



KARL TAYLOR

IN the death of Karl Taylor Compton on June 22, 1954, American physicists lost one of their most stalwart colleagues, friends, and benefactors; the world of science lost one of its proudest examples of what a scientist should be and do; the nation lost a scientist-statesman of unusual insight and wisdom; and the world lost a human being of rare perception, integrity and charm.

A mere recapitulation of Karl Compton's activities would give no indication of his real stature and achievements, and of the affection in which he was held by all who came in contact with him. In the words of J. R. Killian, Jr., his successor as President of the Massachusetts Institute of Technology, "The response of his friends, his associates, and even those casually acquainted with him to Karl Compton's personality was invariably one of spontaneous pleasure in a personality completely free of guile, a personality sensitive in perception, emanating goodness and wisdom and always generous and benevolent in human relations." This freedom from guile, which was immediately apparent to all with whom he came in contact, is probably the principal key to an understanding of Compton's character. His complete integrity was so apparent to all who worked with him that his mere presence was sufficient to increase cohesive activity in any group in which he was found. It was impossible for him to believe ill of any human being, and virtue radiated tangibly from him.

Karl Taylor Compton was born in Wooster, Ohio, on September 14, 1887, to Dr. Elias Compton and Otelia Augspurger Compton. His father was a professor

in and Dean of the College of Wooster, and the entire family became famous in educational fields. His brothers were Arthur H. Compton, who became equally well known as a physicist, and served as Chancellor of Washington University in St. Louis, and Wilson M. Compton, who became President of Washington State College, while his sister Mary became the wife of Dr. C. Herbert Rice, President of Forman Christian College in Lahore, India. Young Karl attended the College of Wooster, receiving the degree of Bachelor of Philosophy in 1908, and that of Master of Science in 1909. He became an instructor in chemistry there for a year before entering the Graduate School at Princeton, where he obtained the degree of Doctor of Philosophy *summa cum laude* in 1912. He then served for three years as an instructor in physics at Reed College in Portland, Oregon, and in 1915 was called to an assistant professorship at Princeton.

During World War I Dr. Compton was an engineer in the U. S. Army Signal Corps, engaged in the development of submarine detection devices. Later he became an officer of the Research Information Service and an associate scientific attaché to the U. S. Embassy in Paris. His further career divides itself into three major portions: first, that in which he was teacher and research worker in physics, specializing in electronics and spectroscopy, from 1912 to 1930; second, that in which he served as the ninth president of MIT, from 1930 to 1949; and the third, from the early 1940's until his death, when his major effort was centered in a statesmanlike attack on national problems of science and defense.

COMPTON, 1887-1954

Compton returned to Princeton after the first World War and by 1919 had risen to a full-professorship. He served in this post for eleven years, and was chairman of the department of physics for the last year of his residence. When called to the presidency of MIT he had risen to the front rank of scientists, with an enviable reputation as an educator of outstanding physicists and as a contributor of important research results. His laboratory at Princeton was a mecca for young men interested in the then newly developing field of electronics, and his guidance of the thesis work of a large number of young doctors of philosophy made Princeton one of the outstanding centers of research in fundamental electronics in the 1920's.

Before being asked to take the presidency of MIT Dr. Compton was asked to make a report on the Institute's physics department, and his reaction to his visit there was typical. While effective in a restricted sphere, the department had been built up mainly as a service organization for teaching young engineers, and the research carried on by its faculty was largely of the applied variety to be expected in an engineering school of that era. The numbers of students who specialized in physics were relatively small. Dr. Compton, as a professional physicist, felt that a much greater contribution to the education of engineers and to the cause of science could be made by a department that had, in addition to its service function, a primary professional function of training physicists who could compete on the national scene with those produced by outstanding universities. When asked to accept the presidency of MIT he replied that he would not be interested in be-

ing associated with an institution whose physics department had so small a research budget as that then provided. He was told that, if he accepted the presidency, this would be a matter for his own decision. Later he appreciatively remarked that it had not been emphasized that it would be up to him to raise the needed money.

The task of guiding the Massachusetts Institute of Technology and of building it in a new direction was a challenge which Compton could not resist, and during the 19 years of his presidency he greatly broadened, deepened, and enriched the MIT curricula, adding new courses and departments as these seemed needed for the better education of scientists, engineers, architects, and industrial administrators. Under his guidance MIT grew from an outstanding engineering school to a university which, though of limited objectives, specialized in some twenty disciplines arranged in five Schools.

Before Compton's call to the duties of administration made him reluctantly give up his teaching and activities, he had published more than 100 technical papers, mainly in the fields of photoelectric phenomena, thermionics, fluorescence, the dissociation of gases, and spectroscopy in the extreme ultraviolet. His transition from physicist to administrator, which was made willingly but not without some internal struggle, was a great sacrifice. When he first came to MIT he took the very firm stand that he must allot himself at least a day a week in which to carry on his own research. He and a research associate brought with them from Princeton a large vacuum spectrograph, which they had together designed. On arrival in Cambridge, they discussed the course which this research was to follow, and then Compton became immersed in his new duties as president, after assuring his colleague that he would be available every Thursday to help in tracking down the wave lengths of elusive spectral lines. Unfortunately his administrative duties were so overwhelming that several weeks went by with no visits to the laboratory. Finally his young assistant telephoned, and Dr. Compton promised faithfully to put in an appearance on the following Thursday. He did so appear, and spent the afternoon happily wiping oil off the insides of a vacuum pump, which he disassembled for cleaning. Unfortunately the presidential duties soon closed in so heavily that this was his last appearance as an active participant in the Laboratory.

