Paul M. Gross, President-Elect

At a time when the scientific revolution and its consequences for society are insufficiently comprehended by scientists and nonscientists alike, it is vitally important that our nation utilize to the full those rare scientists whose research has contributed significantly to the progress of their own disciplines and who also have acquired deep appreciation of the corpus of science, of the scientific method, and of the personality and motivations of scientists; who have developed a comprehensive grasp of modern technology; and who have demonstrated administrative skill of a high order, while maintaining an abiding faith in the university as the symbol and instrument of man's noblest aspirations. Such are the desiderata to be sought in the president of the Association. And such, indeed, are the qualifications of Paul Magnus Gross, president-elect. A lifetime of successful endeavor as teacher, investigator, and administrator extraordinary have prepared him for the diverse challenges of this position of leadership in American science.

When the bequest of James B. Duke made possible the conversion of Trinity College to Duke University, Paul Gross was already a respected physical chemist, the William Howell Pegram professor of chemistry and chairman of the department. In the years since, he has been one of the principal architects of the complex transformation of a good small college into an important national university. Devoted to the maintenance of standards of excellence, he repeatedly emphasized that the quality of a university is to be equated with the quality of its faculty; that the suddenly increased resources of the university should be used first to strengthen those enterprises already in being, and that creation of new departments or schools should be undertaken only when the faculty of existing departments represented a community of productive scholars worthy of a true university. As dean of the Graduate School from 1947 to 1952 and as vice-president in the Division of Education from 1949 to 1960, he was in a position to implement this philosophy. His was the guiding genius which brought accomplished scholars to all segments of the university—in the humanities and social sciences as well as in the natural sciences and professional schools. By 1958 he should have found satisfaction in the general recognition that the initial phase of the transition had been accomplished; the good small college was now a good university. But he also recognized that the resources available to the university had not been exploited to the full and that the time had come for initiating the second phase, the development of a truly great university to serve the people of North Carolina, the South, and the nation. Accordingly, he initiated an intensive, long-range planning effort which is even now under way, energetically developing a blueprint for the future of Duke University. But his academic efforts have not been restricted to Duke University. For example, in 1952 he organized the Council of Southern Universities; he served as its first president and has served as treasurer ever since. The academic world is truly indebted to Paul Gross.

Paul M. Gross

As a physical chemist, Paul Gross was trained at the College of the City of New York (B.S., 1916) and at Columbia University (Ph.D., 1919), with a brief interlude of service as second lieutenant in the Chemical Warfare Service during World War I. Soon after his arrival at Trinity College in 1919 he initiated a long-term study of the fluorination of organic molecules, a study which was continued and extended by L. A. Bigelow. The chemistry department at Duke has been a renowned center for the study of organic fluorine compounds ever since. As his department grew, Gross exercised the greatest care in selecting his enlarged faculty, most notably the distinguished theoretical chemist Frederick London.

Perhaps the most important single influence on his career was a year spent in Leipzig (1929) with Peter Debye, an experience which produced an enduring friendship as well as a series of incisive analyses of molecular structure based upon estimation of dipole moments and magnetic susceptibility. To cite only a few results, these analyses permitted characterization of aromatic structures, estimation of the extent of covalent character of the bonds of the halogen acids, decisions concerning the structure of various aromatic isomers, and estimates of the extent of group rotation in substituted aromatic molecules. In parallel, he and his students engaged in systematic studies of solution chemistry, with emphasis on solutions of nonelectrolytes in aqueous media; the sum of these studies has been a comprehensive and revealing test of the Debye-Hückel theory of solutions. In recognition of his competence as a physical chemist, in 1946 he was elected chairman of the Division of Physical Chemistry of the American Chemical Society.

Although the son of Magnus and Ellen Sullivan Gross, born in 1895, is a native of New York City, few have contributed so much to the renaissance of his adopted southland. Recognizing the importance of tobacco in the economy of North Carolina, in 1927 he instituted a continuing series of investigations on the cultivation and curing of tobacco, many of these in collaboration with Frederick Wolff, professor of mycology. Their studies of the chemical changes that occur in the ripening and curing of tobacco altered

the purchasing practices of all the major tobacco companies. The demonstration that selected strains of aromatic tobaccos thrive when grown under conditions of semistarvation (that is, closely spaced in the field and with a relatively light application of fertilizer) has led to a continuing research and development enterprise, still in progress, which holds out the hope that American manufacturers may in the future be freed of the necessity of importing aromatic tobacco for blending with domestic varieties. Similarly, American manufacturers had been dependent upon French cigarette paper, which was in acutely short supply during World War I. Gross and his colleagues experimented with various possibilities and demonstrated that such paper could successfully be prepared from flax and hemp. It is worth noting that the first truckload of American-made cigarette paper, prepared from California flax, rolled out of a North Carolina factory on the same day that Hitler's trucks rolled into Poland. For these and many other contributions Gross received the Herty medal, presented annually by Georgia State College to the "outstanding chemist in the South"; the first honorary award of the Florida section of the American Chemical Society, for "outstanding contributions and service to humanity through the science of chemistry"; and the science award of the Southern Association of Science and Industry, for "outstanding work in Southern regional development."

