scientists, as Faraday, Helmholz and others, there had often been an interchange of scientific views between scientists even when differing in nation and often in language, indicating that they were working as friends and often comparing notes as to their difficulties, whereas in America, outside of the special professional societies, there at that time appeared to be little in the way of close intimacy among scientists themselves. Research workers themselves often need this feature of the personal contact, with some one who can think along the same lines as they are working upon.

As one of this diminishing group of the nine founders of this society, permit me to extend our appreciation of the efforts of the officers of the society and of the Cornell chapter to have us all here for this semicentennial celebration, and to witness the dedication of the handsome monument on this campus, as a fitting mark of this event.

And this little group of founders desire to thus express their deepest sense of appreciation for the excellent administration that has distinguished this society in every phase of its existence for these fifty years and to wish for the continuance of the great and good work of the society for the years to come.

FRANK VAN VLECK

OBITUARY

ARTHUR A. NOYES

ON Wednesday morning, June 3, Arthur A. Noyes died of pneumonia at Pasadena, California, three months before his seventieth birthday. During the past twenty years in which I have been intimately acquainted with him he has never been in robust health, and two years ago he underwent an operation which further weakened his resistance and from the results of which he suffered continually until the time of his death.

Few men have played a larger rôle in the development of American science than Arthur A. Noyes. He was born at Newburyport, Mass., on September 13, 1866; took his bachelor's degree in organic chemistry from the Massachusetts Institute of Technology in 1886, his master's in 1887 and the next year went to Leipzig and started organic chemical research with Wislicenus, but under the influence of Ostwald soon joined the group of young men who were then devoting themselves to the creation of the new subject of physical chemistry. After taking his doctorate in Leipzig in 1890 he returned to the Massachusetts Institute of Technology and for ten years was actively engaged in that institution in teaching analytical, organic and physical chemistry. During this period he published his well-known work on qualitative analysis which has exerted a very large influence in this country. Also during this period he carried out with his students so many researches on the ionic theory of electrolytes that he became recognized both here and abroad as one of the most outstanding leaders of American chemistry. In 1903 he established at the Massachusetts Institute of Technology and became the director of the first Research Laboratory of Physical Chemistry, and for seventeen years personally contributed half the expense of its maintenance. He never married but devoted every ounce of energy that he possessed to the development of his chosen field, chemistry.

Nothing reveals the extent of Noyes's influence better than the roster of the output of that laboratory in men, for on it are found such names as W. D. Coolidge, G. N. Lewis, W. C. Bray, R. C. Tolman, C. S. Hudson, E. W. Washburn, R. B. Sosman, W. D. Harkins, John Johnston, C. A. Krauss, F. G. Keyes and others.

The wide sweep of his influence is also shown by the fact that he acted as president of Massachusetts Institute of Technology from 1907–1909, and was president of the American Association for the Advancement of Science in 1927. In the councils of the American Association, the National Research Council and the National Academy of Sciences he was universally felt to be as objective a thinker, as wise a counselor and as discriminating a formulator of policies as could be found in this country.

From 1913 on he began to divide his time between the Massachusetts Institute of Technology and the California Institute of Technology, and in 1916 organized, built and became the director of the Gates Chemical Laboratory, the first building after Throop Hall to rise on the campus of the latter institution.

The contribution of Arthur A. Noyes to the creation of the California Institute of Technology, to which he devoted his whole time after 1920, is beyond all measure. His rare judgment, his fertile imagination, his conscientious devotion to the institute's welfare, his long educational experience and profound understanding, his breadth of vision, his research enthusiasm, his unwavering forward look, his innate refinement (he was a great lover of poetry)—all these qualities combined to make him a man of rare ability and effectiveness. But he was more than an able man; the far reach of his influence came from the fact that he possessed the greatest and the rarest of all qualities, complete unselfishness. When he had once seen clearly a great objective, he forgot, as few men I have ever known have been able to forget, all about his own place in the picture.

