It is possible that the second ecdysis plays a part in determining the region of the host's intestinal tract in which the worms develop. Thus, *T. axei* is the only member of this genus to live in the abomasum, and is the only member to enter that organ exsheathed. Differences in the rate of exsheathment between *T. colubriformis* and *Nematodirus* spp. in the abomasum may be a significant factor in the relative position of these species in the small intestine, since Tetley[5] has shown that the maximum numbers of *Nematodirus* spp. are always posterior to the maximum numbers of *T. colubriformis*. The relative inability of some species of nematodes to parasitize a host, in which another species of the same genus is commonly found, may possibly be determined by differences in the rate of exsheathment within the host. Further work to elucidate these and other aspects is in progress.

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Occurrence of *Paracentrotus lividus* (Lamarck) in Scotland

Paracentrotus lividus is a littoral sea-urchin well known in the Mediterranean and on the Atlantic coasts of Europe. In the British Isles it has been recorded only in Ireland, where it is common on the south and west coasts, and occasionally in Devonshire and Cornwall[1].

It is therefore of interest to place on record that three specimens were found in 1939 in the intertidal zone of the Isle of Muck, Inverness-shire. These came from two distinct localities and the animals were living in situations similar to those inhabited by *Psammechinus miliaris* in crevices and under stones. Possibly the rock is here too hard for the urchins to burrow as is their habit in so many other localities[2]. The spines, while of the typical purple colour, are shorter and stouter than in some Irish specimens in our collection. The animals resemble closely a specimen presented to one of us by the late Prof. J. H. Orton which he collected at Looe in Cornwall in 1913.

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Effect of Alpha-Particle Bombardment on Creep in Cadmium Single Crystals

Bombardment of stressed single crystals of cadmium by alpha-particles was found by Andrade[1] to cause a marked increase in the rate of glide under certain conditions. The crystals were stressed so as to produce a creep-rate of about 0·05 per cent per min., and increases in rate of up to five times were recorded on bringing up the alpha-particle sources during the early stages of the creep curve. The effect was attributed by Andrade to the initiation of new glide planes by the intense local disturbances produced in the surface of the crystal during the impact of the energetic alpha-particles.

The present creep tests were undertaken to throw further light on this hypothesis, and in particular to determine if the effect occurred on clean crystals or whether a thin oxide film was necessary. The apparatus is very similar to that used by Andrade with the exception that the strain is measured with an optical-lever device having a magnification of 200. A cylindrical polonium alpha-particle source with an initial strength of 140 mc. produces a maximum flux of 5×10^8 particles per sq. cm. per sec. at the surface of the crystal. The flux used by Andrade was about $1{\cdot}5 \times 10^8$ particles per sq. cm. per sec.

It has not proved possible to repeat the phenomena described by Andrade. Tests have been carried out on both standard (99·9 per cent) and spectroscopic (99·99 per cent) purity cadmium crystals, 1 mm. in diameter under a variety of surface conditions produced by oxidizing the clean 'as-grown' crystals in the atmosphere for various lengths of time at 240° C. Crystals have been tested with a range of orientation ψ, the angle between the glide plane and the specimen axis, between 10° and 45°. The effect of dissolved nitrogen has also been investigated. The majority of the specimens have been tested at 0·05 per cent per minute—the rate quoted by Andrade—but tests have also been made at various rates between 0·013 and 0·26 per cent per min. The bombardment was usually initiated after about 0·5 per cent glide and the sources were brought up and removed from the specimen several times during the course of a test. A small elongation of the crystal sometimes occurred on moving the alpha-particle sources ; this was traced to vibration in the apparatus and could be reduced to a minimum by very careful handling.

In specimens in which marked geometrical softening occurred as glide proceeded, due to the rotation of the glide planes towards the specimen axis with a consequent increase in shear stress, it was observed that the elongation produced by vibration would sometimes cause an increase in the rate of creep. This behaviour was observed in specimens in which the angle ψ was large and also in annealed crystals containing dissolved nitrogen. The increase in creep-rate under these conditions was independent of the position of the alpha-particle sources. In the majority of the tests, however, no change in creep-rate was detectable on bringing up or removing the sources from either the clean or the oxide-coated crystals.

Bombarding for longer periods under no load has been found to harden the crystal slightly. In one case the creep-rate of a clean spectroscopically pure crystal was reduced from 0·08 to 0·05 per cent per min. after bombardment for 2 hr. It is possible that this effect is due to the oxidation of the crystal by the oxygen ions or ozone produced in the air by the passage of the alpha-particles.