

of a V-shaped cutting ten feet deep. The channel itself is four feet wide, with a bottom of red earthenware tiles. No conduit of this type had previously been found in this part of Roman Britain. It appears to have gone out of use in the second century A.D. The foundations of the three-roomed Roman building have now been cleared, and show the remarkable and unusually wide doorway, which is seven feet across.

Prehistoric Civilization of Northern France

THE party of archæologists deputed by the Society of Antiquaries of London to carry out archæological investigations in northern France is now at work in Brittany and western Normandy under the direction of Dr. R. E. Mortimer Wheeler. The expedition has been undertaken with the good will of, and under a permit from the French authorities, in accordance with an agreement into which the Society of Antiquaries entered with them last year. This investigation will constitute the major undertaking for the time being of the Society in archæological research in the field, taking the place of the excavation of Maiden Castle, Dorchester, upon which it was engaged, with Dr. Wheeler as its director, for some years. The purpose of the investigation in France is to search for evidence of the cross-channel origin of the civilization of south-western Britain in the later prehistoric period, and more especially of the fortified towns which appear there suddenly in a state of mature development, but of which the source is uncertain. This is a department of investigation in France which French archæologists have left virtually untouched. The programme of the investigators is in the first place to map the distribution of pre-Roman earthworks of the Maiden Castle type in north-western France, and secondly to ascertain by trial excavation on selected sites what cultures went to make up these Continental works. The first centre which has been chosen for excavation is Huelgoat, a well-known site in the pine forest about twenty miles south of Morlaix, where a camp nearly a mile in length is under examination. It is seen to have been built in the first century B.C. on the eve of the Roman conquest of northern France. The rampart, fifteen feet high, is faced with stone and bonded with lacing timbers. The ditch is in part cut out of the granite rock. The search for other sites has progressed so far as to show that the great Wessex fortified sites did not originate in Finistère, though certain smaller fortified enclosures in that department can be paralleled in Cornwall. Investigation will shortly move farther east to a large camp in the neighbourhood of Avranches.

Fungus Diseases of Animals

A NEW journal devoted to the fungus diseases of man and other animals has recently commenced publication (*Mycopathologia*, Den Haag, Dr. W. Junk, 18 Dutch florins per volume, 1, Fasc. 1, 80 pp. May 1938). The publication is international; it is edited in Italy and printed in Holland; the United States provides the first number with several authors, whilst the list of collaborators is long and geo-

graphically extensive. R. Ciferri, director of the Botanical Laboratory of the Faculty of Agriculture in the University of Florence, and P. Redaelli, director of the Institute of Pathological Anatomy in the University of Padua, are the joint editors. They contribute the first paper on "A New Hypothesis on the Nature of *Blastocystis*". This organism shows more affinities with certain algæ than with sporogenous yeasts, and the general biologist will welcome the discovery of a further link between fungi and algæ. Classification of fungi belonging to the genus *Actinomyces* is considered by E. Baldacci of Padua. The rest of the papers in the present number demonstrate the wide scope and outlook of the journal. The papers are all scientific contributions to a little-known section of mycology, and a "Bibliographia Mycopathologia" of references to work published in 1937 adds further utility. The production is excellent, both of type and plates, and the volume should supply a particularly welcome quota of knowledge in Great Britain, where fungal diseases of man are apparently not common enough to provoke research on a large scale.

Advances in Printing Telegraph Technique

IT is shown in a paper by A. E. Thompson, published in *Electrical Communication* of April, that at no period in the history of the telegraph has there been such revolutionary improvements in methods and equipment or such rapid development and expansion in its service to the community as during the last ten years. The progress was initiated by the introduction of teleprinter systems, which by providing instruments requiring no telegraphic skill on the part of the operators have completely changed the outlook of telegraphy and greatly stimulated development in all its branches. Teleprinters are superseding all the older types of machine telegraphic apparatus. Even hand Morse working, which has been the backbone of telegraphy for more than a century, has now been abandoned in the British telegraph service, the bulk of the traffic being handled by Creed teleprinters. Similar developments are taking place in other countries. A description is given of the new Creed No. 10 tape teleprinter. The improvements achieved are trustworthy service at 85 words per minute, reduced costs, quiet operation and reduced size. Maintenance costs have been reduced by evolving mechanisms with a breakdown speed exceeding 100 words per minute. The printer operates continuously for 300 hours without requiring lubrication. Ball-bearings and oil-impregnated bearings as well as sliding surfaces lubricated by means of oil reservoirs are used. This machine can be used by telegraph administrations and private companies as well as by high-speed news and ticker services.