This is why he was the trusted adviser of all who knew him, faculty and students alike. This was the secret of his influence. The world is quick to sense, to appraise and to follow a character that every one can trust. Over and over again our enterprise might have been ruined if a man of narrower vision and smaller soul had been a guiding spirit. Over and over again he deliberately pushed his own interests out of the picture and chose the course which led to the remoter but larger goal. With his early arrival on the scene and his great prestige and influence, he could easily have followed the course which lesser men would have undoubtedly pursued, and built this institution around himself and his department; but he realized that the larger objectives required that other departments be made significant, too, and he threw his own energies into building them, sometimes even at the immediate expense of his own. He spent more time than any other man on the campus trying to create here outstanding departments of physics, of mathematics, of the humanities, of geology, of biology and of the various branches of engineering, and what these departments are to-day they owe more than they themselves know to Arthur A. Noyes. The breadth of his vision is shown by the fact that from the first he was the foremost and most effective advocate of the view, first, that really great engineers can not be produced in an atmosphere that ignores the fundamental sciences upon which all engineering ultimately rests, and, second, that neither effective scientists nor engineers can be created in an atmosphere which is not permeated by the background of the disciplines that deal with human values, motivations and experience. In all the fields in which the institute thinks that it has done and is still doing educational pioneering, Arthur A. Noyes has been the leader. The last great act of his life was altogether typical of the man. He had been pondering, as he was always doing, over the needs and the opportunities of the institute, and he saw clearly another step having nothing to do with chemistry that had to be taken; but he knew the financial difficulties in the way. So he went to the trustees and said, "Take what this costs out of my own personal income but do not hesitate for a moment to take this necessary step." Is it any wonder that we at the institute feel that the atmosphere of mutual assistance and self-forgetting cooperation toward a great ideal which has been created here and which is to-day the most priceless asset of this institution is largely the legacy of the mind and the soul of Arthur A. Noyes? We can not pay the debt which we owe to him by any words of eulogy or praise. "It is rather for us to be here dedicated to the great task remaining before us," that the spirit and ideals and accomplishment of Arthur A. Noyes shall not perish from the earth.

ROBERT A. MILLIKAN
CALIFORNIA INSTITUTE OF TECHNOLOGY

RECENT DEATHS

DR. JAMES TATE MASON, president of the American Medical Association, died on June 20. He was fifty-four years old.

DR. BLAIR SAXTON, associate professor of chemistry at Yale University, died on June 16 at the age of forty-five years.

DR. JOHN HUGHES MÜLLER, professor of chemistry at the University of Pennsylvania, died on June 18. He was fifty-three years old.

DR. J. FINLEY BELL, of the Englewood, N. J., Hospital, known for his work on the bacteriology of milk, died on June 16 at the age of seventy-six years.

FRANK MERRICKS, British consulting mining engineer, past president of the British Institute of Mining Engineers, died on June 6 at the age of seventy years.

DR. HAMILTON CLELLAND MARR, formerly lecturer on mental diseases at the University of Glasgow, died on June 15. He was sixty-five years old.

SCIENTIFIC EVENTS

THE ALLOYS OF THE IRON RESEARCH COMMITTEE OF THE ENGINEERING FOUNDATION

APPOINTMENT of three representatives of the steel industry to the Alloys of Iron Research Committee of the Engineering Foundation, which is carrying on world research embracing the entire body of knowledge of steel, alloy steel, alloy iron, and cast, wrought and pure iron, has been announced. Dr. John Johnston, director of research of the United States Steel Corporation, was named to the committee to represent the American Iron and Steel Institute; Wilfred Sykes, a director of the Inland Steel Company, becomes a member-at-large, succeeding the late Dr. John A. Mathews, who was vice-president of the Crucible Steel Company of America. The other new member is James T. Mackenzie, metallurgist and chief chemist of the American Cast Iron Pipe Company, who takes the place of R. E. Kennedy, technical secretary of the American Foundrymen's Association.

Nearly 150 specialists in alloy steels, physical and works metallurgists, physicists, chemists, engineers and superintendents of alloy-steel plants, are cooperating with the committee, of which Professor George B.