The third phase of Compton's career was that of a combination scientist-statesman and statesman-scientist. He contributed his time generously to public activities, and although possessed of an athletic and vigorous constitution, for a dozen years prior to his death kept himself constantly at the edge of exhaustion by his inability to refuse any request to serve in a worthy cause.

During World War II Dr. Compton was a member of the National Defense Research Committee, set up in June of 1940 and later expanded as a part of the Office of Scientific Research and Development, directed by Dr. Vannevar Bush, who before going to Washington as president of the Carnegie Institution had been

vice-president and Dean of Engineering at MIT under Compton. Compton was in charge of that division of the NDRC which dealt with radar, infrared signalling, and optical devices of all sorts. He was the prime mover in the development of the great Radiation Laboratory at MIT, one of the most successful of wartime laboratories. His intimate knowledge of science and scientists, his deep awareness of the problems of national defense, and the universal confidence in his judgment, statesmanship, perception, and impartiality, made men willing to work under his aegis who might have hesitated when summoned by lesser men.

Dr. Compton was a member of the War Resources Board in 1939 and 1940 and the Baruch Rubber Survey Committee during 1942. He was chairman of the Radar ad hoc Committee of the Joint Committee on New Weapons of the Joint Chiefs of Staff during 1942-45, and served on the Advisory Staff of the Chief of Ordnance Military Training 1942-46. In 1943 he went to England as chairman of the U. S. Radar Mission to the United Kingdom. Also during 1943 he was appointed chief of the Office of Field Service of the Office of Scientific Research and Development, and travelled to Australia and New Guinea as a Special Representative of the Secretary of War to investigate weapons problems in the Southwest Pacific area at General MacArthur's request. In 1945 he was a member of both the Advisory Board of the Chemical Warfare Service and of the Secretary of War's Special Advisory Committee on the Atomic Bomb, and served on a special Scientific Intelligence Mission to Japan, landing in Tokyo among the first civilians after the surrender terms were signed. In 1945-46 he served as chairman of the Executive Committee of the Research Board for National Security, and in 1946 was named chairman of the Joint Chiefs of Staff's Evaluation Board on the Atomic Bomb Tests. He served as chairman of the President's Advisory Commission on Universal Military Training in 1946-47. He was chairman of the Research and Development Board of the National Military Establishment from 1948 to 1949, when his health required him to lessen his activity in affairs of the nation.

Compton's work brought him many honors, including the Rumford Medal of the American Academy of Arts and Sciences; the Hartley Public Welfare Medal of the National Academy of Sciences; the Washington Award of the Western Society of Engineers; the Lammé Medal; the Thacher E. Nelson Award; the Hoover Medal, presented in 1950 to a "great leader in engineering education for distinguished public service"; and the Priestly Memorial Award "for distinguished contribution to the welfare of mankind through physics". In recognition of his services during World War II, Compton was awarded the Presidential Medal for Merit. The citation states that the importance of the work he did might be said to have made him personally responsible for hastening the termination of hostilities. He was named Honorary Commander of the

Civil Division of the Most Excellent Order of the British Empire and a Knight Commander of the Order of St. Olav. In 1951 the president of France advanced him in rank from Chevalier to Officer in the French Legion of Honor. Throughout the years he received more than thirty honorary degrees, including doctorates from his two alma maters and from Harvard and Cambridge Universities.

Characteristic of Dr. Compton's influence in science is the part he played in the inauguration of the American Institute of Physics. By 1931 the numbers of physicists in the United States had increased to such an extent that incipient fission was beginning to be apparent. Groups of physicists interested in optics, in acoustics, in thermodynamics, and especially in applied physics, had somewhat different interests from those interested in the newer fields of electronics, spectroscopy, and quantum physics in general, and were feeling inner stirrings toward the founding of new professional societies. Compton recognized the desirability and inevitability of such fission, but felt also the need for coordination and unity, with the result that he became a leading spirit in the founding of a new amalgamation of societies. Thus he encouraged unity in diversity, with the result that American physics has been able to make an orderly growth with due attention to the interests of physicists of all sorts. The program of publication of the research results of American physicists is as a result probably in better shape than in any other country.

As the first chairman and one of the principal founders of the American Institute of Physics in 1931, Dr. Compton did more than any other single person to ensure the success of the Institute, and he remained, after serving five years as its chairman, one of its most influential and respected elder statesmen. His sound judgment and reliable decisions set the course of its future development, and throughout the remainder of his life he gave unstintingly of his time when this was needed.

Dr. Compton was a member of numerous societies, including the National Academy of Sciences, the American Philosophical Society, the American Academy of Arts and Sciences, the American Association for the Advancement of Science (of which he was president in 1935), the American Chemical Society, the American Institute of Electrical Engineers, the American Society for Engineering Education (president in 1938), the Franklin Institute, the American Physical Society (president 1927-30), and the Optical Society of America. His fraternities were Alpha Tau Omega, Phi Beta Kappa, Sigma Xi, and Tau Beta Pi.

Dr. Compton is survived by his widow, Margaret Hutchinson Compton; by two daughters, Mrs. Bissell Alderman and Mrs. Carroll W. Boyce, and a son, Charles Arthur Compton. He affected profoundly the lives and careers of many fellow humans. Even those who saw him only in passing salute his memory, and join in gratitude at having known the influence of so great and good a man.

George R. Harrison