

## The War Against Malaria in Italy.\*

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[The following account of the work now going on in Italy towards the extirpation of malaria is of double interest, affecting profoundly, as it must in time, the social and economic conditions of the Italian peasant, and indirectly, no doubt, the emigration question. This splendid work, aiming at making the earth more habitable and life more worth living for thousands of workers, is one of the encouraging and stirring chapters in modern history. The length of the original article made it necessary to omit some parts, retaining only so much as made the story.—L. L. D.]

In the early days of July, 1898, on the initiative of the Hons. Fortunato, Franchetti, and Celli, the Society for the Study of Malaria was founded, and since that time, always unobtrusive but active, it has devoted itself unremittingly to a work as useful as it is insufficiently known.

Our society had the good fortune to arise at a favourable moment. Under the learned direction of Manson, Ross, an English medical officer at Calcutta, after three years of ingenious and patient researches, had demonstrated, in May, 1898, that the malaria of birds, perfectly analogous to that of man, was propagated by ordinary mosquitoes, and he was also well advanced in the experiments he had undertaken in order to demonstrate that the malaria of man was propagated in the same way, but by another species of mosquito, which we know to-day to be the *Anopheles*.

I had already demonstrated that soil and water were not the causes of malaria. Bignani had concluded that this malady acted, in regard to man, as if it were an inoculation by mosquitoes; Ficalbi had thoroughly described these insects, their varieties and their habits; and since 1880, the epoch when Laveran gave the first description of the malarial parasites in the blood, our medical schools of Rome and Pavia had perfected their methods of research, and had tested and completed a world of facts relating to the malarial parasites in the blood-cells and tissues of the body.

In the course of the summer of 1898, in studying the geographical distribution of different species of mosquito in the malarial regions of Italy, Grassi had indicated three varieties as the most suspicious; and one of these, the *Anopheles*, was always found in those localities where fever was prevalent. This was enough to incite our researches to greater activity, and in the following autumn Bastianelli, Bignani, and Grassi gave the direct proof of the propagation of human malaria by means of mosquitoes, and demonstrated that it was the *Anopheles*, and not the ordinary mosquitoes, or blood-drawing insects, which transmitted malaria to man.

\* Translated from the Original. By Miss L. L. Dock.

This new theory of malaria once demonstrated and indubitably confirmed on all sides, the next important step was to take advantage of this knowledge in applying it to useful hygienic measures.

This was the task undertaken by this society, to which it has formally consecrated itself. True, since 1898 it has not been able to collect more than 50,000 francs, whilst Germany, England, and Belgium, in a spirit of noble emulation, organised, with sums of money that seem fabulous to us, foreign scientific expeditions for the study of malaria, placing at their head such men as Koch and Ross; but the limited resources which some few land-owners, the railroad companies, certain municipalities and provinces, notably Rome, and several State Ministers have bestowed upon our society have already, thanks to the self-abnegation and voluntary sacrifices of those who undertook this work—physicians, students, professors—given the happiest results, and will, I am certain, give even more in future.

First the work of our investigators had to be strengthened; then, in the light of the new theories, the enemy, once recognised, had to be attacked with the most perfect weapons known to science.

Consequently, on the since famous farm, La Cervelletta, where Lombard agriculturalists, under a Roman proprietor exceptionally enterprising and sagacious, Duke Salviati, were beginning a wonderful work of sanitation, I installed, in 1899, the first station for the study of malaria in the midst of the Roman Campagna. Dr. Dionisi did the same at Maccarese.

Whilst daily study was made of human malaria; its genesis, propagation, and course, I began immediately to apply the new theories of bovine malaria, inoculated, as Smith and Kilborne thought, by means of ticks. In times past, in the Campagna, this bovine malaria had destroyed whole herds of milk-cows and ruined extensive undertakings in irrigation and cultivation of meadow-land for dairy and cheese-making; and now, anew, at La Cervelletta this deadly malady had burst forth and menaced with ruin all that the energy and enterprise of Lombard activity had undertaken.

But thanks to a simple counsel of practical hygiene, dictated by the new theories, which was to keep the cows in their stables during the warm season in order to protect them against the ticks, I was able to avert entirely the economic disaster threatening the enterprise, which has since then developed in an extraordinary manner; meantime, in this station, I pursued the study of epidemic malaria and the means of combating it.

Already, indeed, during the summer and autumn of 1899, along the railroad line of Prenestina-Cervara, I had demonstrated, for the first time and beyond any doubt, that by the simple method of mechanical protection, in covering the exposed parts

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