tions on only two kinetically significant states. Perhaps many regulatory enzymes, including some of bewildering conformational multiplicity, will prove to be systems of essentially two or a few states.

Naturalists of the past

from a Correspondent

The Society for the Bibliography of Natural History held an Easter Meeting at the Linnean Society on April 3 and 4.

SINCE natural history is a descriptive science firmly rooted in history the researcher in the field has often to consult the older literature and unpublished manuscripts. The four sessions into which the meeting was divided reflected some of the diverse interests of natural history: manuscripts, exploration, descriptive bibliography and social history.

Roy Porter of Churchill College, Cambridge, considered William Hobbs's unpublished *The Earth Generated and Anatomized,* a recent acquisition of the British Museum (Natural History). Practically all that is known about Hobbs is that at one stage of his life, in the late seventeenth or early eighteenth century, he was a government official employed at Weymouth harbour. Although he seems never to have published anything he certainly exchanged ideas with other men of science about the theory of the Earth. Opposed to the Woodwardian school that the flood was an agency of fossil distribution, his theories gave a greater prominence to the role of tides in the creation of the Earth. Mr Porter will publish this manuscript after which some reassessment of late seventeenth and early eighteenth century theories of the Earth will be necessary.

The most important purchase made by the Natural History Museum in recent years is the large collection of Sowerby papers. Various members of this talented family played a significant part in the development of British natural history and engraving during the eighteenth and nineteenth centuries by writing or illustrating over one hundred books on botany, zoology, mineralogy and palaeontology. R. J. Cleevely of the Natural History Museum gave a résumé of the material which is as yet an untapped source of information on the production of scientific books in the last century. The Backhouses of Darlington and York, well-known as bankers and nurserymen, were also seminal figures in the growth of natural history studies in the north of England during the eighteenth and nineteenth centuries. Colin Simms of the York Museum where the Backhouse collections of plants, bones and bird skins are housed reviewed their work as naturalists. J. Pingree discussed manuscripts at Imperial College, including the papers of T. H. Huxley and Sir A. C. Ramsay.

Michael Hoare of the Australian Academy of Science argued for a more important status in the history of science and letters for Johann Reinhold Forster (1729–98), the controversial naturalist of Captain James Cook's second voyage (1772–75). Phyllis Edwards of the Natural History Museum talked about the botanist, Robert Brown, and the collections of plants, animals and minerals he made during Matthew Flinders's voyage to Australia (1801–05). Peter Whitehead, also of the Natural History Museum, described Piso and Marcgrave's *Historia naturalis Brasiliae* (1648), an important early work on the botany, zoology, medicine and ethnology of Brazil. He is still pursuing his search for the missing original drawings on which the woodcuts in this work were based. Natural history has its share of megalomaniacs and frustrated scientists. G. C. Wallich, naturalist on HMS Bulldog in 1860, became embittered through his vain endeavours to achieve recognition for his scientific work. Antony Rice of the Institute of Oceanographic Sciences in a paper written in conjunction with Dr Burstyn and Dr A. Jones recalled some of the scientific controversies in which Wallich got involved.

When the same plant or animal has been discovered and named independently by different naturalists it is necessary to determine who named it first. Descriptive bibliography, that is the study of books as physical objects, is a discipline frequently called upon to resolve such taxonomic problems by determining dates of publication. John Thackray of the Geological Museum opened the third session with an examination of James Parkinson's *Organic Remains of a Former World* (1804–11) and its various editions and issues. George Washington Sleeper's *Shall we have Common Sense* was found among his papers after his death in 1903. It bore the date 1849 and seemed to anticipate Darwinian theories. A. R. Wallace, convinced of its authenticity, communicated it to the Linnean Society and Professor E. B. Poulton made it the subject of his presidential addresses to the Linnean Society in 1913 and 1914. John Collins of Sotheby and Company demonstrated how the application of bibliographical methods proved conclusively that this pamphlet was a forgery. Since illustrations are an integral part of many natural history books it is rather surprising that their biographical description still remains imprecise. Gavin Bridson, the Linnean Society's Librarian, maintained that a greater knowledge of graphic reproduction processes is required before principles can be formulated for a more exact description of plates in books. Mr Michael Walpole examined textual and plate variations in the editions of William Curtis's *Flora Londinensis.*

David Allen of the Science Research Council traced a pattern of social development in British natural history over the past three hundred years, showing the interaction of natural history and social history. Phillip Lowe of University College, London complemented Mr Allen's thesis with a review of the relationship between amateurs and professionals in the development of science, taking as a case history the emergence of ecology as a scientific discipline. M. McNeil of Darwin College, Cambridge concluded the session with a critique of Erasmus Darwin, who formed a link between natural history, medicine and literature.

The rise of palaeobiology

from A. Hallam

MOST geologists still regard palaeontology as the handmaiden of stratigraphy. That fossils are invaluable in the establishment of a relative time scale was recognised by early last century, and concerns as practical in their objectives as oil companies have felt the need to employ a variety of micropalaeontologists to correlate their boreholes. There is more, however, to stratigraphy than correlation and dating. In its broader sense it is concerned with the interpretation of ancient environments and here again fossils are of great utility. A fossil reef coral, for instance, can tell us much about the ambient sea water temperature, salinity and depth.

The term palaeoecology has been widely used to embrace a variety of disciplines aimed at learning more about environments in the past, such as analysis of the processes affecting fossilisable organisms between death and burial, or the application of knowledge of the tolerances of living organisms to their fossil relatives. The goal in both cases is a geological one and in no proper sense could this sort of work be considered to contribute to our further understanding of biology.

If one attends palaeontology courses in the geology departments of most universities one might be forgiven for failing to appreciate the third great value of fossils. They are the only direct evidence we have of the history of life, of the patterns and rates of large-scale evolution. Palaeontology can in fact