another. In a book entitled "Locating the Iron Trail," by Edward Gillette (Christopher Publishing House, Boston, 1925), three trips through the Big Horn Canyon are described. Besides Mr. Gillette's trip on the ice, there is the account of the trip in which my observation is mentioned (see pages 110 and 111), and the description of one of the two previous trips by boat, written by J. W. Newell. That trip was made in August, 1893. The following passages from Mr. Newell's account seem to me of great interest in connection with this problem of analyzed sound. On page 92, in the description of their passage down the river before reaching the canyon, there appears the following:

As we approached the ferry, a group of men came down to the bank and hailed us. They had heard through the newspapers that a party of Sheridan men were out on an excursion with its itinerary including a passage through Big Horn cañon on a boat, and they wanted to know if we were "it." With the very best of intentions they warned us to turn back and abandon the proposed passage in a boat, and particularly such a boat as we had. They said it was too heavy and clumsy to be safely taken over the numerous rapids; that it would be dashed to pieces on the rocks and that we would all be drowned before we had proceeded a mile. They repeated some of the stories we had heard before leaving home, and told of unearthly noises that were reported to have come out of the cañon on the wings of the wind—howls and screams which made the hair stand on end—and could have emanated from no human being or animal known to exist at that day and age of the world.

One of them was sure that some supernatural beings or forces which nothing human could withstand would be encountered in the depths of the cañon, and that if we persisted in going we would never be heard of again. He kindly volunteered to inform our folks at home of the day and date of our passing in case we never came out. Later we imagined we could explain the sounds that had been heard, as being produced by perfectly natural causes.

On pages 95 and 96, apropos of shots fired at mountain sheep, there appears the following:

Our shots echoed and reverberated from the wall on one side to the opposite wall until it seemed as though a dozen shots had been fired. . . .

While the report of a rifle is so magnified in the cañon, a shot fired up the mountain side is not heard below. The unearthly sounds in the cañon which chill the blood and almost cause nervous prostration, no doubt came from the roar of the rapids being reflected by the walls of the cañon acting as a sounding board in places. The sounds are startling, being unusual, and cause one to imagine them as coming from an unknown animal of enormous size.

I had heard nothing of these early traditions and observations when in July, 1903, I heard the howl arising from the roar of the river and was therefore not on the lookout for it. It is interesting, therefore, to see that similar sounds in this canyon had created such a profound impression on early settlers and that an observation so similar to my own was recorded ten years earlier by one of the parties that traversed the canyon in a boat.

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LOSS OF VIRULENCE IN FUNGI

THERE is a general idea among plant pathologists that many fungi lose their virulence, at least in some degree, when grown in culture. Definite and authentic cases of this phenomenon appear to be not easy to find. Burkholder[1] has recently studied a strain of Fusarium, which was originally isolated from a bean plant, and which after six years in culture had largely lost its power to infect beans. When grown for a month as a parasite on beans, it regained its old virulence. This change in physiological behavior was accompanied by certain morphological changes.

The manner in which a fungus can be so changed requires explanation. At first glance it looks like the inheritance of environmental effects. But changes due to environmental factors have been found not to be inherited in other plants, and many of us do not believe in the inheritance of acquired characteristics. Cases similar to the one noted by Burkholder have been cited by some writers in support of the idea that external influences may affect the genetic constitution of organisms. Before such evidence can be accepted careful investigations should be made of some of these cases. In an extensive series of trials the author[2] found that he was unable to affect a change in the spore characters of *Pestalozzia Guepini* by selection. More recently he has found selection within pure lines of a species of Helminthosporium equally ineffective. This indicates that the genetic constitution, of some fungi at least, is not readily affected by external factors.

