At the thirty-sixth Annual Convention of the Association of Official Agricultural Chemists held at Washington beginning on November 17 the following officers were appointed for the ensuing year: *President* H. C. Lythgoe, State Department of Health, Boston, Mass.; *Vice-president,* W. F. Hand, Agricultural College, Agricultural College, Miss.; *Secretary-Treasurer,* C. L. Alsberg, Bureau of Chemistry Department of Agriculture, Washington, D. C. Additional members of the Executive Committee are C. H. Jones, University of Vermont, Burlington, Vt., and W. W. Skinner, Bureau of Chemistry, Washington, D. C.

At the annual meeting of the Washington Academy of Sciences, held on January 13, Dr. F. L. Ransome, delivered the address of the retiring president on "The Functions and Ideals of a National Geological Survey."

The sixth lecture of the series of The Harvey Society will be by Dr. Carl Voegtlin, professor of pharmacology, United States Public Health Service, on "Recent Work on Pellagra" at the New York Academy of Medicine on January 24 at 830.

Dr. George Macloskie, professor emeritus of biology of Princeton University, died at Princeton, on December 4 in his eighty-fifth year.

The death is announced of Professor A. Ricco, director of the Observatory of Catania and vice-president of the International Astronomical Union.

The death is announced of Professor E. H. Bruns the director of the University Observatory at Leipzig.

UNIVERSITY AND EDUCATIONAL NEWS

An anonymous gift of $1,000,000 has been offered to Throop College of Technology, at Pasadena, California, conditional upon an equal amount being raised from other sources.

Mr. Gustavus F. Swift, of Chicago, has added $8,000 to the previous endowment of the Gustavus F. Swift Fellowship of the University of Chicago, making the income from that fellowship amount to $925. This fellowship is awarded for the encouragement of research, and is given only to a student who has already proved his capacity for investigation.

Dr. William H. Walker, head of the Research Library of Applied Chemistry at the Massachusetts Institute of Technology, has been appointed head of the new division of industrial cooperation and research.

Dr. M. G. Seelig, has accepted the position of professor of clinical surgery, at the School of Medicine of Washington University at St. Louis, Mo.

Dr. Walter H. Eddy, of Teachers College, Columbia University, associate in physiological chemistry, has been appointed assistant professor of physiological chemistry. Dr. Eddy has recently returned from France, where he served fifteen months with the A. E. F., as major in the Sanitary Corps.

Harold S. Palmer, instructor in geology in Trinity College, Hartford, Conn., leaves on February 1 for Honolulu to take charge of the department of geology in the University of Hawaii.

Sir Richard Glazebrook, who recently returned from the directorship of the British National Physical Laboratory, has been appointed to the Zaharoff chair of aviation tenable at the Imperial College of Science and Technology, founded by Sir Basil Zaharoff, who gave to the university the sum of £25,000 for this purpose.

Dr. G. M. Robertson has been appointed to a professorship of psychiatry and Dr. J. H. Ashworth to a professorship of zoology in the University of Edinburgh.

Dr. Fritz Paneth, director of the chemical department of the German technical high schools at Prague, has been appointed professor of chemistry at the University of Hamburg.

DISCUSSION AND CORRESPONDENCE

MUSICAL SANDS

The article on "Singing sands of Lake Michigan" by W. D. Richardson, in Science,

November 28, gives suggestion for the present writing.

The phenomenon of sonorous sands was very thoroughly studied in the years 1882–1889 by Dr. H. Carrington Bolton and Dr. Alexis A. Julien, both of New York City. The very interesting results of their enthusiastic research were published in several short articles in the *Proceedings* of the American Association for the Advancement of Science and in the *Transactions* of the New York Academy of Sciences. A brief review of their work may be worth the space.

The preliminary paper was read at the Minneapolis meeting of the Association, 1883, describing their study of the musical sands at Manchester, Mass., and on the island of Eigg in the Hebrides; with reference to many other localities. This paper is printed in the *Proceedings,* volume 32, pages 251–252.

After a year of extensive travel and study of the phenomenon, and with voluminous correspondence, a second paper was read at the Philadelphia meeting, 1884, and printed in abstract in volume 33 of the *Proceedings,* pages 408–415. In this article the sounds emitted by the sands are indicated by musical notation. Some search of old writings had shown that allusions to the phenomenon were found in the literature of the past one thousand years; and that famous localities, like Jebel Nagous, had been visited by many travelers. A brief chronology of the study and writings from the sixteenth century was included.

In Volume 3 of the New York Academy *Transactions,* pages 72–76 and 97–99, for 1884, Dr. Bolton described the phenomenon on the Baltic coast, and in the sand-hill of Arabia and Afghanistan, especially at Jabel Nakous, or "Mountain of the Bell" on the Gulf of Suez. A paragraph at the close of that article is worth quoting.

