and large institutions, where, of course, it may only be borrowed.

Wheeler's lists of the genera and their types (1911 and 1913) were therefore of great value, although incomplete and even more inaccurate than Emery's in the "Genera Insectorum".

The recent publication of Donisthorpe's "List of the Type species of the Genera and Subgenera of the Formicidae" (*Ann. and Mag. Nat. Hist.*, ii, 10, 617, 649, 721; 1943) is therefore an event of considerable importance. For the first time there is an authoritative, complete (so far as is known) and easily obtainable list of the genera and subgenera of ants. Furthermore the tribe, subfamily and also, where it occurs, synonymy of each of the genera listed are given. The type species are listed in each case, together with the type locality.

It is difficult to review such a list without entering into detail which would be out of place here, but which I hope to discuss elsewhere. A few points may, however, be mentioned. The use of the generic name *Lasius* Fabr., a synonym for *Acanthomyops* Mayr (five species of which are found in Great Britain), perpetuated by Wheeler and Emery, should now cease for good and all. Fabricius's name sinks on account of Jurine's earlier one. Ruzsby's subgenus *Lasius* (s.g. of *Lasius* Fabr. *Acanthomyops* Mayr.) also sinks to Morrice and Durrant's *Donisthorpea*. It is nice to see *Crematogaster* Lund for once spelt correctly and not as in Wheeler's "Ants" (1910) and Forel's "Social World of the Ants" (London, 1927) with an 's', namely, *Cremastogaster*, which is meaningless. Emery's mis-spelling of *Chtonolasius* Ruzsby (copied by Donisthorpe in his "British Ants", 1927) has also been corrected.

The function of nomenclature is to aid and simplify the work of the zoologist, not to confuse him and make his task more complex. It is a mechanism for handling the data appertaining to, and not a fundamental part of, biology, and as such the taxonomy of a group should be well-ordered, comprehensible and easily accessible. Donisthorpe is therefore to be congratulated on this attempt to produce order out of chaos and to make accessible that which has been beyond the reach of all but the experienced myrmecologist—in fact, Donisthorpe himself and less than half a dozen others in the world.

B. D. WRAGGE MORLEY.

PELAGIC FORAMINIFERA

WE owe much of our recent knowledge of the biology of the Foraminifera to Dr. E. H. Myers. His new publication* is a peculiarly beautiful example of his work, embracing the complete life-cycle of *Tretomphalus* and its activities observed both in Nature and in cultures. The life-cycle includes an orderly succession of sexual and asexual generations in which two distinct types of individuals and three types of tests are involved. Typically benthonic microspheric (asexual) and megaspheric (sexual) individuals are produced, the latter becoming pelagic prior to the discharge of the gametes. The test of the pelagic phase has a globular terminal chamber, perforated by large pores, and contains a gas-filled float, the gametes passing out of the pores. The zygotes are formed by the fusion of gametes from

different parents, the latter approaching one another and their amoeboid pseudopodia anastomosing—an unusual occurrence in the Foraminifera. This association ensures the fertilization of a maximum number of gametes, which settle on the bottom and produce microspheric tests. So the life-cycle proceeds.

Tretomphalus is shown to be significant only as a convenient category in which to place the pelagic stage of species which are now included in either the genus *Discorbis*, family *Rotaliidae*, or the genus *Cymbaloporetta*, family *Cymbaloporidae*. Much confusion in nomenclature has been caused by the polymorphic nature of these tests, and this work should contribute largely to a more natural classification.

Observations on feeding show that swiftly moving organisms, such as nauplii, ciliates and veligers, are not captured, although these can be utilized as food when crushed and placed in the vicinity of the test. On the other hand, grazing on diatoms and other unicellular algae on the walls of the dish is usual, and inclusions of these can be seen in sections. Similar sections of material from the sea show that the natural food is the microflora both from the water or on the substratum fixed on the surface where the animals live.

Interesting accounts are given of the formation and growth of the tests. Under optimum conditions in cultures maintained at 20° C., about forty-two days are required for an asexually produced individual to form a test consisting of 13–17 chambers.

