water. It is working from half an hour after sunset until half an hour before sunrise.

The catches so far have included ten species, and both sexes are present in varying proportions. On certain nights the catch has included gravid and freshly blood-engorged females, and in the latter it has been possible in certain instances to identify the source of the blood.

Work on the seasonal history of the species, and the relation of their numbers to weather conditions, is being continued and will be published later. This communication is to direct attention to the value of the technique.

Since the end of June 1956, a small suction trap with a fan 9 in. in diameter and sampling about 300 cub. ft. of air per min.² has been in use in the same garden, but out of sight of the light trap. The numbers taken are much smaller; for example, 221 in October (as compared with 1,360) and 87 in November (as compared with 557).

Particulars of the light-trap will be sent to anyone who cannot consult the papers quoted, on application to C. B. Williams.

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¹ Williams, C. B., *Proc. Roy. Ent. Soc. Lond.*, A, 23, 80 (1948).

² Williams, C. B., *Bull. Ent. Res.*, 46, 193 (1955).

³ Johnson, G. G., *Ann. App. Biol.*, 37, 80 (1950).

A Record of the Lungworm *Cystocaulus ocreatus* in Sheep in Great Britain

At least fourteen species of lungworms have been described from domestic sheep in different parts of the world. Of these, only three are recorded as occurring in Great Britain, namely, *Dictyocaulus filaria*, *Muellerius capillaris* and *Protostrongylus rufescens*. A fourth lungworm, identified as *Cystocaulus ocreatus*, has recently been found in sheep lungs examined at Weybridge.

This lungworm was first observed in lungs received from Watford abattoir, to which sheep had been sent from various parts of the country within the range Devon to Northumberland. *C. ocreatus* was found in only twenty-two of 310 lungs examined, whereas *M. capillaris*, the common lungworm of sheep in Britain, was present in 293. A higher percentage infection with *C. ocreatus* has recently been observed in sheep on the Wiltshire Downs.

This lungworm has been recorded from parts of central and southern Europe, Asia and North Africa. In both Palestine and Turkey it is the commonest of the lungworm species found there.

The percentage of sheep infected is partly dependent upon the distribution and frequency of the intermediate host. Gerichter has shown that in Palestine development of the lungworm larvae can take place in a number of species of land snails and slugs. The rate of larval development varies in different species of molluscs, being most rapid in *Helicella* spp.; he has classified these snails as 'appropriate' intermediate hosts. It seems reasonable to assume that in Great Britain species of *Helicella*

are also the 'appropriate' intermediate host. As these snails inhabit arid, open land such as cliffs, dunes and downs, it is not surprising that *C. ocreatus* has been frequently found in lungs from sheep which have been grazed on the Wiltshire Downs.

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¹ Gerichter, Ch. B., *Parasit.*, 41, 166 (1951).

Neoteny in a Lamprey

SPONTANEOUS and artificially induced neoteny are well known in Amphibia, and full sexual maturity appears to be attained by the parr stage of *Salmo salar*. But, so far as I am aware, neoteny has never been recorded in the cyclostomes. Young¹ has directed attention to the fact that some lampreys show a speeding up of the time of sexual maturity relative to the time at which metamorphosis takes place (paedomorphosis), but there are no records in the literature of sexually mature ammocete larvae.

On March 18, 1955, I collected some two hundred ammocetes from a small stream, the Fibbio, which is a tributary of the River Adige, near Verona in Italy. These were larvae of a species of *Lampetra* found in the Po flood plain district of northern Italy. They were described by Vladykov², who named them *L. zanandreaei*. Of these ammocetes, twelve showed well-developed ovaries containing eggs which were macroscopically visible on dissection and obviously in an advanced state of maturity. Artificial fertilization of the eggs was not attempted, though they had apparently reached a stage at which this would have been possible. One larva showed well-developed principal secondary sexual characters, namely, enlargement of the two dorsal fins and fusion of these fins, development of the anal pseudofin, and transparent body-wall through which the eggs could be seen. Such characters are normally only associated with adults which are about to spawn. The neotenic specimens, which were all females, were collected during the spawning season. It was confirmed by histological examination that the endostyle was intact and that no post-metamorphic features were present other than the well-developed ovaries. No environmental peculiarities were identified which might account for this manifestation of neoteny, though it should be recorded that some 2 km. upstream from the locality in which the neotenic specimens were taken the effluent from a tannery enters the Fibbio.

Attention has already been directed by Leach³ to an important difference between parasitic and non-parasitic lampreys, namely, the tendency towards precocious sexual maturity in the latter, in which there is no growth phase interpolated between metamorphosis and the assumption of full sexual maturity. The present record of neoteny might be interpreted as an extreme example of this general tendency. It also demonstrates *inter alia* that sexual maturity, at least in the female, can be attained in the absence of a definitive thyroid gland. The absence of this gland in neotenic lampreys bearing mature eggs assumes an added importance, since Gorbman and