

water formed in the reductions, and that the supposed trioxide of tungsten contains nitrogen and probably hydrogen. In view of these facts and of the fact that there is no means of determining when the reduction of oxide to metal is complete, and finally, in view of the fact that more than one hundred and fifty determinations have been made of this oxide, and nothing definite established, it is evident that the method usually employed in the determination of the atomic mass of tungsten must be regarded as unsatisfactory.

UNIVERSITY OF PENNSYLVANIA.

OBITUARY.

Mr. CARL H. SCHULTZ was born at Jutroschin-on-the-Orla, in the Province of Posen, on the 2nd of October, 1827. He began his education at the schools of his native town. In 1840 he entered the schools at Krotoschin, and later the gymnasium of Lissa. From there he went to the University of Breslau, from which he graduated in 1849. Being particularly fond of chemistry and natural philosophy, he continued the study of these branches for some time after the regular course was finished.

While in the tertiary course in the gymnasium, although only thirteen years of age, he gave private instructions in mathematics and later in chemistry.

In 1853, during the World's Fair in New York, he came to America, bringing with him very little money, but some strong letters of recommendation, and was not long in finding employment. His first situation was with the late Professor Benjamin Silliman, who had charge of the Chemical Department of the Exposition. Later he was appointed assistant to Dr. John Torrey, Professor of Chemistry at the College of Physicians and Surgeons, then in Crosby street. In 1854 the United States Assay Office appointed Dr. Torrey Chief Assayer, and he at once made Mr. Schultz his assistant. He not being a citizen of the United States was offered as an objection to his appointment, but he overcame this by taking out his first papers, and after the proper time, his second papers. Few men ever felt prouder of their citizenship or could have been more thoroughly American.

While at the Assay Office, besides his routine work of making

gold and silver assays, he found time to do a good deal of investigation in connection with Dr. Torrey, and much valuable work toward improving the methods of assaying. At the same time he did the chemical work for the Manhattan Gas Company,



and the laboratory at 18th Street Station was fitted up under his supervision, and remains to-day, with few alterations, as he left it.

While holding the position at the Medical College in Crosby Street, he lodged in the college building and took his meals in a boarding house in the neighborhood. There he met the late

Thomas Warker, who showed him a French siphon. With his characteristic quickness of perception, he at once saw its advantages for keeping water fresh and sparkling, and especially its value in the sick-room. Believing that the manufacture of artificial mineral waters would be a profitable industry, he began making investigations on the subject.

In 1862 he and Thomas Warker established a business for the production of mineral waters on a small scale, under the firm name of Schultz and Warker, which continued until 1871, when Mr. Schultz bought out Mr. Warker's interest, and has since conducted the business under his own name. In 1871 the business had assumed such proportions that it was necessary to move into larger quarters, and he purchased property on First Avenue and located his factory where the business is still continued.

In 1867 he was sent to Europe to examine into the methods of assaying employed by foreign governments, and on his return he submitted a report, many of the recommendations of which were adopted.

In 1872, after seventeen years of service, he resigned from the Assay Office and also from the Manhattan Gas Co., although he was afterwards many times called upon in consultation in regard to questions of great importance. General Roome, President of the Gas Co., once remarked that Dr. Schultz's opinion was of special value to them, because it carried with it not only thorough scientific knowledge, but sound business judgment as well, and no matter how much pressure was brought to bear upon him, he would not endorse anything until satisfied by investigation of its merit.

As an illustration of his untiring industry and genius for application, I might mention, that for a number of years after establishing his business, he still retained his position in the Assay Office and remained chemist to the Gas Co., any one of which posts would be regarded by many men as quite sufficient for the employment of all their energies.

He was very fond of chemical work, and often regretted that he had not more time to devote to it, and those who have visited the factory, will agree with me that his laboratory is the finest and best equipped in the country. It was fitted up without the slightest regard to expense, and with no restrictions

whatever on apparatus or supplies. What a boon it would be to our profession if more of our employers took so much interest in science and provided their chemists with every facility for work.

He was a genial and companionable man, cordial and friendly to all to a degree seldom met with. Especially marked was his consideration and sympathy for those in his employ. His men came to feel that in him they had a good and true friend who would not forsake them, a feeling justified by his many benefactions.

Naturally of a charitable disposition, he not only contributed liberally to public charities, but his private benefactions were both numerous and judicious. Many a man would never have attained the position he now holds, had it not been for Mr. Schultz's timely assistance.

The most lovable side of the man was best seen in his home and in his social relations. He and his wife were most genial hosts and most lavish entertainers when they resided in 140th street, and later at their beautiful home in Murray Hill. He leaves a wife, ten children and seven grandchildren to mourn his loss. The funeral was held at his late residence in Murray Hill on May 31st. The interment was in Long Hill Cemetery, near Summit, about three miles from his home.

Mr. Schultz was a member of the American Chemical Society, New York Academy of Sciences, the College of Pharmacy, the American Association for the Advancement of Science, the Reform Club, and all the prominent German Clubs in this city.

Mr. Schultz was a man of keen insight, sound judgment, and affectionate and generous disposition. To be counted among his friends was an honor and a privilege. A. P. HALLOCK.

NOTE.

*Hydrolysis of Starch by Acids.*¹—*An Apology.*—It has recently been brought to our notice that in 1880 and 1881² Prof. H. W. Wiley demonstrated that a practically constant relation existed between the optical and copper-reducing constants in samples of commercial glucoses investigated by him. We wish to apolo-

¹ This Journal, 18, 869, 900.

² Proc. Am. Assoc. of Sci., 1880 and 1881.