Others have also seen rupture of the stomach caused by œstrus larvæ. Knowing the injurious action which these larvæ are capable of producing, the serious consequences are not surprising. Perroncito has for a long time past collected records of cases of rupture of the stomach which appeared to him due to œstrus larvæ. Quite recently there was sent to the Turin school a horse which, after a journey of over 50 kilometres, had shown symptoms of colic and had died. On *post-mortem* examination, a rupture 6 inches in length was found in the right half of the stomach, towards the small curvature. On the mucous membrane could still be seen traces, where the larvæ had become adherent, of three very extensive colonies of *gastrophilus equi*. Two of these larvæ were still to be found in the left, and one in the right half of the stomach. In addition, extensive injuries were noted in the epithelium of the mucous membrane of the right half of the stomach.

Considering the above facts, which appear to indicate that in horses suffering from œstrus larvæ more or less severe injuries of the stomach may occur, and greater sensibility to infectious diseases exist, more attention should be paid to those methods of treatment by which the larvæ can be removed, and those lasting changes in the wall of the horse's stomach due to this cause can be prevented.—(*Fortschritte der Veterinär-Hygiene*, April 1903, p. 40.)

FOWL PLAGUE.

By Drs OSTERTAG and WOLFFHÜGEL.

In January 1901 a disease of fowls, previously recognised in upper Italy, was conveyed from there, partly directly, partly through the breaking up in February of the Brunswick Poultry Exhibition, and was spread to different parts of Germany, particularly, however, to Wurtemberg, Hesse, Prussia, and Oldenburg. Ostertag and Wolffhügel studied this disease in fifteen fowls which were sent them, and in eighty-eight which were artificially infected. The conclusions they drew from their investigations were as follows:—

The specific organism, which cannot be detected by modern methods of investigation, is contained in the blood, fæces, and nasal mucus of diseased fowls, and is spread by these vehicles. It is killed by a temperature of 70° C. The disease is indicated by dulness, ruffling of the feathers, a sleepy expression, and symptoms of paralysis, and usually produces death in two to four days. It is distinguished from fowl cholera by the fact that it affects fowls and very rarely other birds. Its course is somewhat less rapid, is not attended by diarrhoea, and produces different *post-mortem* appearances, viz. mucus in the nose and pharynx, opacity of the liver, bleeding in the mucous membrane of the digestive and respiratory passages of the oviduct, in the pericardium, and in the peritoneum. In addition, collections of fluid may be found in the pericardial and peritoneal sacs; œdema occurs under the skin of the neck, head, and breast, and in occasional instances the lungs are inflamed. The two diseases may with certainty be distinguished by the discovery of the bacillus *avisepcticus* in the blood where it occurs in large quantities, or by inoculating pigeons, which are only susceptible to fowl cholera. The authors name the new disease "fowl plague."—(*Berliner Thierärz. Wochens.* 4th June 1903, p. 365.)

INFECTIOUS PNEUMO-PLEURISY OF CALVES.

By Veterinary Surgeon EVERS.

Since Evers three years ago introduced the treatment of diarrhoea in calves by intravenous injections of collargolum, he has been informed by many owners that, whilst the injections prevented the occurrence of the greatly feared diarrhoea, they were succeeded on the ninth to the twelfth day by

symptoms of inflammation of the lungs, from which the animals died two to fourteen days later. At first he was in doubt as to whether the intravenous injections were the cause of the lung disease, but a large number of *post-mortem* examinations of calves' lungs confirmed him in the belief that the cause was really to be sought in the presence of a specific micro-organism. The first suggestion that the cause was specific arose in connection with an estate near the town of Waren, on which no intravenous treatment had been carried out, but on which nevertheless two young calves, aged respectively nine and fourteen days, developed symptoms of inflammation of the lungs and died. In the year 1901 the disease broke out in an epizootic form in D— amongst the breeding calves, of which thirty-four animals died in six weeks from inflammation of the lungs, twenty-one being between twenty days and four months of age. All the animals attacked died.

The symptoms were as follows. The young animals suddenly became dull, sleepy, and coughed frequently. The respirations were markedly hastened, numbering from forty to seventy per minute. The pulse was tumultuous and as high as 100. Temperature 41.5° to 41.6° C. Although the appetite was diminished, the animals usually took their ordinary quantity of milk, but they drank slowly. As soon as the lung disease was completely developed the patient stood with its fore limbs stretched rather widely apart, the head and neck being advanced and the ears laid back. The animal looked dull, breathed with difficulty, and respiration was evidently painful. The nostrils were dilated. The bowels at first acted normally, but afterwards to a less extent. A few hours before death the anus was relaxed, and offensive fluid excreta were involuntarily discharged.

When the calves were from eight to fourteen days old at the time of attack death usually occurred within two to four days, but when of greater age the duration of the disease was from fourteen to twenty-one days. Complete recovery was never seen. In two cases apparent recovery occurred after an attack lasting fourteen days, the subjects being from thirteen to fourteen weeks old. The *post-mortem* examination of these two calves, which were killed at six months old as unfit for breeding purposes, revealed the presence of encapsuled caseous centres as large as a goose's egg in the lungs, and firm adhesions between the opposing layers of pleura.

