Dutch elm disease. He will make his headquarters at Oxford.

MISS ANNEKE PANNEKOEK, paleontologist at the Geological Institute of the University of Amsterdam, lectured on August 13 before the Paleontological Research Institution at Ithaca, N. Y., on the geology of the East Indies, with special reference to the Miocene Molluska of Sumatra and Java.

DR. C. E. TURNER, of the Massachusetts Institute of Technology, has been appointed by the University of Calcutta to deliver a course of six lectures relating to the organization of health education.

THE fifth Victor Horsley Memorial lecture will be delivered by Sir Walter Langdon-Brown, Regius professor of physic at the University of Cambridge, on November 19 on "The Integration of the Endocrine System." The chair will be taken by Sir Frederick Gowland Hopkins, president of the Royal Society.

THE new Hayden Planetarium of the American Museum of Natural History, New York City, will be opened on October 3. Dr. Clyde Fisher, curator of astronomy, will be director of the planetarium and William H. Barton, Jr., will be assistant curator.

DR. FRED J. SEAVER, managing editor of *Mycologia*, announces the receipt of another gift of $1,000.00, which will be added to the *Mycologia* Endowment Fund held by the New York Botanical Garden. This is the second gift of one thousand dollars made by the same person, the name of the donor being withheld by request. It is hoped that when the interest on this endowment fund has reached sufficient proportions it may be used to defray the cost of special features of *Mycologia* which can not be met by the regular income.

The Experiment Station Record reports that following the granting to the governor of unusual authority in balancing the state budget, Michigan College has been granted for the ensuing biennium $1,284,653, as compared with $1,000,000 for the previous biennium. The agricultural extension funds were reduced from $178,609 to $166,250.

IT is reported in *The Museum News* that the Oregon state legislature has passed a bill designating the anthropological collection of the University of Oregon at Eugene as the Oregon State Museum of Anthropology. The bill provides that excavation and removal from state lands of archeological or anthropological material shall be under permit of the state land board and the president of the University of Oregon. Not less than half of all material so excavated is reserved for the state and is to be deposited in the State Museum at Eugene. The bill makes suitable provision for safeguarding the interests of museums, universities and other recognized institutions. L. S. Cressman has charge of the collections at Eugene.

A NEW agricultural building has been erected on the University of Hawaii campus. This two-story building, made of hollow concrete blocks, is 120 feet long by 60 feet wide and cost $68,000. It will house the offices of the Hawaii Experiment Station and offices and laboratories for agronomy, chemistry, plant pathology and soils in addition to those of the Agricultural Extension Division.

SATURDAY afternoon lectures at the New York Botanical Garden during September, October and November, beginning on September 7, are: September—"Wild Flowers of the Season," Dr. John Hendley Barnhart, bibliographer and administrative assistant; "Germination of Seeds," Dr. William Crocker, Boyce Thompson Institute for Plant Research; "Local Ferns," George T. Hastings, Theodore Roosevelt High School; "Dahlias," Dr. Marshall A. Howe, assistant director. October—"Fall Work in the Garden," T. H. Everett, horticulturist; "Autumn Coloration," Dr. A. B. Stout, director of the Laboratories; "Mushrooms, Edible, Poisonous, and Otherwise Interesting," Dr. Fred J. Seaver, curator; "Fungi and Our Food Supply," Dr. B. O. Dodge, plant pathologist. November—"Why Orchids Fascinate," Carl T. Ramsey; "Color in the Winter Garden," Henry Teuscher, dendrologist; "Interesting Plants of the South-east," E. J. Alexander, assistant curator and curator of the local herbarium; "Clematis for American Gardens," J. E. Spingarn; "Water Features in the Garden," A. C. Pfander, assistant superintendent. These lectures are delivered in the Lecture Hall of the Museum Building; illustrated by lantern slides and otherwise; free to the public. Doors closed at 3:30.

