active audience of any given lecture. The number is, in general, small. This most amusing and occasionally enlightening book contains generally useful introductions to the subjects mentioned.

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Origin of the Angiosperms

The Spores and Pollen of the Potomac Group of Maryland. Gilbert J. Brenner. Department of Geology, Mines, and Water Resources, Baltimore, Md., 1963. ix + 215 pp. Illus. Paper, $2.50; cloth, $3.50.

This volume represents the first comprehensive work on Lower Cretaceous spores and pollen published in the United States. Brenner describes all the pollen, spores, and algae (130 forms) that he found in the Potomac Group; the work is based on a study of 43 rock samples from three stratigraphic sections, two of them from bore holes and one from surface exposures.

The most significant finding in Brenner's publication concerns the time when flowering plants first evolved. Rocks of the Potomac Group in Maryland compose the classic American Lower Cretaceous section, in which the entrance of angiosperms in the fossil record is documented. In 1911 E. W. Berry had reported that, of the three rocks units of the Potomac Group, only the uppermost (the Patapsco Formation) contained unequivocal angiosperm fossils, and these appeared at the base of that unit and above. From the middle and lowest formations (the Arundel and the Patuxent), Berry recorded a few "thoroughly questionable angiosperms" associated with a rich flora of lower plants. Brenner's pollen evidence corroborates, in a convincing way, Berry's conclusions from fossil leaves. He found that undoubted (tricolpate) angiosperm pollen is present throughout the Patapsco Formation in three sections and is absent from the middle and lowest formations of the Potomac Group. In addition, Brenner found a few monosulcate pollen grains throughout the Potomac Group; monosulcate pollen is known to occur in living Angiospermae as well as in Gymnospermae.

Brenner summarizes the known leaf and pollen record of angiosperm occurrences in the Lower Cretaceous, and he concludes that the earliest unequivocal angiosperm leaves and pollen occur in strata of Albian age (late Early Cretaceous) in Portugal, northern Europe, and in the New World. This conclusion is interesting in the light of current theories that angiosperms had their origin during the Paleozoic. Those arguments would be more convincing if they were based on undoubted fossil evidence.

Happily, this volume takes careful account of existing valid names for fossil pollen and spores and follows the International Code of Botanical Nomenclature. (Sadly, not as much can be said for every American work on fossil pollen.)

In my opinion, the stratigraphic and taxonomic work is well done. A minor objection is Brenner's usage of the term *microflora* to mean an assemblage of pollen and spores. The term refers to either a small flora or entire microscopic plants; it should not be applied to the microscopic parts of vascular plants.

In summary, the volume is a significant contribution to the literature on pollen and spores in this country.

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History of Science

The History of Sciences in India. Proceedings of the symposium held at Calcutta, August 1961. P. Maheshwari, Ed. National Institute of Sciences of India, New Delhi, 1963. viii + 343 pp. Illus. Paper, R. 13.75.

The essays in this symposium are subdivided into four main sections: (i) Social and International Relations in the Development of Sciences (teaching, methodology, and the like in the history of sciences), (ii) Agriculture and Chemistry, (iii) Biology, Health, and Medicine, and (iv) Astronomy, Mathematics, and Earth Sciences. Most of the papers in the first section are of a general nature, but this is the only factor that binds them together, for they vary considerably in particular focus. N. K. Bose, for example, has written articles on the classification of soils and on the classification of temples; S. N. Sen has chosen the study of the transmission of scientific ideas between India and foreign countries in ancient and medieval times; V. R. Shastry discusses science in the Vedas; and A. Rahman, in addition to collaborating on other articles, has written on the theoretical aspects of the history of science. There are 12 papers in the first section.

Of the four papers in the second section, three are devoted to the history of agriculture in ancient India and the fourth, by B. V. Subbarayappa, to Indian atomism. The third section contains 12 papers that range from the need for the creation of medico-historical museums to essays on the history of botany in early India and discussions of various phases of the growth of medicine and pharmacy. Of the half dozen papers in the fourth section, four are devoted to the history of mathematics, including S. Chakrabarti's interesting comparative essay on the origins of the ideas of mathematical analysis (a discussion of Archimedes and Bhaskara). The two remaining essays are devoted to geography and aeronautics in ancient India.

In general, this volume represents the growing concern in India for an understanding of the history of science as part of its own national history. While the diversity of the collection testifies to the awareness of the problems involved in this undertaking, the irregular quality of the contributions highlights the limited nature of the solutions offered. The task is enormous, but it is under way, at least for the ancient and medieval periods. It can only be warmly encouraged.

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Conference Report

Advance in Mass Spectrometry. Proceedings of a conference held at Oxford in September 1961. R. M. Elliott, Ed. Pergamon, London; Macmillan, New York, 1963. xviii + 628 pp. Illus. $20.

This volume contains the proceedings (44 papers) of a conference on mass spectroscopy and some of its applications. Although the conference, which was attended by many authorities in the field, was sponsored by British and American mass spectroscopists, it can properly be called international, for authorities from other countries contributed many papers. The papers are distributed among five general sections: