrar's, Treasurer's and Auditor's reports were received and adopted.

Mr. John Wende read an interesting paper on "Pyosep-thæmia," commonly called joint ill in foals. He mentioned

the different names by which it was known, and the various views as to its pathology which had been held. He said that Bollinger, in 1873, first recognized it as omphalo phlebitis. He fully described the symptoms, also the post-mortem appearances produced by emboli in the capillaries of the viscera. He mentioned that "peroius urachus," through frequent, was not invariably present. It is a very serious disease. He also gave the line of treatment he adopted.

Messrs A. Crowforth, W. J. Wilson and others took part in the discussion that followed.

In a discussion in which Mr. C. Elliott, Major Lloyd, Mr. Quinn and others took part it was ultimately suggested that the Council of Arts should send representatives to attend at the examinations of the Ontario Veterinary College.

A discussion then took place on certain parties advertising as teaching veterinary dentistry and granting diplomas as veterinary dentists; and a resolution was passed that a committee be formed to frame a resolution strongly condemning such parties for issuing their so-called veterinary dental diplomas, the resolution to be presented to the Provincial Secretary and to its crown attorney, who were to be interviewed on the subject.

Moved by Mr. O'Neil, seconded by Major Lloyd and carried, that a motion of condolence be forwarded to the widow of the late Mr. Hand, of Alliston, an old and respected member of this Association, expressing deep feelings of sympathy with her in her sad bereavement.

The question of contagious pleuro-pneumonia in cattle then came up, and a resolution was moved by Mr. C. Elliott, seconded by Mr. W. H. Wilson, "That no contagious pleuro-pneumonia exists at the present time, neither has that disease ever made its appearance in Ontario. Carried unanimously.

Mr. John Wende gave a short account of his attendance at the United States Veterinary Congress at Chicago.

Moved by Mr. W. J. Wilson, seconded by Mr. A. Crowforth, and carried, that all the directors read a paper at the next meeting of the Association.

The following new members were duly elected: Mr. W. McGuire, D.V.S., of Shawville, Que.; Mr. A. Crowforth, V.S., of Lockport, N. Y.; and Mr. C. S. Holter, V.S., of Mount Albert, Ont.

The officers for the following year are: Messrs. W. Burns, V.S., King, President; G. L. Robson, V.S., Manchester, 1st Vice; H. Hopkins, V.S., Green River, 2nd Vice; C. H. Sweetapple, V.S., Toronto, Secretary; M. Cowan, V.S., Galt, Treasurer. Directors, Messrs. J. Wende, D. Hamilton, J. F. Quinn, N. Gibb, W. J. Wilson, S. S. Holder, A. Crowforth and N. Steele. Auditors, Messrs. C. Elliott and J. D. O'Neil. Messrs. J. H. Wilson and J. D. O'Neil were appointed representatives to the Western Fair Association. Mr. N. Cowan was appointed representative to the Central Farmers' Institute.

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The annual meeting of the Alumni Association of the American Veterinary College will be held in the lecture room of the college, 139 and 141 West 54th Street, New York City, on Tuesday, March 20th, 1894, at 11 A.M. Meeting of the Executive Committee at 10 A.M. The annual dinner will be held after the commencement, which takes place on that day. All alumni of the college are cordially invited to be present.

E. L. VOLGENAN, D.V.S., *Sec'y.*

NEW GRADUATES.

The Christmas examinations of the Ontario Veterinary College were concluded on Thursday, December 21. The Board of Examiners is composed of prominent veterinary surgeons practicing in Canada and the United States. The following gentlemen were awarded diplomas: Irwin W. Drinkwater, Rochester, N. Y.; Thomas Flood, Stanley, N. Y.; Thomas A. Graham, Clarendon, Ont.; F. J. Hassard, East Caledon, Ont.; Charles V. Hedges, Circleville, O.; Matthias H. Kuhl, Neenah, Wis.; William Longenecker, Lititz, Pa.; Walter Scott McFarlane, Niagara Falls, N. Y.; J. H. Medd,

Auburn, Ont.; M. H. Moore, Listowel, Ont.; Samuel Emery Moyer, Easton, Pa.; Coleman Nockolds, Abilene, Tex.; Henry Nunn, Bolton, Ont.; Herbert S. Perley, Ottawa, Ont.; Argo Raymond, Tilsonburg, Ont.; William Readhead, Corning Ia.; Howard L. Stein, Kutztown, Pa.; Geo. R. Stewart, Arkona, Ont.; W. B. Telfer, Lowville, Ont.

CORRESPONDENCE.

VETERINARIAN WANTED.

LAMBERTVILLE, N. J. December 2, 1893.

Editor American Veterinary Review;

I noticed your advertisement in the *American Agriculturist*, and take this opportunity to write you, saying that Lambertville, N. J., needs a good, first-class veterinary surgeon; for such there is a grand opening, none within six miles, and I think there is one thousand horses and mules within a radius of three miles of this place, beside great numbers of cows, sheep and swine.

It is a fine farming country on both sides of the Delaware River. Lambertville is sixteen miles north of Trenton, N. J., 4,500 inhabitants, with New Hope, Pa., 1,500 on the opposite side of the river, connected by bridges.

If you have in your mind a first-class, talented veterinary surgeon (who has had some experience preferred), a good moral man, for such there is a fine opportunity, and the citizens would appreciate him. If you know of such a person, and he would like to come, and will come and see the place, I will take great pleasure in introducing him to the people, and do all I can to promote his cause, and I have friends here who would be pleased for such a man to locate here. I have no ax to grind, but have horses, and feel the need of a veterinary surgeon. The people are compelled to send six miles for one when needed. Can you point out, and fill the bill. Thought you might have graduated such a man at the head of his class, that could come. Advise me and favor.

Yours truly,

ALFRED B. HOLCOMBE.

AMERICAN VETERINARY REVIEW,

MARCH, 1894.

EDITORIAL.

ARMY VETERINARIANS.—The profession at large will no doubt hear with great satisfaction that some action is at last going to be taken by the United States government in behalf of our colleagues in the army. We have received from Dr. J. P. Turner, of the 6th Cavalry, the copy of a bill, which is endorsed by several high officers, and if we understand right, has been already introduced in the House of Congress and in the Senate. In sending the copy of the bill the gentleman says: “The political assistance of the profession is earnestly asked for, individually and collectively, to aid the bill in its passage, which has the sanction of the war authorities.” We feel certain that the call made by the doctor will not be in vain, and that leaving aside *resolutions* and *sympathy*, as in the past, active urgent work will be done by all of us who may be able to help in the good cause.

This is the bill:

AN ACT

TO FIX THE PAY, ALLOWANCES, PENSIONS, RETIREMENT AND RANK OF THE VETERINARIANS OF THE UNITED STATES ARMY.

BE IT ENACTED by the Senate and House of Representatives of the United States of America, in Congress assembled:

SECTION I. That the United States Army Veterinarians shall have the pay, allowances, pensions, retirements tenure of office, and the relative rank of Second Lieutenant of Cavalry; their appointment to date from original entry into the Army. *Provided*, however, that hereafter, candidates for the United States Army Veterinary service shall comply with all the preliminaries now required from candidates for “The Army Medical Corps,” and shall pass such examinations as the Secretary of War may direct.

SECTION II. This Act shall be in force and effect from, and after, its approval.

SECTION III. All Acts inconsistent with this Act are hereby repealed.

VETERINARY FAMILY REUNIONS.—Like other places of learning, veterinary colleges have their alumni associations

made of their graduates, who, now and then, and most commonly once a year, meet to speak of alma mater, renew acquaintance and friendship, talk of old college life, of present practical results, etc., and have a good time generally afterward. These gatherings are great, and it is unfortunate that too many of the members of some associations fail to answer the call of their Secretary. Often important subjects are discussed at these meetings. Serious steps relating to the welfare of alma mater are suggested, etc. Cannot one lay one day aside for their attendance? See what Dr. E. L. Volgenau says in his call to the American Veterinary College Alumni.

A CORRECTION.—Prof. C. B. Michener writes to us and asks to correct a notice in our last issue at page 618. The doctor says he was not removed from office, but resigned, carrying with him a statement from Secretary Morton to the effect that his services had been all through eminently satisfactory.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.—At a very late hour we have received notice of the annual meeting of this association and with the programme of the exercises, which will occupy the two days March 6th and 7th. Under the management of its officers and with the energy of its members, this association has succeeded in placing itself among the foremost of its kind in this country—that is without discredit or reflection on similar associations in other states. The papers which are announced for the second day of the meeting are as follows: Dr. W. B. E. Miller, Phila.—Castration; Dr. W. L. Zuill, Phila.—Surgical Treatment of Lesions of the Hock; Dr. S. J. J. Harger, Phila.—Malposition of the Heart; Dr. Jas. A. Waugh, Allegheny City—An Obscure and Undescribed Disease of the Deer Family; Dr. W. G. Benner, Doylestown—Transfusion of Blood; Dr. E. Sturge, Scranton—Penetrant Cauterization in the Treatment of Lameness; Dr. E. Mayhew Michener, Colmar—Osteo Porosis.

The association meets at the College of Physicians, thirteenth and Locust Sts., Phila.

ORIGINAL ARTICLES.

A TUBERCULOUS HERD—TEST WITH TUBERCULIN.

BY AUSTIN PETERS, M.R.C.V.S., Boston, Mass.

Chief Inspector of Cattle for the New York State Board of Health, during the Winter of 1892 and '93.

The following account of a tuberculous herd may prove interesting to the many readers of the AMERICAN VETERINARY REVIEW, as well as instructive to those who pooh-pooh the idea that any number approaching 100 per cent. of a herd of cattle can be affected with this malady, provided the number of animals on the farm exceeds one or two. It also aids in sustaining the statement made, at an International Veterinary Congress, in Europe, a few years ago, on which occasion the Editor-in-Chief of the AMERICAN VETERINARY REVIEW said that "there were herds of cattle in the United States where fifty per cent. of the animals were affected with tuberculosis," which statement has since been twisted so as to misquote him and have it read, "that fifty per cent. of the cattle in the United States are tuberculous." The latter is a condition of affairs that every one knows does not exist in this country, and it is generally believed that the Editor referred to never made or hinted at such a statement.

The tuberculin test is of interest, as it sheds additional light upon the value of tuberculin as a diagnostic agent, particularly as the herd was a good sized one, and all the creatures tested were afterward slaughtered for autopsy, the chief objection to be made to such a lot of cattle being the fact that there were so few healthy ones among them to show the resistance of those that are not tuberculous to this agent.

The herd of cattle, an account of which is given below, was first discovered by Dr. Cooper Curtice, in the early autumn of 1892, while engaged in the duties of Inspector of Cattle, for the New York Board of Health, in Westchester county, and was first seen by the writer October 14th. At that time it consisted of forty-two cows, fourteen heifers between the ages of calves of

the previous spring and two years old the following spring, and a bull. The bull was a Jersey and the majority of the females were Jerseys and their grades. A more complete description of each animal will be given with the notes on each one. At the time of this visit (Oct. 14th) the creatures were seen at large in the fields, and only a cursory examination was made, but it was enough to show that a number were suffering with tuberculosis.

The farmer was decidedly inclined to be obstreperous, and would vouchsafe no information as to who owned the farm or the cattle, simply saying that everything was his, hence there was a good deal of delay in taking further steps in the matter, and it was only after stopping the sale of the milk from the cows in New York, and invoking the protection of a deputy-sheriff, that the work could be carried on.

It afterward transpired that the farm and cattle were leased by the farmer from the widow of a New York business man, the milk being sold in a fashionable quarter of the city of New York at a fancy price as being the product of a very choice Jersey herd. The gentleman formerly owning the farm had a *penchant* for Jerseys, but as the disease made inroads into the original herd the places of the departed ones were made good by new purchases of cows of the ordinary varieties, it devolving upon the tenant to restore the farm to the owner, when his lease expired, with the same number of cows as when he hired it.

It was not, therefore, until December 14th that decisive action was taken; on this date the bull and ten cows, which were undoubtedly tuberculous, were seized and driven to the knockers, and on the following day (December 15th) they were killed and autopsies made upon them with the following results: The numbers appended are the tag numbers, each animal condemned by order of the New York State Board of Health having a brass tag attached around the horns by means of a small iron chain, applied with a pair of pincers.

Tag No. 30.—Jersey bull, about six years old. Autopsy revealed extensive tuberculosis of both lungs, and slightly tuberculous mediastinal glands.

- Tag No. 1.—Jersey (or high-grade Jersey) cow. Autopsy revealed tuberculosis of both lungs and mediastinal gland.
- Tag No. 2.—Red and white cow. Autopsy same as No. 1.
- Tag No. 31.—Grade Jersey cow (a “roarer”). Autopsy revealed an enormous post-pharyngeal abscess, containing perhaps two quarts.
- Tag No. 3.—Jersey cow. Autopsy showed tuberculosis of both lungs.
- Tag No. 7.—Roan cow, grade shorthorn. Autopsy showed tuberculosis of both lungs, especially the right, and an abscess in the left fore-quarter of the udder.
- Tag No. 34.—Roan cow, grade shorthorn. Autopsy revealed a few small nodules scattered through both lungs, and a considerable tuberculous deposit in the mediastinal glands,
- Tag No. 4.—Jersey cow (a high grade). Autopsy showed extensive tuberculosis of both lungs, nodules covering the pleurae of the ribs and diaphragm, tuberculosis of the liver and udder.
- Tag No. 32.—Jersey cow (or high grade). Autopsy showed abscess in both hind quarters of the udder, and a few nodules in the lungs.
- Tag No. 6.—An old red cow, so old that lower teeth were nearly all gone. Autopsy showed considerable tuberculous deposit in the left lung (more than one would have expected during life) and a few small nodules in the right lung.
- Tag No. 35.—An old Jersey cow. Autopsy showed a tuberculous mass in the upper part of the posterior lobe of the left lung. There was also a large abscess just pointing in the left flank, extending upward between the paunch and abdominal muscles, and surrounded by an extensive peritonitis. This was probably the result of a blow from the horn of one of her companions, and may and may not have been associated with tuberculosis.

At the time of taking the eleven animals it was decided to examine the herd again in a few weeks and if any more cases

had developed to destroy them also, but it was not until the end of January and again March 1st that the herd was visited, the delays being due to giving the owner of the farm and the tenant time to arrive at a mutual understanding so that the lease could be cancelled, and also to see if it would not be legal to destroy the entire herd if it was deemed necessary to do so for the safety of the public health.

March 2nd Dr. Curtice and myself again examined the remaining animals and found them in a pitiable condition; the sale of the milk having been stopped early in the winter, the tenant had no longer cared to feed them, and had been selling off the hay so that at the time of this visit there was hardly anything left in the barn for them to eat, and they were reduced to a state of extreme emaciation, and were verging on starvation.

The young stock had fared best, as they had been allowed to run at large all winter and had picked up something to eat by browsing on the brush and withered grass.

Death had relieved three cows of their suffering, and two or three of the young animals had disappeared, it being suspected that the tenant and his men had used them for food; there were 29 of the original cows left, and 12 heifers, four two-year-olds and eight yearlings. One of the two-year-olds had recently aborted, and retained the foetal membranes; she was in a very feeble condition. A number of the older animals were found to be tuberculous, and the condition of the remainder was such that it was impossible to say after the examination which of those that remained were diseased and which were healthy.

