

Physicians and Surgeons, Columbia University; Benjamin Freeman, *Dr. A. N. Richards, Pennsylvania*, instructor in biochemistry, Western Reserve University; Thomas P. Hughes, *Dr. Hans Zinsser, Harvard*, assistant in bacteriology, Rockefeller Institute; Moses L. Isaacs, *Dr. Gay, Columbia*, department of Public Health, College of Physicians and Surgeons, Columbia University; James A. Kennedy, *Dr. Hans Zinsser, Harvard*, instructor in bacteriology, University of Rochester; E. Beatrice Carrier Seegal, *Dr. Wolbach, Harvard*, pathologist, Long Island Hospital, Boston; Fred W. Stewart, *Dr. Mallory, Boston City Hospital*, Rockefeller Institute for Medical Research; Harry B. van Dyke, *Dr. Cushny, Edinburgh*, and *Dr. Trendelenberg, Freiburg*, associate professor in pharmacology, University of Chicago.

DR. H. HAROLD SCOTT has been appointed lecturer on tropical diseases at the Westminster Hospital Medical School. Dr. Scott, who formerly held the appointment of government bacteriologist, Jamaica, and was afterwards government bacteriologist and pathologist, Hong-Kong, is now Milner Research Fellow in comparative pathology at the London School of Hygiene and Tropical Medicine and pathologist to the Zoological Society of London.

DISCUSSION

THE ENGLISH TRANSLATION OF DE REVOLUTIONIBUS ORBIUM COELESTIUM

REFERRING to the communication by Mr. Drew Bond, published in *SCIENCE*, June 25, relative to the need of an English translation of the immortal work of Copernicus, "*De Revolutionibus Orbium Coelestium*," Libri VI, 1543, the following may be of interest to others as well.

In *Nature* of December 16, 1920, page 515, there appeared a short statement that Professor J. F. Dobson, professor of Greek at the University of Bristol, and Dr. S. Brodetsky, lecturer in applied mathematics at the University of Leeds, have nearly completed their English translation of this epoch-making book. This translation will be accompanied by a life of Copernicus with some account of his influence, and the history of the hypothesis connected with his name.

Being greatly interested in this historic work, and having had occasion to refer to a German edition—the want of an English translation seemed propitious from a librarian's point of view—I therefore wrote these gentlemen stating how needful and appreciative their work would be.

Last December Mr. W. L. Cooper, librarian of the University of Bristol, wrote me that Professor Dobson was revising the proof which would be ready for publication at the end of the year (1925). He also stated

that he was receiving valuable assistance from Dr. Charles Singer, of the University of London, in the references and notes requiring an intimate knowledge of medieval science. The Oxford Press will undertake the publication of this work.

I am sure that the English translation of this most important work in the history of science, since it established the true beginning of modern astronomy, will be received with delight by the historians of science as well as by those whose business it is to know books. It may also be of interest to know that there are three other copies of the first edition of Copernicus in the United States besides the one in the New York Public Library, namely, Boston Athenaeum Library, Massachusetts Institute of Technology and Harvard University. There was another copy in the possession of the late Professor Louis Derr, of the Massachusetts Institute of Technology.

The original edition of this work is now extremely rare and commands a correspondingly high price. And the history of the second and third editions are now attracting the attention of bibliographers and historians.

The second edition was published in Basile 1566 and is almost as rare as the first of 1543. This edition is the first containing the account by Joachim Rheticus, the distinguished student of Copernicus, under whom he studied from 1539 to 1541. It was he who first assumed the earth's rotation as a fact, whereas Copernicus had treated it only as a hypothesis.

The third and last edition in the original Latin, by Nicolai Mulerii, professor in the University of Groningen, was published in Amsterdam in 1617. This edition was the first containing explanatory notes, and it was noteworthy for the correctness of the text, the lack of which was a fault in the two preceding editions. This edition was reprinted in 1640.

Upon the occasion of the four hundredth anniversary of the birth of Copernicus, celebrated at Thorn in 1873, a very fine edition was issued, printed anew from the original manuscripts, preserved in the Nostitz Library of Thorn. Two copies of this work are in the Library of Congress.

The German edition, "*Über die Kreisbewegungen der Weltkörper*," übersetzt und mit Anmerkungen von C. L. Menzzer, durchgesehen und mit einem "Vorwort von Moritz Cantor," was published in Thorn in 1879. This is the only translation into a modern language, besides a Polish edition. The German and the second and third editions are in the private library of the writer.