The illustrations which accompany this paper, both photographs and drawings, are of great beauty and clarity, and special mention should be made of the photograph of dispersal of the juveniles and the disintegration of the empty test of the microspheric individual which produced them: also the figure of the life-cycle of *Tretomphalus bulloides*.

RECENT AMERICAN ARCHAEOLOGY

EUROPEAN archaeologists are too often apt to forget that the prehistoric period continued in many parts of the world, America included, until about the day before yesterday. Moreover, just because the later time limit of the study is so recent, much more evidence can frequently be collected than in the case of the very remote cultures, and thus a picture in greater detail constructed. The fact, then, that Waldo R. Wedel's recent archaeological investigations in Platte and Clay counties, Missouri (United States National Museum, Bull. 183), deal with finds which in western Europe would be classed as post-medieval in date, does not make them any less interesting or less important. The interest and importance of the ruins at Zimbabwe in Southern Rhodesia were not lessened when it was shown that their date was anything but prehistoric in our sense of the word.

Mr. Wedel is concerned with village sites and two kinds of burial mound. He suggests the presence in the area of two different cultures. One (the Renner village site is the type site) shows definite relationships with certain "Northern Elemental Hopewellian Manifestations" such as those found in the Illinois valley and south-western Wisconsin, the other (the Steed-Kisker site is the type station) recalls the Nebraska culture, characteristic of the Missouri River bluffs in eastern Nebraska and south-

* Biology, Ecology and Morphogenesis of a Pelagic Foraminifer. By Earl H. Myers. Stanford University Publications. University Series. Volume IX, Number 1. Biological Sciences. Stanford University Press, 1943.

western Iowa, being a local variant of the late Middle Mississippi culture. The stone-chambered burial mounds containing dolicocephalic remains are classed with the first-named culture, the earth mounds with the latter. Actually, at Steed-Kisker itself the dead were buried in graves and large earth mounds are absent. When contrasting the material culture from the two classes of sites, no very startling difference is observable, but there are distinctions noticeable in the pottery types, as well as in other classes of finds. An appendix on the types of human skeleton collected is written by T. Dale Stewart.

Once again we are dealing with local investigations on the more recent archaeology of America. So much material having survived for this period in the New World, it is not yet time for a major work of synthesis, but volumes such as the one under review will be the source of information for future compilers of the history of the United States during the centuries immediately preceding the arrival of the Europeans.

M. C. BURKITT.

FORTHCOMING EVENTS

(Meetings marked with an asterisk * are open to the public)

Monday, March 13

SOCIETY OF CHEMICAL INDUSTRY (YORKSHIRE SECTION) (in the Chemistry Lecture Theatre of the University, Woodhouse Lane, Leeds), at 7 p.m.—Dr. T. H. Blakeley: "Graphical Methods of Treating Technical Problems".

ASSOCIATION OF AUSTRIAN ENGINEERS, CHEMISTS AND SCIENTIFIC WORKERS IN GREAT BRITAIN (at the Austrian Centre Swiss Cottage, 49 Eton Avenue, Hampstead, London, N.W.3), at 7.15 p.m.—Dr. K. Weissenberg: "Chemical Constitution and Physical Properties of Materials".

Tuesday, March 14

CHADWICK PUBLIC LECTURE (at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1), at 2.30 p.m.—Dr. S. A. Henry: "Medical Supervision in Industry in Peace and War".*

INSTITUTION OF CHEMICAL ENGINEERS (joint meeting with the CHEMICAL ENGINEERING GROUP) (at the Geological Society, Burlington House, Piccadilly, London, W.1), at 2.30 p.m.—Mr. W. K. B. Marshall: "The Welded Joint in Non-Ferrous Chemical Plant".

PARLIAMENTARY AND SCIENTIFIC COMMITTEE (in Committee Room 14, House of Commons, London, S.W.1), at 3 p.m.—Discussion on "A Scientific Policy for British Agriculture, particularly in relation to Nutrition" (Speakers: Prof. F. L. Engledow, Prof. Miller and others).

