remained inactive and three were sexually normal. Of 11 rats with large lateral lesions, nine remained sexually normal and the other two showed no sexual activity. Histological examinations of the testes revealed no abnormality in the sexually inactive rats.

All rats with medial lesions behaved like rats with lesions in the septal area in that they were aggressive toward the experimenter and displayed marked startle responses to noises and when they were touched. This behaviour gradually disappeared within 2–4 weeks after operation and it did not occur in the rats with lateral lesions.

The results indicate that the medial preoptic area, in contrast to the lateral area, is a site of some brain mechanisms essential for sexual activity in the male[5].

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[1] MacLean, P. D., and Ploog, D. W., *J. Neurophysiol.*, **25**, 29 (1962).
[2] Kim, C., *J. Comp. Physiol. Psychol.*, **53**, 553 (1960).
[3] Larsson, K., and Essberg, L., *Gerontologia*, **6**, 133 (1962).
[4] Hillarp, N.-Å., *Acta Physiol. Scand.*, **14**, 257 (1947).
[5] Soulairac, M.-L., *Ann. d'Endocrinol.*, **24**, No. 3 Supp. (1963).

Halicystis in New Zealand

In 1949 *Derbesia novae-zelandiae*[1] was described from New Zealand. Later when the nature of the life-cycle of other species of *Halicystis* and *Derbesia* became established[2–4] it was expected that *Halicystis* should be found in New Zealand unless the New Zealand *Derbesia* possessed an anomalous type of life-cycle. Despite intensive searches for *Halicystis* no plants were reported up to August 1962. At that time we were in the Bay of Islands with a party of students and a visit was paid to Deep Water Cove. In the course of an exploration by means of aqualungs, plants of *Halicystis* were discovered on lithothamnia-covered rocks at a depth of 30–40 ft.

Rocks with plants on them were brought back to Auckland and have since been kept in ordinary ærated sea-water. Under these conditions dense dark-green patches appeared at the vesicle apices as though they were about to reproduce, but nothing further happened. A similar phenomenon has been reported for *Halicystis* from India[5]. Since August, further search has been conducted in comparable localities and depths and a second area has been located off Little Barrier Island. The vesicles from both areas are comparable in size when mature and there appear to be perennial rhizomatous portions as young vesicles have since developed on some of the rocks. The vesicles arise from a short lithothamnion-encrusted stalk and when mature measure a maximum of 5 mm long and 6 mm wide. Examination of the plastids showed that each contains 3–4 pyrenoids. While attempts so far have failed to complete the life-cycle, one may suggest that these plants represent the sexual generation of *Derbesia novae-zelandiae*. If this proves correct an interesting ecological problem emerges, because although *Halicystis* is now known to occur up to 5 ft. below low water this level is approximately the lower limit of *Derbesia*.

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[1] Chapman, V. J., *Farlowia*, **3** (4), 498 (1949).
[2] Feldmann, J., *C.R. Acad. Sci., Paris*, **230**, 322 (1950).
[3] Kornmann, P., *Planta*, **28**, 464 (1938).
[4] Magne, F., *Bull. Soc. Bot. Fr.*, **103**, 7/8, 488 (1956).
[5] Iyengar, M. O. P., and Ramanathan, K. R., *J. Indian Bot. Soc.*, **33** (4), 446 (1954).

Excretion and Osmoregulation in the Leech, *Hirudinaria granulosa* (Savigny)

Urine, collected from the nephridial bladders of the common Indian cattle leech, *Hirudinaria granulosa* (Savigny), and analysed by the Conway's microdiffusion technique[1], was found to contain 28·3–48·1 μg of ammonia nitrogen (mean 35·8); 12·9–34·9 μg of urea nitrogen (mean 21·6); 180–897 μg of total nitrogen (mean 484·2); and 45·8–228·7 μg of non-protein nitrogen (mean 126·6) per ml. Supernatant fluid of the centrifugated (4,000 r.p.m.) urine contained 30·6–55·6 μg of ammonia nitrogen (mean 44·9); 10·5–15·9 μg of urea nitrogen (mean 13·3); and 99·9–276·0 μg of total nitrogen (mean 177·6) per ml. 8–69 per cent of the total nitrogen present in the urine was found to be due to bacterial growth in it. Deproteinized urine, analysed chromatographically, contained approximately 50–60 μg of amino-acid nitrogen per ml. On an average 31·8 per cent of the total non-protein nitrogen is thus excreted by the leeches in the form of ammonia nitrogen, 13·7 per cent in the form of urea nitrogen, the rest of the non-protein nitrogen being mainly due to amino-acids.

Supernatant fluid of centrifugated urine gave a positive biuret reaction for peptide linkages, Osgood–Haskin's test for urinary proteins, test for globulin and albumin, Robert's nitric acid and magnesium sulphate ring test for protein, Ott's tannic acid precipitation test for nucleoprotein, ninhydrin reaction for α-amino-acid radicals or free α-amino-acids, xanthoproteic reaction for benzonoid radicals (phenylalanine, tyrosine, tryptophan), Millon's reaction as modified by Cole[2] for hydroxybenzene radicals, Hopkins–Cole–Adam–Kiewicz reaction for combined tryptophan, Sakaguchi reaction for free or combined arginine, xanthydrol test for urea, and test for chlorides.

Supernatant fluid of the centrifugated urine gave a negative reaction for cysteine or cystine; Weyl's nitroprusside reaction, Salkowski's nitroprusside–acetic acid test and Jaffe's picric acid reaction for creatinine; McCarthy and Sullivan's test for methionine (negative due to the interference of tryptophan); murexide test and Benedict's test for uric acid; Fehling's and Benedict's test for reducible sugars; Cole's test for small amounts of reducible sugars; Seliwanoff's test for ketoses; Bial's orcin test for pentoses; test for inorganic sulphates and Ehrlich's diazo reaction.

The urine contained 98·19–99·70 per cent and the supernatant fluid of the centrifugated urine contained 99·47–99·89 per cent water. When the animals were kept under arid conditions artificially created in the laboratory, resulting in 23·3–37·38 per cent loss in body-weight, their urine contained 83·72–93·25 per cent water only. The results reveal the extent to which the leeches could conserve water during excretory output. The capacity of tiding over arid conditions depended mainly on the amount of blood stored in the crop of these animals.

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[1] Conway, E. J., *Microdiffusion Analysis and Volumetric Error*, 465 (Crosby Lockwood, London, 1957).
[2] Baldwin, E., and Bell, D. J., *Cole's Practical Physiological Chemistry*, 261 (W. Heffer, Cambridge, 1955).

Effect of Buffers on the Pectolytic Activity of Culture Filtrates of *Fusarium oxysporum*

Pectolytic enzymes have been implicated in the disintegration of plant tissue by a number of phytopathogenic bacteria and fungi[1]. One procedure to assay culture filtrates for pectolytic activity requires a demonstration of a loss of viscosity for a solution of sodium polypectate or pectin in buffer, using a viscosimeter[2].