operation under nembutal anæsthesia immediately prior to slaughter.

Drs. C. Jackson, M. de Lange and H. P. A. de Boom, of this Laboratory, generously advised and assisted with the histological preparations. I am indebted to Mr. Theo. Meyer for the photomicrographs, and to the Director of Veterinary Services for permission to publish this report.

G. C. v. DRIMMELEN

Veterinary Research Laboratory,
Onderstepoort.
Dec. 14.

[1] Bradley, O. C., *J. Anat.*, **62**, 339 (1928).
[2] Walton, A., and Wetham, E. O., *J. Exp. Biol.*, **10**, 204 (1933).
[3] Barfurth, D., *Arch. f. Entw. Mech.*, **2**, 303 (1896).
[4] Payne, L. F., *Okla. Agric. Exp. Sta. Circ.*, No. 30, 1 (1914).
[5] Crew, F. A. E., *Proc. Roy. Soc. Edin.*, **46**, 230 (1926).
[6] Ivanov, E. E., *Compt. Rend. a.d.*, **91**, 54 (1913).
[7] Van Drimmelen, G. C., *J. S.A. Vet. Med. Assoc.*, **16** 1 (1945).
[8] Van Drimmelen, G. C., *J. S.A. Vet. Med Assoc.*, **16** 97 (1946).
[9] Van Drimmelen, G. C., *J. S.A. Vet. Med. Assoc.*, **17**, 42 (1946).

Asymmetry of the Reproductive Organs in the Earthworm *Neodrilus agilis*

Neodrilus agilis n.sp. is the second species of the genus, and is distinguished from *N. monocystis*, Beddard, 1887, by the possession of two pairs of calciferous glands, situated in segments XIV and XV, and by many small diverticula of the spermatheca clustered around the spermathecal duct.

In a specimen of *N. agilis* collected from Karori, Wellington, on June 30, 1948, there is asymmetry of the reproductive organs. There is no reference to such asymmetry in the literature available to me.

Normally *Neodrilus* has a single pair of spermathecal pores, in the intersegmental groove 7/8, each pore situated anterior to the chætæ *ab*. In this specimen the left spermathecal pore is present in the normal position; but the normal site of the right pore is covered by a white scar, 0·5 mm. in width, which extends across the ventro-lateral surface of the body, from the middle of segment VII to the posterior border of segment VIII. Chæta *b* is absent on both VII and VIII, on the right side.

The right prostatic pore is present on XVII, the left missing; but the ventral chætæ are absent on the left side, which is the condition when a prostatic pore is present.

Internally, the left spermatheca has the form usually found in the species, that is, a large thin-walled sac in VIII, opening to the exterior at 7/8 by a wide, openly convoluted duct, and having a number of small diverticula clustered around the distal extremity of the duct. The right spermatheca is absent, and the right nephridium of VIII is divided into two small pieces. The left prostate is absent, although the right prostate is present and has the form normal in the species, that is, a convoluted tubular structure arising from a slender muscular duct in XVII, and passing through the segments XVII–XIX, with a sac containing penial chætæ in association with its duct in XVII.

Apart from the irregularities of the spermathecæ and the prostates, the internal anatomy is normal.

It seems likely that the absence of the right spermatheca is due to injury; but the absence of the left prostate cannot be explained in this way since there is no external or internal scar, and it is unlikely that such a large structure as a prostate, extending as it does through several segments, could be completely excised without considerably distorting the internal anatomy in the region of the prostates. There is not likely to be any connexion between the excision of the right spermatheca and the failure of the left prostate to develop, since I have found in a large number of specimens of the species which I have dissected that the spermathecæ and the prostates are always at similar stages of development, and it would appear that they develop contemporaneously. This presents all the evidence of a case of asymmetry of the reproductive organs due to some accident in the development of the specimen.

K. E. LEE

Department of Zoology,
Victoria University College,
Wellington, New Zealand.
Nov. 2.

Southern Beech (*Nothofagus*) Flowering Seasons

THE periodic occurrence of 'mast' years followed by prolific regeneration of the European beech (*Fagus sylvatica* L.) has enabled the European forester to 'domesticate' this species to such good effect that he has produced with it some of the finest managed forests known. A similar seeding behaviour in the closely related southern beeches (*Nothofagus* spp.) of New Zealand is of interest because of the growing economic importance of our southern beech forests. Sawn timber from them forms a small portion of the annual cut, while timber used in the round is of considerable importance.

Although there are a number of records of the gregarious regeneration to be seen in New Zealand beech forests, there have hitherto been only passing references to the periodic heavy flowering and seeding years. An opportunity was presented of studying one of these in the spring–summer season of 1948–49, when an exceptionally heavy flowering occurred in most districts in four species, *N. fusca* (Hook. f.) Oerst., *N. truncata* (Col.) Cockayne, *N. solandri* (Hook. f.) Oerst. and *N. cliffortioides* (Hook. f.) Oerst., but only in a few places in the fifth species, *N. menziesii* (Hook. f.) Oerst. The flowering has been followed in general by an equally heavy seed set.

An indication of the coming flowering was obtained while examining dormant buds in the winter prior to spring flowering. Flower primordia were then discovered in large numbers in the buds. A certain amount of precocious flowering, mainly of staminate flowers, also occurred in the previous late summer and autumn. Thus it was realized that the factors bringing about a heavy flowering are in operation during the summer prior to flowering. It is believed by European foresters[1] that beech masts follow hot seasons. German work[2] has shown that before mast years the European beech accumulated heavy reserves of starch. Summer drought, usually occurring in hot seasons, then altered the carbon–nitrogen ratio, which in turn initiated flower primordia[3].

New Zealand meteorological records show that the 1948 flowering was preceded by a hotter summer than average. These hot seasons occur, usually throughout most of New Zealand, at irregular intervals. They are not necessarily accompanied by drought. In addition to the 1948–49 season, it has been possible, from the scanty records available c heavy flowering and seeding seasons, to correl two of them, 1938–39 and 1935–36, and a pos