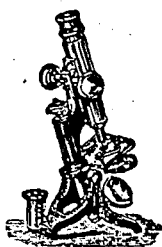


## Medical Matters.

### TROPICAL SANITATION.



On March 1, at the Royal Sanitary Institute, Major Ronald Ross gave, before an audience of the Council and Associates of the Institute, presided over by the Duke of Northumberland, a deeply interesting and instructive lecture on Tropical Sanitation, a subject which he assured his

audience it required sixty lectures to treat adequately.

Sleeping-sickness, Yellow Fever, and Malaria are the three great standing dangers in the tropics, both to natives and to white men. For each of them the cure lies in prevention. In each the chief agent of infection is an insect, which deposits in the blood of man the spores of a parasite. So important is the part played by the tiny creatures that the Liverpool School of Medicine employs a special entomologist for their study, whilst the Americans in Panama have appointed a mosquito engineer to carry out preventive measures against them.

The once mysterious Trypanosomiasis, better known as sleeping sickness, is carried by the fly, *Tsetse glossina*, whose economics, as Professor Ross tells us, are not yet well known. It has only one young, and the larva takes five weeks to develop into the pupal stage. Similar parasites to the *Trypanosoma Gambiense* deposited in man, are formed in animals, birds, fish, and a very closely allied species in insects. If a drop of infected blood, out of which the hæmoglobin has been dissolved, is placed under the microscope, little worm-like creatures can be seen wriggling about, and in them the nucleus, centrosome, and flagellus can be recognised, although Professor Ross, doubting the trustworthiness of the Romanoffsky stain, would circumscribe the nucleus within a smaller area than has been ascribed to it. These are the Trypanosomes, which increase by division, though whether that division is amitotic or karyokinetic is doubtful, as, indeed, is everything else connected with the life and action of the parasite in the present stage of our knowledge. The Trypanosome develops and multiplies slowly in man, being far more numerous in the earlier stage in rats and cattle, producing at first no special symptoms. It is presently discovered by the enlargement of the patient's glands, especially at the back of the neck. At this stage the disease may be arrested, at least temporarily. Later, the cerebral fluid is invaded, the patient emaciates, almost absolute coma supervenes,

the temperature, which had been increased, falls below normal, and the patient dies. If the parasite remains in the peripheral blood, human beings may live for ten years after infection, as the negroes often do. For the study of the disease, its cause, prevention, and cure, the Royal Society has sent out several Commissions, the Liverpool School many, the German Government some, and Dr. Koch is now engaged upon it. Prevention is difficult, the fly being amongst other things prevalent in running water. Cure of the parasite in the patient is recognised as the best preventive, just as Koch has told us that one way to prevent malaria is to kill the parasite in man. But cure by anthelmintics is in this case so hard to compass that the Committee appointed to consider its possibility almost decided to give up the attempt. In killing the parasite you killed the patient. There is, however, Atoxyl, a form of arsenic easily assimilated by the patient, and largely used by Dr. Koch, which gives at least some result. Dr. Nierenstein has also tried inoculation with *Trypanosoma Brucei* in rats. For a time the disease appears to be arrested, but, unfortunately, it invariably recurs. Experiments with another drug are now being made, the results of which will be known later. Dr. Todd has recommended the quarantining of the trade routes in Africa. For the sickness, which travelled slowly from village to village amongst the non-migratory natives, has increased with fearful rapidity, spread by our civilisation and large caravans, until the country is becoming depopulated. The apparently impossible measure of quarantine is to be accomplished by the prohibition of employment of natives with swollen glands in the caravans. In a few months a large expedition will be sent out to carry the measure into effect.

The *Stegomyia fasciata*, the mosquito carrying the Yellow Fever parasite, known as the Tiger insect, from its striped body and legs, and its fierce bite, exists all over the tropics, but carries the fever only in definite regions, such as America, the West Indies, and Spain. The larvæ develop largely in tubs. The epidemics have a startling and dramatic history. From Havana, Cuba, Panama, and Colon they have spread at times to the Southern States of the Union, and to the Northern States of South America, the deaths in the Island of Havana being one in four, and absolutely inhibiting emigration into the island. In 1871 the deaths from yellow fever were 991, rising in 1878 to 1,559. The Americans coming in in 1898, although at first only partially successful in their efforts, dealt so strenuously with the disease, that in 1901 there were but 18 cases reported, the number falling to 0 in

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