In further service to his adopted state, from 1955 to 1958 Gross served on the Governor's Committee to formulate and implement plans for the development of an industrial research park, the Research Triangle, in the area bounded by Duke University, the University of North Carolina, and North Carolina State College. Since 1958 he has been a member of the board of directors of the Research Triangle Institute, cornerstone of this already successful venture, which has brought the research laboratories of a group of major industrial corporations into the area.

As the magnitude of the national scientific effort expanded after World War II, with increasing frequency the nation availed itself of his counsel. As member and vice-chairman of the board of the National Science Foundation (1950–), president of the Oak Ridge Institute for Nuclear Studies (1949–), scientific adviser to the American delegation to the General UNESCO Conference of 1949 and, since then, member of the Committee on Science in UNESCO of the National Research Council, and member of the National Advisory Cancer Council of the U.S. Public Health Service (1959–), to cite only some major instances, he has served science and his country with distinction, providing not only broad scientific knowledge and administrative skill but that even more precious attribute, wisdom. These facts were duly noted when his alma mater awarded him the Townsend Harris medal in 1953 and the Carnegie Corporation presented him with its "Manship Award" in 1954.

Perhaps because he has ever remained conscious that one of the most serious problems facing the South derives from the fact that many of its brightest young people leave the South for advanced academic and professional training, never to return, he has devoted much effort to developing means of identifying and training talented young people. Accordingly, he has frequently been called upon to serve in this connection also. Thus, the President's Committee on Scientists and Engineers, in 1958, requested him to serve as chairman of the Panel on Advanced Training for Superior Talent–Graduate Education and Research. From 1953 to 1956 he was chairman of the Southern Regional Scholarship Committee for selection of Marshall scholars to study in Great Britain, a service which was recognized by his appointment as Honorary Commander of the Civil Division of the Order of the British Empire by Her Majesty, Queen Elizabeth II, in 1958. Last year he was asked to serve as a trustee of the Woodrow Wilson National Fellowship Foundation, and the previous year he served as adviser to the Stern Foundation on its project "The Recognition of Excellence."

No episode in the life of this devoted servant of society has been more remarkable than his role in World War II. Early in the war he became aware of the Army Air Force's need for improved means of gunnery training, particularly the great need for actual firing at normal targets in the air, to meet the psychological requirements of preparation for combat. The problem was simple: to fire through a standard weapon a projectile with all the standard characteristics but one—it must do no damage while readily indicating successful hits. These requirements seemed so impossible of fulfillment that it was impossible for Gross and his colleagues to obtain an NDRC contract for the development of a "frangible bullet." But the need was so great, the problem so pressing, that Gross, with assistance from the Bakelite Corporation and from a group at Princeton University, utilized the resources of his own university to get on with the problem. Only after the major problems had been solved was an appropriate contract let and the project reinforced with staff and equipment. In less than a year a successful frangible bullet with good ballistics had been designed and manufactured, target planes had been lightly armored but retained their flight characteristics, a hit indicator system had been designed and built, and standard .30-caliber machine guns had been modified to utilize the frangible bullet. Use of these training devices was then instituted as rapidly as possible in the Army Air Force gunnery schools.

This extraordinary service was recognized in the award to Gross of the Medal of Merit, the highest civilian award of the United States Government. To quote the citation by the President of the United States: "The Medal for Merit has been awarded to Dr. Paul Magnus Gross for exceptional meritorious conduct in the performance of outstanding service to the United States from July 1942 to September 1945. . . . Although a chemist, he successfully solved serious problems in the fields of ballistics, machine gun modification, characteristics of armour, electrical circuits, plastics and remote control mechanisms. Against great odds, he worked indefatigably for over two and one-half years. The frangible bullet which he developed, with its accessories, provided means of actual machine gun fire from a bomber in flight, against actual fighter planes simulating hostile attack. The success of his efforts was due to his abilities and his penetrating understanding of the need. Dr. Gross persisted until what he believed possible came true and thereby made an invaluable contribution to the war effort of the United States."

