

5. It is generally believed that cinnamic acid by a preliminary process of reduction is first converted by the animal body into phenyl-propionic acid, then by subsequent oxidation into benzoic acid. This type of reaction is apparently employed by the fowl for the detoxication of cinnamic acid, for we isolated somewhat more than 0.5 gm. benzoyl ornithine from the excreta after feeding a hen 3 gms. of cinnamic acid.

6. Nitro benzene when fed to animals is extremely toxic, but is detoxicated to some extent by a simultaneous oxidation and reduction through which it is converted into para-amino phenol. We fed 0.5 gm. nitro benzol to a hen. The chicken died at the end of 12 to 14 hours, but qualitative tests were obtained for para amino phenol in the excreta.

Meta-amino benzoic acid undergoes two different kinds of reactions in the animal body. When fed to dogs it is detoxicated to some extent by being joined with glycocholic acid to form meta-amino hippuric acid. When fed to rabbits, however, it is largely detoxicated by undergoing combination with urea to form a meta-uraminic acid. When fed to fowls the acid seems to undergo a process of acetylation whereby acetic acid is joined onto the amino group of the acid with the splitting out of water resulting in the formation of meta-acetyl-amino benzoic acid.

We fed 4.5 gms. meta-amino benzoic acid to a chicken and recovered 1.8 gms. meta-acetyl-amino benzoic acid.

147 (1894)

### **Merogony experiments on sea-urchin eggs.**

By **ROBERT CHAMBERS** and **HIROSHE OHSHIMA**.

[*From the Marine Biological Laboratory, Woods Hole, Mass.*]

By merogony in the broader sense is meant the fertilization and development of egg fragments whether nucleated or not.

By means of the more accurate method of using a mechanical apparatus for microdissection an attempt was made to repeat the work of earlier investigators (O. and R. Hertwig, Boveri, Driesch, Morgan, Loeb, Wilson and others) especially for the purpose of cross-fertilizing egg fragments of the sea-urchin and sand dollar.

Owing probably to the lateness of the season the cross-fertilization experiments were unsuccessful.

However, the following results were obtained in the self-fertilization of sea-urchin egg fragments which indicate that the size of the nucleus in the swimming larvæ depends directly upon the initial size of the nucleus in the fertilized egg fragment whereas the size of the larva bears no direct relation either to the size of the nucleus or to the initial amount of cytoplasm in the fertilized egg. Mature eggs were deprived of their nuclei by cutting them out together with a minimum amount of cytoplasm. The non-nucleated fragments were about  $\frac{4}{5}$  the size of the entire eggs. These, when fertilized, developed into dwarf larvæ of about half the size of the control and with abnormally small nuclei. Other eggs were deprived of more than half of their cytoplasm. These, upon fertilization, developed into dwarf larvæ of about half the size of the control but possessed nuclei equal in size to that of the control.

148 (1895)

**Halophilic bacteria.**

By WILLIAM W. BROWNE.

[*From the Department of Biology, The College of the City of New York.*]

The salt-fish industry of the United States suffers a large annual loss as a result of the salt fish developing a red coloration during the summer or when stored under warm moist conditions. Work undertaken by the U. S. Bureau of Fisheries has demonstrated that the red coloration is due to the growth of two microorganisms whose origin is the solar evaporated sea salt with which the fish are cured. The coloration may vary from a pale opaque pink to a deep transparent crimson due to the harmonious intergrowth of a spirochete producing a pale pink coloration and a bacterium producing a transparent red coloration. Likewise their separation into pure culture is difficult. These organisms exhibit very decided helio-, thermo-, and halophilic characteristics. The optimum concentration of salt for growth forms is saturation, growing lux-