about six years old. It was tested with tuberculin on the 19th September 1898, and there was no reaction. On the 29th of the same month it was inoculated intravenously with 4 cc. of sterile water holding in suspension tubercle bacilli from the liver of a fowl (natural case of the disease). Microscopic examination showed that the liquid was rich in tubercle bacilli.

The cow was tested with tuberculin on the 7th October following, and the result was as shown below :—

<i>Time of Injection.</i>	<i>8th hour.</i>	<i>10th hour.</i>	<i>12th hour.</i>	<i>14th hour.</i>
101·8	105	105·4	105·4	105

There was an equally pronounced reaction when the test was repeated on the 17th October and 18th November, but the animal failed to react when tested on the 15th December. Since that date it has been re-inoculated intravenously with tubercle bacilli as follows :—

11th November 1899, with 4 cc. of the liquid used on that date for Case III.

5th April 1900, with 3 cc. of the same liquid as was used on that date for Cases II and III.

23rd March 1901, with 15 cc. of the liquid used on the same date for Case III.

18th May 1901, with 5 cc. of the same liquid as was used on that date for Cases II. and III.

At the present time this animal is very fat ; it appears to be in perfect health, and it does not react to tuberculin.

ORIENTAL OR BUBONIC PLAGUE IN CERTAIN OF THE LOWER ANIMALS.

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ALTHOUGH a great amount has been written during the past few years upon the history, clinical or otherwise, and bacteriological and microscopical examination of bubonic or oriental plague amongst the human race, with the exception of the rat, I can find little or no mention of the fact that other of the lower animals share with man a natural susceptibility to the disease. I purpose describing certain cases of bubonic plague which have been brought to my notice in the cat, rat, ferret, guinea-pig, and mouse, during the epidemic of the disease in Cape Town.

CATS—A cat was brought to the laboratory by a man who said he had seen it sitting huddled up in a garden at the back of a house in which had been found rats dead from plague, and he wished to know if the cat was suffering from the same disease. The animal was a wretchedly poor mongrel, very thin, and unable to stand ; head, particularly under the lower jaw, very much swollen, and eyes closed, thus giving the whole head a most peculiar triangular appearance.

On palpation, I at first suspected an abscess, but owing to the diffuseness of the swelling I dismissed this idea. After destruction of the animal (with chloroform) I made a *post-mortem* examination, and found both submaxillary lymphatic glands to be enormously enlarged and swollen, a pale straw-coloured œdema surrounding them, and involving the tissue in the submaxillary space as far down as the trachea. On cutting into their substance, the glands were seen to be spongy, hæmorrhagic in patches, with no signs of supuration, and on squeezing a white fluid exuded. Smears from the glands, stained by Loeffler's methylene-blue, or weak carbol-fuchsin, showed the characteristic bipolar-staining bacilli of oriental or bubonic plague, and these bacilli were much more characteristic than those generally found in the bubos in human cases of the same disease. The spleen was enlarged and deeply congested, while the liver was congested, and smears from both these organs contained characteristic bacilli.

I have made *post-mortem* examinations on several cats dead and dying from plague, and in all the main lesion seemed to be enlargement of the submaxillary glands, due, no doubt, to a primary infection as a result of eating rats dead or dying from plague. In several of the cases I found the presternal lymphatic glands enlarged and teeming with typical bipolar-staining bacilli.

RATS.—It has often happened that many days or even weeks previous to the outbreak of plague in a neighbourhood rats have been noticed to be sick, and people will tell you these animals are then not so quick in their movements, and are more easily knocked over with a stick. Rats dead from plague generally show distinct enlargement in the glands of the neck below the jaw, less frequently in the presternal group or in the groin. On *post-mortem* examination the swelling of the neck is found to be due to an extensive œdema of the subcutaneous cellular tissue, the thyroid and submaxillary glands are about twice their normal size, and in their neighbourhood the lymphatic glands are enlarged to about the size of a pea or bean, deeply congested, with hæmorrhages into and around them.

The presternal lymphatic glands (if the rat has been able to hold out long enough) seem to be the next group affected. Bacilli possessing typical bipolar-staining properties, and which do not stain by Gram's method, are found in immense numbers in the hæmorrhagic lymphatic glands.

In every case I have also found the spleen enlarged, the liver congested, and bacilli present in smears from both these organs.

FERRETS.—Two ferrets which had been used to clean out rats from a plague infected area were noticed to be sick, refusing food, coat staring, inclined to sleep, and with a muco-purulent discharge from the eyes. In from eight to thirteen days (as far as could be made out) after exposure to infection these animals died.

On *post-mortem* examination a complete chain of swollen, congested, and in places hæmorrhagic, glands, embedded in a clear yellow gelatinous œdema, could be made out, extending on each side of the trachea, and in one case a presternal gland was enlarged and approaching suppuration. Cover glass smears made from these glands contained bacilli, indistinguishable from the plague bacilli.

In both animals the spleen was about twice the normal size, deep

purple in colour, and contained the same bacilli, not, however, quite so numerous as in the glands.

In one of the ferrets I found an unhealthy-looking ulcer in the neck, probably as the result of a bite from a rat.

It may be of interest to note that these ferrets were housed near some guinea-pigs, three of which died suddenly, presenting similar *post-mortem* lesions—swollen and hæmorrhagic glands surrounded by oedema.

In these guinea-pigs I found similar organisms showing bipolar-staining, and producing stalactite growths in bouillon, and I reproduced a similar disease in other guinea-pigs by inoculation with a culture in bouillon.

MICE.—Comparatively few of these animals have been brought to me for examination, but in two out of the number I have found enlarged submaxillary and presternal glands deeply congested, and containing bacilli resembling *B. Pestis*. I was surprised to find that the blood in both cases contained an enormous quantity of the same organism. Unfortunately I did not have an opportunity to make cultures from these animals.

I should like while finishing these few notes to add that I have had brought to my notice lately an unusual number of outbreaks of disease amongst poultry in the Cape Town district, and in all the specimens submitted I have found the bipolar-staining bacillus of chicken cholera. Many of these bacilli so closely resemble the *B. Pestis* as to deceive experts in human plague. But in culture this fowl cholera organism does not produce stalactite growths. I have been informed that in Bombay during the plague epidemic pigeons died from the disease. It is a matter of conjecture whether there is any connection between the disease in poultry and the disease oriental plague in man.