Essential to the success of these diverse responsibilities and challenges has been the tranquil home fashioned by his wife, Gladys Petersen Gross. Moreover, her gracious hospitality contributed in no small measure to the success of the continuing task of building the university. Love of the university has been a way of life in their home; their son, Paul, Jr., is now on the faculty of Wake Forest College, while the hus-

band of their daughter, Beatrix Cobb Ramey, is on the faculty of the University of Virginia.

On the coast of North Carolina, not far from the Duke University Marine Biology Laboratory, Paul and "Peter" maintain a modest beach house which serves to unite the family in the summers and serves also as drydock for a collection of sailing craft, most precious of which is the one built by Paul and Paul, Jr. Near at hand is the only luxury Gross ever allowed himself—an ocean-going powered vessel equipped for deep-sea fishing. His friends, colleagues, and students know that Paul Gross will give of himself and his wisdom to the Association as he has in the past and that, accordingly, the affairs of the Association must surely prosper. But we hope, too, that he will occasionally find a moment to listen to the gentle slap of waves against the hull.

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AAAS Council Meeting, 1960

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The Council of the AAAS met twice during the annual meeting of the Association in New York, 26 to 31 December. Both sessions were under the chairmanship of President Chauncey D. Leake and both were held at the Commodore Hotel. One hundred and fifty-two Council members attended the first session, at 4:00 P.M. on 27 December, and 131 the second session, at 9:00 A.M. on 30 December. The Chairman of the Board of Directors, Paul E. Klopsteg, and the President, Chauncey D. Leake, reviewed Association activities and problems.

Elections and Officers

The President announced that Council, by mail ballot, had elected Paul M. Gross as president-elect; had reelected Don K. Price and Alan T. Waterman as members of the Board of Directors for four-year terms; and had elected Henry Eyring to complete the one remaining year of an uncompleted term on the Board of Directors.

The vice presidents and chairmen of sections, as elected by the Council, are listed on pages 468 to 471. Council voted authority to the Board of Directors to elect vice presidents and chairmen for those sections that had not yet presented nominations for these positions.

The Executive Officer reported that the Board of Directors had reappointed Allen T. Bonnell of the Drexel Institute of Technology as Secretary of the Section on Industrial Science and had appointed the following new section secretaries: Section on Mathematics, Wallace Givens of Northwestern University; Section on Chemistry, S. L. Meisel of Socony Mobil Oil Company; Section on Geology and Geography, Richard H. Mahard of Denison University; Section on Engineering, Leroy K. Wheelock of the Engineers Joint Council; and Section on Medical Sciences, Oscar Touster of Vanderbilt University School of Medicine. All are to serve for four-year terms, 1961 through 1964.

Council Activities and Organization

Much of the time of the 1959 meeting was devoted to consideration of a report of the Committee on Council Activities and Organization. Most of the recommendations of that committee were approved by Council, as reported in the minutes of the 1959 meeting [*Science* **131**, 503 (19 Feb. 1960)], but some matters were left unsettled, and to help in their settlement the Committee on Council Activities and Organization was continued for an additional year. The committee reported that it had worked closely wtih the Board of Directors in arriving at recommendations for certain changes in the constitution and bylaws. The proposed amendments were published in *Science* [**132**, 1558 (25 Nov. 1960)].

William A. Wildhack, chairman of the Committee on Council Activities and Organization, introduced the committee report and recommended approval by Council of its recommendations. Council voted to approve the following amendments to the constitution.

Article IV, Section 1

Substitute the following statement for the present Article IV, Section 1:

Responsibility for the affairs of the Association is vested in the Council, which shall have authority to delegate functions to the Board of Directors.

In addition to other powers and responsibilities set forth herein, Council shall:

(*a*) determine the rights and privileges of members, and prescribe the dues and fees to be paid by members;

(*b*) elect general officers of the Association;

(*c*) provide for the organization of the Association in sections in accordance with the fields of interest of its members;

(*d*) authorize the establishment of regional divisions of the Association;

(*e*) determine the conditions of affiliation and elect affiliates of the Association;

(*f*) establish special study committees to report to the Council on any aspect of Association policy or program or on other matters affecting the advancement of science; and

(*g*) establish committees to aid the Council in the discharge of any of the above responsibilities.

Article V, Section 1

Substitute the following statement for the present Article V, Section 1:

The Board of Directors shall have, hold, and administer all the property, funds, and activities of the Association. It shall:

(*a*) take such actions as it deems necessary to carry out the purposes of the Association;

(*b*) make recommendations to the Council;

(*c*) appoint the administrative officers of the Association;