CATS AS PLAGUE PREVENTERS.

By LIEUTENANT-COLONEL A. BUCHANAN, I.M.S.,
CIVIL SURGEON, AMRAOTI, BERAR, INDIA.

In the BRITISH MEDICAL JOURNAL of January 18th reference is made to the newly-established National Society for the Destruction of Vermin. It is stated that Ashburton Thompson, Haffsine, and other practical workers admit that the stamping out of rats is impossible. In his address at the inauguration of this society, Sir James Crichton-Browne referred to the following agents for rat destruction—the gun, the trap, the ferret, the terrier, poisons such as phosphorus and arsenic, and bacteriological preparations such as Danyez's virus, but it is somewhat curious that he did not, as far as I can see, mention the cat. It is now about eighteen months since I began to advocate the employment of the cat for the destruction of rats, and I propose to give a brief summary of the arguments which have been brought forward from time to time and published in Indian papers on the value of the cat. In a pamphlet which was published by the *Pioneer Press*, Allahabad, at the beginning of 1907, I gave reasons for thinking that the ultimate solution of the plague-prevention problem would be to "keep cats," and further inquiries made almost daily since that time convince me that this is the principal way to check plague in India.

THE VILLAGE OF AIRLA.

Airla is a village situated on the roadside between Nagpur and Kalmeshwar, which are thirteen miles apart. At Nagpur over 22,000 people, and at Kalmeshwar nearly 2,000, died from plague. When plague occurred at Nagpur many went to Kalmeshwar, and when plague occurred at Kalmeshwar many went to Nagpur; but although these people would pass through Airla this village has always been exempt from epidemics. There were several cats and practically no rats in this village.

IN AMRAOTI DISTRICT.

Following up this hint, somewhat elaborate inquiries were made in the Amraoti district in Berar. A census of cats was taken in nearly all the villages and towns (over 1,000), and it was found that in 145 villages where the percentage of cats to houses was 50 or above, plague had never occurred; some cases had occurred in villages in which the percentage was between 20 and 50, but the great majority of cases occurred in the towns and villages in which the percentage was under 20. The total number of cats in the district was estimated at 33,000, the population of the district being a little short of 800,000. As statistics are liable to mislead, it was necessary to inquire into the matter from other points of view. It has been now generally admitted that rats are the cause of plague epidemics. The first question that will be asked is, Will a cat keep away rats from a house? There were many rats about the house in which I am now living, but since I kept cats a rat is practically never seen. Occasionally I have brought a few rats from the town and let them go in a room with the cats, and it did not take long to convince me that the Indian cat is a good rat-catcher. I have asked hundreds or perhaps thousands of people what is their experience of the Indian cat, and whether it is a good rat-catcher, and the almost invariable reply is in the form of a query, How can a rat remain in a house with a cat?

INQUIRIES IN VILLAGES AND TOWNS.

There were five thousand odd cases of plague in this district last year, and in most of the towns or villages in which cases occurred inquiries were made by my assistants or myself. It was found, as a rule, that there was no cat in the houses in which cases of plague occurred, but there were exceptions.

These exceptions could generally be explained in one or other of the following ways. A man who had a cat in his own house had gone to work or visit in a house in which rats were present; or a rat from another house may have come and died in a house in which there was a cat. It has been recognized that safety depends rather on a number of cats in a group of houses than on one cat in a single house. It often happens that the people in one group of houses in a village keep cats, while the people in another group of houses do not keep cats. When plague attacks the village the group of houses with the

large number of cats escapes, while the people in the other group of houses are attacked. Many such instances have been found; but the occupants of a house with three cats, although it is situated in an area in which plague has been prevalent, will usually escape plague because the cats visit adjacent houses.

RELIGION AND CUSTOMS.

The people of India, if we may speak of them as a whole, are exceedingly practical, although it would be difficult to find any people more influenced by prejudices. In choosing a method of plague prevention it is necessary to give full consideration to their prejudices and customs, and it would be difficult for a society in England to realize how strongly the people of India are influenced by such prejudices. Among the Hindus the rat is the *sowari* (means of locomotion) of the god Ganpati, and many of them would prefer to run the risk of taking plague rather than kill a rat. The Jains object to taking life of any kind. Many of the Hindu weavers buy some grain on Friday and feed the rats in their houses, with the understanding that the rats will not cut the threads on their looms. The Waddars, a somewhat jungle tribe, eat rats, but chiefly field rats, and the Pardhi enjoys eating a cat. Many Hindus will catch rats in traps, and release them in the fields. On the other hand, a Mohammedan has no hesitation about killing a rat, and there are many of the more enlightened Hindus who do not object to killing rats.

