AN INTERESTING COPEPOD FROM THE FINGER LAKES, NEW YORK

DURING the summers of 1910 and 1918, limnological studies were made on the Finger Lakes of New York for the United States Bureau of Fisheries. In these investigations a considerable amount of plankton material was collected from the lakes that were visited, but the various forms of crustacea were not carefully identified at that time. A more thorough study of this material recently led to the discovery of an unusually interesting copepod in the catches from the lower water of three of the lakes, namely, Seneca, Cayuga and Owasco. This copepod belongs to the calanoid group, but differs so widely from the other members that it represents a new genus and most probably a new family. A full description and figures of the form are being published elsewhere under the name of *Senecella calanoides*.

The female possesses only four pairs of swimming feet, while the fifth pair in the adult male is unusually large, extending well beyond the furcal rami, and greatly modified. Each antenna of the first pair consists of twenty-five segments in both sexes; the right one is exactly like the left one in the adult male, there being no geniculating modification of the right member. Each of these antennae bears fifteen sensory appendages in the adult male, but only seven in the female. In the adult male the oral appendages are reduced, the maxilla, mandible and first maxilliped being much smaller and weaker than those of the female and the immature male. The reduction is so marked, in fact, that it is difficult to see how the male can secure a sufficient quantity of food and masticate it with these reduced appendages. The significance of this reduction, therefore, is a very puzzling question. The modification of these appendages appears to take place during the last moult. Immature males having a length of 2.35 millimeters have these mouth parts as fully developed as the females, but mature males, which have a length of 2.45 to 2.55 millimeters, possess the reduced oral appendages. The female is somewhat larger than the male, ranging from 2.65 to 2.85 millimeters in length.

On the basis of its structure *Senecella calanoides* is more closely related to some of the marine calanoids than it is to any of the fresh-water members of this group. The closer relationship to marine forms suggests that this copepod may have reached the Finger Lakes during the marine invasion of the St. Lawrence valley following the last glacial period. At that time oceanic waters occupied Lake Ontario, forming a body of water known as Gilbert Gulf.[1] In a personal communication Professor H. L. Fairchild states that marine waters did not enter the Finger Lakes. Lake Iroquois, which occupied the Ontario basin prior to the marine invasion, sent a tongue into the Cayuga basin, but the Gilbert Gulf plane was 290 feet lower than that of Lake Iroquois. The passage of this form from Gilbert Gulf to the Finger Lakes was not accomplished, therefore, by a marine invasion of the latter, but by some other agency.

If this copepod reached the Finger Lakes by way of Gilbert Gulf one might expect it to adapt itself to the freshened state of the water at the end of the marine invasion and thus be an inhabitant of Lake Ontario at the present time; but this does not seem to be the case. Professor W. A. Clemens, of Toronto University, kindly loaned some plankton material which he collected in Lake Ontario on October 3, 1922, but *Senecella* is not represented in these catches which extended to a depth of 372 feet.

Two species of the larger copepods inhabit the cool lower waters of the deeper Finger Lakes, namely, *Senecella calanoides* found in Seneca, Cayuga and Owasco, and *Limnocalanus macrurus* in Canandaigua Lake; in none of the catches, however, were both species obtained from the same lake during the season covered by these collections, or from late July to early September. That is, they seem to be mutually exclusive during this time; it would be interesting to know whether this phenomenon obtains throughout the year and, if so, what factors are responsible for this exclusiveness.

CHANCEY JUDAY
GEOLOGICAL AND NATURAL HISTORY SURVEY, MADISON, WISCONSIN

[1] Studies in Indiana Geography, pp. 90–111. 1907; Bul. No. 209–210, N. Y. State Museum, p. 62, 1920.

THYROID CULTURES OF PARAMECIA

AT various times during the past year the writer has had occasion to make some thyroid cultures of paramecium caudatum. It was noted that these animals found this habitat more favorable to existence and reproduction than the ordinary hay-infusions.

Such a paramecium thyroid culture may be easily made by mixing about two grams of Armour's Desiccated Sheep Thyroids (U. S. P.) with 2,500 c.c. spring water. This mixture should be slightly stirred and allowed to stand exposed to the air for a half hour. Several pipettes-full of fluid containing paramecia are then introduced. If the culture jar is covered with a top and carefully sealed with vaseline an excellent, clear culture will be obtained. After several days it can be noticed that the animals are evenly distributed throughout the liquid, and are not congested about the top of the jar as in ordinary cultures. The cultures usually need but little attention. However, it is sometimes found desirable to add a little fresh water every week or ten days.

WILLIAM L. STRAUS, JR.
THE JOHNS HOPKINS UNIVERSITY