oped in some of our northern ports, such as New York and Boston and from there has spread to the Central states." Such a hypothesis is unnecessary. Freed, Jordan and Eckhoff[3] in reporting a case of endemic typhus fever in Des Moines, Iowa, sent the arthropods collected from rats in that locality to the author for identification. This material revealed the presence of *Xenopsylla cheopis, Liponyssus bacoti* and a species of *Hoplopleura* among other things. Dr. G. F. Ferris[4] identified the *Hoplopleura* as *H. oenomydis,* a species which has never been recorded in North America. The report by Freed, Jordan and Eckhoff established the fact that rats with their parasites might have been imported from the southern states, but since *H. oenomydis* has not even been found there it is just as logical to assume that the rats were imported directly to Des Moines.

Thus it is felt that the spread of the flea could have been more easily accomplished by shipping on the Mississippi than by the cross-country travel from New York and Boston. This, accompanied by the fact that in most cases years and years of gradual exposure are necessary to create a race more resistant to cold, would appear to leave the hypothesis of Ewing and Fox without a basis.

Further, a brief thought on the subject should account for the survival of the flea in the colder temperatures of the temperate zone. It matters not how low the temperature falls as long as the flea, its larvae and eggs remain in the warm confines of the rat's tunnel. The same warmth which allows the rat to live can also keep the flea alive. In other words, a flea in a test-tube exposed to freezing temperatures is not any more at home than man deprived of his home, his clothing and his food, but we have long since ceased to marvel because man can survive freezing temperatures in his artificial environment.

ROBERT L. ROUDABUSH
WARD'S NATURAL SCIENCE ESTABLISHMENT,
ROCHESTER, N. Y.

## REDISCOVERY OF THE RHIZOCEPHALAN PELTOGASTER PAGURI ON THE NORTH AMERICAN COAST

FOR more than a century, the Rhizocephala, a group of degenerate parasitic Cirripedes, has engaged the attention of many European zoologists, but, with the exception of a few Sacculinidae described from the West Indies, there have been no studies made of these remarkable Crustacea from the Atlantic coast of North America. During July, 1938, at the University of Maine Marine Laboratory on Frenchmans Bay, Maine, I had the good fortune to discover a representative of the order Rhizocephala, *Peltogaster paguri* Rathke, parasitic on the abdomen of the hermit crab *Pagurus pubescens* Kröyer.

The geographical distribution of this parasite is considerable. It occurs along the entire European coast from Norway to the Mediterranean but is strictly a boreal species, more rare toward the southern edge of its range. Its chief host in Europe is *Eupagurus bernhardus* (Linneus), but it has also been found on *Eupagurus cuanensis* (Thompson), *Pagurus chiracanthus* Lilljeborg, and *Pagurus pubescens* Kröyer.

*Peltogaster paguri* was first recorded for North America by A. S. Packard, Jr.[1] (1866), who found a single specimen at Eastport, Maine. Another specimen was taken by the W. A. Stearns expedition at Henley Harbor on the coast of Labrador and recorded by S. I. Smith[2] (1884). In both cases the host was likewise *Pagurus pubescens.* No further American records are known.

Of a total of 341 *Pagurus pubescens,* consisting of 128 males and 213 females, which I examined from Frenchmans Bay this summer, 86 individuals (25 per cent.) bore the parasite *Peltogaster.* These were distributed as follows:

33 males, each carrying one Peltogaster
4 males, each carrying two Peltogaster
45 females, each carrying one Peltogaster
3 females, each carrying two Peltogaster
1 female, carrying three Peltogaster

The largest parasite obtained measured $21 \times 12$ mm, the average size being about $13 \times 5$ mm.

In many instances the Rhizocephalan was itself parasitized by another crustacean, one of the Epicaridea, *Liriopsis pygmaea* (Rathke). This isopod hyperparasite is new to American waters, but has been known as occurring on the same host along the coast of Northern Europe.

There are only two species of hermit crabs commonly found in Frenchmans Bay, the *P. pubescens* already mentioned and *P. acadianus* Benedict. Both occur on hard bottoms from near low water to 90 feet, with the former more common toward the outer bay and on the open coast, the latter more prevalent in the inner bay. It is significant that none of the 26 males and 46 females of *P. acadianus* which were examined, a goodly number from the same collecting grounds that yielded parasitized *P. pubescens,* showed any evidence of *Peltogaster.*

Abundant material to elucidate the embryonic development and larval stages of *Peltogaster,* the anatomy and life history of the imperfectly known *Liriopsis* and the effect of these parasites on their

[3] H. Freed, C. F. Jordan and D. Eckhoff, *Jour. Ia. State Med. Soc.,* 27: 425–426, 1937.

[4] G. F. Ferris, personal communication, 1937.

[1] A. S. Packard, *Mem. Bost. Soc. Nat. Hist.,* v. I, p. 295, 1866.

