A Study of the Variations in the Number of Grooves upon the Shells of Pecten irradians (Lam.): By FRANK E. LUTZ.

The material for this study was gathered from East Beach, Northport Bay, L. I., during the scallop season of 1899–1900. The Beach is an extremely well-protected one in an almost land-locked harbor. The results given by a count of five hundred specimens of each valve were as follows:

Lower valve.—Average = 17.456 ± 0.022; Standard Deviation = 0.726 ± 0.015; Coefficient of Variability = $4.163\% \pm 0.888\%$.

Upper valve.—Average = 17.110 ± 0.027; Standard Deviation = 0.922 ± 0.019; Coefficient of Variability = $5.388\% \pm 0.115\%$.

The curves obtained in both cases were nearly normal—that of the lower valve approaching the closer. The shells show the least variability of any Pectens yet studied.

Statistical Studies on Sand Fleas: By MABEL E. SMALLWOOD.

Five hundred sand fleas (Talorchestia), apparently adult, were gathered from the Sand Spit at Cold Spring Harbor. They ranged in length from 15 mm. to 27.5 mm. The length of the antennæ ranged from 5.5 mm. to 24.4 mm., the average was 13.01 mm. $\pm$ 0.14 mm. and the standard deviation was 4.67. Attempts to fit a theoretical unimodal curve were unsuccessful. From inspection of the distribution of frequencies it seems probable that the observed curve is multimodal with two principal modes placed so near together that their distinctness is hidden, and that these two modes correspond to two moultings. The length of the tentacle is proportionately much longer in the larger individuals and it seems probable that the two recognized species—*T. megalopthalma* and *T. longicornis* are merely two different moults of the same species. Breeding experiments are now in progress to test this conclusion.

Pedigree Mouse Breeding: By C. B. DAVENPORT.

Quantitative data are being collected from a colony of fifty mice of different races concerning inheritance of color and other measurable characteristics. Especially noteworthy are the relative prepotency of different races, reversion, the skipping of a generation in inheritance, the *localization* of white patches and of the other parental color-markings on particular parts of the body of the offspring. The results are not yet ready for publication.

C. B. DAVENPORT.

COLD SPRING HARBOR, L. I.,
August, 1900.

SCIENTIFIC BOOKS.

Tarr and McMurry's Geographies. First Book—Home Geography and the Earth as a Whole. Pp. xiii + 279. Second Book—North America, with an especial full treatment of the United States and its dependencies. By RALPH S. TARR and FRANK M. MCMURRY. New York, Macmillan. 1900. Pp. xviii + 469.

The first volume is a disappointment. The authors call it 'a radical innovation,' but the claim does not seem well founded. Apparently they have meant to make the Home Geography and the maps the *features*.

Home Geography is a misnomer for the book. The idea that the child ought to begin with the study of forms about him is good, but not new, and the idea is not realized in this volume. A few sentences connect hills and valleys and soils with environment; the mountains are said to look like clouds on the horizon. The rest is descriptive and not Home Geography at all.

Suggestions for further home study are appended to the chapters, 8 or 10 pages in the 280, but they are subordinate and will be neglected by most teachers as such, especially as teachers are still untrained in outdoor work.

For instance, the first suggestion is, "Find a place where men are digging a ditch or cellar, to see how the dirt looks below the surface"—an admirable thing to do, but the inertia of the

ages is against its realization. The children will not do that part of the work unless it is talked of in class and the teacher cannot make anything of it unless she goes and does the work herself. She will not go without stronger urgings than these footnote-like suggestions. There is no evidence in this book that the authors have ever tried to teach children to look about them, and it does not appear that teachers trained in books only will be inspired by this one to begin outdoor studies for themselves.

Putting aside the pretence of basing the book on home study, the introduction on Physical Geography is good, though Frye is a predecessor in that line, and a worthy one.

The portion of the volume that treats of the United States is interesting and admirable, brightened continually by bits of realistic description from personal knowledge that are very effective. The pictures here, too, are admirable, for instance, the cowboy and horse at page 182.

The basing of descriptions on Physiography might be better. Thus in accounting for the greatness of New York City the hollow across the Appalachians in which the Mohawk flows is not mentioned and the real connection of New York with the interior not pointed out. For anything pointed out in the book the Mohawk might enter the Hudson by a narrow cañon. Yet canal and railroads are but utilizations of the open valley. Again, 'sinking of the land' cannot be bluntly stated to children as an intelligent reason for the embayed coast. The idea is one they have difficulty in grasping with much explanation, and to simplify by omitting explanation is unsatisfactory. So, too, cross-sections are used to explain mountain building without elucidation, as in Fig. 90, called a valley sliced through. Apart from the careless drawing of the diagram it is likely to remain a queer picture until the pupils' minds are prepared for it. The idea is yet geometric and even grown teachers have considerable trouble in understanding it on first acquaintance. Several pages are devoted to 'Reasons why Philadelphia is a great City,' and after reading them one is inclined to ask: 'Well, why?' The text does not make it clear why Trenton, for instance, did not take the greater growth.