The Hon. Thomas Newbold, President of the New York State Board of Health, thereupon issued orders for the slaughter of the entire herd, and as the cattle then became the property of the state, he also decided that they might prove of great value for a tuberculin test upon a large scale, in order to obtain further information upon the utility of this means of diagnosis.

The subcutaneous injections of tuberculin were made the

evening of March 7th by myself, assisted by Drs. Cooper Curtice and R. A. McLean, Inspector of Cattle for the New York State Board of Health, who also aided in conducting the autopsies and all the other work incident to the experiment.

The tuberculin was prepared by mixing one part of this agent with nine parts of a 5 to 1000 solution of carbolic acid in sterilized distilled water, and injecting a suitable quantity under the skin in the scapular region (the space anterior to the spine of the scapular) by means of a clean hypodermic syringe. For an average sized cow $2\frac{1}{2}$ cc. of this mixture was used, but for large cows 3 cc. and for one very large cow $3\frac{1}{2}$ cc. were injected, the younger animals receiving proportionately smaller doses. The hair was first clipped close over a space about the size of a silver dollar on the right shoulder where the injection was to be made, and the temperatures of those who were to be experimented upon were taken before commencing the inoculations. All the adult animals, the heifer that had aborted, and three of the yearlings were used for the test.

The cattle were driven to the renderers on the afternoon of March 8th, a few post-mortems were made March 9th, in the afternoon, upon those that died in the night, or weak ones that had to be killed because the stronger ones were knocking them around, the remainder and greater number of autopsies were made March 10th. The reason that so little was done March 9th was that it was the breaking up of Winter, a warm rain turning two feet of snow into slush, and making the country roads almost impassable.

The temperatures of the animals were taken first at 8 o'clock on the evening of March 7th, and this occupied an hour and a half; the inoculations commenced at 9:45 and were completed at 10:30; and the first temperature after the inoculations was taken at 1 A. M. March 8th, and it took about an hour to go through the lot.

Below is a separate table for each animal, giving the succeeding temperature and post-mortem notes.

Tag No. 19.—High grade Jersey cow, seven years old, some-

what emaciated. Temperature 101.6° F. Subcutaneous injection of $2\frac{1}{2}$ cc. of the tuberculin mixture used.

March 8th.—1 A. M. Temperature 101.6° F.

4 A. M. “ 101.9° “

7 A. M. “ 101.6° “

10 A. M. “ 105° “

1 P. M. “ 98.6° “

A diagnosis of tuberculosis had been made in this case at the examination of March 1st.

Autopsy held March 10th.—A nodule was found in the right lung, and some tuberculous deposit in one of the posterior mediastinal lymphatics. (The nodule was so situated as to press on one of the small bronchii at a point where the ear could detect the piping the air made in passing through.)

Tag No. 43.—High grade fawn Jersey cow, six years old, somewhat emaciated. Temperature 101.8° F. $2\frac{1}{2}$ cc. of tuberculin solution used.

March 8th.—1 A. M. Temperature 101.5° F.

4 A. M. “ 101° “

7 A. M. “ 102.2° “

10 A. M. “ 105.6° “

1 P. M. “ 99.6° “

A previous diagnosis had not been made in this case.

Autopsy held March 10th.—A patch of acute miliary tuberculosis was found in the centre of the right lung. Upon removing the skin from the right shoulder but little change was to be seen at the point of inoculation.

Tag No. 38.—High grade fawn Jersey cow, five years old, emaciated. Temperature 101.6° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1 A. M. Temperature 101.4° F.

4 A. M. “ 101.5° “

7 A. M. “ 102° “

10 A. M. “ 106° “

1 P. M. “ 102° “

A previous diagnosis of tuberculosis had been made in this case.

Autopsy held March 10th.—At the point of inoculation a little extravasation of blood was found, there was an abscess in the posterior lobe of the left lung, in the anterior lobe a patch of acute miliary tuberculosis, a small spot of old formation was present in the right lung, the mediastinal and cardiac ganglia were tuberculous, and there were a few nodules in the liver.

Tag No. 42.—Grade Jersey cow, black and white, seven years old, rather emaciated. Temperature 101.2° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1 A. M. Temperature 100.6° F.

4 A. M. " 100° "

7 A. M. " 101.2° "

10 A. M. " 104.6° "

1 P. M. " 99.1° "

March 10th killed.—Autopsy showed slight extravasation of blood at the point of inoculation, the pleura of the ribs, diaphragm and along the spinal column studded with little tubercles, a very few nodules in the lungs but remarkably few in comparison to the amount found on the ribs. A tuberculous posterior mediastinal and cardiac gland were also found.

Tag No. 18.—Grade Jersey cow, fawn and white, eight years old, emaciated. Temperature 101.8° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1 A. M. Temperature 100.8° F.

4 A. M. " 101° "

7 A. M. " 104° "

10 A. M. " 106.4° "

1 P. M. " 98.5° "

March 9th killed.—Autopsy showed a bloody extravasation at the point of inoculation, a few scattered nodules in the left lung (3 or 4), in the right lung six small scattered nodules, and one the size of a bantam's egg, also one slightly tuberculous posterior mediastinal gland.

Tag No. 20.—Grade Jersey cow, six years old, in fair condition. Temperature 101.4° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	100.8°	F.
	4	A. M.	“	102° “
	7	A. M.	“	104° “
	10	A. M.	“	105.6° “
	1	P. M.	“	100.6° “

March 10th killed.—Autopsy showed, ecchymoses at the point of inoculation, a little deposit on the costal pleurae, chiefly on the right side, a number of small tubercles in both lungs, more numerous in the right one, many of them cheesy, also tuberculous anterior and posterior mediastinal glands, and a tuberculous spleen.

Tag. No. 52.—Registered Jersey cow, fawn color, six years old, emaciated. Temperature 102.2° F.

March 8th.—1	A. M.	Temperature	100.°	F.
	4	A. M.	“	100.4° “
	7	A. M.	“	100.4° “
	10	A. M.	“	102.4° “
	1	P. M.	“	98° “

Killed March 10th.—Autopsy showed nothing at the point of inoculation, several nodules were found in the left lung, also one the size of a walnut in the posterior lobe of the right, and another a trifle smaller.

This cow was looked upon as probably tuberculous the previous October, and again a diagnosis of tuberculosis was made upon her at an examination the week before the tuberculin test was made.

Tag No. 9.—Roan cow, grade Jersey, five years old, emaciated and weak. Temperature 102.6° F. 2½ cc. of the tuberculin solution was used.

March 8th.—1	A. M.	Temperature	100.8°	F.
	4	A. M.	“	100.9° “
	7	A. M.	“	102.3° “
	10	A. M.	“	104.3° “
	1	P. M.	“	101.2° “

March 9th killed.—Autopsy showed a reddish effusion at the point of inoculation, a small abscess and a patch of acute tuber-

culosis in the left lung, and two or three mediastinal lymphatic glands somewhat hypertrophied with a few tuberculous foci in them. A previous diagnosis of tuberculosis made on No. 9 on two occasions.

Tag No. 58.—High grade Jersey, fawn colored, seven years old, rather emaciated. Temperature 101.6° F. $1\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	100.8° F.
	4	A. M.	“ 100.5° “
	7	A. M.	“ 100.4° “
	10	A. M.	“ 102.6° “
	1	P. M.	“ 101.5° “

March 10th killed.—Autopsy showed slight extravasation at the point of inoculation, two or three mediastinal glands slightly enlarged with a small amount of the tuberculous deposit in them, and one nodule in the centre of the posterior lobe of the right lung.

Tag No. 5.—Grade Jersey cow, ten years old, very emaciated and weak. Temperature 101.3° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	100.6° F.
	4	A. M.	“ 100.9° “
	7	A. M.	“ 101.3° “
	10	A. M.	“ 103.8° “
	1	P. M.	“ 97.8° “

March 9th killed.—Autopsy showed a few ecchymotic spots under the skin at the point of inoculation, a tuberculous mass at the posterior upper portion of the left lung several inches long, and also through the right lung, and slight tuberculosis of an anterior mediastinal gland. A previous diagnosis of tuberculosis had been made in this case.

Tag No. 57.—Blackish grade Jersey cow, six years old, and lean. Temperature 101.8° F. $2\frac{1}{2}$ cc. of the tuberculin used.

March 8th.—1	A. M.	Temperature	102.6° F.
	4	A. M.	“ 102.2° “

March 8th.—7 A. M. Temperature 103.5° F.
 10 A. M. “ 107.2° “
 1 P. M. “ 98.8° “

March 10th killed.—Autopsy showed slight extravasation at point of inoculation, a large abscess in the upper posterior part of the left lung, also one in the anterior lobe, a mass in the upper posterior end of the right lung the size of a man's fist, several smaller nodules, and the whole of the anterior lobe, tuberculous mediastinal and cardiac glands, and a spot the size of a pea in the liver.

Tag No. 56.—Fawn grade Jersey, six years old, thin in flesh. Temperature 101° F. 2½ cc. of the tuberculin solution used.

March 8th.—1 A. M. Temperature 100.5° F.
 4 A. M. “ 99.6° “
 7 A. M. “ 101.7° “
 10 A. M. “ 105.6° “
 1 P. M. “ 98° “

March 10th killed.—Autopsy showed extravasation at the point of inoculation, and a patch of acute miliary tuberculosis several inches long in the posterior lobe of the left lung.

Tag No. 54.—Red roan grade shorthorn cow, ten years old, in fair condition. Temperature 101.6° F. 3 cc. of the tuberculin solution used.

March 8th.—1 A. M. Temperature 101.5° F.
 4 A. M. “ 101.6° “
 7 A. M. “ 102.5° “
 10 A. M. “ 103.9° “
 1 P. M. “ 101.5° “

March 10th killed.—Autopsy showed extravasation at point of inoculation, anterior lobe of the right lung studded with nodules, anterior division of the middle lobe, and posterior lobe two or three nodules, and tuberculosis of the anterior and posterior mediastinal and cardiac lymphatic glands, also a small nodule in the liver.

Tag No. 53.—Black roan native cow, twelve years old, in fair

order. Temperature 101.6° F. 3 cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	101.3° F.
	4	A. M.	“ 101.4° “
	7	A. M.	“ 101.4° “
	10	A. M.	“ 101.5° “
	1	P. M.	“ 97.2° “

March 10th killed.—Autopsy showed slight red extravasation at the point of inoculation, and in the anterior edge of the posterior lobe of the left lung was an old nodule the size of a small pea. This was the only lesion found, and this cow can be looked upon as practically healthy.

Tag No. 51.—Grade Jersey cow, fawn and white, nine years old, thin in flesh. Temperature 101.6° F. $2\frac{1}{2}$ cc. of the tuberculin mixture used.

March 8th.—1	A. M.	Temperature	101.3° F.
	4	A. M.	“ 100.4° “
	7	A. M.	“ 102.3° “
	10	A. M.	“ 106° “
	1	P. M.	“ 103.4° “

March 10th killed.—Autopsy showed a large amount of tuberculous deposit in the posterior lobe of the right lung, an abscess in the anterior portion of the middle lobe, three or four nodules in various parts of the left lung, tuberculosis of the posterior mediastinal and cardiac lymphatic glands, and tubercles in the mesentery.

A previous diagnosis of tuberculosis had not been made in this case.

Tag No. 60.—Grade Jersey cow, fawn and white, twelve years old, emaciated. Temperature 100.8° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	101.2° F.
	4	A. M.	“ 104° “
	7	A. M.	“ 105° “
	10	A. M.	“ 106° “
	1	P. M.	“ 101.4° “

March 10th killed.—Autopsy showed a barely noticeable red spot at the point of inoculation, a hernia of a small part of the liver through the diaphragm with an adhesion of the base of the right lung to the liver by the posterior vena cava, several tuberculous spots in the posterior lobe of the right lung, five small patches of tuberculosis in the left lung, an intestinal catarrh, the mucous coat peeling off easily, leaving the sub-mucous tissue bare. Shortly before being killed she voided faeces among which was blood streaked with pus.

A previous diagnosis of tuberculosis had been made in this case. Tag No. 59.—Grade Jersey cow, dark fawn, nine years old, thin in flesh. Temperature 102.5° F. $2\frac{1}{2}$ cc. of the tuberculin mixture was used.

March 8th.—1	A. M.	Temperature	101.2°	F.
	4	A. M.	“	101.2° “
	7	A. M.	“	101.4° “
	10	A. M.	“	106° “
	1	P. M.	“	100° “

March 10th killed.—Autopsy showed no well marked eccymosis at point of inoculation, acute miliary tuberculosis in the posterior lobe of the right lung, some older nodules in the anterior lobe, tuberculous centres in the mediastinal and cardiac glands, and two or three small nodules in the liver.

A diagnosis of tuberculosis had been made on this cow on two previous occasions.

Tag No. 55.—Large red and white native cow, nine years old, thin in flesh. Temperature 101° F. 3 cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	100.5°	F.
	4	A. M.	“	99.2° “
	7	A. M.	“	102.1° “
	10	A. M.	“	104° “
	1	P. M.	“	99.1° “

March 10th killed.—Autopsy showed, slight extravasation at the point of inoculation, a mass of tuberculosis on the costal pleura on the right side, the anterior lobe of the right lung

adherent to it and a mass of tuberculosis, a few nodules in the posterior lobe of the right lung, a few tubercles scattered through the left lung, deposits in the mediastinal and cardiac glands, and a few nodules in the liver, and one just commencing to develop in the omentum. There was also tuberculosis of the mucous surface of the uterus.

A diagnosis of tuberculosis had been made on this cow on two previous occasions.

Tag No. 48.—Grade Ayrshire cow, red and white, ten years old, emaciated. Temperature 101.4° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	101.1°	F.
	4	A. M.	“	100.6° “
	7	A. M.	“	104.2° “
	10	A. M.	“	105.3° “
	1	P. M.	“	95.5 “

On the afternoon of March 8th she gave out on the road to the fertilizer factory, and was killed and taken the rest of the way on a sled; the autopsy was held March 9th. Post-mortem examination showed tuberculosis of the costal pleurae with adhesions of the lungs to the thoracic walls, the right lung extensively diseased, and the left one slightly involved.

A diagnosis of tuberculosis was made on this cow at two previous inspections.

Tag. No. 69.—Big spotted cow, grade shorthorn, fourteen years old, in pretty fair order, best of any in the herd. Temperature 101.5° F. 3 cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	101°	F.
	4	A. M.	“	100.3° “
	7	A. M.	“	101.2° “
	10	A. M.	“	102° “
	1	P. M.	“	100.5° “

March 10th killed.—Autopsy showed only a little extravasation at the point of inoculation, otherwise she was healthy, the only adult in the herd to have stood the siege without surrendering.

Tag No. 41.—Grade Jersey cow, light fawn, four years old, emaciated. Temperature 102° F. $2\frac{1}{2}$ cc. of the tuberculin used.

March 8th.—1 A. M.	Temperature	101.9°	F.
4 A. M.	“	104.3°	“
7 A. M.	“	107°	“
10 A. M.	“	106.8°	“
1 P. M.	“	101°	“

March 10th killed.—Autopsy showed extravasation at the point of inoculation, tuberculosis of both lungs, a cheesy mass at the posterior lobe of the right, and a number of nodules scattered all through the left.

