$1,500 for researches on osmotic pressure. Although osmotic pressure has been recognized for twenty-five years as one of the great forces of nature, no direct measurements have been made to furnish an adequate experimental basis for the laws supposed to govern it. Prof. Morse has been engaged for several years in attempting to overcome the difficulties which lie in the way of quantitative measurement of osmotic pressure.

Not the least important of the chemical investigations carried out under the auspices of the Carnegie Institution was the determination of values of atomic weights by Prof. Theodore W. Richards, of Harvard University. Prof. Richards has submitted a memoir, about to be published by the Carnegie Institution, containing the records of his experiments on a new method of determining compressibility. By means of this method, the compressibility of bromine, iodine, chloroform, bromoform, and other substances has been determined over a range of 700 atmospheres.

One of the most important investigations which has been carried on through the munificence of the Institution is that of Prof. Durand, of Cornell University, on ship resistance and propulsion. Very gratifying progress has been made in the preliminary measurements, speeds having been determined from distance and time records in 444 cases, and thrust turning momentum determined by integration in 655 cases.

Lastly we must mention an award of $500 to Prof. Atwater, of Wesleyan University, for researches involving the direct determination of the amount of oxygen consumed by man for sustaining the bodily functions. Readers of this journal are doubtless familiar with the elaborate series of experiments conducted by Prof. Atwater with his respiration calorimeter, experiments which have cleared away many a doubt as to the relative nutritive values of various foods. The grant to Prof. Atwater has been expended chiefly for designing and constructing or purchasing apparatus for developing methods of determining oxygen and for tests and experiments made with the apparatus. An award of $6,000 to Dr. Gamgee was made for work in the same field, in order to prepare a report on the physiology of nutrition, which was the task assigned to him. He began by inspecting European laboratories and by visiting scientific men in Europe. It goes without saying that the work of Prof. Atwater formed not the least important subject of his studies.

CARROLL DAVIDSON WRIGHT.

BY MARCUS BENJAMIN, PH.D.

The time-honored custom of alternating the selection of a representative from the sections devoted to the physical sciences with one from the sections devoted to the natural sciences, for the presidency of the American Association for the Advancement of Science, failed to prevail at the Washington meeting held last winter, when a conspicuous departure from that practice was made by the election of a distinguished representative of the section on Social and Economic Science, whose eminence was sufficient to carry him without opposition into the highest office to which an American scientist can be chosen.

Carroll D. Wright is of worthy New England ancestry, being descended on the paternal side from early English colonists, and on his mother's side from the Davidsons, who were of Scotch blood. He was born in Dunbarton, N. H., on July 28, 1840, and received an academic education. His natural inclination would have led him to college, but he early began to teach, and with such success that he soon became the assistant principal of the Mount Cæsar Seminary, in Swanzey, where he also began the study of law.

The coming of the civil war was a serious event to the young men of New England, and Wright was quick to offer his services to his country, enlisting as a private in the Fourteenth New Hampshire Volunteers, of which in 1864 he became the commanding officer.

