

NOTES AND COMMENTS

Macrogyrodactylus polypteri Malberg on *Polypterus senegalus* in the Sudan

POLYPTERUS is a genus of fishes which is best considered as descendent of the Palaeoniscid stock coming from Devonian times (400 million years ago). This genus, one of the indigenous fishes of Africa, is of economic importance in some parts of the Sudan.

In August 1962, small specimens of *Polypterus senegalus* Cuvier, ranging from 20 to 25 cms., collected from Jebel el Aulia on the White Nile, were introduced into a well aerated aquarium and fed on earthworms. During the first week the water was clear in the tank; nevertheless, because of the debris from the earthworms, the water was changed once or twice. The fishes appeared to be quite active and healthy and were swimming in mid-water or resting on the floor of the aquarium. Occasionally they came up to the surface to take a gulp of air. In the course of the following week, the water—although changed as frequently as before—appeared to become turbid and viscous. At the end of that week, a few of the fishes were found to be lethargic, drifting with the dorsal finlets and a row or two of the dorsolateral scales exposed above the water level. On the 15th day some died.

Post-mortem examination revealed that the dead fishes were heavily infected with a monogenetic trematode of the Gyrodactylid type which was later identified (by my colleague L. F. Khalil) as *Macrogyrodactylus polypteri* Malberg 1956. In the normal fish, the scales are clearly defined and the outline is quite distinct (vide Fig. 1.); in the infected fish the scales were not clearly defined, and the outline instead of being distinct had a "furry" appearance (vide Fig. 2.) due to the abundance of the trematode, which was found everywhere on the body but specially so on the ventral and lateral surfaces. The head too harboured a large number of the parasites particularly round the eyes on the ventral surface.

With the exception of the bifurcated intestine which is partly brown and partly yellow in colour, probably due to the epithelial cells and blood cells from the fish, the parasite is colourless. The parasite (vide Fig. 3.) is attached to the skin of the host by a disc-shaped opisthaptor, armed with two large anchors and sixteen marginal hooks, two of which are anterolateral, while the remainder form a posteriorly directed fan-shaped membrane, attached dorsally to the opisthaptor. The body is an elongated cylinder with a bilobed anterior end. When resting, the parasite attains a length of 2 to 3 mm. and about 0.25 mm. in average width. The body is capable of expansion to a length of twice its normal. It moves on the skin of the host in the manner of a leech. When it is detached it falls to the bottom, as it is incapable of swimming, but moves on the floor of the container by "looping". The parasite is viviparous with a second embryo appearing inside the first one, a third inside the second and even a fourth inside the third. These embryos are at various stages of development.

From observations based on careful examinations of new batches of *Polypterus senegalus* it became evident that infestation built up rapidly when fishes were kept in a limited quantity of water like an aquarium and that overcrowding increased the number of parasites on each fish. This is probably because the parasites, lacking eye spots, find their way to their hosts and infect them by chance contact. Another probable reason is the absence of natural enemies of the species in an aquarium. It was also noticed that douching daily with a strong jet of water minimised the number of parasites on the fishes. After the infestation reaches its maximum, the parasite gradually dies out and after four or five weeks it completely disappears. Unless steps are taken to check the number of parasites, however, few fishes survive the ordeal to reach this stage. It is noticed that after the infection dies out, the water in the tank remains clear and does not become viscous.

There are numerous records of serious outbreaks and epidemics of monogenetic trematodes of the viviparous Gyrodactylids causing the death of the hosts. It is suggested that the death is the result of various factors caused by sheer increase in numbers of the parasite in confined spaces like hatcheries and aquaria. The factors and the probable results are—

(1) Excessive secretion of mucous as indicated by the water becoming turbid and viscous and the fish drifting with the dorsal finlets exposed above the water level. Thus the fish will get “dehydrated” and the density of the fish will be reduced.

(2) Damage to the skin—The colour of the gut contents of the parasite is due to the epithelial cells and blood cells of the host. This will result in fresh water entering the body of the fish through the external surface and upsetting the osmoregulatory control.

(3) Loss of blood will cause (a) anaemia, (b) insufficiency of gaseous secretion into the swim bladder to keep its normal swimming level.

There are very few records of Monogenetic trematodes in Africa and so far there were only two such records. As far as one can gather from the published literature, this is the first record of a monogenetic trematode in the Sudan.

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Fig. 1. Ventral view of the head of *Polyp-terus*. There is no infection and the scales are very clearly defined.



Fig. 2. Ventral view of the head of *Polyp-terus* with heavy infection of *Macrogyrodactylus*. The scales are not clearly defined.

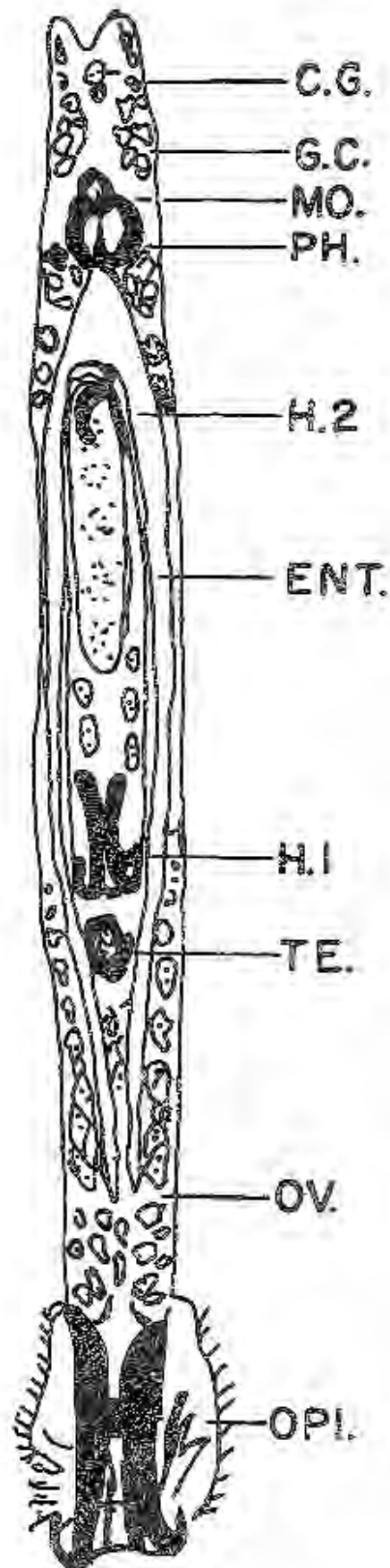


Fig. 3. *Macrogyrodactylus polypteri*. Malberg.