

LETTERS TO THE EDITOR.

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Cattle Plague in Africa.

THE following extract from a report addressed by Captain F. Lugard, C.B., managing director and leader of the expedition sent out by the British West Charterland to work its mining rights in Ngamiland, referring, as it does, to the outbreak of cattle disease which now paralyses transport throughout South Africa, may be of interest to the readers of NATURE.

There can now be little doubt that the present epidemic, known under the common name of "rinderpest," is the same as that with which we have been familiar in Central Africa for the past six years, and for the inroad of which into South Africa we ought long ago to have been prepared.

Commencing, so far as we know, in Somaliland in 1889, where the disease killed off a large part of the cattle, it passed through Masailand in the autumn of 1890. It was there that Captain Lugard, then an officer of the Imperial British East Africa Company, first came in contact with it. In 1891 he again found it sweeping off the cattle in the countries to the north and west of Uganda, of which province he was the Administrator. In 1892 it invaded North Nyasaland, and the Government were then duly warned of the double danger to be apprehended from the free export of hides of diseased animals, thousands of which were taken to America and to Europe, and through the advance of the epidemic into South Africa, should it cross the Zambesi and enter Bechuanaland.

The great peculiarity of the present disease is that it attacks not only domestic cattle, but also certain classes of wild animals, chiefly the buffalo, giraffe, warthog, the eland, and several other species of antelope. The elephant, the rhinoceros, and most of the smaller antelopes seem not to be affected, but in countries where it has appeared the destruction of cattle has been general.

The only accurate account of its previous ravages with which I am acquainted is to be found in Captain Lugard's work on "The Rise of our East African Empire," to which I would refer those who may wish to follow the course of the present epidemic from Somaliland South to Nyasaland.

Captain Lugard, writing from Gaborones, in Bechuanaland, May 13, says: "The results of the 'rinderpest' are here terribly *en évidence*. Near villages, literally hundreds and thousands of dead carcasses lie about; they are found under almost every bush, and the stench is indescribable. I noticed that these carcasses are being skinned by the natives, which means that the hides will be smuggled into the colony, and perhaps exported. I pointed this out yesterday to the magistrate here, and suggested that parties of police should burn the bodies in field cinerators, as fuel is abundant. He told me traders were buying up the hides, and he would recommend their confiscation and destruction by Government." He adds further on: "The magistrate told me that between here (Gaborones) and Buluwayo there are at least 4000 wagons stranded along the road (mostly loaded), of which the ox teams are dead. A famine threatens the country, for the ox is not only the food, but the money of the natives, with which they buy grain, &c. It is also their agricultural agent, for they no longer use the hoe; hence agriculture is at a standstill. The sole counterbalancing good is that it will compel the natives to work on the railway, which will now become a 'famine relief' work."

As little is known of the nature of the disease—some who have seen it in Central Africa classing it as a form of anthrax, others as a sort of pleuropneumonia—I annex an account of the chief symptoms as seen in the present epidemic in South Africa.

As regards the export of hides of diseased animals, to which Captain Lugard refers, which has gone on freely, and, to a large extent, from the Somali ports and from Zanzibar, I may remark that all hides before shipment are there dipped in a solution of arsenic and soda, which may, to a considerable extent, destroy any poisonous germs they contain.

The whole matter is now likely to be thoroughly worked out, but it cannot but be regretted that an inquiry was not instituted

several years ago, when so many favourable opportunities of doing so were presented both on the Zanzibar coast and in Nyasaland.

JOHN KIRK.

Sevenoaks, June 10.

"Zambesi Cattle Fever or Rinderpest.

"This is a feverish disease of typical rapid course, which spreads by contagion and chiefly attacks cattle. Sheep, goats, and game are less liable; human beings, horses, mules, and donkeys do not get it. A healthy animal which has come into contact with a sick one usually shows the first symptoms of the disease seven days after; occasionally the period is considerably longer.

"General symptoms are fever, weariness, uneasiness, rough coat, failing appetite, increase of pulse and breathing, convulsive trembling of skin, rapid emaciation, and decline of strength.

"Special symptoms: One of the first and most constant is a frequent short cough, and thin slimy, afterwards mattery, discharge from the inflamed and swollen mucous membranes of the nose, eyes, and even mouth. On the third (rarely so soon as the second) day diarrhoea sets in. The colour of the fœces depends upon the character and degree of the inflammation of the bowels. At the beginning they are still green, but quickly become discoloured. Some animals evacuate grey-brown, some a gelatine-like yellowish brown, and some clay-like fetid excrement; the dark colour is due to the presence of blood. From the fourth or fifth day the fœces flow off involuntarily, and the anus appears red and swollen. Sometimes small ulcers and sores are visible on the mucous membrane of the lips, gums, and cheeks, and on those parts of the skin which can be licked.

"Diseased animals rarely succumb, earlier or later, than from the fourth to the seventh day after the first symptoms have become manifest.

"Experience has always shown that medical treatment is of no avail, but merely tends to spread the malady. It is therefore wisest and cheapest to destroy all animals affected at the earliest possible moment, and all carcasses, unskinned and complete, should be burnt carefully or deeply buried.

"The disease does not originate through influences, such as cold and fog, dew or rain, but is solely due to a vegetable parasite, which is able to spread easily and rapidly.

(Signed) "OTTO HENNING,

"Government Veterinary Surgeon."

"The foregoing is published for general information. It is hoped that all will realise this great danger and the serious losses which the spread of the pest would produce, and that all will assist the authorities in extirpating it.

(Signed) "F. J. NEWTON,

"Mafeking, March 16." "Resident Commissioner.

The Electrical Resistance of Alloys.

IN reference to Lord Rayleigh's very interesting note in your issue of June 18, we have, for several months, had preliminary experiments in progress, with the object of educating practical proof of the effects of thermo-electric currents upon the conductivity of alloys; but, owing to the stress of routine work in our respective departments, the research was not sufficiently advanced for publication. We had hoped, however, to be able to read a short note immediately after the long vacation.

About two years ago, one of us, who has been engaged in observing the microscopic structure of alloys, was first led to the conviction that the peculiar formation (so often met with) of metallic crystals emmeshed in a network of other metallic material must inevitably cause the production of thermo-electric currents when a current was passed through the alloy-mass. This, he believed, might account for the disproportionate effect of traces of impurities upon the conductivity of pure metals, and for the production of a curve (with percentages of impurity and electrical resistance as coordinates) which, steep at first, tended to become flatter as the percentage of impurity was increased. Prof. Dewar's experiments on the conductivity of pure metals, and of alloys at low temperatures, appeared to give additional proof of the correctness of this surmise, as Lord Rayleigh has pointed out. The pure metals, being perfectly homogeneous, may have no resistance at the absolute zero of temperature; but if other substances be added, so that there is produced the complex structure which the microscope shows the