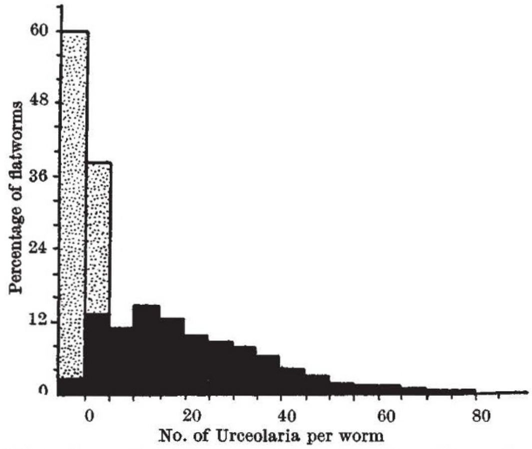

Fig. 1. Comparison of the Urceolarian population of the uniform (stippled) and mottled (black) varieties of flatworm

(Fig. 2*b*), Fig. 2*c* the shorter penis of *P. nigra* with four to eight rows of compound spines (Fig. 2*d*). The former has two musculo-gland organs. The worms referred to were taken from the College pond where the population of *P. nigra* is small compared with *P. tenuis*, in ratio about 1 to 28. The presence of *P. tenuis* has also been confirmed in a sample of flat-worms from Lake Windermere kindly sent by Dr. T. T. Macan. Of 17 worms examined, 13 were *P. tenuis* and 4 *P. nigra*.

The discrimination shown by *Urceolaria mitra* suggests that the physiology and perhaps the ecology of the two flatworms differs. This is borne out by their distribution in the pond and behaviour in the laboratory. *P. nigra* occurs most abundantly near the inlet to the pond where the water moves slowly; *P. tenuis* prefers regions where the water is still. This is supported by examination of other habitats; for example, *P. nigra* occurs alone in a stream at Aber below the zone of *P. cornuta*. There may also be differences in the type of pond the two species favour, but overlap occurs. In the laboratory under conditions resembling a pond habitat rather than a stream, *P. tenuis* thrives much more than *P. nigra* and produces cocoons more freely.

P. nigra has been a favourite type for physiological work, and also figures in many ecological surveys. It is conjectural to what extent it has been confused with *P. tenuis* in the past, in Great Britain, and how this may have affected conclusions. If, as I suggest, the two species can be distinguished on

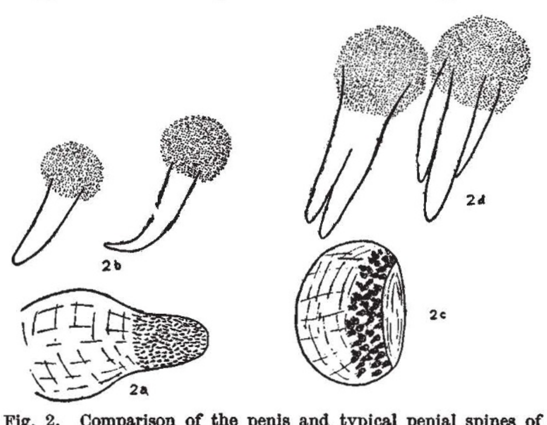

Fig. 2. Comparison of the penis and typical penial spines of *Polycelis tenuis* (*a*, *b*) and *P. nigra* (*c*, *d*)

colour pattern, then they can be easily separated under the binocular microscope. This only becomes difficult when the worms have fed heavily and are distended.

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[1] Ijima, J., *Z. Wiss. Zool.*, **40**, 359 (1884).
[2] Komarek, J., *Zool Anz.*, **70**, 70 (1926).
[3] Sekera, E., *Zool. Anz.*, **72**, 91 (1927).
[4] Lender, Th., *Arch. Zool. Exp. et Gén. Notes et Rev.*, **78** (2), 49 (1936).
[5] Tu, T. J., *Arch. Hydrobiol.*, **35** (1), 46 (1939).
[6] Reynoldson, T. B., *Nature*, **162**, 265 (1947).

Determination of Plant Densities

E. J. MACHIN[1] appears to be unaware of the extensive study by G. E. Blackman[2] on the relation between plant density and percentage absence. In a theoretical appendix to this paper, I have pointed out that the most efficient size of quadrat corresponds to about 20 per cent absence, or a product of quadrat size and plant density of about 1·6 (the efficiency remains reasonable over a range of, say, 0·7–3·0, compared with the rather wider range 0·3–3·3 implied by Machin).

It should also be noted that, while the method is only applicable as an exact method when the distribution of plants is random, it may be used in the more general class of cases for which the relationship between the logarithm of percentage absence and plant density is still linear to provide a comparative index of abundance.

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[1] *Nature*, **162**, 257 (1948).
[2] *Ann. Bot.*, **49**, 749 (1935).

Groundnut Breeding

IN view of the increasing economic importance of the groundnut, a new investigation of its chromosomes should be made known at once. Mendes[1] reports from São Paulo that *Arachis diogii*, *A. marginata*, *A. prostrata*, and a cultivated form from the Mato Grosso, all have 20 chromosomes, the previously known species and cultivated forms[2] all having had 40. Evidently the cultivated forms are mostly tetraploid, and their diploid ancestors are now revealed to us for the first time. The tetraploidy of the groundnut may well have arisen at an early stage of its peregrination when it passed from Brazil to Peru in pre-Columbian times[3].

The diploid species now offer us a ready means of protecting our very vulnerable groundnut industry from disease if we are willing to enrich the store of available variation in this hitherto unresponsive crop by crossing with the new wild sources.

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[1] Mendes, A. J. T., *Bragantia*, **7**, 257 (1947).
[2] Darlington, C. D., and Janaki Ammal, E. K., "Chromosome Atlas", 169 (Allen and Unwin, London, 1945).
[3] *ibid.*, 18.