ROYAL INSTITUTION (at 21 Albemarle Street, London, W.1), at 5.15 p.m.—Prof. A. R. Todd, F.R.S.: "The Mode of Action of some Vitamins", 2.*

INSTITUTION OF CIVIL ENGINEERS (joint meeting with the INSTITUTION OF MECHANICAL ENGINEERS) (at Great George Street, Westminster, London, S.W.1), at 5.30 p.m.—Symposium on "Contractors' Plant".

Wednesday, March 15

INSTITUTE OF METALS (at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1), at 11 a.m.—Thirty-sixth Annual General Meeting: at 2.30 p.m.—Dr. W. Hume-Rothery, F.R.S.: "Modern Views on Alloys and their Possible Application".

ROYAL SOCIETY OF ARTS (at John Adam Street, Adelphi, London, W.C.2), at 1.45 p.m.—Mr. J. N. Dean: "Gutta Percha and Balata, with Particular Reference to their Use in Submarine Cable Manufacture".

SOCIETY OF CHEMICAL INDUSTRY (PLASTICS GROUP) (joint meeting with the PHYSICAL SOCIETY) (at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1), at 2.30 p.m.—Dr. W. T. Astbury, F.R.S.: "The X-Ray Examination of Plastics".

GEOLOGICAL SOCIETY OF LONDON (at Burlington House, Piccadilly, London, W.1), at 3 p.m.—Annual General Meeting. Prof. W. G. Fearnside, F.R.S.: "The Practice of Geology" (Anniversary Address).

ROYAL INSTITUTE OF CHEMISTRY (at 30 Russell Square, London, W.C.1), at 3 p.m.—Annual General Meeting. Mr. P. A. Houseman: "Licence—Putting a Weed to Work" (Streatfeild Memorial Lecture).

ROYAL METEOROLOGICAL SOCIETY (at 49 Cromwell Road, South Kensington, S.W.7), at 4.30 p.m.—Major H. C. Gunton: "Report on the Phenological Observations in the British Isles from December 1942 to November 1943".

INSTITUTION OF ELECTRICAL ENGINEERS (LONDON STUDENTS' SECTION) (at Savoy Place, Victoria Embankment, London, W.C.2), at 7 p.m.—Mr. H. W. H. Warren: "Electrical Engineering Research" (Student's Lecture).

Thursday, March 16

ROYAL ANTHROPOLOGICAL INSTITUTE (at 21 Bedford Square, London, W.C.1), at 1.30 p.m.—Sir John Russell, F.R.S.: "Europe's Changing Peasantry".

CHEMICAL SOCIETY (at Burlington House, Piccadilly, London, W.1), at 2.30 p.m.—Dr. C. R. Harrington, F.R.S.: "Newer Knowledge of the Biochemistry of the Thyroid Gland" (Ninth Fiedler Lecture).

SOCIETY OF CHEMICAL INDUSTRY (AGRICULTURE GROUP) (joint meeting with the BIRMINGHAM SECTION) (at the Chamber of Commerce, New Street, Birmingham), at 2.30 p.m.—Mr. P. Parrish: "Our Fertilizer Industry; with Special Reference to Modern Methods of Manufacture of Calcium Superphosphates, Ammonium Sulphate and N.P.A. Granular Fertilizers".

LONDON MATHEMATICAL SOCIETY (at the Royal Astronomical Society, Burlington House, Piccadilly, London, W.1), at 3 p.m.—Prof. H. W. Turnbull, F.R.S.: "Recent Advances in the Theory of Forms".

INSTITUTION OF ELECTRICAL ENGINEERS (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Mr. P. Schiller: "An Analysis of the Load on a Modern Electricity Supply System".

Friday, March 17

ROYAL INSTITUTION (at 21 Albemarle Street, London, W.1), at 5 p.m.—Mr. Howard Marryat: "Evolution of the Pocket Watch".*

INSTITUTION OF ELECTRICAL ENGINEERS (MEASUREMENTS SECTION) (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Mr. R. Dell: "Developments of Railway Signalling on London Transport".

