Malcolm A. Smith, "The divisions as indicated by Vertebrata"; Dr. A. S. Corbet, "The divisions as indicated by the Insecta"; Mr. H. K. Airy Shaw, "Some general considerations from the botanic standpoint"; Dr. P. W. Richards, "On the ecological segregation of the Indo-Malayan and Australian elements in the vegetation of Borneo"; Dr. F. E. Zeuner, "The divisions as indicated by the distribution of insects in relation to geology".

The object of the discussion, in so far as it aimed at uniformity in principle, can be said to have been attained because there was a general opinion that division into biogeographical sub-regions was preferable to divisions by lines such as the Wallace and Weber lines, but no agreement was reached as to what those sub-regions should be. At the same time it was held that the Wallace and Weber lines retained some importance, but that the Wallace line as drawn by him to pass from the northern end of the Macassar Strait to the east of the Philippines should be modified so as to pass along the deep channel between Mindoro and the small islands off the northern end of Palawan. The southern termination of the Wallace line between Bali and Lombok has been criticized as unimportant by Dutch zoologists, none of whom, through the unfortunate force of existing circumstances, could take part in the discussion. It was also agreed that at the height of the Pleistocene glaciation the Sunda and Sahul shelves were dry land but that there is no precise knowledge yet how far the sea rose above its present level when the ice melted. The discussion was partly directed to considering the validity of Wegener's theory of continental drift as applied to the particular hypothesis that the Australian continental block with New Guinea as a spear-head has broken through what was once a continuous chain of islands now represented by the islands of the Banda Arc and the Bismarck Archipelago. An inquiry as to the general opinion of geologists about continental drift elicited a reply that the theory explains so much that there is a feeling that it must be true but that as yet there is nothing that can be called proof of it. It was agreed that the Indo-Australian Archipelago consists of two comparatively stable areas, the Sunda and Sahul shelves, with a very unstable area, sometimes called 'Wallacea' in between, where mountain-building is now in progress and where islands with rugged contours alternate with areas of deep sea. The Wallace line roughly follows the edge of the Sunda shelf and the Weber line that of the Sahul shelf; but the latter is drawn so as to pass on the west of the Kai Islands and on the west of Halmahera, whereas the edge of the Sahul shelf is to the east of those islands.

Mr. Burkill gave an interesting survey of proposed zoological and botanical divisions, the former following vertical and the latter horizontal lines. He mentioned doubts expressed by Wallace himself about his line and especially about the position of Celebes with regard to it, which he said ("Island Life", 1895 ed., p. 462) might perhaps with equal propriety be left out of both the Oriental and Australian regions. Weber's line was the result of studying the distribution of freshwater fish, but had been slightly modified by Pelseneer and Merrill, while Lydekker would have placed Halmahera west of it.

The unstable 'Wallacea' is a broad transition belt in which a mixture of fauna and flora occurs. Dr. Malcolm Smith emphasized the evidence given by the re-establishment of life on Krakatau after the 1883 eruption of the ease with which organisms, large and small, could have travelled by water and air from the continental areas to the islands in this belt. He said that while the Sunda vertebrate fauna is very like that of Asia, that of New Guinea is not so similar to that of Australia because climatic and geographical conditions differ to a greater extent.

Mr. Airy Shaw said that lowland and mountain floras in the Indo-Australian Archipelago may have quite different affinities with the floras of adjacent regions. Speaking of the floras within the Archipelago, he said that the lowland floras of Sumatra, the Malay Peninsula, Borneo and the Philippines are much the same, but that of Java differs from them. The mountain floras of Sumatra, Java and the Lesser Sunda Islands resemble each other but differ from the mountain flora of Borneo. Dr. Richards, as a result of his work in Borneo, thought that the Australian element has only been able to penetrate into the Archipelago where the soil is poor, and he thought that the Wallace line only holds good at all in so far as it agrees with the divisions of climatic and physical factors.

Dr. Corbet and Dr. Zeuner both dwelt on the importance of butterflies in connexion with the discussion and described the distribution of certain genera. The former proposed a division into sub-regions which he named the Malaysian, the Philippine, the Celebes, the Moluccas and New Guinea, and the Lesser Sunda Islands sub-regions. These differed from Dr. Malcolm Smith's proposal of Malaysian, Philippine, Indo-Chinese, Papuan, Austro-oriental and Australian sub-regions. Dr. Zeuner thought that the Wallace and Weber lines could not be defined biologically and that the Australian continental block is approaching Asia.

In a general discussion which followed the last paper read, Mr. Norman cited the evidence of the distribution of freshwater eels as bearing on the earlier relations of land and sea in this area. The importance of co-operation between biologists and geologists was mentioned, but one speaker pointed out that neither must rely on the other too much for proof of their theories but must rely chiefly on their own efforts.

