

other. Moreover, the title "Doctor," with the implied Ph.D. (doctor of philosophy in the broad sense of high world-scholarship), this represents an outlay of time, effort and self-denial; even the money is worth considering. It means about \$6,000—no small sum for the impecunious student. This can be figured easily, from the \$1,200 or \$1,500 salary per annum that the average candidate temporarily relinquishes when he goes to the two-to-four-year course, plus the actual expenses incurred in study; indeed, \$6,000 is a low estimate. But beyond this is the honest attempt to know all about some little region of inquiry, coupled with a careful general training on the work, the method, the result and the bibliography of the respective specialty. The dignity and the worth of this ambition are greater than the title; this is all understood as a matter of custom in the university, but it should be kept there. The dress suit has its place and its occasion—so has the gown and the title; but these would be farcically out of place in the street, the factory or the shop. Careless misplacing calls for such censure as your editorial justly conveys. It is often gratifying to see an author publish his degrees with his books; the intention is to show his ability to speak with authority on his chosen subject. But no "Ph.D." can entitle any one man to pose as an authority on all subjects; happy is the man who can use his own plain name in labeling his own products. Beecher was not a D.D., neither was Darwin a Ph.D. In describing common men, it is to be hoped that more care will be taken, not only in the accuracy of that title which can be worthily assumed by the respective specialist, but particularly in the matter of good taste—and here we certainly look for more care on the part of the editor of *Science*, the respected weekly gazetteer of education and science in the United States.

DOCTORUM MINIMUS.

Boston, Feb. 7, 1905.

It is estimated that the world's annual consumption of rubber is about 60,000 tons, valued at about \$80,000,000 in all.

A graphite mine is now being worked in the State of Queensland, in Australia. It is situated on one of the slopes of Mount Bopple, about three miles from the Netherley station, on the North Coast line, and within 35 miles of the seaport of Maryborough. The material found is of very good quality. At a depth of 32 ft., 35 tons of graphite were obtained in cutting through a large mass, and on continued sinking operations fine seams varying from 1 ft. to 6 ft. have been reached. Several shipments have been made to paint manufacturing firms in Australia, and have brought about \$50 a ton. Trial specimens have also been sent to some large firms in England and Germany.

### The Birmingham Disaster.

BY OUR SPECIAL CORRESPONDENT.

On Monday, February 20, 1905, an explosion occurred in the Virginia City mines, Jefferson county, Alabama (A. W. Reed & Company, lessees; Alabama Steel & Wire Company, owners). It was 4 o'clock in the afternoon, when the miners were about making the usual shot, preparatory to quitting work for the day. As a consequence of this explosion, 108 men (including miners, heading men, trapper drivers and boss driver) lost their lives, and 13 mules were killed. The first statement was to the effect that a 'dust' explosion had taken place, and that those men in the mines who were not killed outright had died from suffocation by the strong 'black-damp' following. The force of the explosion was felt in every part of the mine, blowing down brattices and knocking out props. One heavy timber was blown out of the mine and on to the tippie 500 yd. away. Immediately after the explosion, a flash was seen to burst from the mouth of the mine; but there was no subsequent fire. Probably the exact cause will never be determined, as not a single man of those at work at the time of the explosion escaped. A rescuing party started within an hour; they had to carry air into the place, repair brattices to provide a regular air-supply, and replace props. The first victim was found in the main slope, some distance from the mouth of the mine; the mutilation of the majority of the bodies was significant in showing that the explosion was terrific. The remains were charred and covered with dust, from which it is inferred that it was a 'dust' explosion. While the mine was known to have a little gas, yet casual, though not official, remark gave evidence to the bad reputation of this mine as regards dust.

The Virginia City mine is a slope, now down 1,800 ft. From the mouth there is an incline of about 33°; and, after the first 'lift' or 'entry,' the pitch is greater, about 42.5°. There are six entries, the last not being turned very long and only on one side. The other five entries go to the two sides, right and left. The first, 300 ft., and the second 500 ft., respectively, from the mouth of the mine, have been worked out and there was not a soul in them. The indications point to the view that the explosion took place in the third-left entry. It is believed that a 'windy' shot was made; the miner either charged too much or too little, and the shot set fire to the dust, which, being presumably charged with gas, exploded with terrific effect. The fire from the explosion consumed the oxygen in the air, and black-damp (also called after-damp, or CO<sub>2</sub>) filled the mine in short order. In one entry ten bodies were found in a bunch; they were headed toward the air course. One of the unfortunates had taken off his shirt and covered his face and mouth to

prevent the inhaling of the foul air. He lay on his face, and his son was by his side. His left arm was so placed that the indications are that he was leading his son in the effort to get to better air. But, with the brattices blown out, there was no chance of a free circulation of air, and it is figured that in less than half an hour the men and mules were all dead. It took five days after the explosion to remove all the bodies from the mine.

Upon being notified, the State mine inspector, Mr. Gray, went to the scene immediately (your correspondent accompanying him); to a considerable extent he directed the work of the rescuing party. There were all the indications of the black-damp, the replacing of brattices and securing of a full current of air being difficult. The pipes to the pumps were wrecked and the pumps themselves displaced. Water began seeping and this was also troublesome. The State inspector will begin at once a full investigation, entering every room and making a thorough examination to ascertain, if possible, exactly what caused the explosion. It is not denied that there was much dust in this mine.

Acting Governor R. M. Cunningham has ordered a strict investigation. 'Windy' shots are frequent in Alabama; and dust explosions, on a small scale, have previously occurred. The Tutweiler Coal & Iron Company have introduced a sprinkling system to prevent these dust explosions; such an accident killed four men in their Short Creek mine a few years ago.

Many widows and fatherless children were left destitute by this accident. The people of the Birmingham district collected a fund of \$25,000, which is being distributed among the families of the victims, with no discrimination on account of color. Three-fourths of the victims were white.

The "reversing layer" in the sun is just over the photosphere, and just below the chromosphere; it contains the lighter gases, as hydrogen and helium, and the vapors of sodium, calcium, magnesium, etc.

A method of producing or repairing quartz articles has been invented by P. Askenasy, of Pansdorf, near Liegnitz. He places a quantity of quartz sand on a support of the same material and fuses it into the desired shape by an electric arc, which is moved over the surface to be melted. The arc is struck between sloping electrodes of small diameter, high voltages being employed, and the operation is conducted in an atmosphere of CO. In certain cases it may be desirable to add to the sand some metallic oxides, like alumina, stannic acid, titanitic acid, etc., which lower the melting point.