

A
TREATISE ON PLAGUE
dealing with the Historical,
Epidemiological, Clinical, Therapeutic
and Preventive aspects of the
Disease

by

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The rôle of animals other than rats in the dissemination of plague not judged to be important from existing observations.

It is established experimentally that animals of different species are more or less susceptible to plague; among these are cats, dogs, pigs, calves, sheep, poultry, monkeys, and squirrels and snakes. Plague has also been discovered as occurring by natural infection among cats in the Mauritius, Cape Town and elsewhere, among dogs in China, among poultry in Hongkong, among monkeys, squirrels and porcupines in India, and in a wallaroo, pademelon, tree-kangaroo, Indian antelope and wallabies in Sydney. There is reason, also, to suspect the susceptibility of moles and bats. The rôle of all these animals in the direct dissemination of plague in the existing pandemic has not yet been proved to be of much importance. Possibly, as plague becomes more diffused and endemic in the areas that it has invaded, the natural infection to which these animals are subject may have a greater opportunity of becoming more general, and the older observations as to their power of disseminating the infection will be found to be correct.

In regard to direct infection communicated by the cat an interesting case occurred in the Cape Town outbreak of 1901. The Rev. Mr Gressley, who took up his residence in the Health Camp and voluntarily performed the duties of chaplain, was attacked with plague under the following circumstances: a cat of his became sick and after a few days died; examination proved its illness and death to be due to plague. One peculiarity of the bacillus, however, was its staining with Gram's method. A few days afterwards Mr Gressley was attacked with plague, his infection being attributed to the cat. Curiously enough the bacillus in Mr Gressley's bubo also possessed the character of staining with Gram's method.

The epizootic disease which affects the tarbagan marmot, a rodent which is very common in the Transbaikal province of Siberia, has already been stated to be communicable to man. Although the bacteriological test has not been applied yet the descriptions given by Dr Bieliavski and Dr Rieshetnikof respectively leave little doubt that the disease affecting these rodents, and which is liable to be communicated to man, is plague.

Dr Clemow gives in the *Journal of Tropical Medicine*¹ a full and interesting account of the disease, derived from the contents of two articles published in the *Journal of General Hygiene and Legal and*

¹ "Plague in Siberia and Mongolia and the Tarbagan (*Arctomys bobac*).'' By Frank Clemow, M.D., D.P.H., *Journal of Tropical Medicine*, February, 1900.

Practical Medicine for April, 1895 (*Viestnik obshtchestvennoi Gigiénni Sudelnoi i Prakticheskoi Meditzinni*), the official journal of the medical department of the Russian Ministry of the Interior.

The tarbagan is a rodent of about 26 inches in length, with a thick fur of a dull yellow colour, which is of a darker shading on the back and snout and round the lips and eyes. The animal builds large underground dwellings in which it hibernates from September to March. It is hunted by the nomad Buriats and by the Cossacks, its flesh being considered a delicacy for the table, but it is principally sought for on account of its fat, which is used for greasing straps, harness and other leather objects. In some years, and usually in the autumn, the tarbagan is attacked by an epizootic disease, the symptoms of which are as follows.

The animal becomes languid and ceases to bark: its gait is unsteady and sometimes under one shoulder a reddish tense swelling appears: if far from its home the animal may be unable from its dazed condition to find it, and readily falls a prey to its foes. Sometimes the swelling is absent or very small, and the Buriats, to determine whether the animal is diseased or not cut into the sole of one pad and if the blood is coagulated they consider the animal is diseased and give it to the dogs. Dr Clemow remarks that it is an interesting fact that neither dogs nor wolves contract the disease.

The disease in man which is believed to be contracted from this epizootic disease of the tarbagan has the clinical symptoms of plague with its great fatality. The symptoms are severe headache, fever, vomiting, sometimes diarrhoea, but more commonly constipation, and pain in the arm-pit or groin with glandular swelling, which, however, is not always present, ending fatally as a rule in a few days. In the village of Suktui in August, 1889, in a Cossack family of ten persons a girl aged 16 years died of this disease after three days' illness, and her death was followed by that of three other members of the family. Then a relative took home some of the clothes and washed them, and in a few days was attacked with the disease and died. Five other members of this second family were attacked and died and only a child of five years remained unaffected: a young Buriat aged 10 years, who played with the children, also sickened and died.

It appears that the members of the family first attacked were occupied in catching and skinning tarbagans, and two years later one of the remaining six sons contracted the disease and died after skinning

and removing the fat from a sickly looking animal. His death was followed by that of his brother, aged 5. At the same time in the town of Aksha a small outbreak took place, the first case being that of a man who, while away from home, had eaten some tarbagan flesh with some Mongolians. He sickened the day after his return and died three days afterwards. Five other members of the family were attacked and died. One of these was removed while ill to a neighbour's house, where two of the household afterwards sickened and died. The symptoms were high fever, giddiness, severe headache, red and flushed face with anxious expression, rapid and progressively weaker pulse. Some patients complained of oppression and pain in the chest with occasional dry cough, and the expectoration of a small amount of occasionally blood-stained sputum. The weakness and depression were extreme, but there was usually consciousness to the end. In some there was pain and swelling of the glands in the axilla or groin, while in others there were no glandular swellings.

In 1894 there was a severe visitation in Sektui in another Cossack family, which was caused by the head of the family, on his way to attend the court at Tzagan-Olui, carrying six tarbagans which his dog had caught and killed. The rapidity with which the animals were caught seemed to show that they must have been suffering from disease. He was taken ill two days after his return home and died three days later. His symptoms were headache, drowsiness, vomiting and diarrhoea. On September 14th the youngest son fell ill with the same symptoms, and had pain and swelling "in the arm-pits and groins." On September 15th a son, on the 17th the mother, on the 19th the grandfather, on the 29th the grandmother, on the 23rd the eldest daughter fell ill and died.

None of the villagers would go near the sick but they brought food and drink for them, which they placed at some distance from the infected house. The dead were buried by the survivors, who threw into the grave the clothes and linen of the deceased. Sixteen days after the last death the survivors went to the house of a relative after changing all their clothes in an out-house, burning their old clothes and putting on new ones provided by the relative.

The tarbagan is to be found in Eastern Europe, Siberia, Mongolia, and Tibet, but, as pointed out by Dr Clemow, there is no evidence to show that it suffers from the fatal epizootic described except in the Transbaikai province, and possibly in the neighbourhood of the Solenko valley in Mongolia.