numerical increase, and that the organism itself imposes the ultimate limit to its own abundance when all other factors normally inhibiting population increase have failed.

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¹ Chapman, R. N., "The Quantitative Analysis of Environmental Factors", *Ecology*, 9, 111; 1928.

² MacLagan, D. S., "The Effect of Population Density upon Rate of Reproduction", *Proc. Roy. Soc., B*, 111, 437; 1932.

Exhibition of 'Autogenous' Characteristics by a British Strain of *Culex pipiens* L. (Diptera, Culicidæ)

A FEW years ago, Roubaud¹, De Boissezon² and Huff³ independently directed attention to the fact that females of certain strains of *C. pipiens* were remarkable, not only in being able to breed, under suitable conditions, throughout the winter, but also in being able to lay fertile eggs without a preliminary meal of blood. Roubaud considers these unusual characteristics to be indicative of a distinct, 'autogenous' race of *C. pipiens*, which thrives (in his opinion) exclusively in urban areas where artificially-heated buildings are common. De Boissezon, on the other hand, denies the existence of such a race of *C. pipiens*, and asserts that the biological peculiarities in question may be caused to manifest themselves in any strain of *C. pipiens* (whether town- or country-bred) merely by giving the larvæ plenty of rich food and keeping them warm.

During the year 1932, two separate 'autogenous' strains of this species were imported into England—one, in the form of adults, from Hungary, and the other, in the form of larvæ and eggs, from Germany—and were investigated by Miss M. Vincent⁴ and Dr. Malcolm MacGregor⁵ respectively. From the material thus obtained, both of these experimenters succeeded in rearing a number of generations of *C. pipiens* without providing any of the females with blood-meals. The adults derived from both of the above-mentioned countries were markedly stenogamic, the German ones mating satisfactorily in cages having a volume of only one-eighth of a cubic foot, and the Hungarian ones in "small cardboard tubes".

So far as we are aware, no case of autogenous characteristics being exhibited by a British strain of *C. pipiens* has ever been recorded. The following facts may therefore be of interest.

On October 6 we found, on the surface of water in an outdoor tank (in which, it may be noted, a species of *Chara* is growing), a small raft comprising 105 eggs of *C. pipiens*. We transferred this raft into a laboratory tank containing ditch-water, into which crumbs of wholemeal bread were thereafter introduced from time to time. The eggs composing this raft hatched on October 8, and by October 24 most of the larvæ had reached the fourth instar. Owing to the mildness of the weather throughout October, the central heating of the building was not put into action until October 31: the temperature of the laboratory during the previous four weeks having varied between 10° and 18° C.

On November 1, with the view of obtaining some freshly-hatched adults for mounting, we transferred the larvæ and some water from the laboratory tank into a small breeding-jar, which has since then been kept in close proximity to a hot-water radiator. Pupæ first appeared in the jar on November 8, and adults commenced to do so on November 12. Adults

were removed from the jar when required for mounting, but in no case was a blood-meal given.

On the evening of November 23 we were surprised to see a small egg-raft on the surface of the water in the jar, and we found a second one on the following morning. The first raft (which consisted of 38 eggs) hatched in the evening of November 26, and the second one (of 40 eggs) hatched during that night.

The portion of the breeding-jar above the water-level (that is, the space in which the adults are confined) has a volume of 600 c.c.—about one-sixth that of the cages employed by MacGregor.

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¹ *C.R. Acad. Sci. Fr.*, 188 (10), 735-738; 1929. Also, *Bull. Soc. Path. exot.*, 23 (2), 196-201; 1930.

² *Bull. Soc. Path. exot.*, 22 (7), 549-553; 1929. Also *Ann. Parasit. num. comp.*, 12 (3), 182-192; 1934.

³ *Biol. Bull.*, 56 (5), 347-350; Woods Hole, Massachusetts, 1929.

⁴ *Arch. univ. biol. Forsch. Inst.*, 8, 119-122; Tihany, 1933.

⁵ *Trans. Roy. Soc. Trop. Med. and Hyg.*, 26 (3), 307-314; 1932.

Do Whales Descend to Great Depths?

AS I have stated elsewhere¹, a difference of opinion exists as to the depth to which whales descend. Diver's paralysis or caisson disease is the usual consequence of descending below about 130 ft. Do whales descend below this depth? For obvious reasons, the answer to this question is of considerable interest from a physiological point of view.

Quite a number of awkward facts might be presented to those who, on theoretical grounds, deny that whales descend below very moderate depths. Perhaps the following will suffice:

1. The whaling ships that used to sail from Dundee and Peterhead each carried a number of five-oared boats and several miles of 2½-in. or 2¾-in. whale-line; and when the ships reached the ice, 600 fathoms of whale-line were coiled into each of the boats. It was, however, only in the deeper parts of the Greenland Sea and Davis Strait that it was necessary to coil so much line into the boats: as may be gathered from what Scoresby says, in shallow situations near Spitsbergen and the west coast of Greenland where the whales were caught at an earlier date, a shorter length of line sufficed.

2. When a harpooned Greenland whale 'sounded', or went vertically down, it took out the whale-line very quickly; the wooden bollard in the boat's bow sometimes smoked and threatened to catch fire. At the same time, the boat's bow was pulled down, and if, as sometimes happened, the line became entangled, the boat was liable to be pulled right down. After an interval the whale reappeared near where it went down and was killed.

3. When harpooned whales 'sound' they take out a limited amount of line only.

(a) Large Greenland whales took out from 700 to 800 fathoms; half-grown animals from 400 to 600 fathoms, and calves apparently very much less.

(b) A full-grown male Bottlenose took out 700 fathoms; females and young males from 300 to 400 fathoms.

(c) Large narwhals took out about 200 fathoms.

Except in the vicinity of certain kinds of ice, Greenland whales when harpooned nearly always sounded or dived towards the bottom. What kind of refuge they expected to find at the bottom is not very apparent. Sometimes they died at the bottom