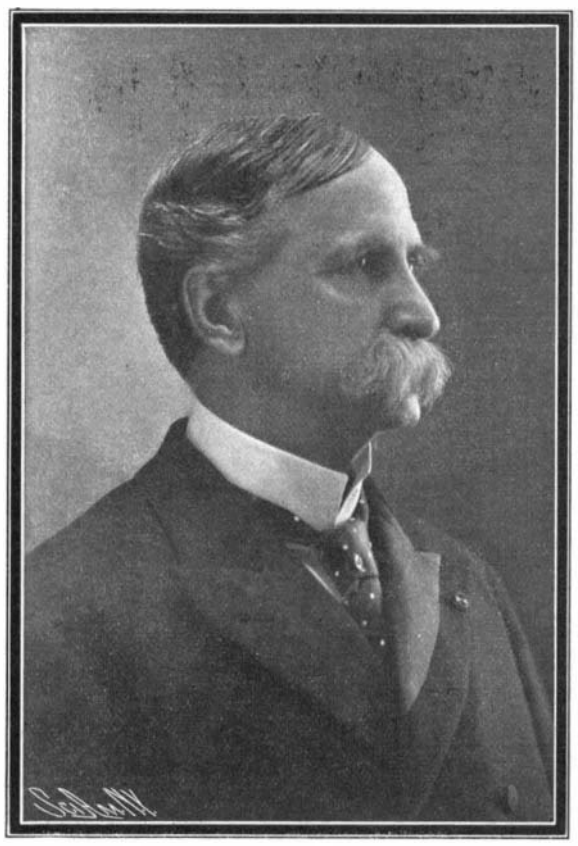
At the close of the war he returned to his chosen profession, and in 1865 he was admitted to the bar of Keene, N. H. He selected patent law as his specialty, and settled in Massachusetts. For ten years he devoted himself to the practice of his profession, in which he was thoroughly successful. Meanwhile, Col. Wright's marked influence over men was made conspicuous in his new home by his election, in 1871, to the Massachusetts Senate, in which body he served for three years, rendering valuable services, and especially as chairman of the Committee on Military Affairs.

His ability was so evident that it commended itself to the governor of Massachusetts, who in June, 1873, at the close of his senatorial career, appointed him chief of the Massachusetts Bureau of Statistics of Labor, which office he then held until 1888, also during that period taking the decennial census of Massachusetts in 1875 and again in 1885. In addition, he was supervisor of the United States census for the State of Massachusetts in 1880, and subsequently a special agent of that work to investigate and report on the factory system.

In January, 1885, he was called by President Arthur to the higher office of National Commissioner of Labor in Washington, which place he still holds, although he will soon retire to actively fill the presidency of Clark University, in Worcester, Mass., to which he was elected in 1902. In addition to the regular duties of his office, President Cleveland intrusted the completion of the eleventh census to him in 1893, in charge of which work he remained until 1897.

No event in recent years in the history of the United States is comparable in importance with the agreement made during the autumn of 1902, on the part of the coal miners of Pennsylvania on one hand and the operators on the other, to submit their differences to arbitration, and with this agreement Col. Wright had much to do. It may be well, however, to emphasize the fact that the many years of experience in treating similar matters in his annual reports had given Col. Wright a wide range of knowledge, and also it must be remembered that in 1894 he had had much practical experience, for he served as chief of a commission that was appointed to investigate the strike in Chicago during that year. It was therefore most natural, when the great strike in the coal regions of Pennsylvania began to be felt by the public, and the necessity of bringing it to an immediate end was apparent, that President Roosevelt at once turned to Col. Wright as the best and most competent intermediary. During the preliminary arrangements, Col. Wright was in constant consultation with the President, and on the creation of the Anthracite Strike Commission he became its recorder. He more than anyone else guided the deliberations which so happily caused the termination of that terrible strike.

Col. Wright's knowledge of social economics has



CARROLL DAVIDSON WRIGHT.

been taken advantage of by educational institutions, especially in Washington, for he has served as honorary professor in the Catholic University of America since 1895, and he has also held the chair of statistics and social economics in the school of comparative jurisprudence and diplomacy of Columbian University since its foundation. Harvard, Johns Hopkins, Michigan, Northwestern, Brown, and Dartmouth, have invited him at different times to deliver courses of lectures before their students. In other ways he has also been active, and conspicuous among these is his selection by Mr. Carnegie to serve as a trustee of the richly endowed Carnegie Institution in Washington.

His contributions to science have been large, and include more than fifty annual reports, together with many pamphlets and monographs on social and economic topics. His larger works are "The Factory System of the United States," "Relation of Political Economy to the Labor Question," "History of Wages and Prices in Massachusetts, 1752-1883," "The Industrial Evolution of the United States," and "Outline of Practical Sociology."

Dartmouth has conferred upon him the degree of Ph.D., and Wesleyan, Clark, and Tufts that of LL.D. He is one of the very few corresponding members of the Institute of France in this country, an honorary member of the Imperial Academy of Science of Russia, a member of the International Statistical Institute and of the International Institute of Sociology, and an honorary member of the Royal Statistical Society of Great Britain. At home he succeeded Gen. Francis A. Walker as president of the American Statistical Society, and he is a leading member of the American Social Science Association, a councilor of the American Economic Association, and a member of the American Academy of Political and Social Science.

