

bladder of this animal exhibited polypoid lesions, and eggs were recovered by digestion.

S. japonicum produced severe disease in *Aotus* monkeys. Exposures of 50, 250 or 500 cercariae caused death within 7 to 33 weeks. Worm recoveries averaged 26 per cent in the 4 animals on which good perfusions were possible after death. Eggs appeared in the feces within six weeks after exposure and were present consistently thereafter. Bloody mucoid stools were common throughout the infection. Severe nodular granulomatous lesions were found in the distal colon and liver at necropsy. Egg deposition was heaviest in the distal or mid-colon, but large numbers of eggs were also found in the proximal one-third of the small intestine.

Aotus trivirgatus appears to be highly susceptible to *Schistosoma mansoni* and *S. japonicum*, but not to *S. haematobium*.

170. Taxonomy of the hypoidal nymphs (Acarina: Sarcoptiformes.)

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The hypopi are heteromorphic and generally phoretic deutonymphs produced under some circumstances by several groups of Acaridiae (Sarcoptiformes) (Zachvatkin, 1941). They are known so far in the following families: Acaridae, Saprogllyphidae, Glycyphagidae, Chaetodactylidae, Anoetidae, and Hypoderidae. Phoretic deutonymphs are known also in other groups (e.g. Uropodidae) but these nymphs are not modified and they may therefore not be considered as homologous to hypopi.

Although some species of hypopi have a parasitic manner of life, their corresponding adults are always free-living in habits (Fain, 1967a).

The hypopi have no mouth and the gnathosoma is replaced by a sensory organ or "palposoma" that bears generally one pair of solenidia and one or two pairs of simple setae (Fain, 1968 and 1969).

The chaetotaxy of the idiosoma and of the legs in the hypopi resembles that of the corresponding tritonymph but the number of setae is smaller. The anals and the genitals are generally very few in number or absent. The tarsi I and II bears not more than 9 setae. The tibiae I and II generally bears 2 setae. The solenidia of the legs are variable depending on the family to which the hypopus belongs, however omega 1 and omega 3 on tarsus I are present in all the species (Fain, 1967b).

The attaching organs are well developed in the hypopi which are phoretic on the insects. They consist of an adhesive apparatus consisting of a sucking disc situated on the posterior ventral part of the body and bearing several pairs of suckers. These suckers enable the hypopi to fix themselves to the smooth body of the insects.

In the hypopi that fix themselves to mammals or birds the attaching organs have generally another structure. In the hypopi that are fixing to the hair of mammals the fixing apparatus consists of one

pair of external movable muscular folds and two pairs of internal club-like and transverse ribbed claspers. The hair is strongly maintained between the superficial folds and the internal claspers.

Except for one species, all the hypopi that live into the hair-follicles of mammals or under the skin of mammals or birds are devoid of suckers on the idiosoma. The fixation organs consist generally of modified hairs situated on the legs and specially on tibiae III and IV. In the Echimyopinae the tarsal claws are articulated with one or two spines situated on the tarsi and they form a pincer-like apparatus. The Hypoderidae living under the skin of mammals or birds are completely devoid of attaching organs.

The life cycle of most of the hypopi is still unknown. The taxonomy of these deutonymphs must therefore be based, in most of the cases, exclusively on their morphological characters.

In the entomophilic hypopi the most useful characters in the separation of the families and genera are: the structure of the legs; the structure of the ambulacra and of the tarsal claws; the length of the pretarsus; the development and the structure of the suctorial plate and of the palposoma, etc. The specific characters consist generally of the structure of the epimera, the cuticle, and the chaetotaxy; the shape of the palposoma, etc.

In the hypopi living on mammals or birds the most important characters are: the hair-clasping apparatus (presence or absence, shape); the attaching organs on the legs (presence or absence, structure); the structure of the palposoma; the structure of the legs; the structure of the tarsal claws; the chaetotaxy, etc.

171. The glyoxylate cycle and the conversion of triglycerides to carbohydrates in developing eggs of *Ascaris lumbricoides*.

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It is known that endogenous trehalose and glycogen are metabolized during the first 10 days of development of *Ascaris lumbricoides* eggs and are completely resynthesized during the next 15 days. Triglycerides are oxidized most rapidly during the period of carbohydrate resynthesis. In part the oxidation of triglycerides is complete, but there is also strong evidence suggesting that some 25 per cent of the fatty acid carbon is converted to carbohydrate and in fact accounts for the carbohydrate synthesis (Passey and Fairbairn, Can. J. Biochem. Physiol. 35, 511, 1957). More recently it has been found that the triglyceride fatty acids are catabolized by B-oxidation, and that the rate of carbon dioxide production from absorbed palmitic acid correlates closely with the changes in rates of utilization of triglycerides during development. Moreover, enzymes of the tricarboxylic acid cycle are present and are tightly coupled to B-oxidation, as