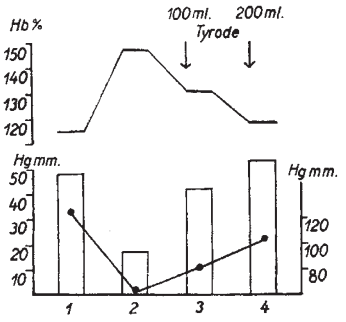

Effect of adrenalin on blood pressure in millimetres of mercury, □; systemic blood pressure, ●—●; upper curve, hæmoglobin per cent; (1) before inducing shock; (2) during shock; (3) after infusing 100 ml. Tyrode; (4) after infusing 200 ml. Tyrode

between the two values ($r = -0{\cdot}86 \pm 0{\cdot}14$). The splanchnic stimulation behaves in essentially the same manner. In hæmorrhagic shock, transfusion of the drawn blood likewise normalizes the splanchnic and adrenalin responsiveness.

From these results it would seem that, conflicting with the theory of a vaso-depressor substance, the diminution in splanchnic and adrenalin sensitivity in shock is due primarily to the reduced amount of blood in circulation.

More detailed results will appear in the *Acta Physiologica Hungarica*.

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[1] Shorr, E., Zweifach, B. W., and Furchgott, R. F., *Ann. New York Acad. Sci.*, **49**, 483 (1948).
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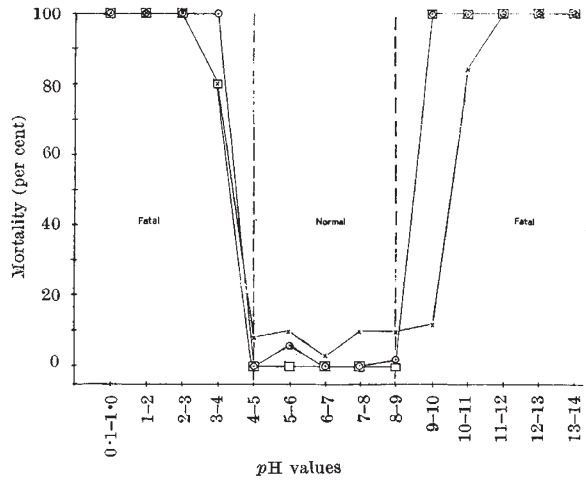
Effect of Changing *p*H on Developing Trout Eggs and Larvæ

A change in the *p*H value of the surrounding water has been observed to have a marked influence on the life and growth of trout eggs and larvæ. Normally, they are reared in water of *p*H $7{\cdot}30 \pm 0{\cdot}05$ at $10{\cdot}5°$ C. The *p*H value of the yolk in living eggs and larvæ is 6·50–6·55, and after death it has the same *p*H value as that of the surrounding water. As a starting point for an investigation of the effect of different *p*H values on eggs and larvæ, they were reared in tap water adjusted to different *p*H's with hydrochloric acid and sodium hydroxide. Such a system would not remain at constant *p*H. Since it was found that a particular quantity of water in a glass vessel containing fifty eggs did not change its *p*H in 6 hr. by more than 1·0 towards the acid side, the water of the experimental container was replaced after 6 hr. with fresh water adjusted to the original *p*H. Buffer solutions were not used to avoid the action of other ions. All the containers were kept in the same hatchery tray at a constant temperature of $10{\cdot}5° \pm 0{\cdot}5°$ C., and each container received 50 eggs. The larvæ need more oxygen and give out more carbon dioxide than the same number of eggs, so the quantity of water in each container was increased to five times the original to ensure the proper aeration of the larvæ. A simple average of the mortality percentage of four experiments is shown in the graph. All *p*H values were measured with a glass electrode and Cambridge *p*H-meter at 10·5° C.



— —, Ova one day after fertilization; ○—○—, eyed ova about three weeks after fertilization; □—□—, larvæ one day after hatching

The graph shows that the eggs can develop normally in a fairly wide range of *p*H, outside which there is an abrupt rise in mortality. It also shows that the eyed ova and the larvæ are equally susceptible to *p*H changes, but green ova are more resistant.

In alkaline medium. There was endosmosis. The eggs swelled and the vitelline cavity was reduced very much. The yolk became white due to contamination with external water. The frozen sections of the eyed ova showed very little breaking of the yolk emulsion at its surface, and it appeared that metabolic activity was very much slowed down.

In acidic medium. In this case there was exosmosis. The egg yolk inside the eggs shrank, and the vitelline cavity widened. The yolk even in the dead eggs was not white, showing that it was not contaminated with external water. The frozen sections of the eyed ova showed an increase in the breaking of yolk emulsion at its surface. The metabolic activity appeared to be accelerated in this case.

It is suggested that the alkali saponifies the lipoids of the vitelline membrane, making it permeable to water, and also retards the activity of the extra-embryonic blastoderm in yolk metabolism. On the other hand, acid does not remove the lipoids of the vitelline membrane and its impermeability to external water is maintained. The acid appears to accelerate the metabolic activity of the extra-embryonic blastoderm on the yolk surface.

In these experiments there can be two factors which would affect the eggs and larvæ: (1) the change of *p*H value of the surrounding medium, and (2) carbon dioxide given out by the eggs and larvæ during respiration. The latter point was raised by Young[1] while studying the effect of changing *p*H values on adult fishes. In the present experiment this factor was negligible because the quantity of carbon dioxide given out by the eggs would be much smaller than that given out by adult fishes. In any event, it was found that the carbon dioxide factor was common to both treated and control containers.

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[1] Young, R. T., *Ecology*, **19**, 126 (1938).