

migratoria migratorioides phase *gregaria* Reh. and Frm.) in the campaigns, from May 9, 1932, to July 7, 1933, and the present, that the swarms and individuals have a definite course on motion.

As a general rule the path of flight of the whole swarm is in a counter-clockwise direction. In other words, if the swarm is heading north at one place a little distance farther north the swarm will have deflected and will be heading in a northwesterly course; and if the swarm has been noticed heading on southerly course it may be expected that the swarm will be heading on a southeasterly course a little distance farther south. This counter-clockwise course is maintained at normal atmospheric conditions and as long as no temporary impediment is encountered on its flight. With head or tail winds the insects seem to be blown off their course in all directions. Also where natural barriers occur, like mountain ranges that are quite high, the chances are that the swarms will have to deflect and find a path of least resistance until it shall have again gained an open course.

The writer also has noticed that the individual of a swarm flies in a general counter-clockwise circular course. That is, each individual, within the swarm on the wing, flies counter-clockwise and the whole swarm takes a counter-clockwise course.

Because of these facts the writer has been able to prognosticate locust movements to a fair degree.

These are observations that the writer has noted of this winged pest in the Philippines. It would be interesting to know if persons who have had anything to do with locusts have ever noticed or noted the paths of flight of this insect singly and in swarm.

The writer suspects that in the northern hemisphere the paths of flight of locust swarms and individuals within the swarm are counter-clockwise, while those of the southern hemisphere are clock-wise.

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UPPER DEVONIAN SPONGES

THE Carnegie Museum has recently acquired a very large series of Upper Devonian sponges of the family Dictyospongidae. The collection, which contains over 5,000 specimens, including 85 types, was made in New York and in Pennsylvania by the late Edwin Bradford Hall, of Wellsville, N. Y. The types were described by Professor James Hall and Dr. John M. Clarke in Memoir II (1898) of the New York State Museum. However, a large part of the collection had never been cleaned or prepared for identification and this work was carried on during the past year. Due to the excellence of some of the cleaned material, it may prove advisable to revise several genera and species that have not been clearly understood. These sponges will no doubt prove to be good index fossils in determining the stratigraphy of the Upper Devonian in New York and in Pennsylvania.

The writer would very much like to hear of any other collections of Upper Devonian sponges of this family, especially of any collected since 1900, or of any new localities for them which have been discovered by contemporary collectors.

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A CORRECTION

IN my review of Professor Pearce's book, "The Migrations of Animals from Sea to Land,"¹ I questioned the statement that "most species of salmon die after spawning." Such doubt, however, appears to be unjustified, for the adults of the five Pacific species of *Oncorhynchus* do not return to the ocean after their upstream reproductive migration. Only to the Atlantic salmon (*Salmo salar*), the two land-locked forms (*sebago* and *ouananiche*) and the steelhead salmon (*gairdnerii*) of the Columbia River, etc., would the objection apply.

ROBERT CUSHMAN MURPHY

SCIENTIFIC BOOKS

CRANIAL MUSCLES OF VERTEBRATES

The Cranial Muscles of Vertebrates. By F. H. EDGEWORTH. Cambridge: at the University Press. New York: The Macmillan Company. 1935. \$30.00.

THERE is doubtless much to be said for the short article favored by editors of current journals, the short article which deals with some illustration of scientific thought torn from its context, or, more deplorably still, penned by an author whose thought has no context. But the day of the monograph will cer-

tainly return when donors of funds for research learn that no research is complete without adequate presentation. "Good form," wrote Gracian, "supplies everything, . . . sweetening the truth, . . . and a little manner is the thief of the heart."

This monograph by a veteran in comparative myology is gracious in form and sufficiently spacious in presentation to convey that feeling of confidence in the reader, lacking which no author can hope to make his contribution truly effective. Without prodigality

¹ SCIENCE, June 5, 1936, pp. 553-554.