INSTITUTION OF MECHANICAL ENGINEERS (in conjunction with the APPLIED MECHANICS GROUP) (at Storey's Gate, St. James's Park, London, S.W.1), at 5.30 p.m.—Symposium on "Some Modern Aids in the Investigation of the Behaviour of Materials, Mechanisms and Structures".

BRITISH ASSOCIATION OF CHEMISTS (NORTH-EAST SECTION) (in the Chemistry Lecture Theatre, King's College, Newcastle-upon-Tyne), at 6 p.m.—Dr. F. G. Mann: "Some Aspects of the Organic Chemistry of Phosphorus and Arsenic" (Tilden Lecture of the Chemical Society).

NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS (in the Lecture Theatre of the Mining Institute, Newcastle-upon-Tyne), at 6 p.m.—The late Dr. W. H. Hatfield, F.R.S., Mr. L. Rotherham and Miss E. M. A. Harvey: "Further Experiments on the Damping Capacity of Metals".

Saturday, March 18

BRITISH INSTITUTE OF RADIOLOGY (in the Reid-Knox Hall, 32 Welbeck Street, London, W.1), at 2.30 p.m.—Mr. W. J. Meredith and Dr. G. J. Neary: "The Production of Isodose Curves and the Calculation of Energy Absorption from Standard Depth Dose Data"; Mr. P. H. Flanders: "A Demonstration of an Optical Contour Finder".

SHEFFIELD METALLURGICAL ASSOCIATION (at 198 West Street, Sheffield), at 2.30 p.m.—Dr. H. M. Finniston and Mr. T. D. Fearnough: "The Physical and Mechanical Properties of Segregates".

APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

ELECTRICAL ENGINEER (location, Middle East)—The Ministry of Labour and National Service, Central (Technical and Scientific) Register, Advertising Section, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. D.767A) (March 15).

CHEMICAL ENGINEER, to assist in the design and testing of plant for the manufacture of various chemicals, mainly organic—The Ministry of Labour and National Service, Central (Technical and Scientific) Register, Advertising Section, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. C.2040.XA) (March 15).

TEACHER to teach mainly MECHANICAL DRAWING in the Junior Technical School, with some MATHEMATICS and/or WORKSHOP PRACTICE (wood or metal)—The Principal, County Technical College, Gainsborough, Lincs. (March 17).

ASSISTANT TO THE ADVISORY CHEMIST—The Chief Advisory Officer, Agricultural Advisory Department, The University, Manchester (March 18).

GRADUATE MISTRESS (MATHEMATICS) for Barrett Street Technical School, Oxford Street, London, W.1, and Maidenhead—The Education Officer, T.1, County Hall, Westminster Bridge, London, S.E.1 (March 18).

HEADMASTER OF THE PRE-APPRENTICESHIP COURSES FOR THE BUILDING TRADES recently established in Aberdeen—The Director of Education, Education Offices, Castle Street, Aberdeen (endorsed 'Pre-Apprenticeship School') (March 18).

PRINCIPAL—The Clerk to the Governors, Harper Adams Agricultural College, Newport, Shropshire (March 18).

PROFESSOR OF MECHANICAL ENGINEERING in the Benares Hindu University Engineering College—The Secretary, Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1 (March 18).

COMMISSIONS in H.M. FORCES (a limited number) will be granted to candidates who are University-trained Biologists, preferably men with some experience of malaria or entomology—The Ministry of Labour and National Service, Central (Technical and Scientific) Register, Advertising Section, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. ONF.2057A) (March 18).

UNIVERSITY CHAIR OF ANATOMY tenable at St. Mary's Hospital Medical School—The Academic Registrar, University of London, c/o Richmond College, Richmond, Surrey (March 20).

TUTORS (2, men, preferably unmarried) at the Makerere College, Kampala, Uganda; Post 1, GEOGRAPHER to teach in New Arts Course, should be specially qualified on the Humanistic (i.e., Social and Economic) side of the subject; Post 2, CHEMIST qualified to teach both Organic and Inorganic and with a special interest in Biochemistry—The Secretary (IPR/CA), Board of Education, Belgrave Square, London, S.W.1, or The Secretary, Scottish Education Department (Branch Office), 29 St. Andrew Square, Edinburgh 2 (March 21).