A diagnosis of tuberculosis had been made on this cow at a previous inspection.

Tag No. 47.—Black cow, grade Jersey, twelve years old, weak and emaciated. Cow down and unable to rise without help. History that she has been troubled in this way for two or three winters, she is able to get around in the summer but in winter she is always stiff in the hind legs. Temperature 104.2° F. 3 cc. of the tuberculin solution used.

March 8th.—1 A. M.	Temperature	104.1°	F.
4 A. M.	“	104.2°	“
7 A. M.	“	103.4°	“
10 A. M.	“	103.6°	“
1 P. M.	“	98.5°	“

March 9th killed.—Autopsy showed tuberculosis of both lungs, a mass in the posterior lobe of the right 3 x 6 in., a few scattered nodules in the left one, tuberculous mediastinal glands, and ulceration of the articulating surfaces of the bones of the hocks (at least one hock, the other was not examined, but she seemed to be equally lame on both).

A diagnosis of tuberculosis had been made upon this cow at a previous inspection.

Tag No. 68.—Black grade Jersey heifer, two years old, has calved prematurely a few days before and retained the placenta

which is decomposing, condition thin, weak and sick. Temperature 102.3° F. 2 cc. of the tuberculin mixture used.

March 8th.—1 A. M.	Temperature	101.4° F.
4 A. M.	“	100.8° “
7 A. M.	“	101.8° “
10 A. M.	“	102.5° “
1 P. M.	“	101.8° “

Killed on road to the knackers March 8th.

March 9th.—Autopsy failed to reveal tuberculosis, has a metritis and is rapidly undergoing putrefaction. (This one is not counted as an adult as she belongs to the lot of two-year-olds and yearlings already spoken of.)

Tag No. 61.—Red cow, native with a trace of Jersey, ten years old, somewhat emaciated, just calved a few minutes before commencing the experiment. Temperature 102.1° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1 A. M.	Temperature	101.6° F.
4 A. M.	“	101.4° “
7 A. M.	“	102° “
10 A. M.	“	103° “
1 P. M.	“	98° “

March 10th killed.—Autopsy showed a healthy noticeable redness at the point of inoculation, a small abscess in the upper part of the posterior lobe of the right lung, a large abscess in posterior lobe of the left lung, and two foci each in two posterior mediastinal glands.

A diagnosis of tuberculosis had been made on this cow at two previous inspections.

Calf killed March 8th, post-mortem examination made the 9th, and the little creature found to be healthy.

Tag No. 62.—Black grade Jersey cow, five years old, fair condition, calf a week old at foot. Temperature 101.8° F. $2\frac{1}{2}$ cc. of the tuberculin solution used.

March 8th.—1 A. M.	Temperature	101.5° F.
4 A. M.	“	103° “
7 A. M.	“	106.5° “

March 8th.—10 A. M. Temperature 106.6° F.

1 P. M. " 101.7° "

March 10th killed.—Autopsy showed no very well marked change at the point of inoculation, an abscess the size of a man's fist containing several cavities at the upper edge of the right lung, two small nodules in the posterior lobe of the left lung around which there appeared to be inflammatory zones, and two small foci in a posterior mediastinal gland.

Calf (a very pretty fawn-colored heifer) killed and found healthy on post-mortem examination.

Tag No. 65.—Black grade Jersey cow, five years old, good size, fair flesh. Temperature 101° F. 3 cc. of the tuberculin solution used.

March 8th.—2 A. M. Temperature 100° F.

5 A. M. " 103° "

8 A. M. " 105.5° "

11 A. M. " 105.8° "

2 P. M. " 100.8° "

March 10th killed.—Autopsy showed a little extravasation at point of inoculation, both lungs full of disseminated nodules, the costal pleurae and diaphragm studded with tubercles, the lungs adherent to the ribs.

Cardiac and mediastinal glands very much enlarged and tuberculous, also lymphatic glands above and posterior to the liver, tuberculous deposits on the omentum, on the spleen, in one kidney, and the uterus and one ovary.

Tag No. 64.—Grade Jersey cow, fawn and white, four years old, in fair condition. Temperature 100.8°. 2½ cc. of the tuberculin solution used.

March 8th.—2 A. M. Temperature 100.8° F.

5 A. M. " 100° "

8 A. M. " 102.3° "

11 A. M. " 105.3° "

2 P. M. " 102.3° "

March 10th killed.—Autopsy showed well-defined extravasation at the point of inoculation, a small deposit in the middle

lobe of the left lung, a small abscess in the posterior lobe of the right lung, and tuberculosis of the mediastinal and cardiac lymphatic glands.

Tag No. 66.—Large red and white cow, nine years old, in fair condition. Temperature 100.4° . 3 cc. of the tuberculin solution used.

March 8th.—2 A. M. Temperature 100.2° F.

5 A. M. “ 99.2° “

8 A. M. “ 102.8° “

11 A. M. “ 104° “

2 P. M. “ 98.5° “

March 10th killed.—Autopsy resulted in finding nothing at the point of inoculation, in the left lung well in the posterior portion two small tuberculous patches, one recent, a nodule in the anterior lobe, in the right lung a small abscess the size of a pigeon's egg and two other small patches in the posterior lobe, and a patch of tuberculous deposit at the superior margin opposite the shoulder, also a few tuberculous foci in the anterior and posterior mediastinal glands.

Tag No. 63.—Large red cow, twelve years old, thin in flesh. Temperature 100.4° . 3 cc. of the tuberculin mixture used.

March 8th.—2 A. M. Temperature 100.3° F.

5 A. M. “ 100.5° “

8 A. M. “ 103.5° “

11 A. M. “ 104.7° “

2 P. M. “ 99.1° “

March 10th killed.—Autopsy showed slight extravasation at the point of inoculation, two small patches of tuberculosis in the posterior lobe of the left lung, and a small tubercle in one of the posterior mediastinal glands. There was also a mammitis of the left fore and right hind quarters of the udder: this looked like the result of a blow; unfortunately no microscopic examination of the lesion was obtained.

Tag No. 67.—Black and white native cow, nine years old, rather thin in flesh. Temperature 101.3° F. 3 cc. of the tuberculin solution was used.

March 8th.—2	A. M.	Temperature	100.6° F.
	5	A. M.	“ 100.8° “
	8	A. M.	“ 102.8° “
	11	A. M.	“ 104° “
	2	P. M.	“ 99.2° “

March 10th killed.—Autopsy showed slight extravasation at the point of inoculation, tuberculosis of both lungs, many nodules diffused through them, and tuberculous deposits in the mediastinal and cardiac lymphatic glands.

Tag No. 70.—A dark fawn, grade Jersey yearling heifer, in fair condition. Temperature 101.4° F. 1½ cc. of the tuberculin solution was used.

March 8th.—1	A. M.	Temperature	102.5° F.
	4	A. M.	“ 102.4° “
	7	A. M.	“ 102.2° “
	10	A. M.	“ 102° “
	1	P. M.	“ 102.2° “

March 10th killed.—Autopsy revealed nothing.

Tag No. 71.—Red grade Jersey, yearling heifer, in fair condition. Temperature 101.9° F. 1½ cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	102° F.
	4	A. M.	“ 102.6° “
	7	A. M.	“ 101.7° “
	10	A. M.	“ 101.6° “
	1	P. M.	“ 101.9° “

March 10th killed.—Autopsy revealed nothing.

Tag No. 72.—Black and white yearling heifer, probably part Jersey, in fairish condition. Temperature 101.4° F. 1¼ cc. of the tuberculin solution used.

March 8th.—1	A. M.	Temperature	101.6° F.
	4	A. M.	“ 103.1° “
	7	A. M.	“ 104.9° “

March 8th.—10	A. M.	Temperature	106° F.
	1	P. M.	“ 105° “

March 10th killed.—Nothing found upon post-mortem ex-

amination. (This autopsy was made near the end of a hard day's work, and it is possible some small cheesy gland may have been overlooked.)

The remaining animals were not tested with tuberculin, only three of the younger ones were used because they had run wild all winter, and it was thought that it would be difficult to take their temperatures, and handle them. The result of the autopsies, as given below, show that it would have been of great value if the test had been extended to them.

Autopsies on eight heifers not tested with tuberculin :—

Tag No. 73.—Two-year-old heifer.

March 10th killed.—Autopsy showed three mediastinal and a cardiac lymphatic gland tuberculous, and a nodule in the left lung.

Tag No. 74.—Yearling heifer.

March 10th killed.—Autopsy showed tuberculous mediastinal lymphatic glands (very much enlarged), also a small nodule in each lung.

Tag No. 75.—Yearling heifer.

March 10th killed.—Autopsy showed the posterior mediastinal glands very much enlarged and filled with tuberculous deposits, tuberculosis of the anterior mediastinal and cardiac lymphatic glands, several tubercles in the anterior part of the right lung, and two or three nodules in the posterior part of the left, and two small nodules in the liver.

Tag No. 76.—Two-year-old heifer.

March 10th killed.—Autopsy showed nothing.

Tag No. 77.—Yearling heifer.

March 10th killed.—Autopsy showed a patch of bronchial irritation at the posterior border of the left lung, with mucopurulent material in the bronchia. Whether this was tuberculous or not could only be made certain by a microscopic examination, which was not obtained.

Tag No. 78.—Yearling heifer.

March 10th killed.—Autopsy showed a few drops of pus at the posterior edge of one lung, and a small nodule in the liver,

but a microscopic examination would be necessary to ascertain whether it was tuberculous or not, which was not obtained.

Tag No. 79.—Yearling heifer.

March 10th killed.—Autopsy showed two very much enlarged tuberculous mediastinal lymphatic glands, also a cheesy nodule in the right lung.

Tag No. 80.—Two-year old heifer.

March 10th killed.—Autopsy showed tuberculous mediastinal glands, and a nodule in the right lung.

Of the forty animals slaughtered but one was found to be absolutely healthy, making the per cent. of disease among them $97\frac{1}{2}$ per cent.

Of the entire herd, counting two doubtful cases as not being tuberculous, the per cent. of the diseased is 84 per cent., forty-four out of the fifty-two killed being positively tuberculous. The cause of the remarkable fall in the temperatures between the hours of 10 A. M. and 2 P. M., March 8th, was due to letting the cattle out to water, the water being cold and the majority of the creatures very much emaciated, in one case (tag No. 48) the drop was nearly ten degrees.

The local phenomena at the point of the subcutaneous injection of the tuberculin solution was not as carefully noted in each individual case as it should have been, but in a general way it may be said that each animal that reacted had a swelling at the point of inoculation that was hot and very painful upon pressure, and that upon removing the skin after death there was either ecchymosis or extravasation of blood at this point.

That tuberculin is a valuable aid in diagnosing bovine tuberculosis must be admitted after a careful study of the foregoing tables, but it should be used in conjunction with ordinary methods of examination, and is not a means for any tyro to use in picking out diseased cattle by simply squirting a little fluid under the skin, and then waiting for a plainly-marked reaction.

Of the twenty-nine adult cows tested it will be seen that but fourteen were previously decided to be tuberculous by the ordinary means of examination, yet upon post-mortem all ex-

cept one or possibly two were found to be tuberculous, and nearly all the tuberculous animals showed a reaction to tuberculin.

Tuberculosis, but giving no well marked reaction, were Nos. 52, 53 and 58; of these No. 52 had previous been declared tuberculous after the ordinary examination.

No. 53 had only a small nodule, not of recent formation, in one lung, and may therefore be excused for not reacting.

No. 69 was a healthy cow and showed no reaction, and Nos. 68, 70 and 71 did not react and were found free from tuberculosis.

No. 72 reacted but no tuberculosis was found upon post-mortem examination.

In the cases of Nos. 52 and 58 the reaction may have been tardy in making its appearance, as it sometimes is, and then spoiled by giving them cold water at the time they were allowed to drink, although unfortunately this argument applies to all those that did not react.

In the case of No. 47 the tuberculin seems to have given her ease, and caused the temperature to decrease slightly.

UNSUSPECTED POISONING BY MEAT AND MILK OF TUBERCULOUS ANIMALS.

BY PROF. J. LAW, M.R.C.V.S., Ithaca, N. Y.

A Paper Read before the N. Y. State Veterinary Medical Society.

With an unaccountable shortness of vision, medical and veterinary sanitarians alike have never, up to the present hour, looked beyond the infection by the tubercle bacillus in estimating the dangers to man of tuberculosis in our flocks and herds. We find accordingly that the question kept continually before the public is that of the presence or absence of tubercle bacillus in food products—meat, milk, butter or cheese—furnished by the diseased or suspected animal. The question of the presence or absence of ptomaines or other toxic elements which are

calculated to prove hurtful or even fatal to certain members of the human race, is not for a moment considered.

• Hence we are continually met by the argument that tubercle is rare in the muscular system of cattle, and that muscle juice is inimical to the bacillus and that therefore the muscular tissue which forms the great mass of the dressed carcass may, as a rule, be safely eaten even though the internal organs may have been affected with tubercle. In Germany and other European countries the flesh of animals in which the tubercles are found in only one organ or in two isolated ones is passed as wholesome. It is only when the tubercles are found in the bones, or in the muscles or in the lymphatic glands among these, or finally when the tubercles are so generally distributed in different parts of the body as to show that the bacilli must have been carried by the blood that the meat is rejected from use as human food.

So with milk and other dairy products. Many claim, with Nocard and McFadyean, that the milk is harmless so long as the udder is quite free from tubercle, and that it is only when tubercle is present in that gland that the secretion is to be feared.

Altogether apart from these discussions as to the wholesomeness of uncooked flesh and meat, it is safe to say that, up to the present, every writer on the subject holds that even the infecting tuberculous meat and milk is rendered absolutely harmless by cooking. The consensus of professional opinion on this subject is tersely given by Salmon and Smith in their article on tuberculosis in the work on the "Diseases of Cattle," published by the Bureau of Animal Industry. "Fortunately tubercle bacilli are readily destroyed by the temperature of boiling water, and hence both meat and milk are made entirely safe, the former by the various processes of cooking, the latter by boiling for a few minutes."

But this is altogether too narrow a view to take of the subject, and it is liable to lead to the most serious and fatal results if put into every-day practice. The professional mind,

in concentrating its attention on *tubercular infection*, has practically entirely overlooked the no less real and in many cases no less dangerous *tubercular poisoning*.

To elucidate this matter let us consider that much of this toxic matter produced by the growth of the bacillus is retained in Koch's "tuberculin," which has been absolutely sterilized. What then is the action of "tuberculin" on the animal system? Constitutional disorder, elevation of the body temperature and an impairment of most of the functions, notably those of assimilation and secretion. This is abundantly manifest in the wasting and fever of the victims of acute tuberculosis in which these poisonous principles are being continually produced in large quantities. As the dose is reduced, a point is finally reached in which no fever nor appreciable systemic derangement is produced, and thus in many slight and indolent cases of tuberculosis the animal appears well, and thus also the usual test dose of "tuberculin" has no recognizable disturbing effect on the healthy animal system. With a dose less than this it may even be questioned whether it may not be actually beneficial in conferring on the healthy system a small measure of tolerance and power of resistance to bacillus and its poisons. This, however, is of little account seeing that no real immunity from tuberculosis is ever acquired. In many systems, both human and brute, this disease continues its slow progress for many years, and the slight tolerance that results, while it may suppress the disease so that it assumes an indolent and chronic form, does not fully arrest it.

