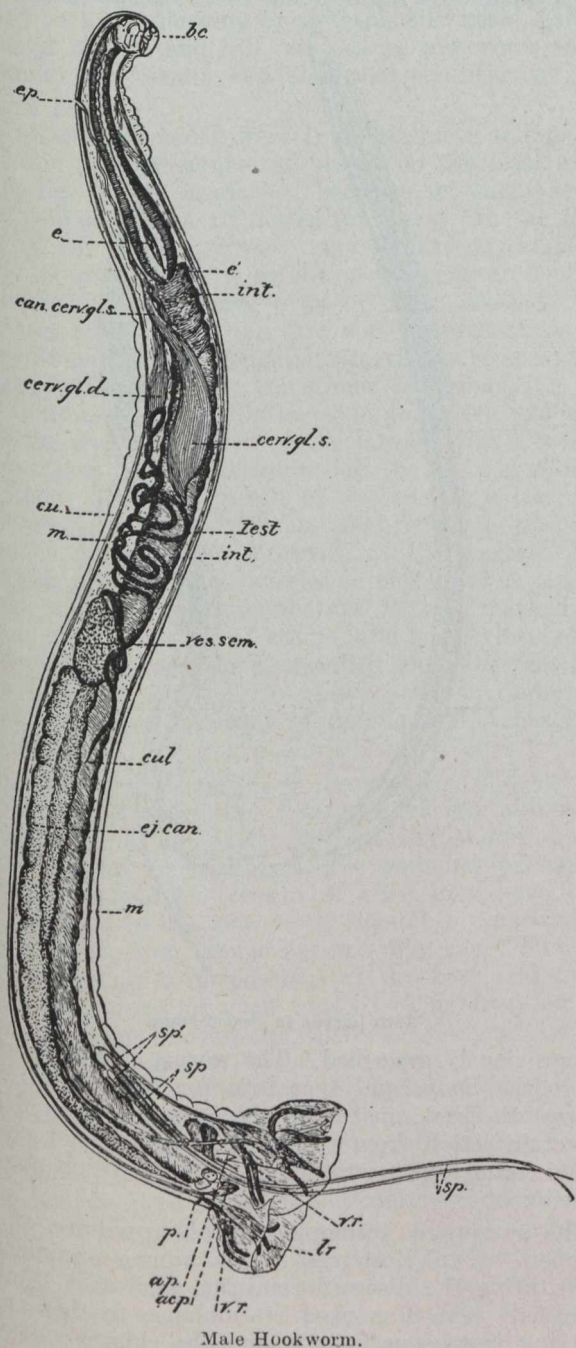


"Considering the subject in the light of all I saw on the trip, and taking what I believe to be a conservative view of the subject, I find it exceedingly difficult to escape the conclusion that in uncinariasis, caused by *Uncinaria Americana*, we have a pathologic basis as one of the most important factors in the inferior mental, physical and financial condition of the poorer classes of the white population of the rural sand and piney wood districts. This sounds like an extreme statement, but it is based on extreme facts."



In Europe, although known to exist since the date before mentioned, the disease never assumed a serious aspect until the alarming outbreak in the St. Gothard Tunnel in 1879, whence it is extremely probable the infection was carried to other parts of Europe by the exodus of the workmen at the completion of the work. Ankylostomiasis is said to be endemic over a large portion of Italy and the low-lying plains of the Danube and the Theiss in Southern Hungary. The condition of the sulphur miners caused by the extensive in-

fection that exists in Sardinia is truly deplorable. More detailed reference will be made to the disease as manifested in the coal mines of France, Germany and Hungary, at a later stage of these remarks.

In England an epidemic of a mysterious nature broke out at the Dolcoath tin mine in Cornwall, which was eventually traced to ankylostome infection, and this also will be dealt with more fully later.

The *ankylostome duodenale* is a parasitical worm belonging to the nematode order (thread-like). The adult female is approximately one-half an inch in length, the male being shorter and thinner, and easily distinguishable from the female by a characteristic umbrella-like caudal process surrounding the genital organs at the tip of the tail. The adult worm of both sexes is provided with a formidable suckorial apparatus, consisting of a circular mouth opening, furnished with four in-curved teeth, leading to a strongly muscular esophagus which acts like a pump, the whole forming, to quote Dr. Calmette, "a veritable cupping glass." The name of hookworm popularly applied to the ankylostome is not derived, as would at first sight appear, from the hooked teeth with which it is so liberally provided, but from the fact that the head of the worm is bent round like a hook, the mouth being on the under surface.

The natural habitat of the adult ankylostome is the small intestine of man. Here the female lays her eggs in enormous numbers, commencing to do so the day after impregnation. The eggs are very minute, about 1-400 inch by 1-700 inch, oval in form, and delicately transparent. They are provided with an inner membrane, which in conjunction with the concentrated fluid interior exerts a great osmotic pressure, and renders the eggs almost impermeable, consequently they possess extreme powers of resistance to outside agencies. They pass out of the body with the feces, usually partially developed, but development to the larval stage in the body itself is prevented by the natural heat and the lack of oxygen in the intestinal passage. After leaving the body the conditions necessary to hatch out the larvae are warmth, moisture, and the presence of oxygen. All these conditions must exist together, and if any of them are absent development will not take place. Below a temperature of 68 degrees Fahr. or above 98 degrees Fahr. development is retarded or entirely prevented. Given favorable conditions, however, the eggs will hatch out very quickly, the time varying from several hours to two days, according as the conditions are more or less favorable. The young larva is very active, and before hatching may be observed coiling and recoiling itself with extraordinary rapidity within its shell. When it succeeds in breaking out and emerges as a free larval worm it commences to feed voraciously on the fecal matter surrounding it, and grows rapidly, changing its skin on the second or third day. At the end of from four to six days it commences to secrete a vitreous transparent fluid, gradually loses its mobility and becomes rigid, and within four to five days the larva is completely enveloped in a smooth yellowish chitinous capsule, impervious to water, enabling it to resist with ease physical and chemical influences that would have been fatal to it when newly hatched. The larva at this stage possesses remarkable vitality, and has been observed by Looss to live for a period of 300 days when immersed in water, which is said to be a medium well suited for the preservation of the encysted larvae. They have also been known to resist desiccation prolonged over five days.