The movements of the opossum embryo are adequately described by Carl G. Hartman.[1] My observations, although more limited, corroborate his account of the birth of the opossum's young. It is an interesting point to note that in this instance the hind limbs of the foetus were comparatively inactive.

There were thirteen young in the pouch of this animal. Dr. H. E. Jordan determined the greatest length (in this instance the vertex-breech distance) of seven of the embryos to be as follows:

Number of embryos	Greatest length
2	10 mm
2	11 "
1	11.5 "
2	12 "

L. M. DICKERSON
MILLER SCHOOL OF BIOLOGY AND THE BLANDY EXPERIMENTAL FARM, UNIVERSITY OF VIRGINIA

1 *Anatomical Record*, Vol. 19, 1920, p. 256.

A NEW RHIZOPUS ROT OF RUTABAGA

IN November, 1927, the junior author found in one of the Evanston fruit and vegetable stores a number of bushels of rutabagas heavily infected with Rhizopus. The rot produced is a typical wet rot such as is produced by other species of Rhizopus, but it works slowly as compared with *Rhizopus nigricans* Ehrb. For example, where *R. nigricans* produces a wet rot in three days, the new Rhizopus requires six days. Inoculation experiments have shown the latter to produce a typical rot in carrot, cucumber, eggplant, green pepper, Hubbard squash, onion, pumpkin, sweet-potato and tomato.

The fungus, when studied in pure culture, proved to be an undescribed species and for it the name *Rhizopus fusiformis* sp. nov. is proposed.

Rhizopus fusiformis sp. nov.

Forming on bread at first a white, cottony mycelium, becoming in age a loose, light gray turf 0.5–1.5 cm high. Sporangiophores 1–2 mm tall, 13.5–17 μ in diameter, trailing, irregularly branched in umbels of two to six sporangiophores, sometimes again branched with a fusiform swelling immediately below the insertion of the branches, some of which may end in sporangia. Sporangia but sparsely developed, globose, 70–113 μ in diameter, with deliquescent wall. Columella spherical, 30–65 μ in diameter. Spores angularly subglobose to suboval, pale gray, smooth, 5–7 x 3.5–7 μ. Zygospores not found.

Isolated from rutabagas rotting in an Evanston store.

Rhizopus fusiformis Dawson and Povah is characterized by its cottony mycelium, its sparse production of sporangia and its branched sporangiophores with a fusiform swelling at the base of the insertion of the branches. It resembles *R. nodosus* Namysl. in the production of swellings on the mycelium, but differs from it in the shape and location of the swellings. In the mode of branching, it recalls *R. arrhizus* Fischer, but differs from it in the size of the sporangia and the production of swellings.

MARION L. DAWSON
ALFRED H. POVAH
NORTHWESTERN UNIVERSITY, EVANSTON, ILLINOIS

WHAT DRAWS MEN INTO GEOLOGY?

DR. GEORGE H. ASHLEY,[1] in discussing the present standing of geology, writes, "To the world at large, geology has taken a back seat." The remedy he proposes is largely that of presenting geology in a more popular and palatable form to the general public. This is a most desirable aim; but, to the writer, another serious phase of the problem is to attract to geology the ablest type of student. Recently, the late Professor Nathaniel Shaler's course in geology at Harvard has been cited, by a leading educator of Columbia University, as an example of what an "easy" course might lead to in attracting large numbers of students and in stimulating many able men to take up geology as their life work. Professor Shaler's enthusiasm certainly must have been contagious and his lectures stimulating. But were there not external cooperating factors to aid at that time in producing professional geologists? As Dr. Ashley has pointed out,

> The average man of culture fifty years ago had a better knowledge of these things (geological concepts) than the man of culture to-day. . . . We were a new country, and the men who explored this new country and told us of its mineral wealth loomed large in public affairs.

The United States Geological Survey, which dates its period of greatest growth from that time, then afforded opportunity for the employment and training of geologists and created a demand for them.

