

two hours of sunset and returned to their own holes by the next morning, though often each was lying turned round from its original position.

During daylight it was common to see vacant rock holes, which, by the absence of weed growth, appeared to have been recently vacated. Usually, however, these holes were again occupied within a week, but tagging techniques had been inadequate to reveal whether the occupants were the original ones or newcomers.

Unlike most of the finer-spined urchins, the slate pencil urchin, *Phyllanthus parvispinus*, appeared not to live in holes, preferring crevices between rocks. In more than 200 sightings of these urchins, only one had been seen in a spherical rock hole. Most were in crevices, during daylight, but were so securely wedged in that they could only be moved by breaking spines. Other haunts of the slate pencil urchin were on the floor of forests of weed or kelp. Like *C. rodgersii* these urchins seemed to prefer deeper water and were more numerous in 20–30 ft. of water. Although each slate pencil urchin did not have its own particular rock hole, it returned to a particular locality.

The slate pencil urchins went out 'walking' at night, often covering 1 ft. in 20 min., and were seen attacking whelks bigger than themselves.

The commonest urchin at shallow levels within about 6 ft. of the surface was *Heliocidaris erythrogramma*. This was the dominant species, and practically the only urchin present in the intertidal zone. It lived in crevices and holes in the rock, which could be almost honeycombed. It appeared to dig

holes much deeper in relation to its size than any other species. This urchin appeared in many colours: greens, reds, browns and purples; a new one being revealed at almost every dive. The spines were smooth and relatively short. One of the most interesting combinations of spine shape and colour in this urchin was in the blue or mauve specimens.

Tripneustes gratilla, a wanderer from tropic seas, apparently had the distinctive habit of being unconcerned with the need for shelter. It was usually found on the walls of caves or in the open many yards from the nearest shelter. It was a large-bodied urchin with very short white spines tipped red or mauve. The rounded body had a plain darkish colour, or was white with five darker major bands and five secondary bands. Some of these urchins carried small pieces of shell or weed, presumably for sheltering from the light. *T. gratilla* was usually seen at depths of 10 ft. or more.

Most of the useful observations made by diving were of an ecological, rather than a systematic, nature, and an observation ledge had been carefully watched at frequent intervals during the past seven months; however, other observation points will be established after a twelve months period has been completed. A handicap to observation was that many local residents had developed a taste for eating sea urchins and the colony risked extinction.

In summer the colony comprised: twenty *C. rodgersii*; one *H. tuberculata*; and one *P. parvispinus*. By early July the numbers of *C. rodgersii* had fallen to fourteen, and later in the month had been reduced to ten.

JOURNAL OF APPLIED POLYMER SCIENCE

THE study of polymeric systems originated largely from technological considerations, but has now grown into a scientific subject in its own right, with its own techniques and outlook. This change has occurred in a very short time, and its rate of growth can be illustrated by the increasing size of the *Journal of Polymer Science*, which attracts contributions from both chemists and physicists interested in the preparation and properties of these interesting materials. From the original *Polymer Bulletin*, published in 1945 with 158 pages, it has progressed stepwise: 1946–50, 598 to 800 pages; 1951–54, 1460 to 1,864 pages; 1955–57, 2,432 to 2,420 pages; 1958, 4,256 pages. This seven-fold increase in thirteen years shows no sign of slowing down, and the publishers have therefore decided, as a transition measure, to split the journal, the original journal to continue, but in addition to publish the *Journal of Applied Polymer Science**. The latter is intended to deal with the properties of industrially significant materials, leaving articles of a definitely basic character to the original *Journal*.

It is difficult to see how this distinction can be maintained. The first number of the *Journal* includes papers on such basic matters as thermal expansion and transition temperatures, impact

strength and spherulite growth, and anisotropic properties of strained visco-elastic fluids. Perhaps a better grouping of subject-matter would be—preparative techniques; physical properties; characterization and constants, and applications.

The present tendency for publication of specialist journals, as distinct from the journals of learned societies of wider scope, must be taken as an inevitable consequence of increased specialization. Although it may facilitate the task of the scientist wishing to keep together papers on his own research subject, it has made it almost impossible for him to pay for the subscriptions. The stage has been reached where even the smaller scientific libraries cannot hope to purchase more than a small fraction of these specialist journals. This situation is likely to worsen, and the research man will have to visit large central libraries, or rely on abstracts to track down new papers of interest to him. Perhaps one solution is for the smaller libraries to pool some of their resources on a local basis, by arranging regular circulation through several laboratories. In any event one would like to see an extension of the system of reduced rates for personal copies. The increased cost cannot be blamed on the publisher; the cost per page has remained constant at 2.5 cents since 1952. The new *Journal* is somewhat larger in page size than the earlier publication, and this has improved the presentation and layout.

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