

stead of making use of the regular harbors, where a trained examination staff exists, were often simply beached at any convenient spot, so that when the tide fell they lay dry on the beach, and infected rats could scamper ashore. Some 20,000 rats were destroyed in the ten principal harbors.

The plague investigation department in Daressalam possesses a fully-equipped laboratory, as well as three mobile plague laboratories, which can be attached to any suspected locality. During the latter part of 1908, 12 cases of plague, 4 of which were of the pneumonic type, occurred in Daressalam; 6 of these were fatal. The last case occurred in January, 1909. Fortunately these cases were detected at an early stage, and, owing to the precautions taken, no epidemic resulted. At the same time rats were found to be infected with plague. Between 600 and 1,000 rats were examined each month from October, 1908, to June, 1909. In October, 1908, the percentage of rats found to be infected was 7.9; this percentage steadily diminished, till February, 1909, when it was only 0.3; after this date no definite infections were detected.

The measures taken to prevent the disease from spreading consisted in the isolation of plague patients, careful burial of the corpses of those dying from plague, disinfection of the dwellings, keeping contacts under observation, destruction of rats. The greatest importance was attached to the last precaution. The work was directed by the medical officer in charge of the laboratory, assisted by a junior medical officer, four medical subordinates, and ten to twenty natives. The town was divided into districts, in each of which in turn rat traps were set and phosphorus rat poison systematically laid out. Once in each two months every surface drain was fumigated with the Clayton apparatus. Two refuse carts were employed for two months to collect and remove all rubbish heaps which could afford a hiding place for the rats. By the end of the year plague had been eliminated from Daressalam.

*Malaria*—As in every tropical colony, malaria is the principal cause of inefficiency. In German East Africa it is accountable for one-third of the total sickness and one-quarter of all the deaths. The great majority of Europeans live in the

towns of Daressalam and Tanga; hence the anti-malaria campaign was mainly directed to improving the health of those two places.

The antimalaria staff employed in Daressalam consisted of the medical officer in charge of the laboratory, assisted by two sisters, two Genoese assistants, and eight natives. The town was divided into districts and the blood of the native inhabitants in each district was systematically examined once a quarter to detect malaria carriers. In this way over 20,000 blood films were examined during the year. Owing to changes in the population and in the methods employed for examining the blood the results obtained cannot be used as an exact index of the state of malaria in this and in the previous years. It may, however, be stated with some approach to accuracy that, of 100 malaria carriers, 3 have tertian parasites, 10 have quartan, 15 have crescents, and 72 have rings, most of which are probably of the malignant variety. These figures would appear to denote that benign tertian has receded as the result of the general administration of quinine, but that quartan malaria has increased.

All malaria carriers, 4,578 in number, were given a course of quinine. In most of the cases the course lasted three months, and was carried out as follows: On two successive days of each week adults were given 15 grains of quinine in tablets or solution, and made to swallow it in the presence of a European; children received a proportionately smaller dose in a sweet solution. In only four cases was an attack of blackwater fever induced by this treatment; all recovered, and were afterwards put through an acclimatization course of gradually increasing doses of quinine till complete tolerance of the drug became re-established.

The anti-mosquito measures were as follows: In May all drainage ditches were treated with saprol, and with a mixture of 2 parts of saprol to 1 of petroleum. In the case of wells for which petroleum was not suitable a species of cicada was introduced; at the beginning of the year a supply of these insects was obtained and placed in a pond in the experimental gardens; they increased so rapidly that a regular supply for use in wells could be relied on. Water tanks were either filled in or covered with