

faces are evidently rubbed on one another and thus triturate the substance of the food pellet, only small portions of which are ingested at a time from the trophothylax. In all Pseudomyrmine larvæ and in many larvæ of the other subfamilies, except the Dorylinæ and Cerapachyinæ, the trophorhinium is beautifully developed, although in many ants (Ponerinæ) it must be used for comminuting parts of insects given directly to the larvæ by the workers. In its development the trophorhinium bears a strange resemblance to the stridulatory organs of the petiole and postpetiole of many adult ants. It may, in fact, function also as a stridulatory organ, when the food supply is exhausted, and thus apprise the worker nurses of the larva's hunger. Many ant-larvæ, notably those of the Ectatommiine Ponerinæ and of most genera of Formicinæ, also have elaborate but coarser stridulatory surfaces on the mandibles, so that the larva may be able to produce a variety of sounds and therefore communicate to the nurses more than one need or craving.

*On correlation of shape and station in fresh water mussels:* A. E. ORTMANN, Ph.D., Sc.D., curator of invertebrate zoology, Carnegie Museum, Pittsburgh. Various observers have noticed that freshwater mussels differ in shape according to the localities from which they come, and that, generally speaking, flat or compressed shells are found in the smaller streams, more swollen shells in the larger ones. But these observations have been rather vague and indefinite. The present paper is devoted to the demonstration of this fact by careful measurements and their tabulation on the hand of abundant material from a great number of localities, and it has been found, indeed, that for certain species, such a law does exist, according to which more swollen specimens are found downstream, in the larger rivers, more compressed specimens more upstream, and that in the intermediate stretches of a river, these extremes are connected by gradual transitions.

*Evolution principles deduced from a study of the even-toed Ungulates, known as Titanotheres:* HENRY FAIRFIELD OSBORN, Sc.D., LL.D., research professor of zoology, Columbia University.

*The Astropotheria:* WILLIAM B. SCOTT, Sc.D., LL.D., professor of geology, Princeton University.

*The middle Cambrian beds at Manuels, Newfoundland, and their relations:* B. F. HOWELL, JR., B.S., instructor in geology, Princeton University. (Introduced by Professor W. B. Scott.) The beds of Middle Cambrian age at Manuels, near St.

Johns, southeastern Newfoundland, are part of a once widespread sheet of marine sediments, deposited millions of years ago off the shore of an ancient continent, which probably stretched across what is now the North Atlantic Ocean and for hundreds of thousands of years formed a land bridge between such parts of North America and Europe as were then above the sea. These beds are of special scientific interest because they contain large numbers of unusually well-preserved fossils, which prove that the creatures that swarmed in the waters then covering much of what is now New England, southeastern Canada and southeastern Newfoundland were of practically the same sort as those living in the seas which at the same period washed over many parts of Scandinavia and the British Isles. North America has probably been joined to Europe in this way several times in the geologic past, so that the animals living in the coastal waters could spread from the one hemisphere to the other; but it is seldom that geologists discover such clear evidence of one of these old connections as that which is presented by the Manuels fossils.

*The Michigan meteor of November 26, 1919. Also the glacial anticyclone and the blizzard in relation to the domed surface of continental glaciers:* WILLIAM H. HOBBS, D.Sc., Ph.D., professor of geology, University of Michigan.

On Saturday evening the annual dinner of the society was held at the Bellevue Stratford Hotel and was largely attended, the following toasts being responded to:

*The memory of Franklin:* HON. OSCAR S. STRAUS.

*Our universities:* DR. JOHN M. CLARKE.

*Our sister societies:* DR. HARVEY W. WILEY.

*The American Philosophical Society:* PROFESSOR LESLIE W. MILLER.

ARTHUR W. GOODSPEED

---

## SCIENCE

A Weekly Journal devoted to the Advancement of Science, publishing the official notices and proceedings of the American Association for the Advancement of Science

Published every Friday by

**THE SCIENCE PRESS**  
LANCASTER, PA. GARRISON, N. Y.  
NEW YORK, N. Y.

Entered in the post-office at Lancaster, Pa., as second class matter