national aspects. The conference, which will be held at Reading on July 24, 25 and 26, will take the place of the ordinary annual meeting, which would in normal circumstances have been held at Newcastle.

THE second International Congress of Eugenics has been postponed indefinitely. Further information can be obtained from the general secretary, Professor G. Constantinesco, director of the National Zootechnical Institute, Strada Dr. Staicovici 63, Bucarest.

THE New York State Section of the American Physical Society will hold its spring meeting at the University of Buffalo on April 6. The address of welcome will be made by Dr. S. P. Capen, chancellor of the university. In addition to the program of technical papers, Professor H. A. Bethe, of Cornell University, will give the Foster lecture on Friday evening, April 5. He will speak on "The Theory of Stellar Energy." The lecture will be preceded by a buffet supper.

THE Association of Southeastern Biologists, of which Professor H. L. Blomquist, of Duke University, is president, will meet on April 19 and 20 in Nashville, Tenn., with Vanderbilt University as the host institution. Titles of papers to be presented should be filed with Donald C. Boughton, secretary-treasurer, Regional Laboratory, U. S. Department of Agriculture, Auburn, Ala.

THE annual joint meeting of the Institute of Radio Engineers and the American Section of the International Scientific Radio Union will be held in Washington, D. C., on Friday, April 26. This meeting will be held in the building of the National Academy of Sciences.

THE sixty-ninth annual meeting of the American Public Health Association will be held in Detroit, Michigan, from October 8 to 11, with the Book-Cadillac Hotel as headquarters. The Michigan Public Health Association, the American School Health Association, the International Society of Medical Health Officers, the Association of Women in Public Health and a number of other allied and related organizations will meet in conjunction with the association. Dr. Reginald M. Atwater is executive secretary of the association, with offices at 50 West 50th Street, New York City.

ON Wednesday, March 6, the inaugural Ephraim McDowell Lectureship of the University of Louisville School of Medicine was presented in the amphitheater of the Louisville City Hospital. The meeting was opened by Dr. John W. Moore, dean of the medical school. Dr. Irvin Abell, who is an authority on the life of Ephraim McDowell, gave a résumé of the life and work of the great Kentucky pioneer surgeon. Dr. M. Herbert Barker, of Northwestern University Medical School, delivered the inaugural lecture. He was introduced by Dr. J. Murray Kinsman, of the University of Louisville. Dr. Barker's subject was "Modern Pioneers in Vascular Diseases." The McDowell lectures are being sponsored annually by the Phi Beta Pi Medical Fraternity.

DISCUSSION

CHANGES IN MODERN MATHEMATICS

IN 1898 there appeared the first part of a large mathematical encyclopedia entitled "Encyklopädie der Mathematischen Wissenschaften," which was due to international cooperation and was completed in 1935. Even before it was completed it was commonly recognized that at least the first one of the six volumes was already out of date and in need of many fundamental changes in order to be abreast with current scholarship along its line. This rapid obsolescence may be contrasted with the fact that certain parts of Euclid's "Elements" were used as text-books more than two thousand years after they were written and are still regarded as masterpieces. Since the summer of 1939 several parts of a revised volume 1 of this mathematical encyclopedia have been published, and it is interesting to see how profoundly these parts, relating to algebra and the theory of numbers, differ from the corresponding parts of the first edition.

In particular, much more space is devoted to the theory of groups and its applications in this revised edition than in the first edition. While only about 18 pages were devoted to finite discrete groups in this first edition, 51 pages are devoted to only a part of this subject under the heading of general group theory in this revised edition. It is especially interesting to note that the subject of general or abstract groups precedes that of permutation groups in this edition, while the reverse method was followed in the first edition. These two subjects supplement each other, and it would not be profitable to try to determine their relative importance even if the former is more widely useful. The subject of group theory was, however, first studied in connection with permutation or substitution groups. The fact that abstract groups permeate the treatment of various other subjects in this revised edition is especially noteworthy.