J. B. SCRIVENOR.

CARNEGIE INSTITUTION OF WASHINGTON

THE Year Book of the Carnegie Institution of Washington No. 40 covers the year July 1, 1940–June 30, 1941, and includes the report of the president as well as the reports of departmental activities and co-operative studies.

In his report, the president refers to the retarding of the attack on many problems on the border line between physics and biology, to implement which the construction of a large cyclotron has commenced, as well as on the new approach to human genetics, but emphasizes the responsibility of such an organization as the Carnegie Institution for preserving intact some of the more important threads of fundamental scientific research, now almost completely stopped all over the world. With regard to defence activities, nearly all the research in the Department of Terrestrial Magnetism was on Government problems, and the number of men employed in that laboratory had been more than doubled. Important work was also proceeding in the Geophysical Laboratory, the Mount Wilson Observatory and the Nutrition Laboratory.

To secure the proper integration of the combined research effort in the United States, Mr. Roosevelt has created the Office of Scientific Research and Development as a part of the Office for Emergency Management, and the president of the Carnegie Institution is the director of this Office, and many of the staff are members of its organization. The president points out that the close connexion of the Institution with the defence research effort has led to much closer contact between members of its staff and outstanding scientific men of the country, which should be of great benefit when the full normal programme is renewed.

Despite the preoccupation of most of the staff of the Department of Terrestrial Magnetism with defence research, progress has been made with its fundamental programme, and it is anticipated that the cyclotron will shortly be completed. The studies of the electrical and chemical conditions of the air at great heights are also progressing, as well as the co-ordination of magnetic, solar and upper air studies relating particularly to problems of radio transmission. Further progress in studies on photosynthesis is reported from the Division of Plant Biology, where recent research relating to the chemical mechanism of the photosynthetic process has necessitated revision of the old hypotheses in regard to the chemical interaction involved.

In the development of co-operation between the Department of Genetics and the Long Island Biological Association, a symposium at Cold Spring Harbor on the subject of the gene and the chromosome attracted a large group of scientific workers. Plans for the continuation of such co-operation are being formulated.

In the Nutrition Laboratory progress has been made in the development of instrumental technique and in co-operative studies of carbohydrate metabolism with reference to diabetes.

Interesting results have been obtained in the Geophysical Laboratory with the equipment for studying silicate minerals in the presence of water at high temperatures and pressures, such as prevail deep within the earth. The apparatus used is essentially an electric furnace within a strong closed chamber in which materials can be exposed to the action of steam at pressures of several thousand pounds and at temperatures far above a red heat. Other work has been concerned with the properties of solutions under high pressures.

FORTHCOMING EVENTS

Monday, May 18

ROYAL GEOGRAPHICAL SOCIETY (at Kensington Gore, London, S.W.7), at 5 p.m.—Sir Henry Craw: "The Burma Road".

Tuesday, May 19

IRON AND STEEL INSTITUTE (joint meeting with the Sheffield Society of Engineers and Metallurgists, the Sheffield Metallurgical Association and the Refractories Association of Great Britain) (at the Royal Victoria Station Hotel, Sheffield), at 5.30 p.m.—Discussion on "Open-Hearth Furnace Refractories": (*a*) "Dolomite Bricks", (*b*) "Open-Hearth Roofs, including Temperature Control". (Chairman: Dr. W. H. Hatfield, F.R.S.)

Wednesday, May 20

ROYAL SOCIETY OF ARTS (at John Adam Street, Adelphi, London, W.C.2), at 1.45 p.m.—Prof. H. D. Kay: "The Future of the Milk Industry".

INSTITUTE OF PHYSICS (ELECTRONICS GROUP) (at the Royal Institution, 21 Albemarle Street, London, W.1), at 2.30 p.m.—Discussion on "Amplifiers for Measurement and Control" (to be opened by Mr. C. A. A. Wass).

ROYAL METEOROLOGICAL SOCIETY (joint meeting with the Physical Society) (in the Physics Department of the Imperial College, Imperial Institute Road, London, S.W.7), at 5 p.m.—Discussion on "Emission and Absorption of Radiation in the Atmosphere" (to be opened by Dr. T. G. Cowling).

APPOINTMENTS VACANT

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

JUNIOR ASSISTANT (MALE OR FEMALE) TO THE PUBLIC ANALYST—The Public Analyst, Parker Lane, Burnley (May 20).

HEADMASTER OF THE EASTBOURNE TECHNICAL SCHOOL—The Education Officer, Technical Institute, Eastbourne (May 23).

ASSISTANT LECTURER IN AGRICULTURAL BACTERIOLOGY—The Registrar, The University, Leeds 2 (May 29).

UNIVERSITY CHAIR OF BIOCHEMISTRY tenable at St. Thomas's Hospital Medical School—The Academic Registrar, University of London, Richmond College, Richmond, Surrey (June 8).

INSTRUCTOR IN ELECTRICAL ENGINEERING at the East Ham Technical College—The Secretary for Education, Education Office, Town Hall Annexe, Barking Road, East Ham, London, E.6.

