by cotangent. What is, however, very much more important is that we find here the statement that "Rheticus (1514–76) made a great advance by considering the functions as ratios instead of lines." This is also a very fundamental question relating to the history of elementary mathematics, and the widespread error involved in this quotation was considered by Tropfke in Volume 5, 1923, page 19, of the work noted above in the second paragraph. It is here explained that the modern conception of the trigonometric functions as abstract numbers did not appear before the second half of the eighteenth century, that is, about two hundred years after the death of Rheticus.

In closing we shall refer to one more misleading statement relating to a historical question of fundamental importance. Under the term "Analytic Geometry" it is stated that "the primitive system of coordinates called rectangular coordinates is due to Descartes (Lat. Cartesius) from which fact they are called Cartesian." On the contrary, Descartes did not have a clear notion of such coordinates and some rectangular as well as oblique coordinate systems were used in very early times, especially by the Greeks.[1] They were also used in Europe long before the time of Descartes. In particular, such a system is found in the works of Oresme in the fourteenth century. From what precedes it is clear that in some particulars the popular work under consideration is still in need of much improvement. It is hoped that this discussion may disclose some facts of interest to the general reader and may also have some influence on speeding the needed modifications, which are fortunately made feasible by the frequent printings. In fact, some important corrections resulted from a similar effort made several years ago. *Cf. American Mathematical Monthly,* Volume 24 (1917), page 106.

G. A. MILLER

UNIVERSITY OF ILLINOIS

THE CONTROL OF DAMPING OFF OF COTTON SEEDLINGS BY THE USE OF USPULUN

OWING to the unusually large amount of rainfall prevalent in northwest Arkansas in May and the early part of June, 1924, damping off of cotton seedlings became very prevalent, particularly in those rows where the stand was the thickest and best. As this threatened to destroy some valuable breeding work it was felt that something ought to be tried to effect control, although it was recognized that under field conditions there was very little promise of success.

[1] *Encyclopédie des Sciences Mathématiques,* tome 3, Vol. 3, p. 17.

Accordingly, a 0.25 per cent. solution of Uspulun was prepared, the strength recommended by the manufacturers (Bayer Chemical Company), and the solution applied in a sprinkling can to five rows of cotton. Approximately one gallon of solution was applied to the square foot of soil. Only one application was made. The results obtained are so promising that it seems worth while to present this preliminary report.

At the time of application, the soil was quite moist and the solution was taken up very readily. No particular effort was needed to force the solution into the soil, for there was but little surface drainage. The solution was applied directly over the plants with an ordinary sprinkling can, the application being made slowly so as to enable the soil to take up the solution.

No further damping off has appeared in the five treated rows. In the untreated rows damping off continued to develop to such an extent that large parts of the rows are now bare in contrast to the treated rows on which the stand is much better. A microscopic examination showed that most if not all the damping off was caused by Rhizoctonia. The treated plants have shown no ill effects from the treatment.

H. R. ROSEN

UNIVERSITY OF ARKANSAS

NOTICE TO ZOOLOGISTS OF GENERIC NAMES TO BE INSERTED IN THE OFFICIAL LIST

THE following generic names (with genotype in parentheses) have been submitted to the International Commission on Zoological Nomenclature for inclusion in the Official List of Generic Names.

The secretary will delay final announcement of the votes on these names until January 1, 1925, in order to give to any zoologists who may desire the opportunity to express their opinions.

Mammals: *Alces* Gray, 1821, 307 (*alces*); *Arvicola* Lac., 1799, 10 (*amphibius*); *Ateles* Geoffr., 1806, 262 (*paniscus*); *Bison* H. Smith, 1827, 373 (*bison*); *Bradypus* Linn., 1758a, 34 (*tridactylus*); *Canis* Linn., 1758a, 38 (*familiaris*); *Capra* Linn., 1758a, 68 (*hircus*); *Cebus* Erxl., 1777, 44 (*capucina*); *Cervus* Linn., 1758a, 66 (*elaphus*); *Choloepus* Ill., 1811, 108 (*didactylus*); *Condylura* Ill., 1811, 125 (*cristatus*); *Cricetus* Leske, 1779, 168 (*cricetus*); *Crocidura* Wagl., 1832, 275 (*leucodon*); *Cystophora* Nills., 1820, 382 (*cristata*); *Dasyprocta* Ill., 1811, 93 (*aguti*); *Didelphis* Linn., 1758a, 54 (*marsupialis*); *Erethizon* F. Cuv., 1822, 432 (*dorsata*); *Felis* Linn., 1758a, 41 (*catus*); *Gulo* Pallas, 1780, 25 (*gulo*); *Halichoerus* Nills., 1820, 376 (*grypus*); *Lepus* Linn., 1758a, 57 (*timidus*); *Lynx* Kerr, 1792, 32 (*lynx*); *Mus* Linn.,

1758a, 59 (*musculus*); *Myrmecophaga* Linn., 1758a, 35 (*tridactyla*); *Nasua* Storr, 1780, 35 (*nasua*); *Ovibos* Blainv., 1816, 76 (*moschatus*); *Phyllostomus* Lac., 1799, 16 (*hastatus*); *Procyon* Storr, 1780, 35 (*lotor*); *Putorius* Cuv., 1817, 147 (*putorius*); *Rangifer* H. Smith, 1827, 304 (*tarandus*); *Rhinolophus* Lac., 1799, 15 (*ferrum-equinum*); *Rupicapra* Blainv., 1816, 75 (*rupicapra*); *Sciurus* Linn., 1758a, 63 (*vulgaris*); *Sorex* Linn., 1758a 53 (*araneus*); *Vespertilio* Linn., 1758a 31 (*murinus*).