MOHAMMEDAN CUSTOMS REGARDING CATS.

In the religious books of the Mohammedans there is a great deal about the cat. The keeping of cats was strongly commended by Mohammed. In the *Quasasul Ambia* there is an account of the creation of rats and cats which appeals to the Mohammedans very strongly. Noah had got the ark afloat; the sanitary condition of the ark was very unsatisfactory, and pigs were created to clean up the ark. At the instance of the devil, rats were created from the pigs; the rats multiplied rapidly, and began to make holes in the ark, so that the lives of all on board were in danger. The Angel Gabriel then appeared and advised Noah to pass his hand over the nostrils of the tiger, and forthwith cats came into existence. The cats soon cleared off the rats, and the ark was saved. I have had this story printed and circulated in this district, pointing out how the cats saved Noah from the devastation of the rats, and how the people can now save themselves from plague by following the advice of the Prophet. It is now the exception to find a Mohammedan in this district who has not a cat in his house.

HINDU CUSTOMS REGARDING CATS.

It is considered a great sin for a Hindu to kill a cat or to injure even a single hair of a cat. The penalty, which is very widely known among natives, though known to probably only a few Europeans, is that the person who kills a cat is to have a golden cat made, and he either presents this at a shrine in Benares or wears it hung round his neck. It will thus be seen that the cat is sacred both among Mohammedans and Hindus, and it is also important to notice that it is the only animal that is sacred among both. I have found that many natives have taken to keeping cats of their own accord since they began to have a suspicion that rats are the cause of plague, and it seems to me that there is good reason to believe that the origin of the customs regarding the cat is based on the idea that cats keep away rats and therefore prevent plague. Plague is a very old disease in India. An old pundit has given me a quotation from an old book (*Shushrat*) which was written perhaps some thousands of years ago, in which it is stated that when you see rats falling in your house you should get out to the jungle as fast as you can. Whilst scientists recommend segregation, disinfection, etc., the practical villager says, as soon as he realizes that plague is spread by rats, "Let us keep cats." Plague has been prevented and stopped before the introduction of the modern methods referred to, and there is little doubt that the cessation of earlier outbreaks of the disease was due to the fact that people kept cats.

CUSTOMS AMONG OTHER CLASSES.

The Parsees, who are among the most enlightened of the people who live in India, have a strong prejudice against

keeping cats, but there is not, as far as I can find out, any religious objection. As soon as they realize the advantage of keeping cats they willingly agree. The Bhowani Dher, who are not a numerous people, object to keeping cats because the death of a cat in their house puts them out of caste, and they have to break all their earthen vessels and perhaps entertain their caste fellows. The birth of kittens in their house is also a serious matter, but to avoid this latter misfortune, those who have recognized the value of keeping cats now keep male cats. These people sometimes suffer severely from plague, for example, in Dhaba village the Bhowani group of houses suffered from plague while the group of houses occupied by the Tels, where the percentage of cats was over fifty, escaped.

RAT-PROOF HOUSES.

Dr. Ashburton Thompson is a strong advocate of the rat-proof house, and theoretically this idea is excellent. But most houses in an Indian village are built of mud, and in all probability will be built of mud for centuries to come. The mud wall might be called the black rat's home, for it is in the mud wall that it likes to make its burrow and nest. The Bhowani Dher in this district often lives in a wattle hut, and those who live in such huts are remarkably free from plague, because there is little attraction for the rat.

INOCULATION *versus* CATS.

While we did not know how plague was spread, there was a great deal to be said in favour of inoculation; but now that we know that plague is spread by rats and that without rats there will be no epidemic, surely it is much better to try and remove rats; and when we know that rats can be kept away by cats there can be little question that the best way to prevent plague is to keep cats. In this district, where vaccination is an exceedingly popular measure and where the elder men could soon convince the doubter who has perhaps never seen a case of small-pox of the value of vaccination, the people have not readily taken to inoculation, and their reasons might be stated somewhat like this:

<i>Inoculation.</i>	<i>Keeping Cats.</i>
Efficient for a few months.	Permanent efficiency.
Does not strike at the root.	Destroys the root.
Very expensive.	Cost to the public <i>nil</i> .
Large establishment required.	No establishment required.
Necessary to inoculate every member of household.	One cat protects a household.
Not an absolute preventive.	When the number is sufficient all risk of plague is abolished.
Sore arms, fever, and absence from work.	No inconvenience.
Many objections on the part of the people.	Extraordinary willingness.
Not favoured by tradition or religion.	Strong tradition in favour of keeping cats (Parsis and Bhowani Dher excepted).

