ventrals a little in front of dorsal); lower lip not divided so distinctly, and almost straight (in *C. multifasciata* divided distinctly and with two lobes); barbels 3 pairs and short (in *C. multifasciata* 4 pairs and longer); eyes very small, its diameter 6.7 in head length (4.7 in *C. multifasciata*).

Inhibition of Cell Division of Sea-urchin Egg by Hypertonic Solutions

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It has been known (*e g.*, J. LOEB 1892, J. Morph. vol. 7) that the cleavage of the fertilized egg of sea-urchin can be inhibited by keeping the egg in hypertonic solution. However, as will be seen below, the effect of hypertonicity establishes quite instantly, at least at the first cleavage of the egg of *Anthocidaris crassispina* or of *Pseudocentrotus depressus*. When the egg, which had been kept in sea water, was transferred into hypertonic sea water ($1.5 \times \frac{5}{8}$ Mol Herbst sea water) at any stage of the first cleavage, the cell division was immediately inhibited, the depth of the cleavage furrow having not changed.

When brought back in normal sea water, the egg failed to divide and assumed an hour-glass shape. In the meantime the second cleavage cut the egg in two perpendicular to the first.

When the egg was brought to the hypertonic sea water, an exosmotic shrinkage occurred and the cell membrane was slackened. The egg in hypertonic solution was slightly pressed between a cover slip and a slide, so as to give tension to the slackened membrane. The cleavage furrow became shallow and the egg finally returned to the one-cell stage. If, on the other hand, the egg, during the first division in normal sea water, was treated in the same way, the cleavage furrow did not disappear. Hence the mere slackening of the membrane does not seem to be an important factor for the inhibition.

The inhibition of cell division could be observed in pure NaCl, KCl, $CaCl_2$ and $MgCl_2$ solutions when they were isotonic or hypertonic to $1.2 \times \frac{5}{8}$ M MaCl, so that it is probable that the supression of cleavage above described is due to the hypertonicity of the medium but not to the modification of the ionic balance of the external medium. However, this does not mean that the composition of the medium plays no part in the inhibition, since it was found that pure cane sugar solution isosmotic even to

50-75 per cent sea water could inhibit the cleavage in the same way, while this inhibiting power of pure cane sugar solution was annihilated by adding to it a very small amount of isosmotic NaCl solution (*e.g.*, 0.5 volume percentage).

Notes on the Chromosomes of Some Teleost Fishes

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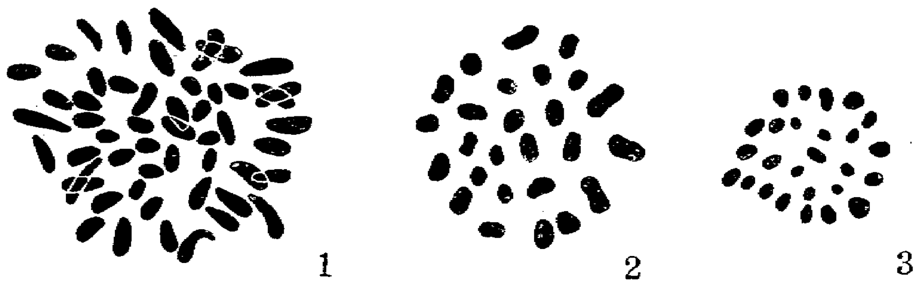
Accounts on the chromosomes of four species of teleosts including fresh-water and marine forms, are briefly presented below.

1. *Misgurnus anguillicaudatus* (CANTOR). The present species is a common fresh-water teleost of wide distribution, known by the name of loach (the Cobitidae). The testes fixed in August served as the material for study. The spermatogonium contains 52 well defined chromosomes in the metaphase plate (fig. 1). The chromosomes are all telomitic rod-shaped and show gradual difference in length from long to short. In the metaphase of the primary spermatocyte 26 chromosomes are counted without any doubt (fig. 2) and the same number is also observed in that of the secondary spermatocyte (fig. 3). The general morphological appearance of the chromosome complex represents nothing different from that common to teleosts and bears much resemblance to that of gasterosteiids[1] and of poeciliids[2].



Figs. 1—3 *Misgurnus angullicaudatus* (×4200)

2. *Oncorhynchus keta* (WALBAUM). The chromosomes were studied in the primordial germ cells contained in the germinal ridges of the fry of the salmon, *Oncorhynchus keta*, just emerged from the roe. The diploid number of chromosomes was found to be 74 after examination of several good metaphase figures(fig. 4). The diploid complement consists of various kinds of telomitic

1) MAKINO, S. 1934: Cytologia, 5, 155.
2) RALSTON, E. M. 1934: J Morph., 56, 423.
FRIEDMAN, B. and M. GORDON 1934: Am. Nat., 68, 446.