however, were able to survive (short-term) after exposure to more than 800g.

Waterman[2] makes no reference to forces greater than 2·2g in his 1961 work, *The Physiology of Crustacea*. A search of abstracts since 1960 reveals only one pertinent reference. Eberly *et al.*[3] studied the effects of centrifugal force on nymphs of the grasshopper *Melanoplus differentialis* (the size of nymphs was not specified). They reported 50 per cent mortalities in 9 days at 9g and in 20 min at 10,000g. We were not able to obtain nymphs of *Melanoplus* locally at this season, but were able to capture two half-grown (40–50 mm) nymphs of lubber grasshoppers (*Romalea* sp.). Centrifugation at 800g for 10 min eviscerated and killed one nymph; centrifugation at 2,700g for 1 min reduced the remaining nymph to mush. Thus, we very much doubt the validity of the 10,000g value.

In view of the tolerance of anomuran crustaceans to extremely high centrifugal forces and because of their availability in quantity, hermit crabs could well be used as experimental organisms for extraterrestrial investigations. The use of hermit crabs in instrumented shells or simulated shells seems feasible. Furthermore, detailed physiological and biochemical investigations of the resistance mechanism could well provide valuable guidance in the design of life support systems for higher animals.

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Feeding Habits of the Squid, *Illex illecebrosus*

OBSERVATIONS have occasionally been made on the method of attack on prey by *Illex* in the inshore zone where it feeds mainly on small fishes[1–3]. This communication suggests a way in which the squid is able to capture smaller food organisms—mainly small crustaceans (Euphausiids)[4]—when it is schooling in the offshore zone.

It is generally agreed that fish such as herring, mackerel, etc., when swimming in schools, feed on the small crustaceans (copepods, etc.) which are abundant in the oceans. These they take into their mouths together with the water used to perfuse the gills in respiration and strain them from this water by means of gill rakers. During such feeding the school of fish remains intact. With the squid, *Illex*, this method of feeding is impossible not only because of its anatomy but also because of the way the individuals orientate themselves when schooling. When swimming in a school they generally orientate themselves with their tail forward. In this position the animal is propelled by successive and continuous jets from the siphon which is now at the rear end. Although the head is also at the rear end in this position, vision forwards or backwards is unimpeded because the eyes are appreciably protruded. When moving in well-formed, evenly spaced schools, the squid maintains its arms and tentacles compactly together and the siphon is held straight. When moving through swarms of small crustaceans, however, individual squids are able to trap some of their prey in their own wake by expanding their arms and thus creating a turbulence. The mantle intake and siphon ejection of water which effect propulsion also add to the turbulence in their wake. The prey pulled into this turbulence is easily captured by the suction cups on the arms or tentacles and then transferred to the mouth. This method of feeding is accomplished without breaking up the formation of the school. Fewer squids appear to fall prey to their fellows in the offshore zone where this type of feeding in schools is generally predominant[4].

It is probably not always possible for a squid to swim past a small active fish sufficiently close or fast to capture it in the turbulent wake set up by expanding its arms. Observations of the capture of fish by *Illex* reveal that although the squid swims past the fish or lure, it then turns and darts with arms forward and grabs its prey[1–3]. This invariably causes the schooling pattern to break up. It is quite probable that there is a connexion between break-up of schools and the not uncommon finding of squids in stomachs of inshore squids[4,5]. The change from feeding mainly on small crustaceans to feeding mostly on fish may in part be responsible for this. It would seem that squids have to learn this method of feeding because in the first seasonal occurrence of squid in the inshore zone there is a period in which fish-shaped lures do not attract them (the period during which fishermen consider the squids to be "blind"). Lures with dangling hooks designed in the shape of euphausiids would take into account the feeding method of squids and could well be used in the offshore zone and possibly also during the period in which they learn to feed on fish.

The observations referred to in this communication were made in inshore waters off Newfoundland at Holyrood where the squids are present from July–October, and offshore on the south-west edge of the Grand Banks where they are commonly present early in June.

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Corpus Allatum and Sexual Receptivity in Female *Drosophila melanogaster*

IN a number of insects the hormone secreted by the corpus allatum is known to affect reproductive behaviour. In female insects so far studied the hormone operates in one of two ways. It may control pheromone secretion and thus determine whether a female attracts courtship from males, for example, the cockroach *Byrsotria*. Here, Barth[1] showed that there is no effect on behaviour itself because if males are induced to court allatectomized females by adding pheromone artificially, the latter respond normally and mate. Alternatively, the hormone may affect the sexual receptivity of females, as in the grasshopper *Gomphocerus*. In this case pheromones are not important and Loher[2] has shown that allatectomized females, although courted normally, do not respond. Implanting mature corpora allata induced the return of receptivity within 7 days.

Few *Drosophila melanogaster* females kept on a 12 h : 12 h light/dark cycle are receptive to males on the day of eclosion (day 0) or on day 1, but almost all are fully receptive by the morning of day 2. This change in behaviour runs parallel to the growth of the corpus allatum[3] which is small at eclosion. Feedback from the ovaries