SENIOR LABORATORY ASSISTANT—Mr. R. W. Stott, Rugby School Science Laboratory, Barby Road, Rugby.

REPORTS and other PUBLICATIONS

(not included in the monthly Books Supplement)

Great Britain and Ireland

John Innes Horticultural Institution. Thirty-second Annual Report for the Year 1941. Pp. 14. (London: John Innes Horticultural Institution.) [274

Brompton Hospital Reports: a Collection of Papers recently published from the Hospital. Vol. 10, 1941. Pp. vii+127+29 plates. (London: Brompton Hospital.) 5*s*. [284

Carnegie United Kingdom Trust. Twenty-eighth Annual Report, 1941. Pp. 16. (Dunfermline: Carnegie United Kingdom Trust.) [284

Other Countries

U.S. Department of Agriculture. Miscellaneous Publication No. 439: The Fruitflies of the Genus Anastrepha. By Alan Stone. Pp. 112+23 plates. (Washington, D.C.: Government Printing Office.) 40 cents. [224

Imperial Council of Agricultural Research. Miscellaneous Bulletin No. 54: A Further Survey of some Important Breeds of Cattle and Buffaloes in India. By F. Ware. Pp. iii+16+21 plates. (Delhi: Manager of Publications.) 1.4 rupees; 2*s*. [224

Forest Research Institute, Dehra Dun. Indian Forest Leaflet No. 10 (Utilisation): A Preliminary Note on the Use of Prolamins as Adhesives. By D. Narayanamurti and V. Ranganathan. Pp. ii+4. (Dehra Dun: Forest Research Institute.) [234

Indian Forest Records (New Series). Botany, Vol. 3, No. 1: The Flora of the Aka Hills. By Dr. K. Biswas. Pp. 62. 2.2 rupees; 6*s*. 6*d*. Botany, Vol. 3, No. 4: A Short Account of the Geology and Flora of the Hill Zamindaries in Kalahandi State. By H. F. Mooney. Pp. 131–143+4 plates. 14 annas; 1*s*. 3*d*. Botany, Vol. 3, No. 5: New Indian and Burmese Species. By Dr. N. L. Bor. Pp. 144–150+4 plates. 10 annas; 1*s*. Entomology, Vol. 4, No. 2: A Guide to the Control of Termites for Forest Officers. By C. F. C. Beeson. Pp. 44–90. 1.2 rupees; 1*s*. 9*d*. (Delhi: Manager of Publications.) [234

Forest Bulletin No. 94: Specification for the Inspection and Passing of Helves and Hammer Handles. By V. D. Limaye. Pp. ii+7. 4 annas; 1*s*. 3*d*. Forest Bulletin No. 95: Stacking Timber for Air Seasoning. By M. A. Rehman. Pp. ii+9+1 plate. 3 annas; 4*d*. Forest Bulletin No. 96: Drying of Wood Fuel of *Shorea robusta* (*Sal*), *Eugenia jambolana* (*Jaman*), *Machilus duthiei* (*Kaula*). By M. A. Rehman. Pp. ii+8+1 plate. 4 annas; 5*d*. Forest Bulletin No. 97: Experiments on the Air-seasoning and Notes on the Passing of *Sal* Sleepers. By M. A. Rehman. Pp. iv+25. 7 annas; 8*d*. Forest Bulletin No. 99: Properties, Preparation and Testing of Helve and Tool Handle Timbers. By V. D. Limaye. Pp. ii+13+3 plates. 8 annas; 9*d*. (Delhi: Manager of Publications.) [234

U.S. Department of Agriculture. Circular No. 626: Control of the Locust Borer. By Ralph C. Hall. Pp. 20. (Washington, D.C.: Government Printing Office.) 5 cents. [234

Report and Accounts of the National Botanic Gardens of South Africa, Kirstenbosch, Newlands, Cape (and the Karoo Garden, Whitehill, near Matjesfontein) for the Year ending 31st December 1941. Pp. 12. (Kirstenbosch: National Botanic Gardens of South Africa.) [244

U.S. Office of Education: Federal Security Agency. Bulletin 1941, No. 2: Education of Teachers; Selected Bibliography, October 1, 1935, to January 1, 1941. By Benjamin W. Frazier. Pp. vi+60. 10 cents. Bulletin 1941, No. 10: Inter-American Friendship through the Schools. By Prof. Verna A. Carley. Pp. vi+61. 15 cents. (Washington, D.C.: Government Printing Office.) [244

Pennsylvania State College: School of Agriculture, Agricultural Experiment Station. Bulletin 415: The Minimum Base Value of Heat Production in Animals; a Research in the Energy Metabolism of Cattle. Pp. 26. (State College, Pa.: Pennsylvania State College.) [244

Bell Telephone Laboratories: a Bell System Company. Pp. 32. (New York: Bell Telephone Laboratories, Inc.) [274