DISCUSSION

DEFINITIONS OF MATHEMATICAL TERMS IN GENERAL ENGLISH DICTIONARIES

A STRIKING instance of the shortcomings of certain definitions of mathematical terms in widely used English dictionaries is furnished by the fact that no satisfactory definition of the now widely used technical term group appears under the entry "group" in any one of the following four well-known works of

reference: Oxford English Dictionary (1888–1928), Century Dictionary (1911), New Standard Dictionary (1933) and Webster's New International Dictionary, second edition (1934). In none of the definitions in question is there any reference to the associate law which constitutes an essential element of every definition of an abstract group. This law is explicitly stated under the entry "group" in the preceding edition of the last of the four dictionaries just noted and its absence in the latest edition of this work marks a step backward which counteracts some of its forward steps.

Although the commutative law in the combination of elements was explicitly recognized much earlier than the associative law, the former being explicitly noted in Euclid's "Elements" (VII, 16) while the latter received little explicit attention before the middle of the nineteenth century, group theory has taught us that much more progress can be made by assuming the associative law without the commutative law than *vice versa*. The greater part of the developments in group theory result from the consideration of elements which are assumed to obey the associative law but not necessarily the commutative law when they are combined. The term associative law is due to the most noted Irish mathematician up to the present time, *viz.*, W. R. Hamilton (1805–1865), who was also the first to emphasize the importance of this law. A. Cayley (1821–1895) was the first to mention it in connection with a definition of an abstract group, but he was not steadfast in insisting on the fact that it is an essential element of the definition of an abstract group just as the last-named dictionary noted above displayed a lack of steadfastness in this respect.

A considerable number of new mathematical definitions appear in the second edition of Webster's New International Dictionary. The selection of the terms thus defined is not always wise. For instance, we find therein an incomplete definition of the somewhat special term "dicyclic group," but the much older and more widely used term "symmetric group" does not appear at the appropriate place. One also looks in vain in this dictionary for the entries "Fermat's theorem" and "primitive root." There appears, however, therein the entry "primitive group," but the definition which follows this entry is also incomplete, since in an imprimitive group all the substitutions which omit a given letter may also form a group involving all the other letters. Such incomplete definitions are very objectionable in a work which claims to be the "foundation book of education." Many readers will probably be more surprised to find therein also an incorrect definition of such a commonly used term as "spherical excess." Under this entry it is stated that its product by twice the square of the radius of the sphere on which the triangle is drawn is equal to the area of the triangle. The word "twice" should obviously not appear in this statement.

As this is the most recent extensive revision of any one of the large dictionaries noted above and hence will probably be used in our schools and elsewhere in its present form for a long time it may be desirable to direct attention here to a few additional points which seem to be in need of reconsideration. Probably most mathematicians would agree that the name of E. Galois (1811–1832) should appear in the "Biographical Dictionary" of this work in preference to many others which appear therein, such as that of W. Chauvenet (1820–1870), for instance. In fact, many would probably have preferred to see the name of E. H. Moore (1862–1932) retained instead of that of W. Chauvenet, in case one of them had to be omitted to make room for desirable additions. The name of S. Lie in this list should be followed by the dates (1842–1899) instead of by (1842–1879). The greater part of his publications appeared after 1879.

The preceding remarks do not imply that the existence of a few inaccuracies nullifies the value of such extensive works of reference as those noted above. On the contrary, they exhibit the great difficulties involved in the onward movement towards greater and greater accuracy. As regards many points it would evidently be impossible to secure now a unanimity of views, and the brevity of statements required in a work which deals with such a wide range of knowledge as a general dictionary naturally leads to some ambiguities. It is hoped that the points noted above are sufficiently outstanding to appeal favorably to the great majority of those who may consider them carefully and that this consideration will tend to a greater independence of thought while using such works of reference. Mathematics deals to an unusually large extent with finalities as regards accuracy, but it borders on fields in which such finalities are still impossible.

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THE EFFECTS OF ZINC SALTS ON THE OXIDATION PROCESS IN PLANT CELLS

SINCE 1870, when Raulin[1] demonstrated the remarkable accelerating effect of zinc salts upon the growth of fungi, the action of this and other "stimulating" or "accessory" elements has been the subject of many

[1] J. Raulin, "Etudes chimiques sur la vegetation." Paris, 1870.