He joined the American Association for the Advancement of Science at its second Washington meeting in 1891, and in 1894 was made a fellow. Col. Wright continued to take an active interest in the section on Social and Economic Science, of which he became chairman in 1902, as well as vice-president of the association. He presented at the Washington meeting a retiring address on "The Psychology of the Labor Question," and he will preside at the meeting to be held this week in St. Louis.

In the years to come it is his hope that he may be permitted to live in Worcester, Mass., a well-known educational center, and there, as president of the university to which he has been called, pass the remaining years of his life in giving from the rich stores of his accumulated knowledge and experience to those who shall have the honor of listening to the wisdom from his lips. Fortunate, indeed, will be those who shall have that privilege.

PREVENTING FROST ON SHOW WINDOWS IN WINTER.

During winter weather many shopkeepers experience more or less difficulty in keeping their show windows free from the ice that in low temperature tends to defeat the object of the display. No doubt all of the devices for keeping glass clear of ice, published from time to time in the journals, have received a fair test, with varying satisfaction. A writer in one of the foreign drug journals, apparently a druggist who has experienced the rigors of high latitudes, insists that none of the ordinary schemes are of much use, and that the only certain remedy for the opaque deposit of solid water is a double layer of glass with a sufficient airspace between. He states that applications of glycerine, alcohol, and other solutions are of no avail in extreme weather and that, in any case, they must be so frequently renewed that they become extremely troublesome. In the northern portions of Russia, where zero weather is sufficiently common, experience has taught the owners of show windows that the only effective protection is a three-inch air space between two panes of glass. The outer sash is rendered as nearly tight as possible by calking the chinks and pasting strips of paper over the crevices. The glass is then carefully cleaned and dried on a clear, mild day, and a second sash, fitted with the same care to prevent all circulation of air, is inserted about 3 inches within the first. The double panes are said to obstruct the view very little. The physical cause of the deposit of moisture and ice upon windows is the difference in temperature between the surface of the glass and the air bearing a relatively high proportion of moisture, which comes in contact with it. As long as the glass is as warm as the circulating air, there will be no deposit, nor when its temperature is higher than the dew-point of the moist air. Warm air is able to carry a much larger proportion of water than cold air, and the problem therefore resolves itself into a question of keeping the glass warm or the air dry.

A small electric fan in the window two or three feet away seems to answer this purpose well. Probably the moisture is all dried off, hence leaving nothing to freeze; anyway, the glass is perfectly dry and clear.

DISPERSION OF FOGS BY ELECTRICITY.

Sir Oliver Lodge has tried at Liverpool to disperse fogs, using for this purpose a Wimshurst influence machine which discharged by means of a bundle of points into the air. A very high potential is necessary, and to increase the surface a large gas flame was used to supplement the points. On one occasion the discharge of electricity from the flame was sufficient to keep a clear space of fifty or sixty yards radius in a dense fog. Although these experiments were promising, the Wimhurst machine did not seem suitable for everyday use, and there was no other generator which would give a sufficiently high direct voltage to do the work. To overcome this difficulty, Sir Oliver now uses the rectifying properties of the Cooper Hewitt mercury vapor lamp . . . This arrangement gave him unidirectional sparks two or three inches long, and was very effective in laboratory experiments. To dispel the fog in a circle of fifty or sixty yards' radius is a noteworthy performance, but the general application of this method seems to be rather far off. The cleared area will have to be extended much more than sixty yards from the discharge station before the system can be of use in harbors or at sea, thus necessitating the use of very high voltages, such as are at present impracticable. There are, however, waterways—such as the Manchester Canal or the Chicago River, in which the channel is narrow and the traffic very great—where a system of dispelling fogs only slightly better than this would be very useful. It is to be hoped that Sir Oliver will carry on his work and will be able to report much more successful experiments before long.