Amphibia: *Cryptobranchus* Leuck., 1821, 259 (*gigantea* = *alleganiensis* = *alleghaniensis*); *Desmognathus* Baird, 1849, 282 (*fuscus*); *Siren* Linn., 1766, addenda (*lacertina*).

Reptilia: *Alligator* Cuv., 1807, 25 (*mississipiensis*); *Calamaria* Boie, 1827, 236 (*calamaria*); *Chelydra* Schweigg., 1812, 292 (*serpentina*); *Crotalus* Linn., 1758a, 214 (*horridus*); *Dermochelys* Blainv., 1816, 119 (*coriacea*); *Eremias* Wieg., 1834, 9 (*velox*); *Lacerta* Linn., 1758a, 200 (*agilis*); *Mabuya* Fitz., 1826, 23 (*sloanii*); *Phrynosoma* Wieg., 1828, 367 (*orbiculare*).

Pisces: *Blennius* Linn., 1758a, 256 (*ocellaris*); *Echeneis* Linn., 1758a, 260 (*naucrates*); *Esox* Linn., 1758a, 313 (*lucius*); *Ophidion* Linn., 1758a, 259 (*barbatum*).

C. W. STILES
Secretary to the International Commission on Zoological Nomenclature
HYGIENIC LABORATORY,
WASHINGTON, D. C.

SCIENTIFIC BOOKS

The Devonian Crinoids of New York. By WINIFRED GOLDRING. Published by the New York State Museum, 1924, John M. Clarke, Director. Memoir 16. One volume, 4to, 483 pp. text, 60 plates, 63 text-figures; with explanation of plates and index, total 670 pp.

THE appearance of this superb volume, long expected and long delayed, marks an epoch in American paleontology. It is based primarily upon collections made more than half a century ago under the direction of Professor James Hall by Charles Abiathar White, then a young and impecunious doctor of medicine residing in Burlington, Iowa, who in later years became state geologist of Iowa, and afterwards United States paleontologist. While conducting the first geological survey of Iowa, 1855–1858, on which White was an assistant, Hall noted his great enthusiasm and capacity for field explorations, and when that survey was concluded, took him to New York for the special purpose of collecting the Devonian fossils of that state.

The immediate result was the discovery of a colony of crinoids in the Hamilton shale of western New York near a village now called Vincent, which proved to be, as Dr. Clarke in his historical preface says, "the most extraordinary assemblage of these ancient stone lilies which the rocks of New York, or of the Devonian system, have ever afforded." A distinct crinoidal horizon was located in the Finger Lakes region, in which Dr. White continued his collection during the season of 1860 with phenomenal success, his acquisitions embracing a great number of specimens in exquisite preservation, many of which were new to science.

But little was done in the way of publication of the results of these investigations during the years which followed; but in the meantime many notable additions were made to the Devonian crinoid material from the faunas of the Portage and Chemung groups, chiefly by Dr. Clarke and under his direction. As the result of these various activities, extending over a period of upwards of fifty years, there was accumulated in the State Museum of New York at Albany an unparalleled collection of Devonian crinoids, of such magnitude and variety that nothing short of a special monograph, entirely devoted to the subject, would be adequate for its proper treatment.

The preparation of such a treatise involved a great expenditure of time and labor, for the study of the material and composition of the text, as well as for the execution of the necessary drawings. A large amount of such preparatory work was done by Dr. Clarke with a view to publication, but the pressure of official duties impeded the progress of the work to such an extent that he was at last obliged to look for assistance. To that end an arrangement was made with Dr. Edwin Kirk, then recently graduated from Columbia University, to spend a portion of his time in the study of the problems involved. His subsequent association with the United States Geological Survey, however, was followed by such increasing demands upon his time that the New York work was again subjected to protracted delays.

Finally the revision and completion of the entire theme was committed by Dr. Clarke to his associate, Winifred Goldring, who after several years of devoted study brought the work to a conclusion ready for publication. Here again another long period of delay ensued before the printing of the volume could be accomplished, so that while Dr. Clarke's historical preface to the completed work is dated in 1919, it was not until 1924 that the actual publication and distribution could be secured. Some compensation for the vexatious procrastination, however, may be found in the quality of the printing, which has been done in a manner unsurpassed by any scientific publication produced in this country. In point of typography, paper and general execution of the work, there is nothing finer in American paleontology, and the authorities