What may be of most interest to the non-mathematician in connection with this revised edition is the fact that some of the modern mathematics relating to

elementary subjects has so quickly become out of date. In the "Encyclopaedia Britannica" (1938) it is stated under the entry "Number" that "the concept of ordinary number was first adequately presented by Euclid." The treatment of the development of number systems and the representation of real numbers by limiting processes in the parts of this revised volume which have appeared indicate wide digressions from Euclid in the modern development of concept of ordinary or positive numbers. The fact that the ancient Greeks commonly restricted the notion of number to discontinuous magnitudes is of fundamental importance in the history of mathematics and must be clearly understood in order to evaluate the contributions made by recent mathematicians towards our present concept of number.

The revised volume to which we referred above enables the German mathematicians to retain now the leading position among the mathematicians of the world with respect to mathematical encyclopedias, even if it omits a number of the important subjects, including the theory of probability, which were treated in the first edition. It also includes some subjects, such as mathematical logic, which were not explicitly treated in the first edition but constitute a welcome addition in this revised volume. The number of references is large, but in view of the great extent of the recent literature they do not aim to be complete. A wise selection of references is very useful to the beginner in a field of mathematical study in these days of intense specialization when too little is frequently left to be supplied by the reader who enjoys to supply the obvious.

Recently the American mathematicians started a periodical under the title of *Mathematical Reviews,* which may bring to our country an important share of the reviewing of the current mathematical literature of the world and thus arouse a greater interest in the mathematical advances of the present time. Heretofore the German mathematicians have been especially prominent along this line. They established in 1871 a review journal entitled *Jahrbuch über die Fortschritte der Mathematik,* which has been published fairly regularly since then and is widely used wherever mathematical advances are successfully made in a rapidly widening list of countries. In 1931 they established a second somewhat similar periodical under the title *Zentralblatt für Mathematik* with a view to bringing reviews to the attention of the public more promptly than was done earlier. The recent American periodical along this line will therefore have considerable competition, but it has started out in a promising manner and will probably receive strong support, especially in America.

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THE CHESTNUT BLIGHT AND ITS RELATION TO THE PRINCIPLE OF DISEASE RESISTANCE

CADMUS' adventure with the slain dragon's teeth that sprang anew into life forms an allegory of the American chestnut, *Castanea dentata* Borkh. Consigned to rapid extermination and a place with the dodo as an extinct species after discovery of the disease in the Bronx in 1904, the chestnut perennially springs into life and is still a familiar species of our woodlands, its foliage adding to the lower-story canopy of the summer forest and its wood and bark providing a habitat for associated species.

Data collected on survival of the American chestnut were published in this journal[1] some years ago, and private research again makes possible a picture of the present blight situation. Permanent plots were laid out in the earlier days of the research, carefully charted and each tree measured, the increase in length of every stem and twig of each tree for each growing season being recorded as cm increment of growth. The lengths of stem and twig killed by blight the same year were recorded in like manner. It was found in 1926, when the last report was published in SCIENCE, that the ratio of new growth produced to blight-killing in the year 1926 was as 3 to 1. The plots have been remeasured in 1939 and the ratio, while varying widely with soil and plot history, is again favorable, the average for all plots tallied being better than 2 to 1. As the trees grow older the total volume of increment naturally increases: thus, Table 1 shows the growth increment for one plot.

TABLE 1

TOTAL GROWTH INCREMENT FOR PLOT 3, EXPRESSED IN TERMS OF CM LENGTH EXTENSION OF TWIG AND SHOOT

1926—1,431 cm	1929—4,456 cm
1927—1,812 cm	1930—5,681 cm
1928—3,092 cm	1939—8,092 cm

Our study has brought to light several noteworthy facts. First, stump sprouts have very little resistance to blight, and the rapid destruction of their coppice has doubtless led to the popular belief that the chestnut is being exterminated. On the other hand, seedlings have proved highly resistant, and many of the seedlings on our plots have come through the fifteen years of our observational study untouched or but slightly touched with blight. Moreover, several new seedlings have appeared on our plots and have reached a height of from 1 to 3 m in the period of our study. The seed trees earlier recorded in SCIENCE are still fruiting and are apparently responsible for at least one healthy seedling that appeared in Plot 2. There are several enemies of the seedlings, however, which now appear almost as inimical as the *Endothia:* Hunters do a sur-

[1] SCIENCE, 60: 292–293, 1924; *ibid.,* 63: 476–477, 1926; *ibid.,* 70: 538, 1929.