CONCLUSION.

In the early days of plague epidemics many mistakes were made. Cordons were drawn round villages and towns so that infected people could not get in, but infected rats might steal in unobserved. Disinfection was practised with great vigour, but while this operation was in progress the rat was sitting comfortably in its burrow, ready to come out as soon as the disinfection operations were over. The plague patient was hastily segregated to a plague camp, but we now know that plague (bubonic) is practically never conveyed direct from man to man, so that it has come to be a common saying that "the safest place in a plague epidemic is a plague camp," and those of us who have had charge of plague camps know that those servants who lived in the camp practically never took plague, although they were handling plague patients all day. A few cases of plague have been occurring daily in this district for some time, and from daily inquiries which are being made I think there is good reason to believe that the duration of plague in India depends on the time it will take before it is generally recognized that the cat is the best plague preventer. At any rate, I hope I have shown that there are reasonable grounds for making further inquiries on the lines suggested here.

REFERENCE.

¹ *Indian Medical Gazette*, October, 1907

SPORADIC KALA-AZAR IN CALCUTTA, WITH NOTES OF A CASE TREATED WITH ATOXYL.

BY U. N. BRAHMACHARI, M.A., M.D.,

TEACHER OF MEDICINE AT THE CAMPBELL MEDICAL SCHOOL, CALCUTTA.

KALA-AZAR, as used in this article, may be defined as the disease caused by the Leishman-Donovan bodies. Its epidemic manifestation, which is seen in Assam, more frequently goes by this name. It is endemic round about Calcutta and probably occurs in the city itself.

Last year I examined the spleen blood of nearly 150 cases of enlarged spleen admitted into my wards in the Campbell Hospital, and found the parasite of kala-azar in 60 cases. From this it is seen that cases of this disease are frequently admitted into the Calcutta hospitals.

No two cases came from the same house, and I have not succeeded in corroborating the fact that the disease is limited to individual houses or families; 91.7 per cent. of my cases were Hindus, while 8.3 were Mohammedans, giving a proportion of nearly 11 to 1. Out of the total number of patients admitted into my wards in 1907, about 75 per cent. were Hindus and 17.5 per cent. Mohammedans, giving a proportion of nearly 4 to 1. It will thus be seen that Hindus are more frequently affected by the disease than the Mohammedans, and if this fact is corroborated by more extended observations it may probably throw some light on the etiology of the disease; 33 per cent. of my cases were below the age of 20. I have not met with any case above the age of 55. The cases came to my wards during all the parts of the year, the largest number of admissions being during the period of April to August, but especially in the month of May.

It was difficult to trace from the history of the cases where the disease was contracted. Most of them pointed, however, to the disease having been contracted in the neighbourhood of Calcutta, and a few seemed to have contracted the disease in the city itself, as they never went out of it. None of my cases came from the epidemic area of Assam. Some came from Orissa, Eastern Bengal, district of Murshidabad and Behar.

Most of my cases were chronic, with history of illness for several months, and with the spleen extending 3 in. or more below the costal arch. In a large majority the liver was also moderately enlarged, while in a very few cases the liver was very much more enlarged than the spleen, which extended just an inch or so below the ribs. I have not met with a case in which the spleen was not at all enlarged.

SYMPTOMS.

As regards the early symptoms of the disease, knowledge is still very limited. The patients met with in the hospital wards have suffered for a long time. I give here a summary of the early symptoms of the disease as gathered from the patients.

In one class of cases we get a history of intermittent attacks of fever, quotidian for some time, and later on becoming irregular with or without rigors, lasting for several months and not benefited or only temporarily benefited by quinine. In a second class there is a history of a few previous attacks of fever, continuing for some time on each occasion, the spleen becoming slowly and steadily enlarged. In a third class there is a history of attacks of low fever, continued for several months, with a progressive enlargement of the spleen not benefited by any treatment. In a fourth class there is a history of one or two attacks of remittent fever more or less resembling typhoid. In a fifth class the patient gives a history of gastro-intestinal troubles, with dysenteric or diarrhoeic attacks followed by oedema of the lower extremities, and attended from time to time with ague-like attacks of fever. In all these cases the patient invariably says that there was very slight or no benefit from quinine. Possibly a large majority of cases begin with attacks of remittent fever.

Among the other symptoms I have observed may be mentioned progressive emaciation, with anaemia, cachexia, oedema of the extremities, diarrhoea, dysentery, which may sometimes be very obstinate, and haemorrhages from various parts of the body, such as the skin and mucous membranes.

Oedema of the extremities is sometimes an early symptom; on the other hand, it may be absent even up