

FRANCISCO'S WAR AGAINST RATS.**HOW IT WAS WAGED, AND THE RESULT.**

In the *American Review of Reviews* Mr. Augustin C. Keane describes in detail the determined war waged by San Francisco last year directly upon rats and indirectly upon bubonic plague.

First, the city was divided into thirteen districts, each with its officer and an army of subordinates—a thoroughly military plan of campaign. On a large map of the city the spread of contagion and the operations of and against the rats were marked with coloured pins. Then came the difficulty that there were not enough different colours among pins, and one expedient after another was tried, till it occurred to someone to dip the heads in different kinds of coloured sealing-wax. Yet another difficulty occurred which no one had foreseen. Tags were used to mark the captured rats, showing where, when, and by whom they had been caught. But only after much ado and two months' trying was a satisfactory untearable tag found.

METHODS OF ATTACK: TRAPPING RATS.

First, the rats were systematically trapped in each district, at the outset 13,000 being caught per week. They were then immersed in bichloride of mercury, which killed both them and their parasites, and then sent to a laboratory to be scientifically examined. If found to be plague-infected, the tag showed from which district a rat had come, and proper notifications and instructions were given; and if there had been any contact with plague-infected rats, an eight-days' watch was kept. All trapped rats were also skinned and microscopically examined. Five varieties of rats were found in San Francisco—the big grey Norwegian rat, the ordinary brown rat, the red rat, the house mouse, and a rare hybrid.

The fleas were always combed out of a rat's fur and preserved in phials, one phial for each rat's fleas, for it is, of course, the fleas which carry the infection in the case of bubonic plague. Five kinds of fleas were found: sand fleas, rat fleas, mouse fleas, dog fleas, and the plague flea of India. The entomologist employed had the pleasing task of identifying about 10,000 fleas.

POISONING RATS.

Rats were also systematically poisoned by bread cut into cubes and laid about where rats, but no human beings, would get it. Record was kept of where the bread was laid, and how much of it, etc. But so quickly do rats breed that trapping and poisoning alone would never have stamped them out or sufficiently kept their numbers down.

STARVING RATS.

Accordingly the enemy had to be attacked by cutting off food supplies as much as possible. No refuse was allowed to accumulate where rats could get at it. The utmost care was taken as to the disposal of refuse, and everything was done in order to induce

those people who did not already use sanitary dust-bins to use them at once. Entrances to all markets had to be screened, sanitary chicken-coops provided, and stables fitted with metal-lined food- and refuse-bins. The municipal authorities naturally helped in this war against rats, especially when force had to be exercised in order to compel people to take the sanitary precautions necessary for exterminating the rats.

MAKING BUILDINGS RAT-PROOF.

As far as possible San Francisco was made rat-proof. In order to do this basements and ground-floors had to be made of some rat-proof material, concrete being found to be best, and wooden sidewalks replaced by concrete ones; and, secondly, buildings had to be screened near the ground. Stables especially had to be rigorously rat-proofed. Sewers damaged by the earthquake had to be similarly treated, and warehouses (great harbouring places for rats) to be built of reinforced concrete. Finally, the wharves, which used to be of wood, and across which doubtless many rats had found their way, are to be built of stone and concrete. Also an isolation hospital was built for treating plague cases. With these numerous and rigidly enforced sanitary precautions, San Francisco contrived to have a plague death-rate of only 48·42 per cent., as compared with India's of 90·60 per cent.

MR. CHURCHILL'S RHINOCEROS.

MR. WINSTON CHURCHILL continues his description of his African journey, in the *Strand*. He describes the scenery of the Nile with much enthusiasm.

The chief incident is that of his landing at a place he calls Hippo Camp, where elephants and rhinoceroses abound. The party divided into three. In three hours, and within four miles of their landing-place, each of the three parties came on a number of the greatest wild animals. As he dropped off to sleep in the little boat moored in the bay, he says, "the African forest for the first time made an appeal to my heart, enthralling, irresistible, never to be forgotten." Next day they toiled for nine hours and saw nothing. Then they came up against at least four rhinoceroses. He hit the nearest hard with both barrels, and down it went. The rest scattered and fled. A mile further on four more full-grown rhinoceroses were seen, and two killed.

Mr. Churchill will doubtless give President Roosevelt the address of this Hippo Camp.

THE most important item in the autumn number of *Poet Lore* is a translation from the French, by Dirce St. Cyr, of Robert Bracco's drama, "Phantasms." A translation of the same author's "The Hidden Spring" appeared in a previous number. Another interesting article in the current number is that by Edward Thostenberg, with the title "Is Longfellow's 'Evangeline' a Product of Swedish Influence?"