phyllites, Neuropteris, Alethopteris, Megalopteris, Pecopteris, Whittleseya and *Sigillaria.*

David White

PROFESSOR PUNNETT'S ERROR

In Professor Punnett's admirable little book, entitled "Mendelism," there occurs an error of definition that ought not to go unnoticed. This error, which runs through the whole book, begins on page 2, where may be found this statement: "Among animals the female contributes the ovum and the male the spermatozoon; among plants the corresponding cells are the ovules and pollen grains."

The last half of the quoted sentence contains three distinct errors: (1) Half of the plant kingdom possesses no pollen grains nor ovules, yet its members have parts that correspond with the ova and spermatozoa of animals; (2) the ovules and pollen grains are not *cells* but each is a cell complex; (3) it is a gross mistake to regard the pollen grains and ovules of plants as corresponding with the spermatozoa and ova of animals.

The first two mistakes might be passed over; but the third, in a book that is written for the reading public, is unfortunate and should be corrected in the next edition. The pollen grain is multicellular and the ovule is multicellular. The genetic cells of higher plants are produced in these bodies. It is as correct to call the testis of an animal a gamete as to call a pollen grain a gamete. The terminology of the genetic cells in plants need offer no difficulty to the zoologist. If he will consult the literature, or his botanical friends, he will find that, besides using the term *gamete* for the conjugating cells of both plants and animals, he may use *ovum* and *spermatozoon* for plants as well as for animals.

F. C. Newcombe

PHENOMENA OF FORKED LIGHTNING

As pointed out in a recent paper in Science, September 1, the negative end of a lightning discharge is forked. When visible we call it forked lightning. When such a system of drainage channels penetrates a shower of negatively charged drops, great differences in potential between drops not far removed from each other must be created. Before the flash the drops have approximately equal potentials. They then repel each other. Drops having radii of one mm. only need to be charged to a potential of 0.0031 volt in order that their repulsion for each other may balance their gravitational attraction.

As soon as the flash occurs these drops attract each other. They coalesce, and a brief dash of large drops of rain follows.

Francis E. Nipher

SCIENTIFIC BOOKS

A Study of Chiriquian Antiquities. By George Grant MacCurdy. Memoirs of the Connecticut Academy of Arts and Sciences, Vol. III., March, 1911. New Haven, Conn. Pp. 249, 384 text figures, 49 plates.

In a beautiful volume Dr. MacCurdy has given us the fruits of a long and patient investigation of the excellent collection of antiquities from Chiriqui in the Museum of Yale University. Not too much praise can be given to the painstaking examination and clear description of the long series of specimens, to the careful grouping of the material, which makes it possible for the student to master the wealth of new material with comparative ease. The author's description is about the same as that given by Holmes, but with a few modifications in terminology and grouping. Together with Professor Putnam's paper on conventionalism in ancient American art, and Professor Holmes's earlier description of ancient art of the province of Chiriqui, we have here material that needs only the additional researches of the field investigator to give us a clear picture of the archeology of a part of the Isthmian region. It is fortunate that, for a comparison of cultural types, the archeologist has at his disposal the two careful investigations by Dr. Hartman on the eastern and western parts of Costa Rica.

The illustrations in Dr. MacCurdy's volume are of the excellence of all the work of Mr. Rudolf Weber, whose illustrations of the publications of the Heye Expedition and for-