The *post-mortem* appearance varied according to whether the disease had followed an acute or chronic course. If for any reason one had not seen the lungs, one might have imagined death to have resulted from swine plague.

In animals in which the course of disease had been acute, that is, animals between eight and fourteen days old, the lungs were almost exclusively the seat of change. The apices of one or both lungs were solidified, of a dark red colour, showed numerous pin-point bleedings, and were of firm consistence. Occasionally the apices of the lungs were healthy, and the middle and posterior sections presented a firm, solid, dark-red or brownish-red appearance. The bronchi were filled with froth. From the bronchi of the diseased sections little yellow plugs could be squeezed out. The pleural sacs contained a large quantity of a clear fluid. The bronchial lymph glands appeared sodden and swollen, and in many cases exhibited brownish-red patches on section. In animals in which the disease had taken a chronic course, that is, in animals of six to fourteen weeks old the appearances on section were much more marked. In these lungs the entire gamut of change could be noted, from the commencement of the partially purulent-caseous pneumonia up to almost total necrosis of the lung, with firm union between the parietal and visceral layers of pleura. It was difficult to find even small portions of lung relatively sound. The bronchial and mediastinal lymph glands were often as large as a hen's egg and caseous.

As above stated, *post-mortem* examination reveals the appearances of swine plague in all its stages. And, in fact, the cause of this infectious pneumonia in

calves, which occurs so commonly in Mecklenburg, appears identical with that of swine plague, and it is not improbable that the disease is commonest in places where chronic swine plague is most rife.

Evers considers that the identity of this disease of calves with swine plague is established by the facts given below. In 1901 the greater number of the calves in a certain district died of the above pneumonia, and on *post-mortem* examination Evers had noted the great resemblance between the pathological appearances and those of swine plague. In February Herr V. asked for advice regarding his calves, which were suffering from the disease. One of the young calves was slaughtered, and another, aged 14 days, died after three days' illness. The *post mortem* examination of these animals confirmed the diagnosis. Of the surviving calves five appeared healthy and two had seemed ill for a period of one day. The treatment adopted was founded on the idea that if the cause of the disease was identical with that of swine plague, then swine plague protective serum ought to confer immunity, and might in the early stages have a curative effect. The calves were therefore treated with serum of this character termed Septizidin and prepared in the laboratories of a company at Landsberg. Improvement was so marked that next day the two diseased calves were much brighter, and in a week appeared absolutely cured. The five immunised calves did not take the disease. In 1901 Evers had no further opportunity of making inoculations.

In January 1902 the disease appeared in S. district. Of twenty-eight calves eleven became ill one after the other. Eight died or were killed. On the 16th January the healthy calves each received 10 cc., the diseased 20 to 30 cc., of septizidin. The healthy animals have since shown no sign of disease. Of the three diseased animals, one, which showed no signs of recovering, was slaughtered after some weeks; the two others recovered.

In December 1902 a calf, forming one of a lot of fifty, died of pneumonia. One animal was slaughtered and four became ill. Inoculation with protective serum was performed on the 23rd December, with the result that all save one of the calves treated remained healthy. This one calf had been ill when inoculated, and as it did not rapidly improve it was slaughtered. The left lung contained encapsuled necrotic centres as large as a goose's egg.

Encouraged by these results, Evers in December 1902 sent a fresh diseased lung to the Bacteriological Institute at Landsberg. The result of the examination was as follows: the lung contained bipolar staining bacteria similar to those of swine plague. The virulence of the bacteria discovered was considerable, mice inoculated with '01 cc., dying in twenty-four hours; rabbits and guinea-pigs were also killed. The growth on agar and gelatine and in bouillon was similar to that of swine plague and hæmorrhagic septicæmia. In guinea-pigs and rabbits which received intraperitoneal injections there was noted, however, a greater tendency to fibrinous exudate, the liver particularly being coated with a layer of fibrin about 2 mm. in thickness. Cultures obtained from the lung were used as a means of testing acquired immunity. Guinea-pigs which had been protected against swine plague survived the injection of doses of the culture of pneumo-pleurisy of calves several times greater than those which killed unprotected animals; swine plague serum also protected mice against simultaneous inoculation with cultures of the organism. Evers considers this proves the identity of the organism of pneumo-pleurisy of calves with that of swine plague.

Since December 1902 Evers has had excellent results from inoculating calves on the day of birth with 10 cc. septizidin to which a quantity of culture of the pneumo-pleurisy organism has been added. Should the animals become ill, they receive an injection of 20 to 30 ccm. of septizidin. The curative affect clearly cannot be so effectual as protection, inasmuch as the serum cannot restore the injured lung to its normal state.—(*Berliner Thierärztl. Wochensc.*, 23rd April 1903, p. 277.)