in bell diameter; the August ones range from 7 to 13 mm, bell heights being between one half and three fifths the diameter. All specimens are sexually mature males. In one individual of the August sample the gastrovascular cavity contains a bolus of algal filaments, apparently partially digested, in which is entangled detritus and numerous fragments of copepods; in each of two others there is a small partly digested dipterous pupa. Such a diet does not seem to have been previously recorded for the gonosome, according to the monograph by Dejdar[1] (p. 687).

The irregularity of tentacular arrangement suggested by Dejdar (p. 622) is difficult to discover in the present material, in which these organs are arranged in seven quite complete cycles, fully distinguished in size in the smaller specimens, although somewhat obscured beyond the fifth series in larger ones. An incomplete eighth cycle, increasing in extent with increase in size of the individual, is present. The folds in the nettle-ring of the bell-margin are regularly disposed at the bases of the larger tentacles, of the first through fourth classes in the smaller, the first through fifth in the larger medusae. There are modally three lithocysts between each of these puckerings of the rim; and in conformity with the addition of such folds at base of tentacles of the fifth class in large individuals, there are approximately twice as many lithocysts per quadrant (48) in these as in the smaller ones. Dejdar's conclusion as to the universal peduncculation of the lithocyst concretions in *Craspedacusta* is evidently correct, but with reference to his synonymization of most of the named forms, it is worth noting that the present seems to agree with other American material in displaying a much less conspicuously elongate attachment than that described in medusae from other regions of the world.

If the reported reappearance of the medusoid population subsequent to its removal by drainage of the reservoir at Monroe is correctly interpreted, and if the medusae were not carried into the pool with the water-supply, it may be inferred that the gonosomes, replenished by a hydroid stock which survived the drainage, reached sexual maturity and a diameter of 13 mm within two months after liberation, a growth rate comparable with that found by Dejdar (p. 687–688) in aquarium-reared medusae. Also, if the maleness of the two available individuals of the June sample be assumed to have characterized the entire population at that time, it may be inferred that homogeneity in sexual nature of the gonosomes was maintained in successive liberations from the trophosomes, in the face of some modification of the environment. Dejdar (p. 688) very properly suggests that the quite usual sexual uniformity of local populations of *Craspedacusta* requires the assumption of a "getrenntgeschlechtliche Polypengeneration"; nevertheless, the alternative possibility that the prime affect of sexual nature in *Craspedacusta* is environmental seems worth consideration.

PERCY VIOSCA, JR.
NEW ORLEANS, LA.

M. D. BURKENROAD
BINGHAM OCEANOGRAPHIC LABORATORY
YALE UNIVERSITY

[1] *Zeits. f. Morph. Ökol. Tiere,* 28: 595–691, 1934.

A MARINE TENEMENT

SANIBEL ISLAND, in Lee County, Florida, lies three miles off the mainland coast at the mouth of the Caloosahatchee River, and has its long axis generally directed S.E. and N.W. This position affords a southerly exposure to some twelve miles of open beach on the Gulf of Mexico. The immediate locality is exceedingly rich in genera and species of molluscan fauna and also in numbers and unusual variety of other forms of marine invertebrate life.

Drift rows of incalculable numbers of living *Atrina* (*Pinna*), principally *A. rigida* Dillwyn, were stranded on the beaches by the wind-blown tides of early March, 1936. Normally *Atrina* lives in moderate depths of water, buried in the sea-bottom, and attached by a byssus to some point of support with only an inch or less of the free, rounded edge of the bivalve shell exposed to the invasion of inquilines of various other tribes.

These "pen-shells" must have been washed from their beds, quite likely in the hurricane of September, 1935, and must have lain for the succeeding five months in some depression of the sea-bottom between outlying sandbars, not far off shore and at no great depth. This seems evident from the character of the creatures which have adopted these shells for their tenements and made use of the entire extent of their rough outer surfaces.

When the "pen-shell" is buried vertically in sand or mud, as it normally lives, the surfaces of the shell are protected from contact with the larvae of other mollusks, and of worms, crustaceans, ascidians, zooids, etc., which are free-swimming in early life, and also from creeping forms of other invertebrate creatures which seek a firm and stable attachment for themselves or their egg-cases.

These *Atrinas* were covered over from top to bottom with an extraneous medley of living marine animals; principally species which live in shallow water and within the littoral region. Some of them were covered with this adventitious growth on one side only, suggesting that they had lain for some time undisturbed upon the bottom of the sea.