Very different is a dose of even a minimum amount of "tuberculin" on a subject which is already attacked with tuberculosis. In such a case the products of existing tubercle are often so small in amount and the system has acquired such a tolerance of them that there is no manifest disturbance of health and the animal may even be in excellent condition. But add to this minimum amount of poison already in the system a small, quantity of "tuberculin," and in ten or fifteen hours the temperature of the patient's body will rise two or more degrees above the

normal, and the destructive process going on in the seats of the tubercles will be accelerated. In cattle this is now used as a most valuable test of the presence or absence of occult tubercle. In horses and other animals the subjects of tuberculosis "tuberculin" causes the same rise of temperature, and this action may be accepted as the rule in all classes of animals. In the tuberculous man this action of "tuberculin" is a well established fact and was made the basis of Koch's employment of this material as a curative agent. The daily hypodermic use of "tuberculin" in cases of lupus or other superficial forms of tuberculosis led to a more active congestion and an earlier molecular death of the local tubercle until that was separated from the living healthy parts and the progress of tuberculosis at that focus was arrested. If there were no deeper unseen tubercles in the system, a real cure might be effected in this way. But the cure in such a case was only secured by a temporary aggravation of the disease in its primary focus. Nor was this all. If other tubercles existed in internal organs, they too had the morbid process aggravated and extended, and the death of tissue increased by the fresh introduction of "tuberculin" from without. In such a case the increased mass of tubercle—dead and living—remained confined in the midst of the surrounding solid tissues, and as the infecting materials could not be separated and cast off from the body, they continued their ravages with an increasing force in proportion to their recent artificial extension.

It is this extension of the tuberculosis under the influences of the toxic products of the bacillus, which raises the most important question in connection with the consumption by man of the flesh and dairy products of tuberculous animals; and yet this question has been overlooked by sanitarians in the most unaccountable way. It has seemed enough for them that the living tubercle bacillus did not exist in the muscle juices nor milk. It seems never to have occurred to them that all the soluble toxic products of this bacillus were constantly circulating in the blood passing through the muscles, and that they equally traversed the bloodvessels of the mammary glands and escaped into the

milk. Yet no pathologist can for a moment doubt this general diffusion of these toxic products in the tuberculous subject.

Accepting then as undeniable, the presence of the toxins in the blood, flesh and milk, it follows that those who eat this flesh and milk are taking in continually small doses of "tuberculin" and that in case they are already the victims of tuberculosis, in however slight a degree, or however indolent a form, this continuous accession of the poison will rouse the morbid process into greater activity and secure a dangerous extension.

If we now consider the prevalence of tuberculosis in the human population, and realize that every eighth death is that of a tuberculous person, we see what a fearful risk is being run by the utilization of the meat and milk of animals so affected, even if it could be shown that such meat and milk were themselves free from the living bacillus. Such reckless consumption of the products of tuberculous animals can only be looked upon as a direct means of sealing the fate of that large proportion of the community which is already slightly affected with tuberculosis.

The claim that the canning of tuberculous carcasses and the boiling or Pasteurizing of milk does away with every element of danger can no longer be entertained. Sterilization is not a restoration to a non-toxic condition. It does away with the possibility of infection, it is true, but it does not render the product innocuous.

As a matter of fact, Koch's "tuberculin" has been sterilized by heat, but this has not by any means rendered it safe and harmless. On the contrary, it invariably intensifies any existing tuberculous process and develops fever and general constitutional disorder. When "tuberculin" is, therefore, present in meat and milk it can only cause these to operate in the same way on subjects that have been already infected.

In my experience with tuberculous cows cases have come to my knowledge in which invalids drinking the milk of such animals have suffered very obviously, and have improved after such milk was withheld. So, too, in the case of calves sucking phthisical cows: they have done badly and proved unthrifty

though they took the whole of the milk furnished by their respective nurses, and they have thriven better when weaned and put upon solid food alone. I have followed some such calves until they grew up and were slaughtered, and have made post-mortem examinations and found them bearing old calcified tubercles pointing back to the time when they sucked the infected and poisonous milk. It is idle to say that such milk was merely lacking in nutritive principles. The calves in question had access to other food, while following their nurses, and would have taken no harm from swallowing an equal amount of pure water. Apart from the bacilli, which operates slowly, and which allowed these animals to live for years and even to thrive after they had ceased taking the milk, there was unquestionably in this secretion a definite poison which undermined the health and stimulated the progress of the tuberculous process. Accessions of bacilli in the milk are not denied, but at the worst these acted tardily, and apart from the soluble poisons, their action must have been cumulative up to the cessation of the milk diet, so that immediately after its withdrawal the morbid action should have been greater than at any time before, and it should have advanced with a rapidity proportionate to the impetus thus acquired. But in these cases improvement dated from the change to the dry coarse food, implying rather the withdrawal of a poison which had been heretofore acting continuously but which had no power of self-multiplication after the fashion of the bacillus.

K. Yamagiva, in his experiments on guinea-pigs, obtained results confirmatory of this. After inoculation with tubercle, the administration of "tuberculin" greatly hastened the onset of generalized tuberculosis, so that after a week tuberculous foci were found in lymphatic glands, liver and lungs.

In this connection it is worthy of notice that man is much more susceptible to "tuberculin" than many of the lower animals. A healthy guinea-pig, weighing a pound, is little or not at all affected by a dose of 2 cc. (Nocard), while a healthy man, weighing 150 lbs., is seriously affected by a dose of 0.05 cc.,

and a tuberculous man often reacts under a dose of 1 mm. Small doses, therefore, must be accepted as hurtful to the phthisical man.

It may be safely held as proved, by analogy, observation and experiment, that the soluble poisons of tuberculosis, invariably operate by exaggerating any existing tuberculous process, and that all blood and all animal fluids, becoming charged with such poisons, uniformly tend to still further endanger the health, or even the life, of any person who may consume them while suffering from tuberculosis.

We may freely allow that the transmission of the bacillus from man to man is far more common than from beast to man. But though the implanted seed may have been in many cases derived from a fellow-man, its subsequent destructive progress may be due far more to the constant accessions of the soluble toxic products conveyed in the meat and milk of the tuberculous animals. Without these constant doses of the soluble poisons of tubercle the implanted germ would in many cases have proved comparatively harmless. Although it could be proved, in regard to many cases, that the cow had not contributed the seed of the disease, she is left little less responsible for its destructive progress and fatal result. The germ, which might have remained comparatively dormant and harmless in the absence of the poisoned meat and milk, is by these stimulated to a more deadly energy.

This hitherto unchallenged factor in the progress of tuberculosis opens up new and uncultivated fields for sanitary work. The great evil ventilated in the paper cannot be effectually met without the eradication of tuberculosis from every herd kept for the supply of food products for the public. Nothing short of this can be trusted to operate satisfactorily in putting a check upon the present fearful mortality from this disease. No inspection of dressed carcasses, nor of milk, butter and cheese will furnish a guarantee. We must go to the herds and subject them, animal by animal, to a critical test, and only accept the products as safe when there is no longer a shadow of suspicion

remaining. A professional examination of the most searching kind must be supplemented by the "tuberculin" test, before a clean bill of health can be furnished. In my own experience on cattle, two-thirds of the cases of tuberculosis sometimes escaped under the most critical professional examination, and were detected later by the "tuberculin" test. Often when cattle were condemned by the "tuberculin" test have the owners pronounced them the most thrifty and the least suspected in the herd, and it has only been after slaughter, when the bodies were opened and the old caseated tubercles exposed, that they were satisfied that no mistake had been made. Recently in a herd kept for the supply of milk of guaranteed soundness, the stock having been subjected to weekly examinations by a veterinarian, the "tuberculin" test was applied, and 50 per cent. of the herd demonstrated to be tuberculous. Without the "tuberculin" test there is no guarantee possible for the products of the dairy, and the sanitary officers who will affect to deal with this disease in herds without the aid of "tuberculin" are at best but pruning the tips of the branches of the evil tree. Public money ought not to be thrown away on such fruitless and ineffective work.

The purification of a herd must be followed in every case by a thorough disinfection of contaminated buildings and places and by a careful seclusion of the herd from new sources of infection. It is evident, therefore, that the non-tuberculous herd must be secured against the addition of fresh animals from any herd that has not been similarly attested sound, and that any necessary addition from another source, must be tested by "tuberculin" before it is added to the herd. Equally important is it to test all farm animals of whatever species, which live on the place and co-habit with the herd, and to see to it that no human being suffering from tuberculosis is allowed to attend on the animals nor to prepare their food. It is difficult to see how anything short of such a system can afford a guarantee of the absence of the soluble tubercle poisons from our milk, butter and cheese.

In the case of butcher meats, a professional examination when slaughtered, embracing the condition of the general health, and the state of all the viscera as well as the carcass, will be essential, and the current doctrine of sound meat with localized tuberculosis must be abandoned. Every municipality must have its own public abattoir, where alone its meat supplies must be butchered, and where every meat animal and every carcass must be systematically examined. Private slaughter houses, controlled by individual owners, afford endless opportunities for the evasion of sanitary statutes, and ought to be abandoned as relics of an age when modern sanitary science was unknown.

The question of dressed, canned and salted meats is one that must be carefully considered. It is quite evident that such products must come to us with a sufficient guarantee if allowed to compete with our home meats that have passed the municipal inspection. It is equally evident that no inspector, paid by the packer or canner, can furnish a certificate which will command public confidence. This inspector must be a government official who is entirely independent of the packers and who is in no way dependent on their good-will.

Then again the existing method of furnishing government inspectors at our great packing centres only, and thus giving a monopoly to the large operators cannot be long maintained in a country of equal rights and privileges. The most obvious cure for this evil is to make all packing establishments government institutions, where the small packer shall have equal privileges with large, and where all carcasses shall be subjected to the same scrutiny and all shall go out with the same guarantee.

Such a proposition will doubtless be severely criticised both from the medical and economic standpoint.

On the medical side it will be argued that if the toxins in the meat and milk were as injurious as represented we would see the evil results on every side, and that medical men would be universally cognizant of them. And yet do we not see clearly to-day much that was never suspected twenty, thirty, or

even fifty years ago? How recent is the acceptance by the profession of the doctrine of contagion in tuberculosis, in tetanus, in pneumonia, in influenza, in glanders, etc? Are we to suppose that our forefathers were surrounded by fewer evidences of contagion at a time when no precautions were taken to prevent infection than we are with all the antiseptic and antizymotic provisions of the present day? The facts of contagion were doubtless more abundant in their days than in these, but their attention had never been drawn to them. So now let the attention of physicians and sanitarians be drawn to the morbid action of the soluble poisons of the tubercle, and evidences of their evil results will accumulate on all sides. It is the scrutiny and not the facts that are wanting.

The economist will object to drastic measures for the suppression of tuberculosis on the ground of expense. Who is to pay for the municipal abattoirs, the inspectorships, the disinfections and the indemnities for slaughtered animals? In response let us ask who now pays for the constant losses of live stock which the proposed system would put a stop to; for the frequent infection of sound herds by unfortunate purchases of animals that prove to be tuberculous; for the losses to the nation, the community and family of the tuberculous one eighth of all deaths; for the loss of work—literary, scientific, manufacturing, commercial, domestic and manual—of the great host of consumptives waiting all over land to fill the places of this fatal eighth in coming mortality statistics; for the losses represented by the bills of physicians, nurses and druggists for these invalids; and for the losses represented in the many migrations and exiles in search of health, and of the costly consumption hospitals and sanatoria? And who is to pay in the future for the needless harvest of similar fruits, which the seeds now sown through our supineness, must inevitably produce in the coming generations?

Is it not truer economy to destroy the seed before it has germinated, or even before it has been sown, than to wait for multitudinous evils that must attend on its growth and fruitification?

Our State Board of Health which has charge of tuberculosis in animals as well as in man, must take this matter up earnestly. A year ago this board was very apprehensive of evil results from the use of "tuberculin" as a means of diagnosis, and only reluctantly allowed me to use this agent in examinations I made for them, on the condition that I would personally bear all responsibility for untoward results. This I could afford to do being well assured from past experience how trustworthy this agent is, and how impossible it is to speedily eradicate tuberculosis from a herd without its aid.

Now that our excellent board has reached a similar confidence, let me urge it to go a step farther, to accept the logical deduction from its present position, the presence, namely, of the toxic products in both meat and milk of the tuberculous animal, and the pathogenic action of these on the tuberculous human consumer. Let our Health Board urge on the Legislature the necessity of providing means for the purification of our dairy herds, and municipal abattoirs where all animals destined for butcher meats will be scrutinized by professional government inspectors.

VETERINARY EXHIBITS AT THE WORLD'S COLUMBIAN EXHIBITION.

BY W. L. WILLIAMS, V.S., Bozeman, Mont.

It is difficult for some industries or professions to exhibit their triumphs to a body of mixed visitors in such a manner as to interest and instruct a reasonable proportion of the passing throng.

Veterinary science in its broadest sense holds an unique place in science and art. On the one hand it holds a close relation to human medicine and becomes insensibly blended with it as a guardian to the health of man when considering the relation of animal to human diseases, while in the prevention and eradication of diseases destructive to animal life it bears an important relation to economics, and, finally, although not

justly least, it should be a constant and important relation to ethics.

In so far as veterinary science is related to human health it naturally follows the historical antipathy of human medicine to public display of its achievements, because probably of the practical impossibility of making such exhibit without permitting the insinuation of some form of quackery or of apparently sanctioning in the public mind charlatanism, but in its relation to economics, when national, and to ethics there is certainly scant reason to hesitate making properly designed exhibits.

We divide, naturally, veterinary science into live-stock, husbandry and animal pathology, the former of which having already been well recorded by the popular press, we need mainly consider the latter, which in this instance proved certainly of far the less general interest. In the World's Columbian Exposition just closed at Chicago, Ill., the most interesting probably of all exhibits to the veterinarian were those of educational institutions devoted to veterinary science, and among these, chief and almost alone stood the exhibits made by the national veterinary schools of France. These were displayed in the French section of the agricultural building and were quite elaborate and instructive, showing with great emphasis the importance which the government of France attaches to its animal industries and its determination to afford the highest possible education to those in whose hands the health and quality of animals is so largely intrusted. More than one third of the entire area given to French agriculture was devoted to the exhibits of these two great schools. The plans of exhibit were practically parallel in case of each school. Each showed thirty or more grand photographs illustrative of buildings, grounds, apparatus, and, where possible, active work in progress. The photographs exhibited birds-eye views of the grounds of the Alfort and Lyons colleges, showing them to be commodious, convenient and beautiful, in marked contrast to the average veterinary institution of our country. But in France the government recognizes in veterinary science, whether viewed

from the standpoint of agriculture, sanitary or military science, a subject of essential and fundamental use to the nation, hence the schools should logically have premises in keeping with their recognized importance.

With each school extensive botanical gardens were shown, where students might see growing forage plants of all kinds, as well also as those of a toxic character. The buildings are in keeping with the grounds and the national sense of a usefulness of veterinary science, the photographs showing them to be massive, substantial and tasteful, while the detailed plans showed careful arrangement, with a view to convenient and valuable working. Classes were shown at work in commodious rooms, with all essential material and apparatus at hand, in such subjects as anatomy, physiology, histology, zoötechnics, surgery, clinics, etc.

