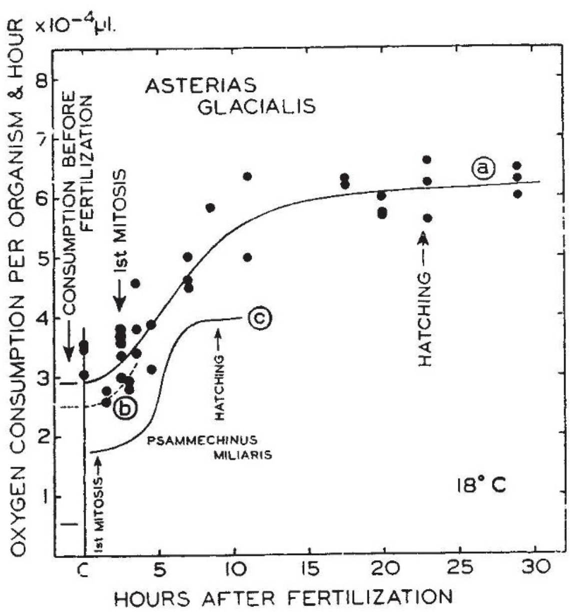
such a difference would manifest itself in fundamental divergences from the oxygen consumption pattern of the young sea-urchin embryo. Using Cartesian diver micro-respiration technique, the oxygen consumption of this latter has lately[1] been investigated for the time between fertilization and hatching (see also refs. 7, 8).

It has also recently been shown[1] that the exponential increase in oxygen uptake, characteristic of the first few hours of development in the sea-urchin egg[3,1], is roughly applicable to the same time interval in the starfish egg. During this time the starfish egg only passes the first mitosis, whereas the sea-urchin egg reaches the 8- or 16-cell stage. In the present investigation the starfish embryo respiration has been followed for some six hours after hatching.

As previously, Cartesian diver micro-respiration technique at 18° C. was used. In 0·8 µl. of sea-water (32 pro mille salinity) were placed ten eggs or embryos of *Asterias glacialis*, giving pressure differences of approximately 1 cm. per hour. Before fertilization the oocytes were given time to change into unfertilized eggs, that is, time to give off the polar bodies. In *Psammechinus miliaris*, where development to hatching is completed at 18° C. in nine hours, the embryos may, without developmental disturbances, remain inside the diver during the whole of this period. In *Asterias glacialis*, hatching at 18° C. is not completed until 23 hours after fertilization[1]. Moreover, eggs and embryos begin to show signs of dark cytolysis if kept inside the diver for more than five or six hours and simultaneously cease to increase their oxygen uptake rate. Thus divers have to be charged for short-time experiments (not exceeding four to five hours) with material of the different developmental stages, derived from spare cultures maintained at 18° C.

The results are given in the accompanying figure, where each point stands for the mean oxygen uptake of one experiment lasting four to five hours. Uptake before fertilization is denoted, as are the times of hatching and first mitosis (telophase). Curve *a* summarizes the results. In 1947 the uptake values in early development[1] were somewhat lower, as seen from curve *b*. For comparison the corresponding curve for *Psammechinus miliaris* is given in curve *c*.



The method of measurement used necessarily means that biological scattering has greater influence than in the corresponding experiments on *Psammechinus*, where the same embryos could be used throughout[1]. The results obtained, however, undoubtedly show that the increase in oxygen consumption between fertilization and hatching is principally of the same type in both *Asterias* and *Psammechinus*. Thus the results do not indicate that the oxidative mechanism of the young starfish embryo differs from that of the sea-urchin; instead, differences may be anticipated in the oxidative mechanisms of the unfertilized eggs of the two groups.

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Cotton Crop Yield in Relation to the Application of Fertilizers

THE authors of a letter under this title which appeared in *Nature* of March 5, p. 362, seem to be unaware how much is known about the manuring of Egypt's chief crop, and about the soil in which it grows.

The Chemical Section of the Ministry of Agriculture is close to the Faculty of Agriculture from which the authors write, and has published a notable and exhaustive series of official bulletins. Most of these are based upon ten-year runs of field experiments at twenty to thirty different sites each year. A list of those available on my shelves is appended.

This work is almost unknown to agricultural scientists elsewhere (having been published locally) and apparently in Egypt also. My present purpose is to direct attention to these comprehensive contributions to soil science which my former colleagues have made.

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