

in many matters pertaining to its growth and development. At one time the city census was questioned and he was chosen superintendent to repeat and verify it. He was always ready and forcible in the discussion of the engineering problems of the city, and served terms as president of both the St. Louis Engineers Club and of the St. Louis Academy of Science. As a member of the city school board and several times as its president, he has given character and direction to the public school system of St. Louis.

Professor Woodward married Fanny S. Balch, of Newburyport, Mass., in September, 1863. She survives him together with three daughters, two of whom are married. His home life was an ideal one; to enter within its circle was always a privilege.

In hasty review we have selected only a few of the instances where Calvin Milton Woodward has come prominently before the country. The story of a long life of cheerful labor and distinguished service in the college halls can never be told. There is no tangible record of the daily lessons enforced with an unflinching and overflowing spirit of optimism. But it is this work and this spirit that produce a sure and lasting effect upon the lives of students. Just as the gentle sunshine is the most potent force in nature, so the efficient teacher, who on the whole is quite often an object of condescending sympathy in our social state, is nevertheless the mightiest agent in the progress and development of society, for he is developing its coming leaders and, therefore, more than any other agency, is shaping its destiny. Happy is that teacher who knows his power and lives true to his high calling. His name may soon be forgotten, but the essence of his life and labor passes on from heart to heart and from generation to generation.

Such a man was Dr. Woodward. As a teacher he lived. As a teacher he sought his life's reward. A little more than a year ago in a company where were many of his former students he expressed his conviction that no epitaph could more highly honor him than

the simple statement "He was a teacher of men."

C. A. WALDO

WASHINGTON UNIVERSITY,
ST. LOUIS

ROBERT KENNEDY DUNCAN

By the death on February 18 of Dr. Robert Kennedy Duncan, director of the Mellon Institute of Industrial Research of the University of Pittsburgh, American science lost one of its most illustrious devotees. Dr. Duncan was known to the public at large in two important lines of service. First, as an interpreter of science, in which branch he was preeminent; he gave life to the most abstruse things of cold science and made them of intense interest. His books, "The New Knowledge," "The Chemistry of Commerce" and "Some Chemical Problems of To-day," while of the highest scientific accuracy, are so written as to hold the reader's sustained attention to the end. The other line in which he will be remembered is as the originator of the unique system of *the service of science to industry*. Dr. Duncan felt that he was fortunate in being able to live to see this system established on a permanent basis in the Mellon Institute of Industrial Research. With his usual farsightedness he carefully trained those who were to take his place when he was gone and the institute embodying the system he originated will go on as a living monument to its founder.

Certain of the ideas he had in mind in working out a practical method whereby the learning of the university could be brought to the service of industry are interesting, in that they show prominent traits of his character. He once told me that he experienced the keenest pleasure of achievement when he thought of the opportunities he was able to offer to young men through the working of this system. He loved to speak of his laboratory as a center of opportunity for young men. And that fact really indexes the keynote of his character. He was absolutely unselfish. He sought nothing for himself and was continually trying to advance his "boys,"

as he loved to call them. And he was in his relations to them an older brother more than a formal director. Dr. Duncan always felt that in scientific investigation the things of the spirit were more important than material things and that the many seemingly impossible results which had been achieved in his laboratories were accomplished solely because of the fine spirit which he instilled into his men.

Dr. Duncan was born in Brantford, Ontario, 1868. He graduated with first-class honors in chemistry and physics from the University of Toronto in 1892 and did graduate work in Clark and in Columbia universities. He was a preparatory school teacher of chemistry from 1893 to 1901, when he became professor of chemistry at Washington and Jefferson College (1901-6). He studied abroad during the years, 1900-1903, 1904 and 1907. Up until 1906, Professor's Duncan's life as it was evidenced to the outside world was simply that of a successful growing teacher of chemistry. But in his inner life a great purpose had been developing and finally took form in his system of industrial fellowships. He really led a dedicated life—a life dedicated to the working out and founding of a method of sympathetic cooperation between industry and learning, whereby industry, the university, the public and young men would be greatly advantaged. In 1906 Dr. Duncan was called to the University of Kansas as professor of industrial chemistry and it was then and at that time that he initiated on a small scale his new system of industrial fellowships. In 1910 he became director of the department of industrial research of the University of Pittsburgh, which department, in 1913, became the Mellon Institute. It was in the University of Pittsburgh that industrial fellowships expanded with such extraordinary rapidity to the present large institution.

As an educator in the field of science Dr. Duncan's influence was very far reaching. He had the rare faculty of imparting to his students and associates his own overflowing enthusiasm. He inspired a peculiar loyalty to the highest ideals of scientific truth. Nu-

merous short articles from his pen, in addition to his books—written with a unique charm of expression and power of interpretation—gave a widespread interest in things scientific. His investigations and writings on the conditions of the employment of chemists by industrialists had a marked effect in bettering the status of the industrial chemist.