Bound in convenient form were exhibits by both schools of each institution from its foundation, with detailed plans and measurements of all buildings, a detailed history of the teaching staff, the curriculum of each school, minutely detailed, giving the subject of lecture and name of lecturer for each day throughout the entire course.

In keeping with all this, it was but logical that some exhibit should be made of the immediate fruits of so well endowed an institution. We have noted above that the teaching staff in each institution had been given in detail throughout the schools' entire career, and among them stand, of course, many of the greatest names in veterinary science, both present and past.

Literature is the greatest test of the ability of a teacher, since to be a successful teacher, he must be an ardent, intelligent student, and be able to impress the results of his labors upon his pupils, interesting them and leading them into enthusiastic study. Such men write and record their observations. To aspire to the name of teacher without showing good evidence of having studied one's science enthusiastically and observing some facts, be they ever so small, which are worthy of record, is weak, low and pitiable.

It would have been out of keeping if the Lyons and Alfort schools failed to exhibit, along with what we have already mentioned, in some degree, the recorded achievements of its illustrious faculty. Accordingly, we noted the two works by Prof. Trasbot, "General Pathology" and "Special Pathology"; the great work of Nocard, "Contagious Diseases" and the "Dictionary of Veterinary Medicine, Surgery and Hygiene," by Reynal and the illustrious Bouley. The names of Chauveau, whose "Comparative Anatomy of Domesticated Animals" stands peerless; Goubeaux and Barrier, by their "Exterior of the Horse," and Saint Cyr and Violet, "Veterinary Obstetrics," are all too well known by their works to need comment, and our current veterinary literature constantly teems with valuable observations made by the long list of teachers connected with these two great schools.

Why should they not be great? A pupil who would not become an enthusiast under the direction of such men must be classed as of very inferior degree.

Were we to judge American veterinary schools by the standard of valuable professional literature produced by members of their faculties, it would certainly be hard on the vast majority of them. And, yet, it has been well said by a very prominent educator*: "No second-hand man was ever a great teacher, and I much doubt if any real great investigator was ever a poor teacher."

The University of Illinois made a small exhibit of skeletons, models, pathological specimens, etc., illustrative of their teaching in veterinary science in connection with agriculture, but the exhibit lacked cohesion and was not suggestive of so logical and thorough teaching of this very important subject as the value of live stock interests in Illinois would warrant, nor as probably attains in the university.

The other agricultural colleges of the United States remained practically silent on this, one of the most important of

* Dr. D. S. Jordan, President Leland Stanford Junior University—*The Forum*. Vol. xii. p. 12.

agricultural subjects; except the unified exhibit of agricultural colleges and experiment stations, under the supervision of Dr. E. A. A. Grange, of the Michigan Agricultural College and Experiment Station.

In this collective veterinary exhibit were shown Auzonx models of horse, stomach of horse, horse's foot, uterus of mare, pregnant uterus of cow, and teeth of horse.

In osteology were shown skeletons of the horse, cow, sheep, and hog, of good average quality.

In pathology were exhibited half a dozen actinomycotic jaws of cattle, experimental actinomycotic tumor, two other tumors, a few specimens of diseased bone, some fourteen photographs of classes at work, and a collection of veterinary instruments commonly used, etc., etc.

In all, this exhibit was not of a character to impress visitors to the great exposition with an idea that teaching and experimentation in veterinary science are anything near what they should be, either in scope or quality, in our agricultural colleges and experiment stations; a suggestion which is painfully borne out by careful examination of facts.

The task of superintending this exhibit had "gone a begging," and had been undertaken and given up in despair and disgust by several persons before it was finally settled. Most veterinarians to colleges or experiment stations had nothing to contribute to the exhibit, others would or could do nothing for other good reasons, so that very little valued assistance could be enlisted. Even Dr. Grange declined to contribute anything whatever to this exhibit until he had been made superintendent of it. The veterinary colleges of America made no exhibit so far as observed.

The veterinary department of the army made a small exhibit in the government building, relating almost wholly to shoeing, and without special interest to the visitor.

The most pretentious and interesting exhibit from this country was by the Bureau of Animal Industry.

In pathology there was a series of models, representing tuberculosis of cattle and guinea-pig; hog cholera of rabbit;

Texas-fever spleen; and a series of sixteen models of various lesions of rinderpest; glanders of horse and man, etc.

All exhibited a high order of skill, and were interesting and instructive.

Alcoholic specimens of glanders; tuberculosis; swine plague; hog cholera; pleuro-pneumonia bovina; actinomycosis; bovine broncho- and interlobular pneumonia were shown; all of which were well selected and attracted considerable attention.

Probably the most instructive and interesting part of this exhibit were the photographs and micro-photographs relating to infectious diseases and the bacteriological laboratory in operation. The photographs were mainly those of contagious pleuro-pneumonia of cattle.

The micro-photographs included some fifteen of Texas fever of cattle; other of bacillus tuberculosis, septicaemia, black quarter, fowl cholera, swine plague, and hog cholera, portraying in an interesting and popular manner the chief factors in the causation of some of our most serious animal diseases.

To these were added an interesting series of similar objects, mounted and *in situ* under microscopes of appropriate power, which with a small bacteriological laboratory, with bacterial cultures in active growth, served to attract much attention.

A considerable collection of dry pathological specimens, mainly of the legs and feet of horses, were exhibited, some ordinary anatomical diagrams of animals and some very interesting dry mounted specimens of gapes in fowls and glanders in horses.

To these should be added a chart showing the portions of the United States in which Texas fever is indigenous, also exhibits of quarantine stations for imported animals, and methods of tagging inspected or quarantined animals.

Altogether the exhibit of this important governmental department was one calculated to reflect credit upon it and certainly attracted greater attention from visitors than any other science exhibit presented.

An account of the veterinary exhibit at the Exposition

would be incomplete without mention of a series of animal pathology paintings exhibited in the French building by veterinarian E. Pion. These paintings were ten in number and exceedingly well executed, both in an artistic and scientific sense. Among them we note glanders affecting larynx of horse, depicting very faithfully, in well-chosen colors, the characteristic glanders ulcers affecting the laryngeal mucous membrane; pathological lesions of bovine contagious pleuropneumonia, bovine tuberculosis (lung), intestinal ulceration pneumo-enteritis, pneumo-enteritis of swine with tuberculosis, muscular tuberculosis of ox, actinomycosis bovis with odontoma of lower jaw, and sarcoptic scab of sheep, all of which were depicted with great fidelity, recording in the most vivid manner possible, lesions which are promptly lost or at least seriously deteriorated in value as soon as their preservation as tissues is attempted.

This exhibit brings up the thought that more of us should be able to record our observations in the most intelligible manner possible, as these records become of value as they accumulate. We can not all paint as has Dr. Pion, and unfortunately we can not even make a passable pencil sketch of what we at times see, although such sketches might prove invaluable to us and our profession were they only preserved. A sufficient knowledge of drawing to enable veterinarians to faithfully depict some of their rare or very interesting cases would certainly prove of very great pleasure and utility.

Still we have yet another method of recording our observations—with the pen—and even this method is apparently beyond the reach of the vast majority of our so-called veterinarians.

The archives of our profession, be they in paint, plaster, pencil or pen, constitute the essence of our body, the enduring, permanent, tangible portion.

The exhibit as a whole was not highly eulogistic of our profession in America, and we were perhaps fortunate that foreign nations did not enter very fully into this line of exhibition; else we might have fared much worse by comparisons.

A study of the French veterinary school exhibit should lead us to a much higher ideal of the true veterinary college, create a healthier educational standard, and give efficient moral, if not direct, support to such of our schools as have at heart the elevation of our profession as their chief and constant aim, and a study of the exhibits as a whole should lead us as individuals of a body to strive for something higher and better, and especially should we record in some efficient manner our observations and discoveries; for these records are the sole evidence that the student or practitioner has ever thought or seen.

VETERINARY EDUCATION AND MATRICULATES.

BY J. C. MEYER, SR., V.S., Cincinnati, Ohio.

Attention has often been called to the subject of veterinary education and matriculates, but as the desired results have not as yet been brought about, a few remarks on this important matter may be allowable.

When asked for their opinion some time ago, nearly all the deans of veterinary colleges agreed to the proposition of reorganization, particularly to the lengthening of the time of study. Naturally each of us interested in the intended improvement expected a confirmative answer. Every new edition of our textbook presents changes and new ideas which require a more thorough study to comprehend, and the branches of natural history, zoölogy, chemistry, hygiene, microscopy and electricity ought to be added to the curriculum where it has not already been done. True, some of these sciences have received a moderate share of attention, but a great deal more is wanted; above all things, no graduate should leave college without being well versed in the use of the microscope.

It remains to be seen whether all these branches will be adopted into the regular course of study or not, but in justice to the demands of the present time it would not be wise to disregard them. If students were equipped with the necessary preliminary education, there would be no need of such conditions.

In Europe, a young man intending to devote his future to scientific pursuits, knows that he must attend a gymnasium or a school of similar character in order to attain the qualifications admitting him to college or university. Mark Twain in his "Tramp Abroad" gives an idea of a gymnasium training. In speaking of the student of Heidelberg University, he says: "It would be a mistake to suppose that the easy-going student carries an empty head. Just the contrary. He has spent nine years in the gymnasium under a system which allowed him no freedom, but vigorously compelled him to work like a slave. Consequently he has left the gymnasium with an education that is so extensive and complete that the most a university can do for it is to perfect some of its profounder specialties. It is said that when a pupil leaves the gymnasium he not only has a comprehensive education, but he knows what he knows; it is not befogged with uncertainties, it is burnt into him so that it will stay. Foreign youth steer clear of the gymnasium, its rules are too severe. They go to the university to put a mansard roof on their whole general education; but the German student already has his mansard roof, so he goes there to add a steeple in the nature of some specialty, such as a particular branch of law, or medicine, or philology."

Of course this is overdrawn, but as late as half a century ago, the average American's chances for fitting himself for the university were meagre. Time, however, has worked changes. Preparatory schools as well as universities have gradually increased and are to-day so numerous that any talented youth with an earnest desire to acquire a thorough education can do it. Evening sessions have even been inaugurated in the larger cities for the benefit of those who can not attend in the day time. There is nothing gained by evading the preparatory instructions; the one who does it knows just that much less.

It is through learning that the veterinary student can attain the gratifying reputation, the college or university credential (diploma), the ultimate testimonial that he has perfected himself in all the branches of veterinary science, which the quack or

self-made practitioner, thus far, has had no use for; these, however, will find out that it will be of some value after all, for the public is becoming so well educated that it appreciates the difference between educated men and empirics, and very often the latter are obliged to face questions which are embarrassing and annoying to them. They observe that it is a poor investment to buy a diploma, they dare not boast of it, and as they cannot buy the knowledge which is a specific antidote against parasites of this kind, they will leave the field to the legally entitled veterinarian; no law is as effective as this, provided the latter is well prepared to meet the former.

An eminent professor of a German veterinary high school claims that the best attainable preparatory schooling, particularly in natural science, promises the surest guarantee to the coming veterinarian for a successful result in official service as well as in general practice.

The information gained in the preparatory school is averse to the handicap practitioner, and these branches of service contain just the kind of philosophic wisdom by which the educated veterinarian is able to show his superiority over the former manifold, not only by his professional literary achievement, but also by the position he can occupy in society by virtue of his degree of learning. Such a preparation might admit of the shortening of the course from three to two years in a veterinary college, but as a general thing applicants with such a good foundation are few, consequently, in order to make up these deficiencies, it is absolutely necessary that these, as well as the special veterinary branches, be taught.

By lengthening the course many a young man intending to enter a veterinary college will, upon consideration, give up his plans, not having counted this additional cost of time and money. It is claimed time is money, and nobody will deny it, and no one is to be blamed for preventing unnecessary expense, but the outlay in this direction is better invested than the inexperienced think. They must take into consideration that their patrons expect equally as good services from them as from an

experienced professional. To be thus qualified, which is acquired only by much time and effort, they are able to give satisfaction to the employer and are a credit to their alma mater, and most pupils, no matter how talented they are, will find that a three-years' course is not too long to accomplish this.

In Europe the time for a student attending veterinary college until he is admitted for final examination varies from three to five years. Russia, Belgium and France each prescribe four years, Spain and Roumania five years, Berlin seven semesters or three and a half years, &c., and some of our universities and colleges adopted a three-years' course.

Beside the collegiate instruction, practice with an experienced veterinarian through the summer vacation must be taken advantage of; neglecting to do so would be one of the sins of omission.

Under no circumstances should an applicant be admitted without a satisfactory examination or credential. In all European schools this is the rule.

When I entered the veterinary college at Zurich over fifty years ago, thirty applicants gained admission by undergoing an examination. The credentials from Zurich were sufficient to admit me to the veterinary college in Vienna. Upon presenting them to the director, he gave me an order to the registrar, who in turn gave me the permit which entitled the veterinary student to all the privileges in that institute and to elective ones in the university. The university student enjoyed the same privileges at the veterinary college. In Stuttgart there was no examination or certificate required from those who took only special courses.

The following proves that Bourgelat, founder of the first veterinary college, 1762, in Lyons, upheld a strict discipline. He would not admit students to his college unconditionally. Every young man was obliged to bring testimonial from his native village, town or city that he was of respectable parentage, and that the applicant himself was industrious and well-

behaved. Such attestations were almost certain to bring together a reliable class of young men, who would make proper use of their time, elevate one another, exert themselves to give satisfaction to their principal, and consequently turn out to be qualified veterinarians. Bourgelat would probably never have enforced such strict rules, nor have made veterinary medicine the work of his life, had it not been for the following occurrence which he met with in his early career as lawyer, which he had chosen first. While defending a client, he won a case which he knew was unjust, and lost another in which he was convinced that his cause was a just one. Such injustice disgusted the noble-minded man to such a degree that he abandoned the practice of law and directed his attention to medicine. No doubt this incident induced him to demand a high standard of morals in his pupils.

Bourgelat was so successful in his veterinary undertaking that the government in 1765 established another veterinary school in Alfort, of which he was appointed director. Students came, not only from France, but from Denmark, Sweden, Prussia, Switzerland and other countries to be instructed in the new profession which this genius shaped into a systematic science.

Upon the death of this great man in 1779, Chambert, a disciple of Lafosse, succeeded him as director. Chambert dropped natural history and chemistry, which branches Bourgelat had added to his curriculum, but in 1813 Napoleon again ordered these studies to be adopted as being essential to veterinary education.

The whole civilized world appreciated the merits of Bourgelat, by erecting to his memory as benefactor of domestic animals two monuments, one at Lyons in 1876, and the other at Alfort in 1879.

Although not of the opinion that we should imitate Europeans, because, with the exception of the English schools, all are supported by their respective governments, still we must regulate our affairs as best as circumstances will admit, elevating the standard, keeping pace with the progress of the times.

DISTEMPER IN THE DOG.

BY S. S. BAKER, D.V.S. Chicago, Ill.

A Paper Read before the Illinois State Veterinary Medical Association.

In casting about for a subject on which to write a paper for your consideration, I decided to give you something in connection with a class of patients that appear to have been entirely neglected by our essayists, although they come nearer being our friends than any other of the lower animals, viz., the dog.