> The localities in which sonorous sand is found may be divided into three classes: first, sea- and fresh-water beaches, where all the sand possesses the sound-producing quality permanently, as at Eigg, Manchester, Plattsburg, etc.; secondly, sea-beaches where small tracts of the sand possess acoustic properties transiently, as along the Atlantic coast, in New Jersey, North Carolina, and on the Baltic; thirdly, sand-hills in the interior or otherwise, whose steep slopes give rise to acoustic phenomena of great magnitude, as at Kauai, in Nevada, and at Jebel Nakous and Reg Ruwan.

Volume 8 of the Academy *Transactions,* 1888, pages 9–10, prints a letter giving the conclusion of the authors as to the cause of the sounds. And on pages 181–184 is given a very interesting letter of Dr. Bolton, from Egypt, describing his visit to Jabel Nagous. In Volume 9, 1889–1890, pages 21–25, Dr. Bolton gives a fuller account of his visit to Arabia Petraea, and also a summary of the conclusions reached by Dr. Julien and himself, as follows:

> Dr. Julien and I believe that the true cause of sonorousness in the sands of singing beaches and of deserts is connected with thin pellicles or films of air, or of gases thence derived, deposited and condensed upon the surface of the sand-grains during gradual evaporation after wetting by seas and lakes or by rains. By virtue of these films, the sand-grains become separated by elastic cushions of condensed gases, capable of considerable vibration, and whose thickness we have approximately determined. The extent of the vibration and the volume and pitch of the sound thereby produced, after any quick disturbance of the sand, we also find to be largely dependent upon the forms, structures and surfaces of the sand-grains, and especially upon their purity or freedom from fine silt or dust.

In Volume 8, page 10, of the New York Academy *Transactions,* is described the opening by Dr. Bolton of two packages of sea sand collected at Rockaway Beach four and five years previous, and which gave distinct high notes when quickly rubbed or shaken.

The present writer has a large bottle of the Rockaway Beach sand, collected with Dr. Bolton on that summer day in 1884, when the beach was singing clearly. The bottle has been closed with a cork stopper, but was opened, for a minute, a few years ago for removing a sample. The bulk of the sand has been in the bottle over thirty-five years. This day, December 2, it has been poured into a stocking, and when quickly compressed has

given clearly the characteristic high note, audible at considerable distance. But since it has been spread out in the warm dry room, and received some handling, it has lost the sonorous quality.

H. L. Fairchild
University of Rochester

MORE ON SINGING SANDS

To the Editor of Science: The comment of Mr. Richardson in a recent number of Science (November 28, 1919) on the singing sands of Lake Michigan, calls to mind some observations made a number of years ago that should be considered in connection with the hypothesis he advances to explain the singing quality of the sand.

These sands were encountered by us in connection with the soil survey of Allegan, county, Michigan. The singing quality was particularly well developed within four to six rods of the lake shore. We collected a sample of several hundred pounds which was forwarded to the Bureau of Soils at Washington. After the material was in the sack on the beach, the singing quality could be developed by merely running the fingers through the sands.

The material was shipped by freight and stored in the basement of the building then occupied by the bureau. Some months later the material was looked up and examined. It had completely lost its singing quality. Of course it had dried out. There was no leaching and presumably no change in chemical composition.

It has seemed to me that this quality is associated with two primary factors namely: (*a*) Very well rounded and smooth particles, (*b*) A particular amount and condition of moisture. Neither a very wet nor a very dry condition suffices. We have noticed a slight tendency to this singing quality in walking over the sand dunes in that section of Michigan, if the foot is jammed into the sand so as to get below the very dry surface layer and into contact with the somewhat moist sand immediately below.

I am inclined to think the percentage of moisture when coupled with the smooth, rounded particles is the chief factor in developing singing sand. That per cent. is somewhere in the region of the lento-capillary point or the margin between hygroscopic and free capillary moisture where, due to surface attraction of the sand particle, film movement is very sluggish. It might be defined as the first stage of film solidification.

Elmer O. Fippin

THE INITIAL COURSE IN BIOLOGY

The botanists are more and more loudly proclaiming their academic rights as against the zoologists. In most American universities now there is a course in general biology, and it is given, often entirely, by the department of zoology. It is a very large course, running sometimes to several hundred students a year. It involves a large staff, assistant professors, instructors and assistants, and thus provides places for graduate students without fellowships. Sometimes it carries more patronage than all the other courses in zoology, botany and related subjects combined.

Naturally the botanists feel aggrieved, when they compare the few students who reach their courses, and the inadequacy of the assistantships for their support in botany, with the opulent conditions in the department of zoology.

Professor George E. Nichols has presented recently in Science data bearing on this matter, and has discussed with fairness and ability the question of the initial course in biology. The initial course in any field is a difficult subject: whether it should be designed primarily as introductory for those who intend to go further, or as broadly educational for those who can not.

I take it as axiomatic that there is a certain minimum of information regarding matters biological which every educated man ought to have, and that this would consist particularly in some knowledge of the living human body. In fact, however, a large number of students are passing through our universities, many are even taking courses in biology, who fail