The geography is constantly connected with history and this is done with much judgment. In describing Turkey a word might have been devoted to the presence of the Turks in Europe. Reference to p. 271 for height of the Spanish plateau (p. 230) fails to obtain information. Manitoba, described in the text is not on any of the maps. Under caravans (p. 234) a good opportunity was passed to show why camels travel in groups. The Manila house, p. 253, should be compared with the similar houses in the West Indies. If the Chinamen in this country are worth mentioning and their exclusion of foreigners from their territory, surely it was in order to note the present restrictions placed on their immigration here by our government. On p. 201 the impression is likely to be obtained that Spanish is spoken in Brazil and at 205 that Lima, eight miles from the Pacific, is an interior city.

The second part of the 'innovation' in this volume is in maps which by their small size allow the volumes to take the handy duodecimo size, 'unimportant names' being excluded. Comparison is challenged in the statement of belief that the 'maps are the best thus far printed in an American geography.'

Now the small size is no innovation of Tarr and McMurry. Professor Davis adopted it two years ago in his 'Physical Geography' and his long teaching of the adequacy of small maps for many purposes is not unknown to his pupils. Some of the maps here are very good indeed but they hardly surpass some of those in the American Book Company's new geographies, while some of the maps in the present volume are unpardonably bad, *e. g.*, the hemispheres, Fig. 119, Europe in Fig. 120, where simplicity of names is attained by representing Europe's chief cities as London, Paris, Berlin, St. Petersburg, Constantinople and Gibraltar (!). The two-page Europe, Fig. 183 has an orography worthy of the middle ages, the Alps being in northern Italy while Pyrenees, Apennines and Carpathians have altogether insignificant relief. The introduction of the map idea by the sketches in Fig. 91 is entirely amiss. The fundamental distinction between pictures and maps is the introduction

of perspective in a picture. But the pretended views of Fig. 91 are not views at all but maps differently colored. The Nova Scotia St. Lawrence view for instance shows no foreshortening with distances, but the same defect is present in the first sketch. It is an attempt to teach by trickery; for being false maps they cannot convey the idea of what a map really is.

Now that the objections have been stated let me hasten to express a hope that the small size geography has come to stay.

The maps of North America, Fig. 123, and the New England States, Fig. 125, seem to me very beautiful maps, but will Brockton and Haverhill agree that Plymouth is more important in New England geography than they? The make-up of the book is attractive, but it should be much revised before being offered to the schools.

The good features of the volume are developed in the admirable *Second Book*, 'North America.' After occupying a quarter of their space with a hastily written account of general physical geography, the authors present a splendid picture of the varied life and industries of different parts of this country, profusely illustrated. This portion of the book is admirable. Where older or briefer books have contented themselves with stating occupations and products, Tarr and McMurray describe industries so vividly and realistically that the interest is absorbing. Professor Tarr's books make 'easy reading,' and this one is no exception. It is to be hoped the use of the volume will be widespread. The teacher's part will be easy. History and industry are both referred to a geographic basis.

Each volume is closed by statistical tables and a pronouncing vocabulary. The latter would be more valuable did it not attempt a closeness of sound reproduction that demands special knowledge of languages and sounds for proper handling. Some inconsistencies and mispronunciations result. Accent and sounds of Spanish words need special revision. *Tuscon* for Tucson is the only misprint noted in the two volumes though a number of errors in the pronunciation are very likely chargeable to the printer. The maps are admirable apart from the hemispheres and Mercator repeated from the First Book.

MARK S. W. JEFFERSON.

Wireless Telegraphy and Hertzian Waves. By S. R. BOTTONE. Whittaker & Co., London. Cloth. Pp. 116. 35 illustrations.

This little book contains a brief account of the phenomena of Hertzian waves and of the development of the system of transmitting signals known as wireless telegraphy. The first chapter is intended for readers who are not familiar with even the more elementary ideas concerning electrical phenomena. The second chapter gives a brief account of the historical development of wireless telegraphy, and the next chapter on Hertzian waves describes in a very simple manner the methods of generating these waves and some of the methods of detecting them, especially those employing the coherer. The chapter on constructional details, which comprises nearly half the book, contains directions for making in an inexpensive way the apparatus required for experiments in the field of wireless telegraphy.

The comparison which the author makes between the action of a coherer and the action of iron filings in a helix through which an electrical current is passing is rather a misleading one, and the impression is given that it is necessary to have the coherer circuit carefully tuned to the transmitting circuit in order to have the coherer respond. Otherwise for a simple presentation of so difficult a subject the book contains very few misleading statements.

F. L. T.

SCIENTIFIC JOURNALS AND ARTICLES.

IN the September number of *The American Journal of Physiology* J. Van Denburgh and O. B. Wright present a carefully prepared account of their experiments 'On the physiological action of the poisonous secretion of the Gila Monster (*Heloderma suspectum*).' They find that the poison is essentially like the various snake venoms in its effects. The rate of respiration, the activity of the heart, the irritability of the sensory apparatus, the rapidity of coagulation of the blood, all suffer first an increase, and later a retardation with a gradual total loss of function. This primary quickening and secondary paralysis is not seen in the vasomotor center; instead, the poison causes immediately a great fall in blood pressure due to