Distemper is one of the most common diseases that the dog is heir to, or, I might better say, the puppy, for it is, generally speaking, a puppy-hood complaint, dogs over one year of age rarely suffering from it, although age is no preventive. Of all diseases that canine flesh is heir to, distemper exacts the largest tribute. Distemper is a specific disease, and very contagious and wide-spread in its prevalence. It is of a catarrhal nature, usually affecting the mucous membranes of the head and alimentary tract. Some authors have described it as resembling typhus fever in man, influenza and glanders in the horse, but there is great diversity of opinion in this respect. Distemper usually runs a definite course, and, when uncomplicated, generally terminates favorably, but when complicated I know of no disease that will make a man more tired than this. There is no specific for it, although the country is flooded with nostrums that are advertised as sure cures, and every dog fancier has a different recipe that he claims will do the work. Distemper is not a necessary disease. Dogs frequently pass through life without being afflicted with it, nor does one attack render immunity from a second. It is usually found most prevalent among highly-bred pampered dogs, and those that are closely inbred, the mongrel rarely suffering from it. The period of incubation is from four days to three weeks, and the period of duration from ten days to two or three months.

Etiology.—That the cause is a germ or germs is quite certain. It is a foregone conclusion that there is a virus of some kind, that has great vitality, and can be communicated from one

dog to another, or from a kennel in which the diseased dog has been kept. I have known dogs admitted to a hospital take the disease long after a case had been there, and after all precautions had been taken as to cleanliness and disinfection. Some authors attribute it to improper feeding, especially on a meat diet, improperly ventilated, damp kennels, etc.; but I am satisfied that it is due to a specific virus, although the environments have, of course, a great deal to do with it. I do not think it is carried in the air, but that a dog must come in actual contact with the virus, either on infected animal, or in some place in which one infected with the disease has been kept. The annual bench shows are a fruitful source of spreading the disease. Spring and fall are the most common seasons of distemper, and, as the shows are held then, we generally have more distemper following than any other season of the year.

Seminology.—There are so many symptoms that it would be very difficult to enumerate them all. The most prominent ones in an uncomplicated case are catarrhal discharges from the eyes and nose, thin and watery at first, finally becoming mucopurulent; elevation of temperature, rapid pulse, sneezing, dry hot nose, stoning coat, dullness, loss of appetite, etc. The most common complications (and they usually accompany the disease) are bronchial, although pneumonia, intestinal and hepatic lesions are by no means rare. There is a hard, dry cough, bowels are constipated or may be loose; usually there is diarrhœa, and the discharges are very offensive, and of a black tarry consistency. Skin eruptions sometimes occur, most frequently showing on the belly.

Diagnosis.—Uncomplicated cases, as I said before, usually terminate favorably. I believe that few dogs die of distemper pure and simple. When complications exist the case becomes graver in the extreme, and is very apt to be fatal as the complications become aggravated. If the dog passes through distemper safely, he may be taken off by one of the numerous sequelæ that often follow.

Treatment.—The different authors seem to be at variance as regards the treatment of this disease. Some advise purgatives, some emetics, others setons, blisters, etc. Some claim certain drugs as specifics. That there is any specific for this disease, is to my mind the rankest folly. Good nursing is the sheet anchor. The patient should be placed in a warm place, and be made as comfortable as possible; cold should be particularly guarded against; he should be well nursed and fed on nutritious concentrated food, such as beef tea, mutton broth, eggs and milk beaten up together, etc. Bulky food, as meat, should be avoided. If the patient will not eat, which is often the case, he should be fed with a spoon. The eyes and nose should be frequently bathed in order to remove the muco-purulent discharge that accumulates in them. Vegetable tonics should be administered, and persevered in till the patient improves. If there are any respiratory complications, hot poultices should be applied to chest and sides; blisters and counter-irritants are contraindicated, as they tend to annoy the patient. Especial care should be taken regarding the hygienic surroundings. If the fever is persistent and high, a few doses of bromo-quinia and salol may be given to advantage. All the treatment should tend toward the one main point, viz., the keeping up of the patient's strength. As chorea and paralysis are liable to follow distemper, and are usually fatal, an effort should be made to ward them off. Care should be taken that the patient be kept very clean; the litter he lays on should be changed once a day, and burned on removal. The old saw that "while there's life there's hope," is fully exemplified in this disease. I have known cases so desperate, that it would appear to be folly to persevere any longer, suddenly take a turn for the better and recover. Once the disease takes a favorable turn, the patient usually recovers very rapidly.

Post-mortem appearances.—The following is taken from Steel: Body emaciated, eyes and nose glued with purulent mucous; lungs reddish brown, dark, dense in consistency, and their parenchyma infiltrated with fibrinous exudate. Commencing

cell infiltration of the alveoli, respiratory mucous membranes reddened, tumorfied and covered with mucous (or muco-pus). Brain and spinal cord oedematous; liver bright yellow and of a nutmeg appearance, and studded with brick-red and brownish-red streaks and spots, these appearances being due to fatty degeneration. Spleen enlarged and with a marrow-like infiltration. Kidneys congested and fatty; but this state is not constant. The digestive and urinary mucous membranes present patches of hyperæmia and ecchymosis. Muscular tissue of heart pale and commencing to undergo fatty degeneration. Blood watery; serum contains many globular bacteria, isolated or in ball-like clusters, or adherent to both red and white corpuscles; also, in addition, some delicate and staff-shaped bacteria. The liver cells and tubuli uriniferi full of bacteria. The urine brownish red and muddy, containing large corpuscles and epithelial cells, and many bacteria of both kinds, either free or enclosed in the blood corpuscles or in the cells.

Twenty-four hours after death the bacteria are very numerous, but disappeared when putrefaction commenced.

In the earlier stages the lungs are found in a state of œdema, later they show the signs of broncho-pneumonia, ulceration or infiltration of the nasal membranes, and of that of the intestines, especially the ileon, and affecting particularly the solitary glands, and Payer's patches, congestion and dropsy of the pericardium, swelling of the lymphatic glands, especially those of the mesentery, and engorgement of the gall bladder with thick bile, have been noted. Spots due to ecchymosis are very frequent on the different serous membranes.

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.”—VETERINARY RECORD.

CYSTIC CALCULI IN A BITCH.

By E. J. NESBITT, D. V. S., Poughkeepsie, N. Y.

In all the works on canine pathology at my disposal I observe that cystic calculi are more common in the dog than in the bitch; for that reason and the peculiarity of this particular case I think it of sufficient interest to report it. The patient, a Scotch terrier bitch, was brought to the hospital on the morning of December 18th. The owner gave me this history of her: “She has always been well until two or three days ago, when she began to lose her spirits. She did not care to move any more than she was forced to. Lost her appetite, and then began to strain. Thinking it might be her bowels I gave her some castor oil and buckthorn. This gave her no relief, so I brought her to you.”

Upon examination I found the animal slightly bloated, breathing rapidly, pulse very fast and weak. She strained frequently, and as a result one or two teaspoonfuls of a bloody fluid would escape per vulva. The straining was similar to that of parturition. After cleansing the parts with warm water, I inserted my finger, and on the floor of the vulva, between the meatus and labia, felt something hard that seemed like bird shot. I withdrew my finger and adhering to it were two small stones—(calculi). By the use of the finger I succeeded in removing seventeen calculi about the size of very small shot. As there were no more within reach of the finger, and knowing that an operation would be useless, I administered tincture digitalis in eleven-minim doses every three hours. Gave her beef tea and mucilaginous drinks; had the vulva sponged often with warm water, and kept her in a warm flannel bed. She did not

improve any. During the night she strained violently, and voided about one ounce of urine tinged with blood, in which were four calculi as large as buckshot, and seven or eight smaller ones. The next day she could not retain either beef tea or a little diluted brandy. I gave her sub nitrate of bismuth, but this only partially relieved the nausea. She grew steadily worse, and died about three o'clock in the afternoon of December 19th.

I took the following notes at the autopsy : Scotch terrier bitch, about six years old, coat apparently healthy, very fat and slightly bloated. All the organs except the urinary apparatus were normal, so far as the unaided eye could detect. The left kidney and both ureters were normal. The right kidney had a rough yellow patch on its anterior surface ; the structure of the organ, except directly under the yellow patch, where it was darker than normal, seemed healthy in color and consistency. The outer surface of the bladder was of a very dark-red color. The bladder, instead of occupying the pelvic cavity, was very much elongated ; so much so that the fundus lay on the floor of the abdominal cavity, in front of the umbilicus, giving it the shape of a very elongated pear resting on its side. Numerous calculi could be felt through the walls, which were very much thickened. The organ was removed, together with its short urethra, and when opened two or three drams of bloody fluid escaped, in which a large number of calculi were found. After washing the lining membrane, little stones were found imbedded here and there. This membrane was thicker, redder, softer, and more easily torn away than when normal. In all one hundred and ninety four calculi were found, varying in size from a pin's head to buck shot. The total weight of the stones was one hundred and fourteen grains. They are of a bluish-white color; the larger ones regular, and the smaller ones irregular in contour. It is because of the large number of calculi that I consider this case interesting and worth reporting.

CONTAGIOUS STOMATITIS COMMUNICATED TO CHILDREN.

By H. D. FENIMORE, D. V. S., Knoxville, Tenn.

On December 15th I was called to prescribe for twelve colts that were suffering with small ulcers on the mucous membrane of the mouth and tongue. They had a slight raise of temperature, with swollen submaxillary glands, and showed some difficulty in swallowing, but were otherwise in good condition, and eat well of a soft diet. I called it contagious stomatitis, and recommended that care be taken of the hands in the application of the antiseptic solutions of creoline and peroxide of hydrogen. About a week afterwards I was notified that three of the owner's sons had become affected with the disease. The two oldest boys each had a small crack on the end of each finger. The disease developed so rapidly and was so painful in these places that they thought they were each getting a felon. Ulcers appeared all over their hands, and in one case as many as eighteen on one hand. Their arms, and especially the region of the axilla, showed considerable soreness; temperature ranged from 102° to 103°. The youngest of the three boys had one ulcer only, and that was on his lip. This was also very painful; the neck and face swelled so that the features were not distinguishable. The ulcers were of a conical shape, having borders that were elevated, but smooth and reddened. The ulcers healed in the boys in about three weeks, leaving very marked cicatrices. The end of one finger on each of the two oldest boys sloughed off in the places where they first became affected. The colt's mouths healed kindly in about ten days to two weeks.

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By C. W. STILES, Ph.D., Washington, D. C.

MAX BRAUN. Die Leberdistomen-der Hauskatze (*Felis catus domestica*) und verwante Arten: Centralblatt für Bakteriologie und Parasitenkunde, 1893, Vol. XIV., pp. 381-389, 422-428.

“Drink deep or taste not” is the motto which Rudolphi places at the beginning of his *Bibliotheca entozoologica* (Ento-

zoorum *Historia naturalis*, 1808). It would certainly be difficult for a helminthologist to find a better motto, for if he compares the descriptions of various parasites given by different authors he will finally be convinced that merely a short Latin diagnosis unaccompanied by figures is scarcely enough to enable investigators to definitely and correctly determine a species. If a helminthologist follows the motto, "Drink deep or taste not," he will also be compelled not only to consult the entire literature upon a given species before he tries to make any statements in regard to it, but he will study the internal anatomy of the organism, and, if possible, will examine the original specimen. Braun, in the article now under review, has given a good illustration of the difficulties under which the helminthologist of the present day is obliged to work. He attempted to determine some flukes he found in the livers of cats. Upon consulting the literature he saw that not only had each species been insufficiently described under several different names, but different species had been described under one and the same name. The descriptions and figures was so contradictory that he was finally compelled to look up the original specimens. He obtained specimens from various parts of Europe, some of them types, compared them with the descriptions, and has at last succeeded in unraveling the tangle into which the synonyma of these distomes has fallen.

His results, briefly stated, are as follows: Three species of flukes are recognized in the liver of cats in Europe; some of these species occur in other animals as well. The following analytical table (made from Braun's specific diagnoses), the table of synonyms, and the specific diagnoses will enable the reader to distinguish the three different species:

I	{	Body less than 5 mm. long, covered with spines; ovary round or oval. 2.
		Body 10-18 mm. long, lanceolate; ovary lobulate.

Distoma felineum.

- 2 { 2 mm. long, testicles round, side by side, or nearly so ; vitellogene glands lateral in middle half of body ; posterior extremity possesses a muscular edge. *D. truncatum.*
- 2 { 2.5–3.5 mm. long ; testicles lobulate, one in front of the other ; vitellogene glands extend from end of œsophagus to middle of body ; posterior extremity without muscular ridge. *D. albidum.*

I. DISTOMA TRUNCATUM (Rud., 1819) Ercol., 1846.

SYNONYMY :

1819. *Amphistomum truncatum* Rud., found by Otto in the liver of harbor seal (*Phoca vitulina*) ; by Rudolphi in stomach and intestines of same animal.
1825. *Distomum conus* Creplin, found by Creplin in the liver of the cat (*Felis catus domestica*) and the fox (*Canis vulpes*) ; by (?) in the liver of *Halichærus fœtidus*) ; by Wagner, liver of cat ; by Hilgendori, liver of the glutton (*Gulo borealis*) ; by Braun, liver of cat at Königsberg.
1846. *Distoma truncatum* Ercolani, found by Ercolani in dog (*Canis familiaris*) at Bologna.
1875. *Distoma companulatum* Ercol., found by Ercolai in the liver of the dog in Italy ; by van Tricht and de Jong in the dog and cat at Utrecht.

SPECIFIC DIAGNOSIS.—Length 2 mm., form conical (pointed anteriorly, truncate posteriorly) ; integument thickly and regularly covered with fine spines ; oral sucker and ventral acetabulum about the same size (0.134–0.172 mm.), the acetabulum being situated slightly anterior of the middle of the body ; the oral sucker is followed immediately by a pharynx 0.091 mm. long, posterior to which the intestine branches into the two cæcal sacs which extend into the posterior of the body. Immediately anterior to the blind posterior ends of these cæca are situated the two elliptical (non-lobulated) testicles (0.172–0.376 mm. long), seldom side by side at the same height, as the left testicle generally lies about one-fourth of its length in front of

the right. Anterior to the testicles, either in the median line or slightly laterally, we find the gobular ovary, which is smaller than the testicles and generally covered by the uterus. The lateral vitellogene glands, like the uterus, are situated in the middle third of the body, and are composed of 10–12 acini each side. Genital opening anterior of acetabulum; a cirrus cannot be seen, but the winding end (vesicula seminalis) of the vas deferens is geographically evident. Eggs 0.029 mm. long by 0.011 mm. broad. Excretory pore in the middle of the posterior extremity, which is surrounded by a muscular ridge. Color of fresh specimen whitish, with a brownish spot (uterus).

HOSTS.—*Phoca vitulina*, *Felis* [*Catus*] *domestica*, *Canis familiaris*, *C. vulpes*, *Halichærus fœtidus*, *Gulo borealis*.

GEOGRAPHICAL DISTRIBUTION.—Germany, Holland, Italy, France.

2. DISTOMA (DICROCÆLIUM) ALBIDUM Braun, 1893.

1893. *Distomum albidum* Braun.

