Castle, Colo., December 16, 1913, in which 37 men were killed; and one at Eccles, W. Va., April 28, 1914, in which 181 lives were lost. The general ventilation in most of the mines involved in explosions was good, but the defect in certain mines was in permitting the local accumulation of gas through not bratticing up to the face of gaseous entries or working places. One of the great disasters was probably caused by the use of dynamite for blasting, and by disobedience in firing a shot or shots when miners were in the mine, in spite of the fact that an outside shot-firing system had been installed.

Other lesser disasters occurred during the year. Many shot firers lost their lives in the Pittsburg, Kans., district, and in Oklahoma, Indiana and Iowa. Although the system of employing shot firers to fire the shots when all others are out of the mine lessens the number of deaths, yet in many districts the methods of shot firing employed are still so extremely hazardous that only the most reckless men are willing to act as shot firers. In any mine in which this system is used there seems to be no good reason why shot firing from without the mine by electrical means should not be employed, at least if permissible explosives are not used.

Director Holmes strongly urges the purchase by the government of the grounds on which the experimental mine is situated. He declares that the Bureau of Mines should own these grounds, now merely leased, in order to safeguard the large expenditure already made in developing the mine thereon and equipping it with expensive appliances.

Looking to the future, the director observes that, despite the progress made in ascertaining the nature of mine explosions and in devising methods of prevention, they still continue to occur, and it is to be feared that complete prevention will be difficult, owing to the inherent difficulty of eliminating errors of observation, judgment, or understanding from among miners or mine officials. Thus, one of the shocking disasters of the past year was brought about because of one man's willingness to risk the sacrifice of not only his own life, but the lives of many others in order to gain a few tons of coal. It is difficult to meet such a case, and yet with the progress that is being made in the methods of preventing or limiting explosions, it is certain that hereafter in a well-protected mine properly cared for there will be much less danger of a widespread explosion.

THE UNIVERSITY OF CINCINNATI BUREAU OF CITY TESTS

THE Bureau of City Tests aids the city in two ways. It helps the government to purchase the best materials, by examining the dealers' samples, and, by making further tests from time to time, enables it to receive supplies of good quality throughout the year.

Cincinnati is one of the first large cities to purchase coal under competitive bidding in accordance with well-drawn specifications. All its purchases are made on the British thermal unit basis. In submitting bids, dealers guarantee a certain number of heat units per pound, and a certain percentage of ash. The cost per heat unit in the various bids is then calculated and the contracts awarded. All moisture in excess of the amount normally present is deducted from the tonnage delivered. The result of this new system has been the receiving of a good uniform grade of coal.

The bureau tested the 450 or more carloads of cement used, during the year, for various city improvements. In spite of the fact that only standard brands which have proved dependable are used, 11 carloads of cement of poor quality were rejected. The steel employed to reinforce concrete work is tested physically, and of this but one questionable sample was received.

By testing fire hose, the city saved $11,000 on the contract of 1912, and about the same amount on that of 1914. The bureau analyzes samples without any knowledge of the bidders' prices, and contracts are let on a quality basis to the lowest bidder whose product conforms to the standard underwriters' specifications. The satisfactory performance

of the hose under heavy duty has shown the value of these examinations.

In the case of lubricating oils, also, the contracts are let to the lowest bidder whose oil conforms to the specifications of the bureau. At one time, 26 samples of oil were rejected, and it was necessary to advertise for new bids. The second set of samples were practically all up to the requirements.

The 1,164 samples examined during the past year can not all be mentioned, but here are a few that were rejected as inferior: paint, with over 20 per cent. gasoline; sand, dirty, not well graded, and unsuitable; anti-freezing compound, guaranteed free from calcium chloride, yet found on analysis to be composed entirely of calcium chloride and water; marble cleaner, high in price, and consisting entirely of washing soda; woolen blankets, supposed to contain not more than 15 per cent. of cotton, yet shown on analysis to have 30 per cent.; and sulphuric acid, containing such a high percentage of iron that it would have ruined the expensive storage batteries of the fire alarm telegraph system.

The services of the bureau are, for the most part, accepted in a cooperative spirit by dealers and manufacturers. Its reports are frequently the first analyses the dealers have seen of their products, and they have shown much interest in the results and have tried to meet the specifications. The work of the bureau has increased 80 per cent. since last year. The city departments are rapidly taking advantage of the laboratory, and the coming year will undoubtedly show a big increase in the variety, as well as in the volume, of the work submitted.

THE RETIREMENT OF CHARLES HORTON PECK

The regents of the University of the State of New York on the retirement of Charles H. Peck from the position of New York State botanist have adopted the following minute:

The service rendered to the state by Charles Horton Peck, D.Sc., who has just retired from his position as state botanist, has been extraordinary in its fidelity, assiduity and productiveness. Dr. Peck entered the staff of the State Museum as botanist in 1867, and from that date to the present, his service has been continuous—a period of 48 years. In 1883 the position of state botanist was created and he has been its only incumbent.

The nearly half century of his scientific activity became an epoch in the science of botany in America, by virtue of the extensive contributions which he made, not alone to the knowledge of the flora of New York but specially through his almost pioneer investigations among the fungi. His researches in this field vastly increased the sum of knowledge and established an orderly and rational classification so that his published papers, issued in the reports of the state museum, are indispensable to any student of these forms of life. The number of species discovered and described by him are counted by thousands and the additions made through his efforts to the state herbarium are so extensive that this collection of plants is to-day among the largest on the continent and of great scientific worth. By common consent of his colleagues Dr. Peck has long been recognized as the ultimate authority in mycology—the field of his special labors.

In view of these services whose value to the state can not be briefly estimated or readily expressed, the regents take this occasion to record, with their regret that the exactions of time have impelled him to retire from the service of the university and the state, their congratulations to Dr. Peck upon a life well rounded and a work well done, with their assurance of continued interest and deep regard for his welfare during the years that may remain.

SCIENTIFIC NOTES AND NEWS

The annual meeting of the Wesleyan University Club of New York City, on January 28, was in honor of the fiftieth anniversary of the graduation of Dr. William North Rice, professor of geology.

Dr. Robert H. Richards, professor emeritus in the Massachusetts Institute of Technology, has been awarded the gold medal of the Mining and Metallurgical Society of America in recognition of his services in the advancement of the art of ore dressing.

Professor Isaiah Bowman, now in charge of geography at Yale University, will at the end of the current academic year on about