December 6–12, 1950, there were 416 *Drosophila* in the two traps (320 of the 325 examined being *D. subobscura*). Trapping continued until January 24, 1951, and again from February 7, 1951; but up to February 22 flies were very few or absent, doubtless because the temperature remained mostly below 40° F. (4·4° C.), the approximate threshold temperature of activity for *D. subobscura*, the hardiest species. During the period February 22–March 1, 1951, however, the two traps caught 309 flies (298 *D. subobscura*, 3♂ *D. obscura*, 7 *D. cameraria* and 1♂ *Parascaptomyza disticha*), and large numbers again occurred during March 1–3, 1951 (261 *D. subobscura*, 1♂ *D. obscura*, 2♂ *D. tristis* and 4 *D. cameraria*).

The trapping was repeated at the same two sites in 1951, starting on October 23, 1951, with the following results:

	Oct. 23–30, 1951	Oct. 30–Nov. 6, 1951	Nov. 6–13, 1951	Nov. 13–20, 1951	Nov. 20–27, 1951
D. subobscura	20	12	60	1,061	1♂
D. obscura	11♀	15	8	48	—
D. silvestris	40	34	8	14	—
D. tristis	1♀	—	1♂	12	—
D. ambigua	—	—	—	1♀	—
D. phalerata	—	2	—	2	—
D. funebris	—	1♀	2	1♀	—
Total	72	64	79	1,139	1

The next two weeks yielded only 14 *D. subobscura* and nil flies respectively; but with the two traps out during December 14–21, 1951, there was a second flush of 1,496 *Drosophila* (1,472 *D. subobscura*, 15 *D. obscura*, 7 *D. tristis*, 2 *D. cameraria*). The traps were out until March 7, 1952, being renewed every seven days, but there was no further flush, although higher numbers than usual were obtained during the three weeks from February 15, 1952 (186, 209 and 119 *Drosophila* respectively, all being *D. subobscura* except 7 *D. obscura* and 2♀ *D. tristis*).

During 1952 traps were out at various heights in trees and at their bases at Dalkeith. A flush was experienced with traps exposed during October 3–10, 1952 (previous traps out every other week, the last during September 19–26). Traps were then out continuously from October 17, 1952, and a second flush occurred within the period December 5–12, 1952.

It thus appears that the autumn flush is an annual phenomenon in the Edinburgh district. Its causes and whether it occurs over the whole week or over a more restricted period can only be solved by day-to-day observations, which cannot at present be undertaken, owing to pressure of other work. The cause of the initial flush appears to be independent of temperature and of leaf-fall of trees; but the repeat flushes are probably a result of higher temperatures after cold periods. The occurrence of such sudden temporary fluctuations in numbers suggests that the population dynamics of this species are not straightforward, and that caution is necessary in arriving at any opinion as to the effective population size, in Wright's sense[1].

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[1] Wright, S., in "The New Systematics", 161–183 and elsewhere (Oxf. Univ. Press, 1940).

Observations on the Anal Papillæ of *Culex* (*culex*) *fatigans* Wiedemann

THE length and shape of the anal papillæ of mosquito larvæ, although a useful aid to other diagnostic factors, have never been a critical specific factor. Kettle[1] has shown that the length of the anal papillæ of *Anopheles sergenti* Theobald is dependent on the saline content of the larval habitat and that small changes in salinity may produce a large difference in the length of the anal papillæ. A similar observation has been noted in Mauritius, where larvæ of *Culex fatigans* Wd. show variation in length of the anal papillæ, according to the salinity of their habitat. This variation may be so great and so striking as to cause some doubt as to the immediate identification of the larvæ.

Fourth-stage larvæ of *C. fatigans* were found breeding profusely in a small tin, partially filled with foul-smelling water and rotting leaf debris. The extremely long, lanceolate, anal papillæ were white in colour. A more than cursory examination was needed to establish these larvæ as those of *C. fatigans*. The length of the longer pair of anal papillæ and the siphonal index were estimated; the salinity of the water was calculated. The results obtained were compared with a similar set of results obtained from larvæ breeding in a small concrete tank.

Habitat	Water	pH	Salinity (sod. chloride gm./l.)	Average length of papillæ	Siphonal index
Tin can	Dark brown, foul	8·5	0·40	8·0 mm.	3·8–4·2
Concrete tank	Clear	8·0	1·04	3·8 mm.	3·5–4·0

The great increase in length of the anal papillæ may be directly due to the low concentration of halides in the larval habitat; but it must not be overlooked that life in a small container (tin can) may invoke other responses which would lead to the elongation of the anal papillæ.

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[1] Kettle, D. S., *Ann. Trop. Med. Parasit.*, **42**, 5 (1948).

Fluorine in the Human Skeleton

IN recent chemical tests carried out on the Piltdown skull, the accurate determination of fluorine was of decisive importance. It may therefore be of interest to mention that the discovery of fluorine in the human skeleton has been attributed[1] to Arthur Connell, first professor of chemistry in the University of St. Andrews (1840–62). Further, to quote from a publication of 1864, "as an example of his nicety as an analyst we may refer to his determination of the constituents of Greenockite from a single grain of that mineral"[2].

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[1] Irvine, Sir J. C., Chemistry Centenary Lecture (United College, St. Andrews), Edinburgh, 1941, p. 15.
[2] *Proc. Roy. Soc.*, 13, i (1864).