Who can but envy the ideal presented in the life of the wild honey bee that belongs to the swarm and works with her companions for a common purpose. Her coming and going are regulated by no schedule or master. She goes through the forests, along the streams, over the meadows, from flower to flower, gathering nectar from wherever it can be found. Ever going, ever returning, she not only increases her particular store, but enlarges that of the swarm. Beyond and above all these, and all unknown to her, she gives to mankind greater blessings in flowers and fruits.

Let us give to the student opportunity and encouragement to seek truth wherever it can be found. In bringing truths together he builds not only for himself but also increases the common fund of useful knowledge. Beyond and above these, he helps to build a great fund of knowledge which will illuminate life in the years to come.

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HYDRA IN LAKE ERIE

WE seldom think of Hydra as of outstanding economic importance. However in this connection some interesting data were obtained by the writer during the summer of 1920 while staying at a pound-net fishery on the north shore of Lake Erie near Merlin, Ontario. The fishery is located about midway between Rondeau and Point Pelee, and from it are operated 20 pound-nets in four strings, 5 pound-nets in a string. The strings are approximately three miles apart and this would mean about nine miles from the most easterly string to the most westerly. In midsummer all the nets were taken out of the lake, some replaced from a reserve stock, the others simply reset after being washed, dried, mended and tarred. This midsummer cleaning is necessary because of the algal and other growths which accumulate on the nets making them heavy as well as putting considerable strain on the nets, especially in stormy weather, through the obstruction of the free flow of water through the meshes.

All of the nets when lifted in late July and early August were loaded with a very conspicuous brownish-orange growth in addition to the bright green algal growths. At first sight diatomaceous ooze or a bacterial production was suggested but microscopic examination showed it to be composed of innumerable living Hydras. The nets were lifted into the characteristic flat-bottomed pound-net boats and brought to the dock. The boats were anchored 100 to 150 yards from the dock and the nets dragged through the water to cars on the dock in order to wash off some of the loose material, especially mud. In addition to the mud many Hydras were washed off and these gave to the water a brownish-orange color quite distinct from the lighter color of the mud. The bottoms, seats, etc., of the boats were covered with Hydras to the depth of from ⅛ to ¼ inches and a quart jar was quickly filled by simply running a hand along the seats. A fisherman eight miles to the west and another seven miles to the east reported Hydra in apparently equal abundance. This means a distribution of at least fifteen miles along this part of the shore. The beach is sandy to gravelly with some large stones. Very little life was found on the bottom out as far as one could wade. However out beyond the region of strong wave action there must be places of attachment for the Hydras other than the nets in order to account for the existence of the species from one fishing season to another, since in 1920 they had not reached sexual maturity by the first week in December when the nets were removed for the season.

Specimens of this Hydra were submitted to Professor Frank Smith of the University of Illinois who kindly stated that they without doubt were *Hydra oligactis* Pallas although absolute determination could not be made in the absence of gonads. He stated that the large size and numerous buds indicated optimum conditions of food and temperature.

Fishermen had frequently spoken about a poisoning which often affected them while handling the nets during the process of cleaning and mending. They said this occurred chiefly after the nets had dried and were covered with a fine dust which they called tar dust. No poisoning was observed during this

summer but the men stated that their hands and faces became inflamed and swollen especially if there were any cuts. The eyes were often affected also. Lack of time prevented carrying out any experiments but it seems quite probable that the poisoning could have been traced to the Hydras. The dust was composed of dried sediment and organic matter and certainly must have contained a high percentage of Hydra remains.

This account has been written to call attention to an economic problem in relation to the fishing industry, which awaits study. There would appear to be at least four points for investigation.

(1) The amount of interference and injury caused to the nets by these great growths.

(2) The question of the poisoning of the fishermen.

(3) Do these Hydra destroy young fish to any appreciable extent in open water? Beardsley in 1902 in Bull. U. S. Fish. Comm., vol. XXII, pp. 157-160, recorded the destruction of trout fry by Hydra in a hatchery at Leadville, Colo.

(4) To what extent do these immense numbers of Hydra reduce the entomostracan food supply of young fish and of mature fish such as the ciscoes? The latter in Lake Erie feed almost exclusively upon *Entomostraca* and if the Hydra are as abundant throughout the lake as they are along the fifteen miles of shore as described above they must be very serious competitors of these fish in the matter of food.

Since the above was written Professor Paul S. Welsh of the University of Michigan has informed me that he has been making a special study of Hydra in the Lakes of Northern Michigan.

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A MOSQUITO ATTRACTANT

CERTAIN facts regarding the possibility of attracting mosquitoes were disclosed in the course of experiments made in 1919 which may have a bearing on mosquito control. Press of other work has prevented further development of this project and the following notes are offered for the consideration of those who may care to give the matter further attention.

A number of possible attractants were tested. Among these were crude mixtures of the components of perspiration and of blood which seemed to produce faint, erratic response from the mosquitoes, but it was found that a degree of warmth somewhat above that of the surrounding air was highly and consistently attractive to a certain percentage of these insects. Thus a joint of stove pipe placed in the woods and warmed somewhat by an alcohol lamp, attracted about as many mosquitoes as were attracted by persons in the vicinity. It must be said, however, that in all of our field tests of this attractant the mosquitoes were scarce.

In most of the laboratory experiments with heat *Culex pipiens* was the species used and the insects were liberated at will, as bred, into a cage about 20 x 20 x 15 inches square having the top and three sides of cheese-cloth, the bottom of wood, and the fourth side of glass for observation. The source of heat was water in a glass flask which was heated by an alcohol lamp. Air bubbled through this water through tubing by means of a pump in connection with a gas bag and was afterwards delivered to a funnel the open face of which, covered with cheese-cloth, was placed very near but not touching the side wall of the mosquito cage. A thermometer was inserted in this funnel.

As the temperature rose to a point where it exceeded somewhat that of the surrounding air a sinister beard-like growth would appear on that part of the cheese-cloth wall of the cage covered by the mouth of the funnel. This was produced by the beaks of the mosquitoes which were pushed through the cloth with great persistence as long as the current of warm, moist air was kept within certain limits of temperature. There seemed to be no specific optimum temperature but the maximum response occurred between 90 and 110 degrees Fahrenheit which represented temperatures from 15 to 30 degrees higher than that of the surrounding air. When the temperature reached 120 degrees less interest was displayed and at 140 degrees the mosquitoes were entirely dispersed.