One *Atrina* picked up at random yielded the animals listed in the following inventory:

Anachis avara similis, 14 mature specimens.
Anachis obesa obesa, several specimens.
Anomia simplex, 3 mature specimens.
Arca occidentalis, 8 mature, 2 young specimens.
Arca transversa, 2 young specimens.
Cantharus tincta, 4 specimens.
Chiton sp., 3 specimens.
Clathrodrillia albinodonta, 3 mature specimens.
Clathrodrillia alesidota macilenta, 3 mature specimens.
Crepidula aculeata, 2 specimens.
Crepidula fornicata, 2 specimens with egg-masses.
Erato maugeria, 1 specimen.
Modiolaria lateralis, 2 specimens.
Murex pomum, 1 young specimen.
Murex rufus salleanus, 5 young specimens.
Ostrea virginica floridana, many young specimens.
Urosalpinx perrugatus, 3 mature, 5 young specimens.
Many barnacles.
Many worm-tubes, both limy and built of sand.
One small holothurian.
Two hydroid colonies with many small crustaceans (*Caprella*) among the branches.
Several small crabs and a number of other small crustaceans.
Several colonies of encrusting bryozoans.
Two small sponges.
One annelid worm.
One flat worm.
Egg-cases of *Cantharus tincta, Muricidea multangula* and *Anachis avara similis.*

Twenty-five different kinds of animal life, more than a hundred individuals of eight different phyla were living on an area approximating 55 or 60 square inches of the shell surface of one *Atrina.* Only creatures seen by the unaided eye are noted. The microscope would have revealed many more.

LOUISE M. PERRY
SANIBEL, FLORIDA

A GONAD PARASITE OF THE STARFISH

CÉPÈDE in 1910[1] described the astomate holotrichidan, *Orchitophyra stellarum,* from the testis of *Asterias rubens.* He remarked that this protozoan is confined to male starfish, where it causes castration. Piatt in 1935[2] has found this parasite in the testis of *Asterias forbesi* in Long Island Sound.

During the summers of 1934 and 1935 this protozoan was found in the ovaries of *Asterias vulgaris,* which were taken from the oyster beds in Malpeque Bay, Prince Edward Island. This is apparently the first record of this parasite infesting starfish ovaries. There was no obvious pathological condition of any of the infested ovaries examined, and the eggs therein contained appeared normal and were fertilizable. However, a histological examination of an infested ovary has not yet been carried out.

The incidence rate of this parasite, taken from a relatively small number of specimens and over a limited area, appears to be about 25 per cent. of the females. Cépède in his paper reported that only three starfish out of 6,000 examined were infested. The incidence rate observed by Piatt was about 9 per cent. of the males.

Cépède observed that although Orchitophyra is endoparasitic in the starfish, it is not injured by being placed in sea water. Cultures for starfish larvae, from eggs fertilized in the laboratory, were set up in 1934. The eggs used in one culture happened to be from an infested ovary. After a week's time, when the culture was discarded, Orchitophyra was active and apparently normal.

G. F. M. SMITH
UNIVERSITY OF TORONTO

THE FIRST RECORD OF A DINOSAUR FROM THE WEST COAST

ALTHOUGH the Cretaceous deposits of California are extensive and many thousand invertebrate fossils have been collected from these rocks, vertebrates of any kind are exceedingly rare. A few sharks' teeth and fish scales have been collected in this series; but evidence of the reptilian life, so common elsewhere, has been totally lacking until the present time. Some weeks ago, Mr. Allan Bennison, an astute high-school student, found a vertebra in an exposure of the Moreno Cretaceous near Gustin, Calif. Mr. Bennison had been collecting invertebrates in this area for some time, and realized that this find was important. It was forwarded to Dr. G. Dallas Hanna, of the California Academy of Sciences, San Francisco, who, in turn, brought it to the Museum of Paleontology, University of California. It proved to be a pre-sacral vertebra of a *Phythonomorpha,* probably of the *Platycarpus-Tylosaurus* group.

Mr. Bennison continued his work in this region, not content to rest after having turned up the first recognizable reptile from the California Cretaceous. In June, in the same Moreno formation (Upper Cretaceous), near Patterson, Calif., Bennison discovered the first specimen of the dinosauria from the West Coast Cretaceous. The material is very fragmentary and seems to represent only the hind quarters of the animal. There are twenty-seven vertebrae (caudal), parts of the foot and the ends of some of the posterior limb elements. There are over 500 fragments of bone, from which, it is hoped, enough may be "pieced" together to make an accurate determination of the form represented. It is, of course, not possible to definitely

[1] C. Cépède, *Arch. Zool. Exp. et Gen.,* 5e Serie, 3, 1910.
[2] J. Piatt, Fisheries Service Bulletin No. 247, U. S. Department of Commerce, 1935.