[2] S. I. Smith, *Proc. U. S. Nat. Mus.,* v. 6, p. 222, 1884.

hosts has been collected and will be reported on elsewhere.

EDWARD G. REINHARD
UNIVERSITY OF SCRANTON AND
UNIVERSITY OF MAINE MARINE LABORATORY

## NOMENCLATURE OF GONAD-STIMULATING HORMONES OF PLACENTAL ORIGIN

WE have recently obtained evidence[1] indicating that the rat may be added to a growing list of mammals whose foetal placentae secrete some type of gonad-stimulating hormone. By combining the evidence which has been accumulated from the horse, human being, monkey, chimpanzee and rat[2] it becomes apparent that the natural function of these chorionic secretions is to prolong corpus luteum function during pregnancy, and there is indirect evidence that a similar mechanism is operative in the mouse, rabbit and hamster.[3] This concept has been obscured, however, by the fact that when administered to foreign species, the known substances display great differences in the type of gonadal response which they produce.

These gonadotropic substances which arise from or are associated with the products of pregnancy are known by terms that in most cases are ambiguous and unduly cumbersome. Certainly the policy of using the name of a body fluid to designate a hormone, as for instance "pregnant mare serum" or "the urine of pregnant women," etc., is an example in loose terminology. It seems to us that in view of the fact that these hormones have a common tissue source and exercise a homologous function, the introduction of a generic term would conform to the facts and afford a satisfactory basis for a sound nomenclature.

We therefore propose that the term *cyonin* (Gr. kuo – pregnancy + hormone + protein) be applied to all those hormones of chorionic origin and of protein nature which act to sustain a female sex hormone balance favorable to the maintenance of pregnancy. This word used in conjunction with the name of the animal in which the hormone occurs would apply to any mammals where such a substance might exist. Thus "human cyonin" would replace such terms as "pregnancy urine," "pregnancy prolan" and "anterior-pituitary-like hormone" and "equine cyonin" such terms as "pregnant mare serum" and "endometrial scrapings of the mare," while "murine cyonin" would apply to the recently described placental hormone of the rat. Should more than one hormone be active in a given species, then qualifying terms may be added.

E. B. ASTWOOD,
*Rockefeller Foundation fellow in the Natural Sciences*
R. O. GREEP
BIOLOGICAL LABORATORIES,
HARVARD UNIVERSITY

# SCIENTIFIC BOOKS

## CRYSTAL PHYSICS

*A Text-book on Crystal Physics.* By W. A. WOOSTER. Cambridge: At the University Press; New York: The Macmillan Company. xxii + 295 pp., 108 diagrams, $4.00.

IT seems that ever since Laue's discovery of x-ray diffraction crystallographers have been too busy to present an up-to-date treatment of those physical properties of crystals which are determined by microscopic rather than molecular symmetry. The experimental physicist and engineer interested in such properties as elasticity and piezoelectricity had to refer to the authoritative but cumbersome "Lehrbuch der Kristallphysik" by Woldemar Voigt, which was published in 1910 and was never translated into English.

In the foreword to a new printing of Voigt's book in 1928 Professor von Laue stated that the phenomenological theory of crystals could be greatly simplified by using the notation for components of higher-order tensors which the general theory of relativity has introduced into physics. He concluded that "whoever wants to make an improvement in that direction will have to write an entirely new book. But who among present-day physicists would delve into this subject with as deep an affection as W. Voigt?"

Dr. W. A. Wooster, of the Department of Mineralogy at the University of Cambridge, has finally taken up the challenge. He can be assured of the grateful interest of physicists and metallurgists as well as crystallographers and mineralogists. The fact that Wooster's book is very modest compared to Voigt's both in volume and in price will increase its appeal. The book is intended primarily as a text-book for students at universities, and presupposes "a knowledge of the elements of physics, mathematics and crystallography." "A two-fold object has been kept in view

[1] E. B. Astwood and R. O. Greep, *Proc. Soc. Exp. Biol. and Med.*, 38: 713, 1938.

[2] H. H. Cole and G. H. Hart, *Am. Jour. Physiol.*, 93: 57, 1930; J. S. L. Browne and E. M. Venning, *Lancet*, 2: 1507, 1936; *Am. Jour. Physiol.*, 123: 26, 1938; R. E. Kirsch, *Am. Jour. Physiol.*, 122: 86, 1938.

[3] W. H. Newton, *Jour. Physiol.*, 84: 196, 1935; G. P. Heckel and W. M. Allen, SCIENCE, 87: 302, 1938; M. Klein, *Arch. Anat. Micr.*, 31: 397, 1935, *Arch. d'Anat. d'Histol. et d'Embryol.*, 18: 1, 1934 and *Proc. Roy. Soc.*, B. 125: 348, 1938.