THE LAWS OF PHYSICS.

PROFESSOR C. R. VAN HISE, in his excellent address on the training and work of a geologist (SCIENCE, August 29), criticises the spiritualistic views of Dr. A. R. Wallace (p. 333) on the ground that they show an ignorance of physical laws. If Professor Van Hise were more familiar with Dr. Wallace's writings, he would know that that naturalist is no mere biologist, but is well acquainted with the currently accepted laws of physics. If he should remain unconvinced of this, he could not say that Professors Crookes and Oliver Lodge, who hold similarly heterodox opinions, are not familiar with the principles of physics! It seems to me that Professor Van Hise might just as well have claimed that believers in magnetism were unacquainted with the laws of gravitation.

Some years ago I had the pleasure of discussing these matters with Dr. Wallace, and in my innocence I ventured to ask if he had sufficiently considered the laws of physics, and so forth. I can recall his smile as he said that of course he had considered them, and then went on to say that all phenomena were equally natural and in accordance with natural laws, only some had received a theoretical explanation, while others had not.

Dr. Wallace's views may or may not be absurd, but it seems clear that Professor Van Hise's criticism is without justice or validity.

T. D. A. COCKERELL.

September 12, 1902.

LICHENS ON ROCKS.

TO THE EDITOR OF SCIENCE: A few days ago, I visited a point along Chicago Creek near Idaho Springs, Colorado, and on examining the massive rock (gneiss) to ascertain the cause of the apparent weathering, I found the rocks literally covered with lichens of a uniform black color.

My observations were made in the vicinity of an abandoned tunnel site, in fact at the entrance, and while standing on the 'dump' my eye fell upon a piece of porphyritic rock which proved to be covered with arborescent figures closely resembling the imprint made by the lichens observed on the rocks above.

My first impressions were that the figures were simply those characteristic of 'dendrites,' but on further examination and reflection I discovered that the deposit on my specimen was upon the surface of a conchoidal fracture, the latter being evidently the result of a shot made prior to the removal of the rock from the fissure vein, and consequently the arborescence could not be the result of the infiltration of a mineral solution along a cleavage plane or fissure, which is generally supposed to be the cause of such deposits.

This conclusion was seemingly corroborated by a discovery made a few moments later on the opposite side of the cañon and at the base of another mountain. Here I found a magnificent hand specimen of porphyry which was evidently derived from a porphyry dyke which I know to be located several hundred feet above the creek. The entire surface of the specimen which had been exposed to the light was covered with beautiful forms of lichens of a brown, green, gray and black color, brown and green predominating.

The ground or main mass of the porphyry, consisting of a beautiful brown color in which were embedded the crystals of feldspar, led me to think that perhaps the differentiation in the color of the lichens was due to the mineral content of the underlying constituents of the rock; for the greater percentage of the browns were found growing in the brown main mass. Here was also evidenced their corrosive and etching effect upon the rock, the black lichens being evidently in a state of decomposition; their corrosive and penetrating effect was also quite apparent upon the massive rocks, resulting in beautiful arborescence similar to that found in the specimen first alluded to above.

I might add that the specimen was considerably mineralized, iron pyrites being disseminated throughout and readily observed by the naked eye. The presence of this accessory together with that of the essential oligoclase which might possibly contain manganese as one of its constituents leads me to ask, first, whether either one or both of these minerals could have influenced the color of the plant during life, second, whether the arborescence

of the specimen first alluded to was not entirely due to organic action.

SAMUEL T. HENSEL.

BONES OF A MASTODON FOUND.

LABORERS engaged in digging out muck have recently found in a swamp near Newburgh, N. Y., some of the bones of a mastodon. So far, there have been secured the lower jaw, with teeth in place; the teeth of the upper jaw; one tusk; eighteen ribs, or seven complete ones and fragments of four others; fifteen sections of the vertebræ; bones of the foot; and what is probably the skull, though in many small fragments. These bones laid at a depth varying from two to eight feet below the surface of the ground, a few in the muck, but most of them in the shell marl that underlies it. The swamp, about two acres in extent, is three quarters of a mile west of the Hudson River, one mile north of the northern limit of the city of Newburgh, and about one hundred and eighty feet above the river level. There is gently rising ground on the north and east, but directly west of the swamp the hills rise quite abruptly to a height of eighty or one hundred feet. The underlying rock beneath this muck bed appears to have a general slope to the southeast. The muck averages two feet in thickness, below which is marl, varying from a few inches to twelve feet in thickness, and under this, boulders and pebbles that form a solid bottom.

The bones found were scattered over an area about fifty by twenty feet, and in this respect they differ from those of the three mastodons found in Orange County in former years, and which were exhumed in almost the relative places they occupied when the animal was alive. The tusk found is curved, seven feet long and nearly seven inches in diameter at the root, and is in fair condition, though it showed signs of disintegration soon after removal from its resting place. Owing to the accumulation of water in the excavation, the progress of finding and removing the bones is very slow; but in a few days it may be possible to announce the finding of some other parts of the skeleton.

REGINALD GORDON.

THE AMERICANIST CONGRESS IN NEW YORK.

THE 13th session of the International Congress of Americanists will open at noon, Monday, October 20, and continue during the week, in the halls of the American Museum of Natural History. The hotel headquarters will be the Hotel Majestic. Lunch will be served daily at the Museum to all members. Thursday will be devoted to a trip through the parks, and visits to Columbia University, the Botanical Garden and Zoological Garden. More than eighty papers have already been offered to the Congress from nearly all the active students of Americanist subjects. The membership fee is three dollars which entitles one to all of the privileges of the meeting and to the volume of proceedings to be published later. The address of the general secretary is M. H. Saville, American Museum of Natural History, New York. It is expected that a large number of the anthropologists of the country will be present, and among the official foreign delegates are: Professor Dr. Seler, Professor Dr. von der Steiner, of Berlin, representing Prussia; Professor Dr. Stolfe, of Stockholm, Sweden; Professor Dr. Schmeltz, of Leiden, Holland; Professor Lejeal, of Paris, France; Alfredo Chavero Chavero, Dr. Leon, Francisco Belmar, of Mexico; Dr. Pittier, Dr. Ferraz, of Costa Rica. After the meeting the foreign guests will be given an excursion to Philadelphia, Washington, Pittsburg, Cincinnati and Chicago to visit the scientific and educational institutions of those cities. A visit will be made to the ancient fort in Ohio known as Fort Ancient. As this is the first meeting of the Americanist Congress in the United States it is hoped that there will be a large attendance of those interested in the work of this organization, namely, to bring together students of the archeology, ethnology and early history of the two Americas, and by the reading of papers and by discussions to advance knowledge of these subjects.

THE BRITISH AND AMERICAN ASSOCIATIONS.

IN its report of the Belfast meeting of the British Association *Nature* says: