from the College of Civil Engineering at Cornell in 1905 and died in New York City two years ago. The memorial is in the form of an endowment fund of $5,000, the income from which shall be used to purchase equipment and supplies for research in hydraulic engineering and related fields.

SIR NORMAN WALKER, of Edinburgh University, Scotland, has offered the College of Medicine at the University of Iowa his medical library through Dr. Walter L. Bierring, Des Moines. Sir Norman visited the university two years ago in company with a commission of eminent European physicians and surgeons. He has announced that the gift is in appreciation of the medical work being done at the university. He also states that he expects to send his son to the University of Iowa to complete his medical training.

A COLLOIDS research laboratory in the University of Manchester has been established with £11,842 given for that purpose. Mr. D. C. Henry, at present a lecturer in chemistry, has been appointed lecturer in colloid physics and will take charge of the laboratory, which will be known as "The Graham Research Laboratory."

DR. GEORGE GRANT MACCURDY, curator of anthropology and assistant professor of prehistoric archeology in Yale University, has been promoted to professorial rank with the title of research associate.

DR. HUDSON BRIDGE HASTINGS, of Wellesley Hills, Massachusetts, who has been investigator of business and economic questions under the Pollak Foundation for Economic Research, has been appointed professor of administrative engineering at Yale University.

MR. J. L. SHELLSHEAR, demonstrator in anatomy at the University College, London, has been appointed professor of anatomy at Hongkong, China.

DISCUSSION AND CORRESPONDENCE

AN EXCEPTIONALLY DARK DAY IN NEW YORK

AT rare intervals days occur in New York of such exceptional darkness as to attract general attention. A remarkable day of this kind was February 28, 1923.

The morning dawned dark, with a few flakes of snow falling until about nine o'clock. The darkness increased toward noon. It was most intense from nine until eleven. At that time the aspect of the city was that which might be expected at night. The shops and shop windows were lighted. Offices, even on the highest floors of the skyscrapers, found it necessary to turn on the electric light. The street cars and taxicabs were lighted as in the evening. For an hour there seemed to be no change in the density. After noon there was a perceptible improvement; but the whole day was unusually dark.

The next day was bright and clear, with a good westerly breeze. It was possible to compare the light on the dark day with that on a normal one. Print could be read as well at 6:15 P.M. on March 1 as at 10:45 A.M. on February 28. Sunset was at 5:46 on March 1. In other words, the light at a quarter of eleven in the morning of the dark day was about the same as it would normally be half an hour after sunset in the same place. The place where this comparison was made was Fifth Avenue and Forty-third Street.

In the streets the atmosphere was clear during the darkness. There was no appearance of fog. Many of the tall buildings could be seen to their tops. It was noticed that smoke and spent steam rose vertically from their roofs. The sky was dark gray.

It is seldom that even very dark days give rise to so much comment. On this occasion the public seemed to feel that it had a special reason to be alarmed. On February 28 the newspapers announced with sensational headlines that the celestial body Beta Ceti had blazed forth suddenly in the sky to the great interest of astronomers. An eminent scientist was quoted as saying that if such a change occurred in our sun, and such changes were not uncommon, the population of the earth would be annihilated. The sudden brightening was of the utmost practical importance. The dark day was therefore looked upon by thousands with alarm.

It has seemed worth while to inquire into the atmospheric conditions which prevailed at

New York and vicinity on February 28 in the hope of finding an explanation of the darkness. I am indebted to the officers of the New York office of the United States Weather Bureau for an opportunity to examine their records of temperature, pressure, wind, precipitation and fog over the northeastern part of the United States and especially along the coast in the neighborhood of New York City.

The day was seasonable as to temperature, with a maximum of 37.4 degrees Fahr. and a minimum of 30. The barometer was 29.97 at 8 A.M. and 29.89 at 8 P.M. Between ten and eleven, when the darkness was greatest, the temperature, according to the official records, was 35. This was at the top of the Whitehall Building; in the streets in the center of the city it was doubtless several degrees warmer. It may be taken as sufficiently accurate to say that the temperature throughout the very dark period was just above the freezing point.

The weather was cloudy throughout the entire region about New York, with slight precipitation in the west and north. Fog was reported along the coast from Cape Cod to the Delaware capes.

The wind was E.S.E. from 8 to 9:15 A.M., then mostly S.E. to 10 o'clock. From 10 to 10:55 it was S.S.E. At 10:55 the wind began to shift to the S., then S.W., W. and N.W. to N. It took fifty-five minutes to complete this change. From noon to 1:45 the wind blew from the north; then it veered to the N.E., back to north and was N.E. at 5:15. It blew from nearly all points of the compass, starting from the direction of the sea and continuing so until the darkest period was passed. There was a sensible lightening when the shift to the south occurred.

The velocity of the wind was five miles per hour up to 9 A.M., then 3 m.p.h. to 9:30, 2 m.p.h to 11:25 and 4 m.p.h. to noon. From noon onward to the end of the day, the velocity was from 7 to 8 m.p.h. The period of greatest darkness was the period of least wind. It grew lighter when the wind veered to the south and began to blow a little harder.

The foregoing facts appear to afford a satisfactory explanation of the darkness. During the morning, large masses of air carrying a heavy load of fog were driven very slowly back from the sea. It is probable that they encountered resistance from currents moving in the opposite direction which became noticeable later in the day, and, in consequence, became piled up to a great height. Whether it was due to this cause or not, the thickness of the fog blanket was certainly great. The warmth encountered at the surface of the earth dispelled the fog at the surface and so produced the effect of a city covered with a very heavy, low-lying cloud. When the wind shifted and grew stronger much of the cloud was blown away.

It would be interesting to know how much of the darkness was properly attributable to the smoke of soft coal and other inferior fuels due to the scarcity of anthracite coal. The smoke and fumes and dust produced by the city, and noticeable in the atmosphere, except on the brightest days, would have added materially to the darkness had there been no unusual amount of soft coal in use. The smoke added to, but did not cause the darkness.

It is proper to conclude that the darkness was caused by a great, low-lying and nearly stationary cloud into which countless chimneys were pouring smoke of various degrees of density.

GEORGE A. SOPER

THE MASS LAW AND STATISTICAL EQUILIBRIUM

THE recent note by Professor Neuhausen[1] on the reaction of slightly soluble salts calls attention to the fact that, while in the past the common error has been to apply the mass law to solutions too concentrated, it is equally fallacious to attempt to reason from it when the solutions are too dilute. Gibbs pointed out that thermodynamics is only an approximation to the exact science of statistical mechanics, the approximation being the better the larger the number of molecules in the system under consideration. Thus by extrapolation from the data for the vapor pressure of tungsten at high temperatures we can calculate the vapor pressure of tungsten at temperatures where there should be only one tungsten atom per liter in the vapor in equilibrium with the solid.

[1] SCIENCE, N. S., 57-26, 1923.