SPECIFIC DIAGNOSIS.—Length, 2.5–3.5 mm.; breadth, 1–1.6 mm.; body spatulate, the anterior portion being narrower and generally separated by a constriction from the broader flat, posterior end; the posterior end is rounded, and does not possess the sucker-like muscular ridge. Integument thickly covered with spines (“Dornen”), which are somewhat larger on the anterior portion than on the posterior portion; these spines frequently fall, especially from the posterior portion. Oral sucker slightly larger than the acetabulum or nearly the same size (0.323–0.301 mm., smaller specimen 0.269–0.242); acetabulum in the median line on the border between the first and middle thirds of the body, and occasionally more or less obscured by the uterus. Oral sucker followed by pharynx, and close to the latter the intestine branches; intestinal cæca extend into the posterior end of the body. Testicles lobulate in posterior half of the body, one in front of the other; ovary round or oval, 0.242 mm. in diameter (slightly less than one-half the diameter of the testicles); dextrad of ovary is situated a pyri-

form recepticulum seminis, which is larger than the ovary; vitellogene glands composed of numerous acini, and extend from about the posterior end of the œsophagus to about the middle of the body. Genital opening anterior to the acetabulum, cirrus not to be seen; excretory pore on posterior end. Eggs 0.027–0.032 long by 0.013–0.016 mm. broad. Color of worm white, with brown spot (uterus).

HOST.—Cats.

GEOGRAPHICAL DISTRIBUTION.—Konigsberg, Germany (Braun); Alfort, France (Raillet). I can add here that Dr. Theobald Smith has found some flukes in cats in Albany, N. Y., which I had identified as “*D. conus* (?),” but which are evidently identical with Braun’s new species.

3. *DISTOMA FELINEUM* Riv., 1884.

1831. *Distomum conus* Gurlt, found by Rudolphi in liver of the cat.

Dictomum lanceolatum Crepl. (pp.) found by v. Siebold (1836) in liver of a cat at Danzig; by van Tricht (1885) in liver of a dog at Utrecht.

1884. *Distoma filineum* Riv., liver of a cat and dog in Italy; by de Jong in Utrecht; by Braun in cat, Konigsberg.

1889. *Distomum conus* Sonsino, in dog and cat, Italy.

1892. *Distoma truncatum* Rail.—Neumann (fig. 234, Neumann’s Parasites).

SPECIFIC DIAGNOSIS.—Body 10–13 (seldom 18) mm. long by 1.25–2.5 mm. broad; flat, anterior end conical, posterior end rounded; the anterior fifth of body separated from the remainder by a constriction; acetabulum situated at plane of constriction. Color reddish, transparent; oral sucker and ventral acetabulum of same size (0.28 mm. diameter); œsophagus (0.204 mm. long by 0.161 mm. broad) follows oral sucker; œsophagus 0.2 mm. long; intestinal cæca extend into the posterior end of the body. Testicles lobulate, situated in posterior end; ovary slightly lobulate, anterior of testicles; receptaculum seminis dextrad and posterior to ovary; vitellogene glands lateral in middle third of

body, and composed of 8–9 groups of small acini. Geoital pore immediately anterior to acetabulum. Eggs 0.030 long, 0.011 mm. broad.

HOSTS.—Cat, dog and glutton (*Gulo borealis*).

GEOGRAPHICAL DISTRIBUTION.—Germany, Holland, Italy, France.

These three distomes belong to the second section of the sub-genus *Dicroælium* Duj., characterized as follows:

Dicroælium.—Digestive tract with two long, simple (unbranched) intestinal cæca; a shorter or longer œsophagus is present; oral sucker without spines or lobes; acetabulum sessile.

First section.—Testicle posterior to the acetabulum, anterior to or among the uterine loops.

Second section.—Testicles posterior to uterus.

CORRESPONDENCE.

TUBERCULIN AS A DIAGNOSTIC AGENT.

BROOKLYN, January 20, 1894.

Editor American Veterinary Review:

I take the liberty of sending you a brief sketch of the history of the result of tuberculin as a diagnostic agent in an instance in which I was recently interested.

The admirers of high-bred Jersey cattle and scientific dairying will be sorry to learn that Mr. F. W. Hawley, proprietor of the Pittsford Farms of Pittsford, New York, has recently determined to destroy his entire herd of pedigreed animals, numbering over 160, having satisfied himself that they are tainted with tuberculosis. Mr. Hawley had his stock in the charge of local veterinarians, with instructions to make periodical physical examinations, report to him the existence of any contagious disease, and to isolate or slaughter any suspected animals. Desiring to be doubly certain of the healthy condition of his cattle, Mr. Hawley some time ago requested the State Board of Health that they examine his herd by the tuberculin test.

Out of the entire herd, 120 cattle, having a normal tempera-

ture not higher than 102° , were tested by an injection of tuberculin, and all but 20, 5 of whom were cows and the rest yearlings, "reacted," the elevation of temperature ranging from 103° to 107.5° .

The high percentage of cattle reacting in this instance caused the post mortem examinations to be looked forward to with considerable interest. Seventy-two of the worst were taken to a convenient place and slaughtered, and post mortem examinations made by Dr. Curtice, of the State Board of Health, I being present in the interest of Mr. Hawley. Tubercular lesions were found in all the animals, with the exception of two, in which no microscopical evidence of tuberculosis could be detected. The majority of the animals were affected either in the mediastinal glands or mesenteric glands, only a few having pulmonary lesions of any extent, and, except in two, or possibly three cases, the most careful physical examination would have failed to detect the lesions.

The question that naturally presents itself is what course the State Board of Health will pursue with regard to the further testing and destroying of cattle in this State. In justice to the public they cannot allow the matter to rest at this point, the natural inference being that other herds may be as extensively involved, possibly more so.

Yours truly,

L. McLEAN, M. R. C. V. S.

SOCIETY MEETINGS.

SECOND ANNUAL MEETING OF THE NORTH DAKOTA VETERINARY MEDICAL ASSOCIATION.

The North Dakota Veterinary Medical Association met at Hillsboro December 30, 1893, Dr. Crewe, president, in the chair. After reading of the minutes by the Secretary, Dr. Hinebauch moved that Article III. of the Constitution, which says that "Members of this organization shall consist of graduates and non-graduates, as recommended by the Board of Censors. Such ap-

plicants as are non-graduates shall pass an examination which shall be deemed sufficient by the Board of Examiners appointed for the purpose ; examination to take place at the first annual meeting after application has been made" be amended as follows: "Members of this organization shall consist of graduates of recognized veterinary colleges."

Under the constitution and by-laws the amendment cannot come up for final vote until the next annual meeting. It was the sense of the association, however, that the change was a desirable one.

Dr. Taylor then presented a paper on glandered horses, of which the following is a synopsis :

"Every intelligent owner of a horse is more or less acquainted with that loathsome disease known as glanders, either by tradition or experience. He is aware that it is both contagious and fatal, not only to horses, but also to mankind. The fact that the disease has to this day baffled all treatment is sufficient evidence why its detection in a stable is always looked upon as serious. If the disease always assumed the same character, if every glandered horse presented the three special symptoms essentially belonging to it, viz., sticky and bloody discharge from the nose, hard, painless, inflamed and swollen glands of the jaws, and above all the peculiar and characteristic ulceration of the mucous membranes of the nasal cavities and chambers, there would be no difficulty in recognizing it, and condemning the animal affected as most dangerous. It is found, however, that horses which suffer from glanders in this country, where the climate is especially dry, cases are very rare which exhibit any two of these symptoms. At the same time, cases do exist which do not exhibit even one of the symptoms, thus making it very difficult to diagnose. Animals affected in the latter way are fully as dangerous in transmitting the disease as those which show the symptoms peculiar to the disease ; they live longer, and are more apt to pass from one farm to another, thus coming in contact with more horses, and eventually producing a wider spread of the disease than where the typical acute form exists. When the disease is once detected there should be no hesitation

in destroying the animal. Even if doubt exists in the owner's mind regarding the disease, he should not hesitate to call in a properly qualified veterinarian in order that he may be advised with regard to the true condition which exists."

The discussion which followed elicited the fact that a number of appointments had been made in the different veterinary districts of the State of men who are neither qualified by experience or education to fill the position of district veterinarian. Many horses undoubtedly have been destroyed for glanders which did not have the disease at all, while, on the other hand, many which did show unmistakable symptoms of the disease have been allowed to go at large, scattering the disease over wide areas.

Dr. Farmer presented the subject of pleura-pneumonia of a contagious form among horses, but as he had no regular prepared paper, his subject was not discussed as thoroughly as it would have been had he placed his observations in writing. Right here I would again like to call the attention of members of this association, as well as of other associations, to the fact that all papers and communications should invariably be presented in writing, so that the Secretary can report a proper synopsis of them to the veterinary journals.

After the reading of the papers, Dr. D. Fisher, of Grandin, made application, and, on vote, was admitted to membership in the association. It was also moved that the Secretary admit all applicants for membership in the association who can present credentials that are satisfactory. The association, although but in its second year, is upon a good footing, increasing its membership, and at the present time but three graduates live in the State who do not belong to it.

T. D. HINEBAUCH, *Secretary*,

FARGO, N. D.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Keystone Veterinary Medical Association was held at Dr. Hoskins' Hospital, 3452 Ludlow Street, Philadelphia, Tuesday evening, January 9th. The meeting was called to order by Dr. Chas. Lintz, who was called to

the chair in the absence of the President, Dr. Chas. T. Gøentner, who I learned was ill.

On roll call the following answered to their names: Drs. Rhoads, Lintz, Hoskins, Bridge and W. L. Hart.

Minutes of the previous meeting read and approved.

The report of the Board of Censors being in order, reported the following resolutions, which they had drawn upon the respective subjects assigned them. After some discussion the resolutions were adopted by the association, and the Secretary directed to transmit them to the respective persons to whom they were addressed.

Philadelphia, Pa., January 9, 1894.

Hon. Wm. Mann, Prothonotary of the County of Philadelphia.

Dear Sir: We, the officers and members of the Keystone Veterinary Medical Association, respectfully call your attention to the many changes that have occurred from death, removal, etc., in connection with the Veterinary Medical Registry of this county, and that the law under which said registries were made enumerates as one of its features that a record shall be kept of such changes, and a suitable minute made upon the registry book. Appreciating your many kind services to us in the past in this direction, we would respectfully request that a record be made in conjunction with the following names as those who have died since said registration was made, namely, Drs. Wm. H. Hitchman, George Kilbride, James McCourt, John Lovett, John B. Berry, Theodore Apeldorn, L. C. Campbell. As removals from the city: Drs. R. S. Huidekoper, who is now a resident of New York City; William A. Birch, N. A. Cohen, Antoni Maurise, and Edward McCarty, now resident of the State of New Jersey; Chas. Lintz, now a resident of Chester, Delaware County; J. P. Zuill, now a resident of Delaware; Harry Walter, who has removed to Wilkesbarre, Luzerne County, and Dr. L. O. Lusson, who has removed to Ardmore, Montgomery County.

We would further request that you personally examine the Veterinary Medical Registry and give necessary directions as you may deem proper, inasmuch as we have found by examination

that in many of these registries their addresses have never been placed with them, and in some one or two instances the name of the person registering has not been placed at the top of the column; and might we not ask at your hands that each person registering will be required to furnish to your office the date of his diploma.

Thanking you for past courtesies, and trusting we are not asking too much at your hands, we are respectfully,

Chas. T. Gæntner, D.V.S., President,

Bryn Mawr, Pa.

Walter L. Hart, D.V.S., Secretary,

No. 1411 North Fourth Street, Philadelphia, Pa.

Keystone Veterinary Association.

Philadelphia, Pa., January 9, 1894.

Hon J. Sterling Morton.

Honored Sir: We, the officers and members of the Keystone Veterinary Medical Association, have read with very much pleasure and gratification your recommendation to the President, as conveyed to the people of the United States through his recent message, your desire to base all veterinary appointments in the Bureau of Animal Industry, over which you preside, upon the "merit system," and the wiping away of the "Infamous spoils system," which so often forces upon officers inefficient and incompetent men for these places, which are of so much importance.

We also gratefully acknowledge your recommendations in regard to some method looking toward the extermination of Tuberculosis from the milk cattle of our land, and we pledge you that in any way we may assist or serve you our association will be only too glad to render to you any aid within its power in carrying out these meretorious reeommendations.

Respectfully yours,

Chas. T. Gæntner, D.V.S., President,

Byrn Mawr, Pa.

Walter L. Hart, D.V.S., Secretary,

No. 1411 North Fourth Street, Philadelphia, Pa.

The evening was well spent in discussing the subject of milk fever, with a report from State Veterinarian Bridge of the recent outbreak of Tuberculosis at Washington, Pa., and some remarks on the outbreak of Glanders at Wilkesbarre, Pa., after which Dr. Hoskins reported a series of statistics in regard to varying weights of horses under injuries and various diseases with the loss and gain measured from week to week. He reported that he found animals suffering with injuries of the foot lost most flesh, from six to seven pounds a day, and that he had an animal in his infirmary that had an injury to the spine that averaged a gain of five pounds a day, being very much emaciated when brought to him.

Dr. Lintz reported a case that had colic which he was called to see; found the animal under the influence of some poisonous drug, having symptoms of belladonna poison: Pupil dilated, mucous membranes very dry, pulse hardly perceptible, respirations very nearly stopped, and staggering. Injected pilocarpine; in ten minutes showed improvement; in half hour respiration and pulse increased, and in a little while became normal; lived four days, then died; neck became very much swollen from an abscess, and died from blood poisoning.

After some other business the meeting adjourned, to meet on the second Tuesday in February, at which meeting Drs. Bridge and Lintz will read papers.

W. L. HART, *Secretary*.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Pennsylvania State Veterinary Medical Association will be held at the College of Physicians, N. E. corner of 13th and Locust Streets, Philadelphia, March 6th and 7th.

We hope members of other veterinary associations will note the time and appoint delegates to meet us.

F. H. RIDGE, *Secretary*.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The Ohio State Veterinary Medical Association convened

its annual session in Well's Port Hall, Columbus, at 7 P.M., January 9, 1894.

The President being absent, the meeting was called to order by Vice-President J. D. Fair.

Visitors present were Dr. W. C. Fair, of Cleveland; Dr. T. C. McQuade, of Canton, and Dr. H. Styer, of London.

Nomination of officers being next, the following were nominated: J. D. Fair, Berlin, President; Neil Jones, Cincinnati, First Vice-President; F. E. Anderson, Findley, Second Vice-President; W. H. Gribble, Washington C. H., Secretary; T. B. Hillock, Columbus, Treasurer. The meeting was a most harmonious one, as shown by the fact that only one nomination was made for each office, and, such being the fact, Dr. Cotton moved, and Dr. Ball supported, that the rules of the association be suspended, and the Secretary be instructed to cast the ballot of the association for each officer.

This was done, and the President declared the above officers elected to the respective offices for the year 1894.

Dr. Cotton and Dr. Bretz requested that no papers be read until the next morning, which was agreed to.

Dr. Cotton, who had given notice at the semi-annual meeting that he would introduce a resolution looking toward a radical change in the code of ethics, now read his amendment to the by-laws. In substance it was the complete striking out of the Code of Ethics of Sections 5 and 6, which reads:

SEC. 5. In advertising, the veterinary surgeon shall confine himself to his business address. Advertising specific medicines, specific plans of treatment, advertising through the medium of posters, illustrated bills, newspaper puffs, etc., will not be tolerated by this society.