At the present time the University of British Columbia has an outstanding record in North America for the number of its graduates who have proceeded to advanced work in geology during the last few years. At my request, Dr. S. J. Schofield furnished me with a list of them, which shows that during the last six years twenty-seven graduates of British Co-

1 "Geology and the World at Large." Address of the vice-president and chairman of Section G—Geology, American Association for the Advancement of Science, Nashville, 1927. SCIENCE, Vol. lxvii, 1928, pp. 22–24.

lumbia have taken or are taking graduate work in geology, and that twenty-three of these have taken or are studying for the doctor's degree in geology. In order to ascertain the causes of this success, I asked a number of these men how they explained it, and their answers are summarized herewith:

(1) Environment is an important factor. British Columbia is still largely in a pioneer state, with great undeveloped mineral resources, and a consequent respect in the community for the geologist. It is a mountainous country, with a corresponding attraction for youth. As one man expressed it, "The rising generation grasps more readily at a prospecting pick than a brief case, and leans more towards a transit than a golf club; there is an appeal to romp over the rugged peaks of the Cordillera, rather than languish on the office stool." The attractions of business are not so prominent or so omnipresent there as they are in some parts of the United States.

(2) The geological faculty comprises a strong and inspiring group of men, who emphasize the high standing of the profession, the ability of the pioneer Canadian geologists and the necessity for a thorough training for those who would follow in their footsteps.

(3) An unusually good opportunity is afforded of doing summer work and getting field training; because of the exceptionally enlightened policy of the Canadian Geological Survey, whereby the most able students are selected for field assistants to geological parties, every effort is made to further their education and to afford field work suitable for doctorate theses, and publication of satisfactory theses is assured.

(4) There are good opportunities for positions with the Canadian Geological Survey, with universities or with mining companies, after completion of training.

I believe that there is more interest in geology in general in the Canadian universities than in those of the United States, due to the combination of these factors. The existence, popularity or stimulus of an "easy" course, as such, is not a vital factor but a mere incident drawing men into geology. To judge from the number of popular books on geology which are being written and the number of summer schools and summer tours in geology which are springing up on every side, the universities recognize the desirability of popularizing geology, and the geological faculties are aiming to supply the needs of the amateur in different ways.

But for the potential professional geologist, the opportunities for the long period of systematic training in field work, so necessary to his education, are meager, for the expense is beyond the means of most of such students. This is the serious problem. A revival of the state geological surveys and a definite recognized system for aiding men in getting their field training by such surveys and by the U. S. Geological Survey, would, I believe, attract more able men into the profession and produce better trained geologists.

A. F. Buddington

Princeton University

THE EARLIEST DYNAMO

H. W. Wiley, in your issue of May 25, quite correctly calls attention to the fact that the fiftieth anniversary of the dynamo should have been held some time ago and speaks of two French dynamos exhibited at the Centennial exposition in 1876. The earliest dynamo made in America, constructed before the importation of any machines from Europe, was exhibited and operated at the same exhibition. It is referred to in the biography of John E. Sweet (published by the American Society of Mechanical Engineers) as follows:

> At the exhibition the engine [a twenty-horse power engine designed by Sweet] drove an electric-generating machine, the first to be constructed in the United States, which supplied electrical energy to a single arc lamp, one of the very earliest of its kind. This exhibit attracted wondering attention; but those who saw it considered it as an interesting toy and probably had no conception of the future of electric lighting and power development. The electric generator or ''Gramme machine'' was built under the direction of Professor William A. Anthony, with the cooperation of Professor Sweet and Professor Moler and the students of Sibley College [of Cornell University], after the design of M. Gramme, of Paris, which was illustrated and described in London Engineering, August 4, 1871 . . . March 14 and April 25, 1873.

This dynamo delivered 20 amperes and 150 volts. It was used to operate two arc lights on the Cornell University campus. The arc light had previously been used in European lighthouses, but this was probably the first instance of outdoor electric lighting, certainly the first electric lighting in America. The machine was again exhibited at the Louisiana Purchase Exposition in 1904, where it was awarded a medal as the first dynamo in America. The machine is still in good condition.

Frederick Bedell

THE MEASUREMENT OF ULTRA-VIOLET RAYS

In the issue of Science for May 11, 1928, No. 1741, in the section "Science News" there is a report entitled "The Measurement of Ultra-Violet Rays." It is intimated that Dr. E. A. Pohle, of the University of Michigan, together with several coworkers, has designed a device for the measurement of ultra-violet rays, which consists of a cadmium photoelectric cell