As to the personal influence of his life on those with whom he came in contact, I do not know how better I can express this than by appending the following tribute from one of his "boys."

RAYMOND F. BACON

ROBERT KENNEDY DUNCAN, AS ONE OF HIS BOYS
KNEW HIM

THERE are scattered over this country a fairly large number of men each of whom is glad if Robert Kennedy Duncan ever referred to him as "one of my boys." Yes, there are many of us who are better men, who see the values of this life clearer for having been one of his "boys." To some of us he was a professor of chemistry, to some he was a director of industrial research but to all of us he was a big brother, yes even a father. He was an employer of none of us in the ordinary sense of the term. Robert Kennedy Duncan was truly "a fisher of men," a witness of the light which has ever shone clearly for those who have lived the gospel of man's brotherhood.

I wish I had the pen to enable others to understand something of his leadership. None can see all the facets of a gem from one angle. Nevertheless I shall attempt to speak of him, as one of his "boys" who has been privileged to know him.

I can do no better than to select a few of his own sentences about certain deeds of men which excited his own admiration. He was fond of military analogies. In a recent article on industrial research which appeared in *Harper's Magazine* he likened the modern spirit of discovery in scientific research to the spirit of the young Marco Polo.

Let us contrast synthetic rubber with synthetic indigo. The commercial synthesis of indigo was

accomplished after a Kitchener-like advance, in which each step at a time was buttressed and battlemented by coordinated facts until the summit was attained and the fortress was won. It was an irresistible march of the horse, foot and artillery of scientific endeavor. The attack upon rubber, on the other hand, recalls nothing so much as the raid of the adventurers accompanying Cortes into the wilds of Mexico. Ludicrously few in number and ill equipped save with a *downtless spirit*, they plunged desperately into a wilderness absolutely unknown and denized by countless thousands of a malignant and disciplined enemy; yet they conquered Mexico. The conquest of Mexico was incredible, it was *unreasonable* to the military tactician; so is the conquest of rubber incredible to the tactician of scientific research.

Allow me to quote another sentence which I think shows one of the great elements of his leadership.

Of course I have forgotten something. I have forgotten the afternoon tire in the garish light of the laboratories, the hard cot at night by the laboratory table, the broken experiments, and the heart-breaking disappointments to endeavor. But so did Marco Polo, for you will look in vain through all his glowing pages for the bitter cold of the morning camp, or the intolerable heat of the desert or of the pain of insect pests, or of his sorrow at the loss of his goods—all forgotten in the retrospect of his wonderful journey.

Valery-Radot wrote two delightful volumes giving us a picture of Louis Pasteur, yet there are two incidents which to me are most illuminating and recall Doctor Duncan. The author tells us of Pasteur's anguish on the occasion of the death of a boy from rabies. Pasteur forthwith undertook an investigation of the subject. Finally one sees this great, tender-hearted man with all the wonderful vision of his mature years brought near death's door and in one last spasm of effort crying: "We must work. We must work." And so Robert Kennedy Duncan was removed by the accident of death just as his dreams, his great constructive dreams, for the amelioration of man seemed to be in the dawn of their fulfillment. Only last December Doctor Duncan attended the Atlanta meeting of the American Association for the Advancement

of Science and met Dr. Howard A. Kelly. Sixty thousand people dying of cancer in this country every year! He returned from that meeting burning with a desire to do something. The idea that radium is and undoubtedly always will be beyond the reach of thousands of these sufferers, *that* was what appealed to him. Couldn't something be done about it? He believed there could. He told his ideas to a Pittsburgh business man, who very quickly said, "It would give me real pleasure to help you tackle this thing."

Another sentence of Doctor Duncan's will always stick in my mind and I think gives us a clue to his fine spiritual nature. In discussing the synthesis of ammonia from nitrogen and hydrogen he recalls that up to 1908 the best work of Haber, Nernst and others had failed to give results of industrial promise and as Dr. Duncan said of Nernst's work:

With this final investigation, then, it was "thumbs down" for the subject; it was finished, exhausted, dead.

But Professor Haber had a feeling that the thing could be done. Doctor Duncan says:

It is to be understood that this "feeling" which possessed Haber was not the obsession of an ignorant dreamer but was actually the expression of a *faith that lay deeper than reason* on the part of one who knew, possibly better than any one else from the standpoint of reason, its folly.

The splendid qualities which he so admired in others he himself possessed. It has ever been such rare spirits which have done the impossible, have pointed the way.

THE WELLESLEY COLLEGE FIRE

THE fire at Wellesley College on March 17, which totally destroyed College Hall, the oldest and largest building, has brought great loss to the college and has greatly disabled four science departments.

College Hall, which originally contained the whole college community, at the time of the fire was a dormitory for two hundred and fifteen students, and also held the offices of the administration, the lecture rooms for the greater part of the college, and the laboratories of the departments of geology, physics,