TABLE I

Changes in the tissue glycogen content of H. fossilis *by mercury intoxication*

Glycogen (μg/g of wet wt. of tissue)

	Control	Mercury intoxication in ppm		
		5 ppm	25 ppm	50 ppm
Liver	2827·50 ± 150·23	3262·50 ± 175·60	2283·75 ± 130·25	1450·00 ± 65·10
Muscle	1833·75 ± 75·25	2247·50 ± 140·38	1196·25 ± 116·39	833·75 ± 61·78
Brain	797·50 ± 56·36	1305·00 ± 85·67	1667·50 ± 132·36	652·50 ± 42·36
Kidney	543·75 ± 70·19	398·75 ± 40·37	181·25 ± 22·76	142·50 ± 30·36

Values are mean SE ± of 4 experiments.

The result of the present study shows that the mercury has different effects on glycogen content of various tissues of the fish. Lower concentrations of mercury elevated the glycogen content in liver, brain, and muscle tissues, whereas higher concentrations depleted the glycogen content in the kidney.

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ON THE REGENERATION OF LABYRINTHINE ORGAN OF *ANABAS SCANDENS* (CUVIER)

DURING the course of an investigation on the function of the labyrinthine organ of *Anabas Scandens* (Cuvier), the author came across an interesting phenomenon of regeneration in the amputated regions of the labyrinthine organ. Since there was no previous record of regeneration of labyrinthine organ, the study was carried out in detail.

Anabas Scandens in the weight range from 10 to 25 gm were kept in the laboratory aquarium for over three months. They were fed regularly with boiled eggs. Three batches of fishes were isolated from the stock and maintained in individual jars. The labyrinthine organ was amputated in the first batch at the level of its origin. In the second batch, it was amputated leaving a small piece of labyrinthine organ tissue at its base. The third batch served as control.

For amputating, the fishes were anaesthetized using either ether or MS222 and the labyrinthine organ was removed by cutting off with sterilised scissors and scalpels in a sterilisation chamber. The amputated fishes were then allowed to recover and kept in water containing acroflavin (antibiotic).

Fishes amputated at the level of the origin from the first branchial arch (First batch) never regenerated. The wound healed without any regeneration blastema being formed. On the other hand, regeneration was observed in those fishes which have a little bit of labyrinthine organ tissue at their base (Second batch). From this it is inferred that the base of the labyrinthine organ acted as a regeneration territory[1] or regeneration field[1]. It took nearly three months for the regeneration of the 75% of the amputated parts. Preliminary histological studies revealed the presence of pillar-like epithelial cells, a characteristic feature of the labyrinthine organ of *Anabas Testudineus*[2]. Critical observations ruled out the possibility of heteromorphosis.

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MINIMUM LEVEL OF OXYGEN IN WATER FOR FISH SURVIVAL WITHOUT AIR BREATHING

THE oxygen content of natural waters varies between 0·04-10·0 ml/l and the solubility of oxygen in water is reduced by an increase in temperature[1]. Magid[2] has reported that a concentration 4·3 mg/l (3·10 ml/l) oxygen, *Clarias lazera* becomes restless, followed by an increase in the frequency of aerial breathing. In

the present work an attempt has been made to study the minimum level of dissolved oxygen content in water for fish survival when their surfacing is prevented or thrir air breathing organ is not allowed to function.

Channa punctatus, Bloch and *Anabas testudineus* Bloch, both air breathing fishes, have been used here as material for the present study. The experiment was divided into two series. In the first series drowning experiment was conducted to see the effeciency of their gills for the adequate supply of oxygen to the body. It was found that if the water is well aerated (6·0–8·0 ml/l oxygen), *Channa punctatus* can survive indefinitely, but on the other hand it was observed that while larger specimens of *A. testudineus* (Weighing 25–62 g) were asphyxiated within an hour, others (weighing 6–18 g) did not die till the termination of the experiment after 10 days, which finding, tallies with that of Hora[3]. This is possibly indicative of the ability of *A. testudineus* weighing up to 18 g to survive indefinitely without contact with atmospheric air if the water is well aerated. In the next series of experiments, the aeration of the water of the container was stopped under the same experimental conditions to allow depletion of oxygen in water and to evaluate the exact level of oxygen for their survival. Both *A. testudineus* and *C. punctatus* died (100% mortality) within 2–3 h, as soon as the level of oxygen in water decreasd, to 2·93 and 2·79 ml/l respectively. The critical level of dissolved oxygen content was 3·26 and 3·10 ml/l respectively for *C. punctatus* and *A. testudineuse* at which 50% mortality took place in 35 minutes. At oxygen level of 3·52 ml/l there was no mortality at all, but below that level signs of slight restlessness were observed in both the species. This experiment was conducted at 30·5 ± 1° C.

It can, therefore, be inferred that if access to atmospheric air is not allowed, *C. punctatus* and *A. testudineus* cannot survive or get asphyxiated if the oxygen content of the water falls below 2·79 and 2·93 ml/l respectively. Brain annoxia may be the cause of immediate death.

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