History of Maize-Breeding

IN a recent lecture given at the Michigan State College, Mr. Henry A. Wallace, the United States Secretary of Agriculture, traced the history of maize or corn breeding and pointed out that up to 1890 the farmers of the corn-belt had not been superior to their Indian predecessors as corn breeders, the chief

improvement having been in substituting a later type of maize for the earlier ones grown by the Indians (Spragg Memorial Lectures on Plant Breeding. Eighth Annual Lecture: "Corn Breeding Experience and its probable eventual Effect on the Technique of Livestock Breeding". By Henry A. Wallace. Pp. 6. East Lansing, Mich.: Michigan State College). The application of the genetic methods of Shull and East, that is, inbreeding of strains followed by cross-breeding of particular types, has since greatly increased the yield. In 1938, probably at least fifteen million acres will be planted, yielding 100 million bushels more than if ordinary open-pollinated types were used. It is suggested that similar methods applied to animal breeding (that is, homozygosis followed by controlled heterosis), first to egg production in fowls, then to swine, sheep, dairy cows and finally to beef cattle can produce similar results, and the methods of swine breeding in Denmark are cited. Mr. Wallace concludes that in mankind compulsory sterilization and selection of types under a dictatorship will not bring about the desired eugenic improvement in the human race. A standardized preconception of the perfect man, after the Nazi ideal of an Aryan 'race', is a false eugenic idea which will lead, in the long run, to the failure of eugenic progress.

Mexican Pictographic Manuscript

A DOCUMENT of extreme interest to students of American pre-Columbian history and culture, the Mendoza Codex, now in the Bodleian Library, has been reproduced in facsimile by Mr. J. Cooper Clark, Captain T. A. Joyce providing a foreword. The Mendoza Codex is one of several pictographic manuscripts which have survived. It was prepared by the authority of Don Antonio de Mendoza, who was appointed the first viceroy of New Spain in 1535. The Codex—or rather collection of codices, for there are three—consists of seventy-one folio pages, the pictographs being in colour. The first part is a copy of an old Mexican chronicle, now lost, of the history year by year of the Lords of Tenochtitlan, now Mexico City, and a list of the towns they conquered. It covers from A.D. 1325 until the fall of the Empire in 1521. The second part is a carefully executed copy of the tribute roll to Motecucuma, the Mexican ruler, by upwards of four hundred towns. The original from which this is copied is now in the National Museum of Mexico, and consists of fourteen folios painted on maguey leaves. The third part of the Mendoza Codex is a compilation by the scribe for Mendoza's use, recording the life of a Mexican from day to day from the cradle to the grave. Although some of the pictures were included by Lord Kingsborough in his book on Mexican art a hundred years ago, this valuable manuscript has never before been reproduced in accurate facsimile as a whole. It has now been printed for private publication by Messrs. Waterlow on hand-made Whatman paper, the pictographs being beautifully reproduced in colour. There are three volumes, of which the first contains Mr. Cooper Clark's translation of the Spanish text with commentary, the

second the interpretation of the Nahuatl place-name glyphs, now for the first time rendered in English, and the third volume is the facsimile in colour of the manuscripts. The subscription price of the three volumes is twenty guineas.

Very Low Temperatures

THE issue by the Science Museum of Books 2 and 3, describing the exhibits and outlining the lectures delivered at the special exhibition devoted to this subject in the Science Museum from March until June last year, completes the account of the exhibition. The three books have been edited by Mr. T. C. Crawhall, with the assistance of Dr. O. Kantorowicz for Book 2. The first book, issued at 6*d.*, gives a survey of physical principles and some applications; the second, issued at 2*s.*, deals with the apparatus exhibited for temperature reduction, temperature and pressure measurement, liquefaction and solidification of gases, the properties of the products, their storage and their applications. Included in the methods of cooling is that of demagnetizing a paramagnetic material. The third book, issued at 1*s.* 3*d.*, gives accounts of the development of low-temperature technique, by Prof. M. Travers, the industrial uses of low temperatures, by Messrs. C. G. Bainbridge, J. T. Randall and I. J. Faulkner respectively, and the approach to the absolute zero, by Dr. J. D. Cockroft, Prof. F. Lindeman and Prof. F. Simon respectively. The three books constitute a valuable record of the present position of a subject which promises to have many applications in industry.

Crocodilian Energy

IMPERIAL AIRWAYS inform us that at the end of July, while one of their pilots was taking off in a flying boat at Port Bell on Lake Victoria, a crocodile gave a remarkable display of agility. The flying-boat had just taken to the air when, about forty yards away, a crocodile about nine feet long leapt full length out of the water, clearing the surface with its whole body by about four feet. Apart from its natural history interest, the occurrence was unusual, since, before a flying-boat takes off, the surrounding water is most carefully patrolled to guard against possible obstacles, and the flying-boats operate as far as possible from areas known to be haunted by crocodiles. This unusual air leap of the crocodile is analogous to the leaping of salmon and other fishes, for propulsion is due in both cases to the powerful movements of the tail muscles. The size of the individual, a young individual of a species *Crocodilus niloticus*, which may exceed twenty feet in length, illustrates a characteristic of many animals, that the young are notably more nimble than adults.

Recent Minor Earthquakes

AFTER the first series of shocks between July 5 and 9 (see NATURE of July 30, p. 203), in which buildings were badly cracked in Paliad and Botad though no lives were lost, further tremors have been recorded, and it was reported from Bombay on July 28 that all but the very poorest of inhabitants had deserted the town of Paliad. It is rare to find a

(Continued on p. 351)