

first reports of this arrival, perhaps in the 1960's, will be of interest.

Curiously enough, an exactly similar habit of despoliation has now been reported from New Zealand⁴, where both species have been introduced. Retrospective inquiry may be able to suggest whether perhaps some north British settler helped to introduce the habit as well.

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¹ Pettersson, M. L. R., *Nature*, **177**, 709 (1956).

² Boyd, A. W., *Brit. Birds*, **24**, 329 (1930). Witherby, H. F., et al., "The Handbook of British Birds" (London, 1940).

³ Fisher, J., and Hinde, R. A., *Brit. Birds*, **42**, 347 (1949).

⁴ Sutherland, E., *Otago Daily Times* (Feb. 6, 1958).

An Unusual Breeding Habitat of the Linnet

CONTRARY to the normal habits of the linnet (*Acanthis cannabina*) this species has been found nesting annually in clumps of rushes (*Juncus effusus*) on a hill pasture in north-east Cheshire, grid reference SJ 956925. The rush sites are apparently chosen in preference to more normal sites of which there is no shortage. The habit has so far not been observed elsewhere in the district and would appear to be unusual anywhere.

The pasture is situated on a foothill of the Pennines and faces north-west, sloping from 700 to 800 ft. above sea-level. About 12 acres in area, it provides rough grazing for cattle. It is very wet in parts with much rush. On the drier parts are scattered clumps of gorse and there are several hawthorn trees at the lower end. The surrounding land consists mainly of pasture together with some meadow and arable land.

The linnet is a common breeding bird in the district, nesting usually in gorse but also in low, thin hedges of hawthorn and holly, particularly those bordering lanes.

The nests in the rush beds are usually placed near to the top of a clump of rushes, although, in 1954, one nest was placed in a small tuft of grass on very wet ground. The nests are typical of the linnet except that dried rush stems are used in the base material.

The first nest was found in 1952. It was deserted and contained two eggs of linnet and one of cuckoo (*Cuculus canorus*). The pasture was next visited in 1954 when more nests were discovered built in clumps of rushes. Nests have been found each year since. There is no lack of more normal sites even on the pasture itself, and the rush sites are apparently chosen in preference to these.

This year (1959) the first two pairs to breed nested in rushes. These were followed by three pairs which nested in gorse and a sixth pair which also nested in a clump of rushes. Both reed bunting (*Emberiza schoeniclus*) and snipe (*Capella gallinago*) nest in close association with the linnets. The nest and eggs of the linnet are very conspicuous in this unusual habitat, whereas those of the reed bunting, in their natural habitat, are well camouflaged.

While the linnet is known to nest in sea purslane and other tall maritime plants on salt marshes¹, and in marram grass on the Norfolk coast², the rush sites do not appear to have been described before. In the Orkney Islands, the linnet has been found breeding on the ground in cultivated districts, in tall heather, and occasionally in reedy marshes³.

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² Bannerman, D. A., "The Birds of the British Isles", vol. I (Oliver and Boyd, 1953).

³ Lack, D., *Ibis*, **6** (1942).

HISTOLOGY

Histochemical Study of Monoamine Oxidase in the Developing Rat Brain

THE activity of monoamine oxidase was biochemically determined in various portions of the brain^{1,2} and the strongest activity was reported to occur in the hypothalamus. Shimizu, Morikawa and Okada³ recently reported the exact histochemical distribution of this enzyme in the brain of adult rodents using the tryptamine-tetrazolium method⁴. According to our observation, the enzyme action occurred not only in the hypothalamus, interpeduncular nucleus, habenular nucleus and tractus retroflexus of Meynert as other investigators^{4,5} stated, but also most strongly in the locus coeruleus and moderately in the dorsal nucleus of the vagus nerve, midline nuclear group of the thalamus, nucleus of the brachium conjunctivum, central grey matter, nucleus ambiguus and area postrema. From the histochemical result it is assumed that monoamine oxidase may be involved in the metabolism of the visceral regions of the brain rather than in the exclusive participation in the function of adrenergic neurons.

The present study was concerned with the developmental changes of monoamine oxidase in the rat brain using histochemical means. Fresh frozen sections were obtained from the brain of rats at varying ages; foetal ages of 15 and 20 days; newly born, 1, 3, 5, 7, 10, 14, 21 days, 1 and 2 months after birth; and adult. The sections were stained by the tryptamine-tetrazolium method of Glenner, Burtner and Brown⁴. As tetrazolium INT (2-*p*-iodophenyl-3-*p*-nitrophenyl-5-phenyl tetrazolium chloride) was mainly used but nitro-blue tetrazolium was also occasionally used.

At the foetal age of 15 days the enzyme action of the brain was almost negative except for definite regions of the pons, which reacted faintly and probably corresponded to the locus coeruleus and its continuation. On the foetal 20th day moderate to strong action occurred in the locus coeruleus (Fig. 1), and a faint staining was present in the habenula, periventricular grey of the hypothalamus and nucleus ambiguus. In the newly born rat a slight initial action appeared in whole portions of the brain excepting the above-mentioned regions. The locus coeruleus and nucleus ambiguus nearly reached the adult level of the enzyme activity directly after birth, the former showing unusually intense reaction (Fig. 3) and the latter a moderate one (Fig. 2). 1-5 days after birth the enzyme activity was generally similar to that of the newly born rat or slightly increased. From the 7th to 10th postnatal days activity in most regions began to increase in intensity and extent, and about 3 weeks after birth the enzyme activity of each region attained respective adult level. In the adult brain the most intense action was observed in the locus coeruleus, and moderate to intense action was encountered in the following regions: the subfornical organ, supraoptic crest, habenula, midline nuclear group of the thalamus, periventricular grey and medial nucleus of the hypothalamus, tractus retroflexus of Meynert, interpeduncular nucleus, nucleus of the brachium conjunctivum, dorsal nucleus of the vagus nerve, nucleus ambiguus, inferior olivary nucleus, area postrema and ependymal layer of the lateral, 3rd and 4th cerebral ventricles. The enzyme action remained weak or negative throughout the development in the neo-