much rolling by water action and heavy striation. The Kentian tradition is very clearly marked in these specimens, which, however, show an advance in technique as they are often made from primitive flake implements exhibiting steep edge-flaking. Rostro-carinates are present in this group.

(3) *Boltonian.* The Boltonian specimens occurred most freely in Bolton and Co.'s brick-field, Ipswich. The prevailing colour of the flints is a rich chestnut brown carrying a well-marked gloss, and they show considerably less signs of rolling and striation than the Bramfordian series. The implemental types are also much more varied and advanced than those of the latter specimens, and comprise rostro-carinates, points, racloirs, scrapers, cores, etc.

(4) *Whittonian.* The Whittonian specimens are a small group, found chiefly in Coe's pits, Bramford, and Bolton and Co.'s brick-field, Whitton, Ipswich. The colour of the majority of the flints is an unusual speckled yellow, and they exhibit very slight signs of rolling and striation. A few rostro-carinates are present in this group, but the greater proportion of the artefacts are racloirs, with one or two scrapers.

(5) *Thoringtonian.* The Thoringtonian specimens equal, approximately, the Boltonian in number, and are found chiefly in the pit at Thorington Hall, Wherstead, near Ipswich, and in the cliffs at Bawdsey, Suffolk. The prevailing colour of the flints is a dense white, or cream, while some of the specimens are patinated blue. The majority of the flints are only slightly rolled and striated, while some are unabraded. Rostro-carinates are rare, while the greater number of the artefacts, which exhibit considerable skill in their manufacture, comprise points, racloirs and scrapers.

(6) *Henleyan.* The Henleyan specimens are a very small group of unpatinated, unabraded, and non-striated artefacts, found chiefly in Bolton and Co.'s brick-field, Ipswich. The predominant type is a skilfully made racloir, and from the condition of these specimens it is legitimate to infer that they were actually made at the site of discovery. No rostro-carinates are present. The titles I have given to these various eolithic industries are based upon the names of the actual pits where the specimens were found, or upon those of the immediate neighbourhood of the excavations, and it is to be hoped that they will pass into general use as have those given to the palæolithic cultures—Chellean, Acheulean, Mousterian, and so on. An examination of the groups of English eoliths must impress unbiased and competent observers as representing a slow but definite evolution of flint implements, and as forming the probable and necessary background to the earliest palæolithic cultures. It has been shown[3] that the eolithic points of the Kentian industry developed into the rostro-carinates, and these into the earliest palæolithic hand axes, and it may well be that the Stone Bed beneath the Norwich Crag in which the latter are found is the geological successor in Norfolk to the Suffolk Bone Bed in which the eoliths occur. The chronological succession of the industries from beneath the Red Crag is irrefutably established by the evidence afforded by the re-flaked specimens, while the difference in technique employed in the various pre-Crag periods seems manifest. I do not think it desirable to place the artefacts found at two superposed occupation-levels in the Red Crag at Foxhall, Suffolk, in the eolithic period. The Crag itself, as distinct from the Suffolk Bone Bed beneath it, is, I think, best regarded as of Early Pleistocene age, and it is possible that the Foxhall specimens are of the same period as those of Group 5 from the base of the Cromer Forest Bed[4] and referable, therefore, to the beginning of lower palæolithic times.

[1] *J. Roy. Anthr. Inst.*, **65** (1935).
[2] I hope to publish a special monograph on the Cantalian industry in the near future.
[3] "The Antiquity of Man in East Anglia" (Camb. Univ. Press).
[4] NATURE, **147**, 530 (1941).

OBITUARIES

Prof. E. Barnes

PROF. EDWARD BARNES, professor of chemistry at the Madras Christian College, died suddenly at the end of May 1941 at the early age of forty-nine. During the past twenty years Barnes had developed a passion for botany and utilized every opportunity for the pursuit of his hobby. He spent most of his holidays making extensive tours in the hills of South India, and even during a stay of a few days in Ceylon, when returning from leave in England, he managed to find a new species of Arisæma. Assisted by his wife, he made a close study of the vegetation in the vicinity of his camps, and this assiduous research led to the discovery of a number of new species of herbaceous plants, all of which were described in either the *Kew Bulletin* or the "Icones Plantarum".

While collecting the majority of the species he encountered, he devoted particular attention to the genera Arisæma (Araceæ), Impatiens (Balsaminaceæ)

and Sonerila (Melastomaceæ). Especially in connexion with the first-named he recorded many observations of interest, including some with reference to their relation to the insects that effect their cross fertilization. Some of his conclusions were published in the *Journal of the Natural History Society of Bombay*.

