

HOOKWORM DISEASE.*

By ANNA T. SORGENFREY.

Only within recent years has the hookworm disease been heard of in California. Even so, it has been regarded with more or less indifference, and believed by some to be another term for laziness. Through the investigations of Dr. Herbert Gunn, of the Board of Health, we have abundant proof that the disease exists, not only in the heart of our city, but in the gold mines, and agricultural districts of the State, and unless prompt and efficient measures are taken to eradicate it, the hookworm is here to stay.

Sir Patrick Manson says, "Hookworm disease, since its discovery by Dubini in 1838, has become so widely diffused that it may be said to occur in nearly all the tropical and sub-tropical countries. Its marked characteristic is progressive anæmia. In many parts of India seventy-five per cent. of the inhabitants are affected; in Egypt the anæmia it gives rise to is one of the common causes for rejection of troops in the army." Another authority says that in Ceylon it is considered as far more serious than cholera. It was found by another professor to be the cause of an epidemic of anæmia in a Cornish mine; it occurs in the mines of Austria and is abundant in Southern Europe. John D. Rockefeller recently donated one million dollars for the eradication of hookworm among the negroes and shiftless whites, commonly called "poor white trash" in our Southern States. Our island possessions, Porto Rico and Hawaii, are both heavily infected.

In Porto Rico, before the Government began its medical and sanitary campaign in 1904, the infection embraced nearly all of the country population and was the cause of one-third of the total death rate. The disease is said to have been imported to Porto Rico by the first slaves from Africa, as far back as the sixteenth century. Porto Ricans in turn have carried the infection not only to Hawaii's native population but to the large number of Spaniards who during the last ten or fifteen years have been emigrating to these islands. The Spaniards work on the plantations together with the Porto Ricans among other foreign labourers, mostly coolies, and, tiring of the plantation conditions, flock to California, carrying their infection with them.

The alien hookworm carriers, Chinese, Japanese, Hindoos and Central Americans, come under the jurisdiction of the Immigration Department and are handled by the Federal Government at its station at Angel Island. With the Porto Ricans and Spanish it is different; coming from our own possessions these laws do not apply to them and they land without a protest. Most of them congregate in the Latin quarter on Telegraph Hill, and sooner or later they become scattered throughout the State, where they work in the fruit and vegetable districts and where wholesale pollution of the soil and water is carried on through their lax habits and the absence of sewer facilities in country districts.

"The normal habitat of the hookworm is the small intestine of man, particularly the jejunum, rarely in the lower reaches of the intestine and occasionally in the stomach. In these situations it attaches itself to the mucous membrane by means of its powerful capsule-shaped mouth, which is armed on each side by two claw-like hooks and one cone-shaped tooth. It obtains a plentiful supply of blood in this manner. It is supposed to shift its hold from time to time, the abandoned bite continuing to ooze blood for a short period. The red corpuscles pass through it unchanged, the plasma only being utilized.

"The female produces a never-ending stream of eggs which pass out in the fæces. While in the body of the host the development of the embryo does not advance very far, but on leaving the human body it proceeds in suitable circumstances to develop with great rapidity into certain other changes until it reaches a torpid condition; in that state it will live for weeks or months in muddy water, mud, or damp earth. In this way those handling the soil, the brick-maker, the miner, and the agriculturist are infected by the dirt adhering to their hands, dishes, &c., as well as by drinking-water." Nearly all the inhabitants of the tropics go barefoot, this being the most frequent manner of infection, the embryo, which is microscopic, entering through the skin. It might be interesting to hear about the intelligent way in which this embryo reaches the alimentary canal. After it enters the skin it proceeds through the circulation to the heart, the lungs, and finally to the œsophagus, where it is swallowed by its victim.

"Some idea of the intensity of the infection may be got from the enumeration in a given quantity of fæces—150 to 180 eggs per cubic centigramme indicate an infection of about 1,000 worms, male and female." In other

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