The English translation of "*De Revolutionibus Orbium Coelestium*" will therefore be an appropriate scholarly contribution to the history of science and

will serve to perpetuate the four hundred and fiftieth anniversary of the birth of the great author, Nicolaus Copernicus.

FREDERICK E. BRASCH

LIBRARY OF CONGRESS,
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FLUORIDES VERSUS FLUOSILICATES AS INSECTICIDES

UNDER the above caption, Mr. R. C. Roark made reference to certain preliminary contributions¹ by the writer relative to the insecticidal value of fluosilicates in the control of the bean beetle and other insects. Mr. Roark first made the point that "there is nothing new in the use of sodium fluosilicate as an insecticide. Its use for that purpose was described nearly thirty years ago by Higbee (English Patent No. 8236, May 23, 1896)." He then advanced chemical equations to demonstrate the contention that the fluosilicates would break down into fluorides in an aqueous system.

From the foregoing statement, one would infer that Mr. Roark was under the impression that the writer had claimed to have discovered the insecticidal properties of sodium fluosilicate.

The writer did not make such a claim, nor did he intend to convey this impression in any of the three articles¹ cited by Roark. Neither was it intended so to do in bulletin 131, of the University of Tennessee Agricultural Experiment Station, which reported experimental results from a number of fluorine compounds, including sodium fluosilicate, cryolite, calcium fluosilicate, calcium fluoride and certain combinations not in general usage. This, our first contribution, was not cited by Mr. Roark and probably had not been seen by him.

From the inception of the experiments, attention was focused on the element *fluorine*, because of its known efficiency in the control of certain pests. After investigation as to methods of manufacture of the fluorides the thought came that the cheaper, raw product, sodium fluosilicate (Na_2SiF_6), might prove of value. Diligent search of the *scientific* literature failed to disclose a report on the use of this material as a protective agent for plants. Later, however, an obscure British patent of nearly thirty years' standing was brought to our attention. This patent was primarily intended to cover the use of *solutions* in outdoor practice. In our investigations, which were carried out without the benefit of knowledge concerning Higbee's patent, and with special reference to the control of the bean beetle, we adopted the idea of dilution by a solid carrier to minimize or eliminate plant injury. In so far as we have been

able to ascertain, this constitutes the first scientifically planned experiment with the fluosilicates for the control of the bean beetle by dusting.

In substance, our reports have been based upon findings obtained by practical field tests and under scientific control. No attempt was made to explain the chemistry responsible for the lethal effect produced in the field. On the other hand, the contribution by Mr. Roark embodies, in the main, a hypothetical discussion of the chemical factors involved, with promise of a report upon tests made to establish the insecticidal value of certain related fluoride products of minimum solubility.

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COMMENTS ON "VACUOLES"

THE article on "The Origin of Vacuoles" in the issue of SCIENCE for April 30 awakens interesting associations. About 1849,¹ Carl Nageli described certain plasmic structures of plant cells, which he named "Utricles" and which included plasmic vacuoles. Unaware at the time of the observations by Nageli, the writer in 1915² made a study of certain plant cell inclusions, which were described under the name "sphaerocytes," and which included in part the Utricles of Nageli, the "Zellenreste" of various authors and the "Vacuoles" of Lloyd and Searth. An article on vacuoles appeared about 1897, but thus far the writer has not been able to find the reference again, although his memory suggests the *Berichte der deutschen botanischen Gesellschaft*. Vacuolization of cell plasm is well known. Chlorophyll grains frequently become vacuolized, as in beet blight. Vacuolization should, however, not be confused with plasmic vacuoles nor with the sphaerocytes mentioned. Certain sphaerocytes, notably the nucleosphaerocytes, possess a remarkable vitality, having been kept alive in hanging drops for over eighteen months, showing marked growth and also nuclear increase (not septation of the sphaerocytes, however). It is much to be regretted that these structures have not received the attention of researchers in biology and botany.

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¹ "On the Utricular Structure of the Contents of Cells," Reports and Papers, Botany, Ray Society, London, 1849.

² "Die Blasenellen (Sphaerocyten) der Pflanzen und ihre Bedeutung zur Erklärung Neoplasmischer Bildungen," *Deutsch-Amerikanische Apotheker-Zeitung*, November, 1915; "The Sphaerocytes of Plants and Their Possible Significance in Plant Growth and in Neoplastic Formations," *Pacific Pharmacist*, November, 1915.

¹ *Ind. Eng. Chem.*, 16, 1249, 1924; *SCIENCE*, 61, 22, 1925; *Jour. Econ. Entomology*, 18, 122, 1925.