As a tentative theory explaining the loss of virulence in culture, the following is proposed. Mutations have been found to occur in several species of fungi which have been carefully studied. Stevens[3] has found them in Helminthosporium, Bonar[4] in Brachysporium and the author[2] in Pestalozzia. When a fungus, normally parasitic, is grown as a sapro-

[1] *Amer. Jour. Bot.*, 12: 245–253, 1925.
[2] *Genetics*, 7: 142–201, 1922.
[3] *Bull.* Ill. Nat. Hist. Survey, 14: Art. 5, 1922.
[4] *Amer. Jour. Bot.*, 11: 123–157, 1924.

phyte, mutations occur which give rise to saprophytic strains. These will thrive while more actively parasitic strains will tend to die out, and loss of infecting power of the culture will occur. When again grown as a parasite, the fungus will regain its virulence, through the development of parasitic strains which originate as mutations, while the saprophytic strains will perish. It may be expected that different organisms will vary greatly in the time required to lose, and regain virulence depending on the frequency of mutation in the species. In some forms, loss of virulence does not occur. Dr. Erwin F. Smith reports a potato rotting organism which is as virulent, after eighteen years in culture, as it was when first isolated.

The proposed theory likewise may prove an explanation of attenuation in bacteria.

At present none of the sudden changes observed in fungi has been studied cytologically, so we do not know whether or not they are capable of explanation on a basis of chromosome behavior. For convenience they are therefore called *mutations*.

The author proposes to investigate known cases of loss of virulence and to test the above theory. He is especially anxious to hear from those who know of well-substantiated occurrences of this phenomenon.

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SPONGILLA LACUSTRIS IN MASSACHUSETTS: A CORRECTION

IN a recent note[1] to SCIENCE, we described the occurrence of the fresh-water sponge, *Spongilla lacustris* Linn., from the Sudbury River near Concord, Massachusetts. Since then Professor Ira Remsen has called our attention to the fact that his study of the water supply of Boston in 1881 revealed the presence of a sponge, which was at that time identified by Professor W. G. Farlow as *Spongilla fluviatilis* Auct. Although there are no descriptions of spicules, gemmules or habits of growth in his report,[2] a colored plate gives conclusive evidence to our minds that he was dealing with the same sponge as the one we described. Further evidence of the identity of the two sponges may be the occurrence of the peculiar "cucumber" odor associated with both.

Revisions in sponge taxonomy since 1881 have restricted the name "fluviatilis" to the genus, Ephydata, formerly called Meyenia by Carter, so that there is no longer any confusion between *Ephydata fluviatilis* and *Spongilla lacustris,* due chiefly to the difference in their habits of growth. American synonyms for the species, *S. lacustris,* are listed by Potts[3] as follows (note the absence of "fluviatilis"):

1863 paupercula, Bowerbank;
1863 dawsoni, Bowerbank;
1875 flexispina, Dawson;
1879 lacustrioides, Potts;
1880 abortiva, Potts;
1880 mutica, Potts;
1880 montana, Potts;
1881 multiformis, Carter;
1884 lehighensis, Potts.

We gladly yield all claim of priority of discovery of this species in Massachusetts to Professor Remsen, and appreciate his calling the matter to our attention.

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"BAR SINISTER"

I BEG leave to submit a line in defense of Professor Willis's delightful little fable, published in SCIENCE of May 29, from the imputation of involving a serious error in heraldry. It is true that the heraldic charge indicative of bastardy is the *baton sinister,* but the French name of this device is *barre sinistre;* the anglicized form of which term, *bar sinister,* has the sanction of centuries of usage.

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QUOTATIONS

SCIENTIFIC MEN AS UNIVERSITY PRESIDENTS

IT is gratifying to note that two of the great universities, Michigan and Chicago, have chosen as presidents men of exact scholarship—one a man of proved administrative ability also, and the other of a turn for practical affairs, but primarily a scientist of the purest type. The former, Dr. Clarence C. Little, the new president of the University of Michigan, a graduate of Harvard and a postgraduate student in science, conducted researches in genetics for many years, and became the assistant director of the Carnegie Institution for Experimental Evolution before he accepted the presidency of the University of Maine. His success there gives promise that the University of Michigan will have not only a competent administrator but a scholar who has gone out to the verge of human knowledge in at least one sector of the great field, and is able to appreciate the problems in every other sector, for the method of advance must

[1] SCIENCE, lxi, 391; 1925.

[2] Document 143, City of Boston, 1881; Report of Joint Standing Committee on Water.

[3] Potts, Proc. Acad. Nat. Sci., Philadelphia, 1887.