

being made into sheets. For this purpose it will not be necessary to make an analysis, but simply to put clean, thin shavings of lead into a test-tube and cover with pure, cold vitriol, the amount of action would then be clearly visible."

It is, however, clear that the action of cold acid is no sure criterion of the effect that hot acid will have upon the lead; so, to avoid error, it is much safer to test the lead under the conditions of its actual employment.

In order to briefly sum up the results of experiment, it will be advantageous to compare the average of the alloys with pure lead as unity both at ordinary temperatures and at 100° C. The following table will therefore express the average solubility or liability to formation of sulphate of the alloys in terms of lead. In each case the total of the relative solubilities is divided by six (the number of members in the class), for the average solubility of the alloys :

	20° C.	100° C.
Pure lead	1.00	1.00
Pb. 100, Sb. 1 to 10 parts	0.81	2.75
Pb. 100, Sn. 1 to 10 "	1.42	0.75
Pb. 100, Bi. 1 to 10 "	1.10	7.69
Pb. 100, Cd. 1 to 10 "	0.86	1.10
Pb. 100, Ag. 1 to 10 "	0.87	0.93
Pb. 100, Zn. 1 to 10 "	1.53	1.10

OBITUARY.

DR. JOHN LAWRENCE SMITH, died at his home in Louisville, Kentucky, on the 12th of October last, in his 65th year, having been born near Charleston, South Carolina, on the 16th of December, 1818. He had been for some years in rather delicate health and had of late retired very much from the active duties of the laboratory, but maintained his interest in scientific studies.

Dr. Smith pursued his academic studies at the University of Virginia, with which he was later connected as a professor. His medical degree was taken at the Medical College of Charleston. Immediately after this he went to France and Germany, where he zealously followed his medical studies, as also chemistry, physics and mineralogy. While yet a student of medicine at Charleston, he commenced his original work by sending to Silliman's Journal a paper, "On a new method of making permanent magnets by

galvanism." In 1841 he commenced his contributions from Paris in a memoir on the detection of arsenic in the human body, and for the term of his residence abroad he was a regular correspondent of the *American Journal of Science*. The list of his papers in the Royal Society's catalogues embraces seventy-eight titles, down to 1873. In that year Dr. Smith printed in a volume of four hundred pages, 8vo., a collection of the more important of his original researches, embracing forty-seven titles.

Dr. Smith returned to Charleston in 1844 from his first European residence, and commenced his professional work as a physician, which was, however, so little to his taste that he soon abandoned it for the life of an investigator in scientific pursuits. As assayer of the State of South Carolina, he made a study of the soils adapted to the growth of cotton—analyzing, also, the marls used as fertilizers. The Turkish Government soon called him to Constantinople as one of a commission to promote the growth of cotton in Asia Minor. But his active mind developed new lines of investigation and opened up sources of wealth before unknown in the Sultan's dominions, especially in the important discovery of Emery, of which he gives us the first account, setting forth its geology and mineralogy. The Morse telegraph was developed while Dr. Smith was in Turkey, and he wrote immediately to the writer to send him an outfit of telegraphic apparatus which he set up at the Sultan's palace, communicating with the port.

His memoir on the Emery was communicated to the French Academy of Science, and was with distinguished encomiums ordered for publication in the *Memoirs des Savants Etrangers*." He subsequently extended his researches to the Emery of Chester, Massachusetts.

During his brief occupancy of the Chair of Chemistry, at the University of Virginia, he carried out his elaborate research on American minerals, devising and perfecting his method for the determination of alkalis in the silicate. Professor Johnson, in the American edition of Fresenius, says Professor Smith's method is by far the most convenient and accurate for separating alkalis from a silicate, and is universally applicable, except, perhaps, in presence of boracic acid.

In 1854 Dr. Smith was called to Louisville on the resignation of Professor Silliman of the Chemical Chair in the Medical Department, as his successor, and this chair he held for several years. Here he married Miss Guthrie, who survives him. They had no

children. By their marriage Dr. Smith became possessed of an ample fortune which enabled him to devote himself with renewed zeal to scientific work, visiting Europe at frequent intervals to confer with his scientific friends at the French capital, and gather objects of interest, especially in the department of Meteors, to the study of which, as is well known, he devoted much time and contributed many important memoirs. The subject of his last paper, in June of 1883, was "On the Concretions in Meteoric Iron," detailing new methods of research, of which he says, "if my health permits I shall complete them before many months." These were his last published words! Fortunately for science his very large and fine collection of Meteorites was purchased by Harvard University only a few days before his death.

Few have done so much for American mineralogy as Dr. Smith, and done it so well. His works were widely recognized, and few Americans have been rewarded by so many elections to learned societies. The following list embrace the more important both domestic and foreign :

Member of the American National Academy of Sciences ; of the Chemical Society of Berlin ; of the Chemical Society of Paris ; of the Chemical Society of London ; of the Societe d'Encouragement pour l'Industrie Nationale ; of the Imperial Mineralogical Society of St. Petersburg ; Corresponding Member of the Boston Society of Natural History ; of the American Academy of Arts and Sciences ; of the American Philosophical Society ; American Bureau of Mines ; the Societe des Sciences et des Arts de Hainaut, etc. Chevalier de la Legion d'Honneur ; Member of the Order of Nishan Iftahar of Turkey ; Member of the Order of Medjidieh of Turkey ; Chevalier of the Imperial Order of St. Stanislas of Russia : correspondent of the French Institute.

All who knew Lawrence Smith loved him. He was one of the most amiable of men and yet a strong character. One who knew him well says justly of him : "Eminent in his profession he was more than eminent in his home. He was a gentleman, truly, but he was a man of affairs, a man of convictions, a man among men, who though absorbed in scientific pursuits, took a sincere and profound interest in public questions and events. He had not an enemy on earth, despite the positivity and transparency of his opinions, and he goes to his last rest leaving the people with whom he was so long identified to mourn the loss of a citizen of whom all were proud and whom everybody loved and honored."

B. SILLIMAN.