SEC. 6. SECRET MEDICINES. Any members who shall advertise or otherwise offer to the public any medicines, the composition of which he refuses to disclose, or who proposes to cure diseases by any such secret medicines, he shall be denounced as an unworthy member, and shall be expelled from the association.

It brought out a great amount of discussion, showing how men in the same profession will disagree on why, and wherefore, as *the same facts are presented*. The final result was that the amendment was laid on the table.

Dr. Anderson reported having seen a man make applications of some medicine to a splint on Saturday and Sunday, and by Tuesday the splint was gone. He was now watching the treatment on a bone spavin.

Many were the interesting cases described and discussed, until it was quite late, when Vice-President Fair appointed Drs. Jones, Howe and Bretz, to audit the books of the association, after which the meeting adjourned until the next morning at 10 A.M.

WEDNESDAY, JAN. 10.

Meeting called to order by Vice-President J. D. Fair. After roll call the Auditing Committee reported as follows:

Gentlemen: We, your committee, appointed to audit the books of this association, beg leave to report that we find the books well kept and the associations treasury in a flourishing condition, there being at the beginning of this session in the hands of the Treasurer \$305.54.

NEIL JONES,
W. R. HOWE,
S. E. BRETZ,
Committee.

Letters were now read, one from the wife of President N. E. Wight, stating that the doctor was sick in bed; another from Dr. Geo. Butler, *disabled* by severe injuries. The Secretary was instructed to send each the regrets and best wishes of the association.

Vice-President Fair now called Dr. Hillock to the chair, after which he read a most excellent paper, reporting several interesting cases of fracture, melanosis, purpura, and spinal meningitis.

Dr. Neil Jones opened discussion by stating that his prognosis of cow fracture has always been doubtful, as he, until very lately, had never seen a case recover, but within three months he had seen a compound comminuted fracture in a cow, where the bone projected six inches, recover, and also a compound fracture of the radius in a horse also get well. So that from now on his prognosis would be guarded.

Almost every member took occasion to discuss the paper,

but most of the difference of opinion was in reference to cases of so-called spinal meningitis, some claiming such cases were diphtheria. The treatment of purpura was discussed at considerable length, but the preponderance of evidence was in favor of strychnia and iodide of iron. The latter being a very unstable product, should be made fresh.

Dr. Jones now asked permission to make a few remarks, as he must leave the city. His remarks were in reference to the Ohio Veterinary College made necessary, he thought, by the action of the New York State Association at its last meeting, as its action, or rather some of its members, were entirely out of place and uncalled for, as Dr. A. H. King was not and had not been for some time previous to that meeting in any way connected with the Ohio Veterinary College, and that the professorship and curriculum would stand quite on a level with any two-year college in America, and that the directors were even now meditating a change to a three-year term.

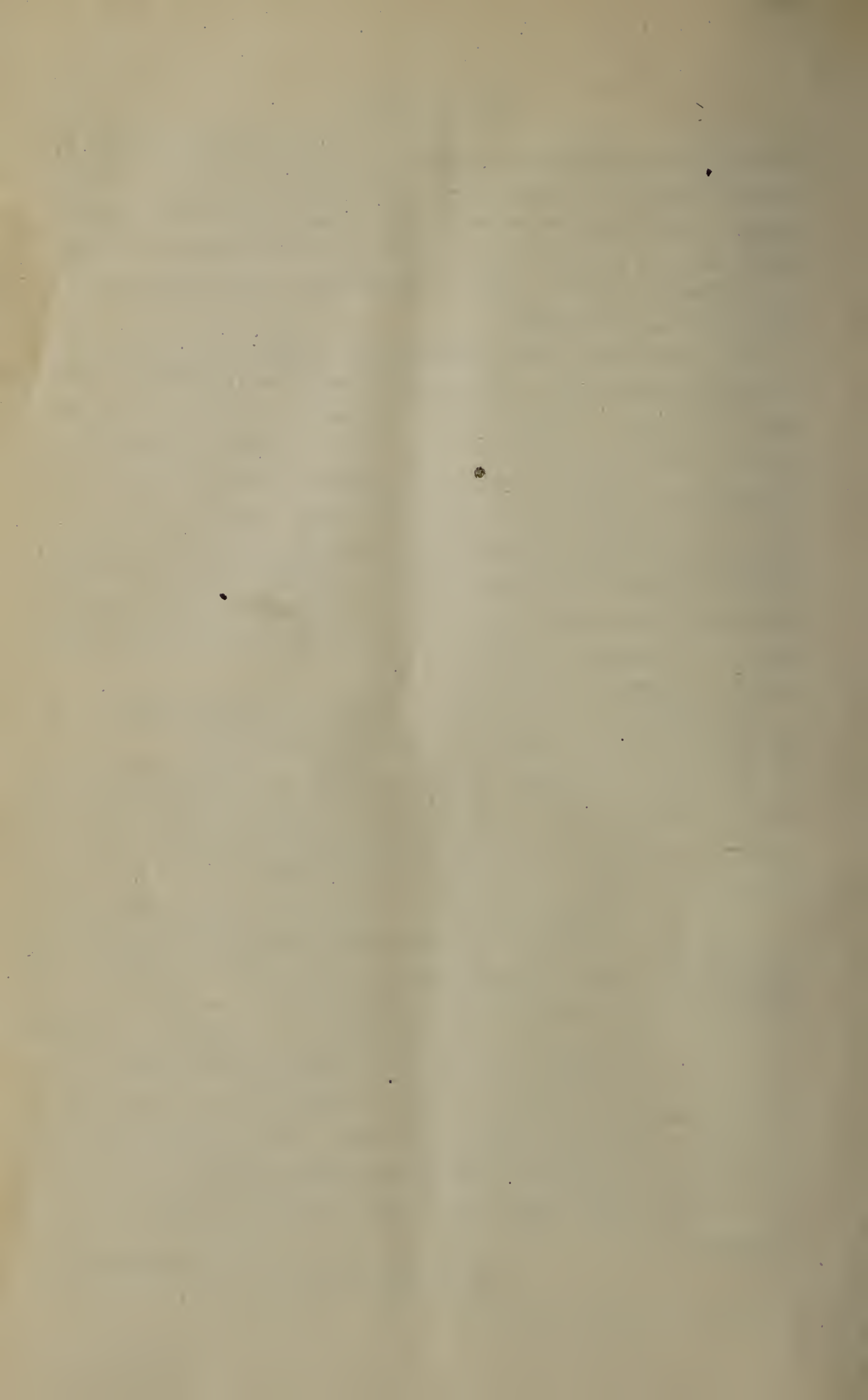
Dr. Gribble now read a paper entitled "Life and Death," but, on account of lack of time, no discussion was had.

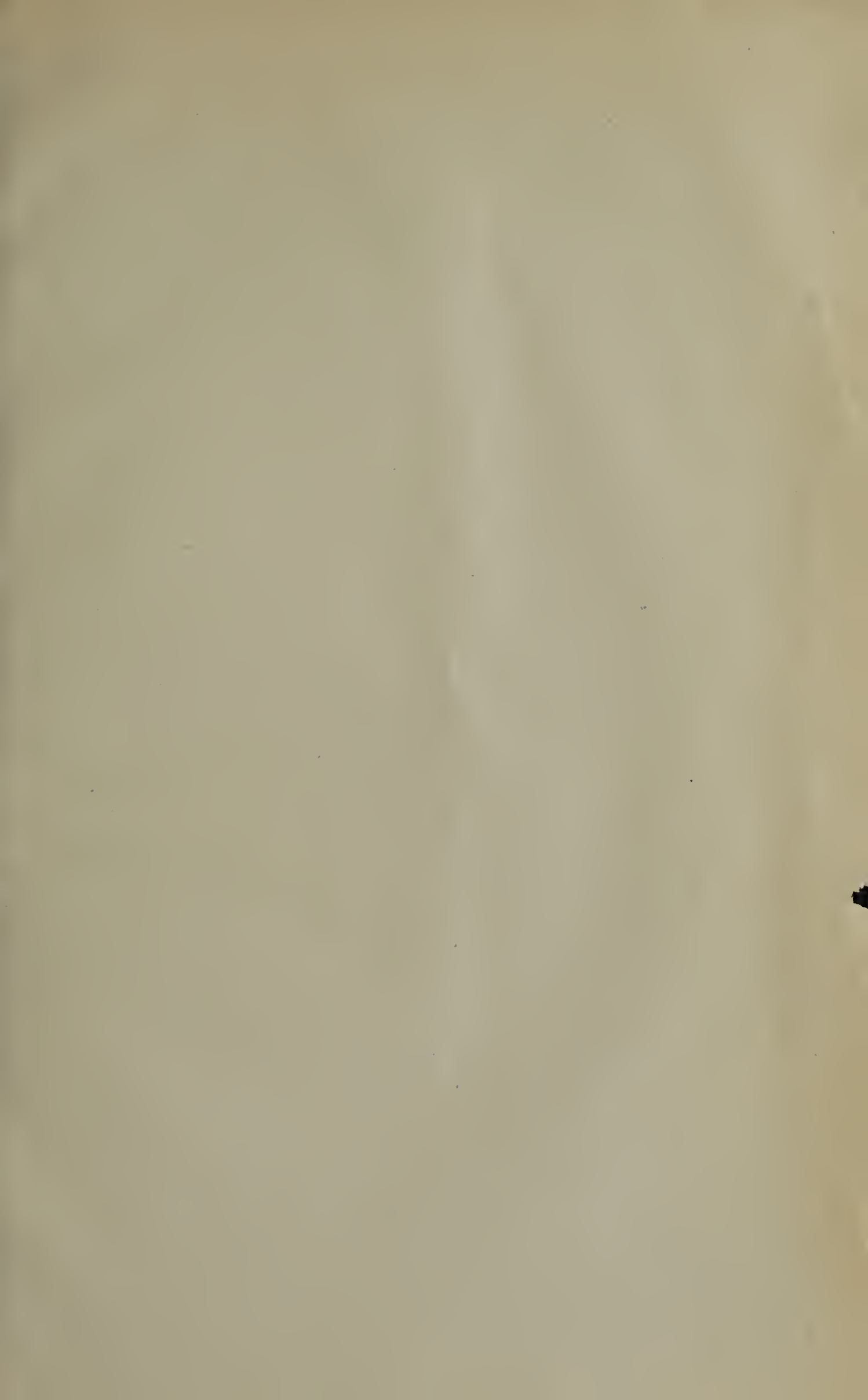
Dr. Howe described a case of rupture of ligaments of the neck, in which he had used splints; the case recovered, but the splints had made a sore neck, and Tetanus developed. Strange to say, the animal even recovered from this.

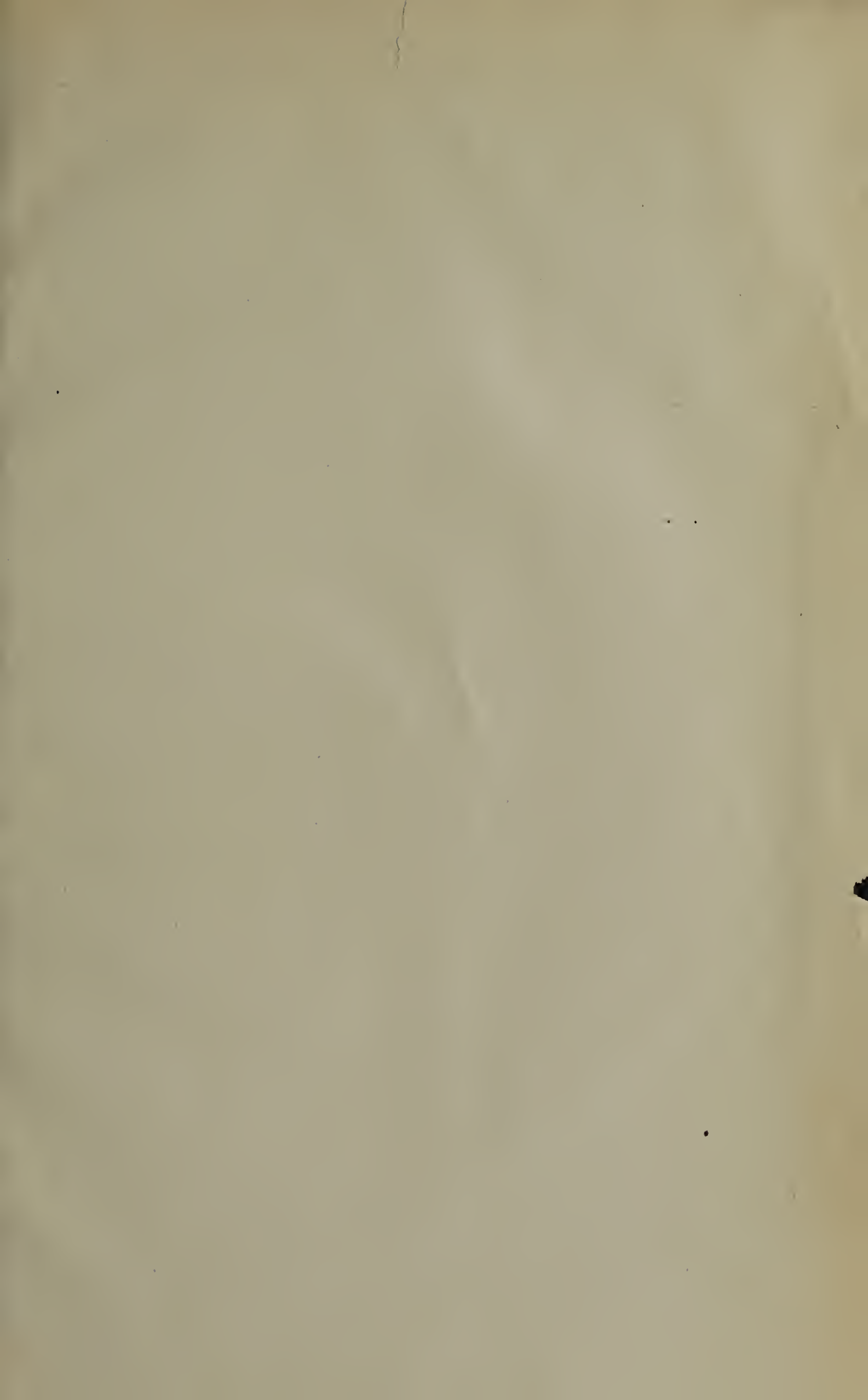
The time having arrived to arrange for the semi-annual meeting, the President invited the association to meet in Millersburgh, which was accepted, and the time set was during the Holmes County Fair, in September next.

It was now moved by Dr. Gribble, supported by Dr. Ball, that we now adjourn, and instead of waiting till evening for our annual banquet, we now appoint a committee to arrange for a first-class substantial dinner. Carried. The President appointed Dr. Ball as a committee, and the association adjourned to meet at the dinner table, where you may be assured none were found missing.

W. H. GRIBBLE, D. V. S., *Secretary.*



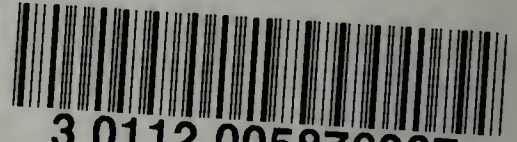




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