His herbarium specimens (a considerable number of which, including all the type-specimens, were presented to and are lodged in the Kew Herbarium) are particularly well selected and preserved; many retain their natural colours and some are so prepared that all the floral parts can be seen without further dissection.

Barnes's friends, besides feeling the loss of a good companion, are convinced that botanical science has been robbed of one who would have brought much further knowledge of plant life to light.

C. E. C. FISCHER.

WE regret to announce the following deaths:

Dr. John Ball, technical counsellor to the Survey of Egypt.

Mr. Claude Hutchinson, C.I.E., formerly Imperial bacteriologist, Pusa, lately chief scientific adviser in India to Imperial Chemical Industries, Ltd., on August 2, aged seventy-two.

Mr. C. Pendlebury, senior mathematical master at St. Paul's School during 1877–1910, honorary secretary of the Mathematical Association during 1886–1936, on August 18, aged eighty-seven.

NEWS AND VIEWS

Comenius Tercentenary Commemoration

JAN AMOS KOMENSKY (COMENIUS), the great Czech educational pioneer, author of the "Janua Linguarum", "Didactica Magna", and many other books, paid a visit to England in 1641. His resolute internationalism and his plan of a "Pansophic College" for co-operative scientific research were among the influences leading to the formation of the Royal Society, which, in its first form, the Invisible College, began its meetings in 1649. Unfortunately, the Civil War, and his failure to find in any other country a patron able and willing to carry out his schemes, postponed the realization of his ideas, which he never lived to see.

On October 24, a meeting will be held in the Senate House of the University of Cambridge at which the following discourses will be delivered: President Benes, "Comenius's Plans for Peace Leagues and his Place in History as a Great European"; Mr. Jan Masaryk (Foreign Minister of Czechoslovakia), "Comenius as an Educational Pioneer"; Prof. J. D. Bernal, "Comenius's Visit to England and the Foundation of the Royal Society"; Prof. Ernest Barker, "The Debt of Europe to Comenius and to Czechoslovakia". These, together with contributions from other distinguished scholars, will afterwards appear in the form of a small commemoration volume. Official representatives will, it is expected, be present on behalf of the embassies and Governments o Czechoslovakia, the U.S.S.R., Poland and Yugoslavia, the Board of Education, the Royal Society, the British Council, the Moravian Church (of which Comenius was a bishop), etc. The Tercentenary Committee consists of the Vice-Chancellor of the University of Cambridge, Mr. H. Butterfield, Prof. G. Haloun, Sir William Dampier, Prof. G. R. Owst, Mr. B. W. Downs and Dr. J. Needham, to the last-named of whom, at Caius College, any communications regarding the tercentenary should be addressed.

Photo-Electric Devices for Detecting Incendiary Bombs

THE British Standard Specification (A.R.P. Series) for the performance of photo-electric devices for the detection of incendiary bombs forms one of a series of standards prepared by the British Standards Institution at the request of the Ministry of Home Security (*BS/ARP* 60. British Standards Institution, 28 Victoria Street, London, S.W.1, 6*d*., post paid 8*d*). The alarm is normally intended to be given within or near the premises so equipped for the purpose of warning fire-watcher parties, and is not primarily designed to call the public fire-fighting services or to bring automatic fire-extinguishing equipment into action. The photo-electric devices may be of various types incorporating light-sensitive cells, including (*a*) photo-conductive cells, (*b*) photo-emissive cells, and (*c*) photo-voltaic cells. The alarm device must be battery operated and give an audible signal which may, if desired, be supplemented by a visual signal. The power supply to the alarm circuit must be obtained from a battery the nominal voltage of which shall not be less than 3, and this battery must be used exclusively for the alarm circuit. The methods of carrying out type tests, routine tests and the test after installation are described.

An appendix deals with the photo-electric cells commonly in use, namely, the selenium cell, the alkali cell and the rectifier cell. The term 'photo-electric cell' is sometimes used as a generic term to embrace these three main types of cell, together with all other devices capable of producing changes in an electric circuit by the action of light. It is preferable, however, to distinguish more clearly between the three main types. The selenium cell is the most common example of a class of semi-conductor the ohmic resistance of which is a function of the illumination to which the cell is exposed. Such cells are termed 'photo-conductive cells'. In the alkali cell there is an electron emission across a vacuum or gas-filled space, and such cells are termed 'photo-emissive cells'. When the term 'photo-electric cell' is used in a restricted sense, it usually relates to the photo-emissive class of cell. The rectifier cell belongs to a class which is termed photo-voltaic. Such cells consist of a contact between a metal and a semi-conductor, and one of the most efficient semi-