Award winners: backgrounds, achievements

Following are more details on the 1974 recipients of awards administered by ACS. Except for the Priestley Medal recipient, names of these award winners were announced initially at the ACS Chicago meeting in August (C&EN, Sept. 3, page 48). A vignette on the Priestley Medal winner, Paul J. Flory, professor of chemistry at Stanford University, was published last summer (C&EN, July 23, page 10). A vignette on Dr. Charles C. Price, Benjamin Franklin Professor of Chemistry at the University of Pennsylvania and winner of the ACS Award for Creative Innovation, is not presented here as his career was described recently (C&EN, Sept. 24, page 14) in connection with his winning of the Charles Lathrop Parsons Award.

E. V. Murphree Award in Industrial and Engineering Chemistry

sponsored by Esso Research and Engineering Co.

HERMAN S. BLOCH is so renowned for his work on behalf of the professional chemist, through all levels of ACS and in other technical societies, that one tends to overlook his numerous and important technical achievements. These achievements have brought him the Eugene J. Houdry Award in Applied Catalysis (1971) and participation in an IR-100 Award (1973), which is *Industrial Research* magazine's recognition of the year's top 100 products.

Dr. Bloch is director of catalysis research at Universal Oil Products. He has spent his entire scientific career at UOP since receiving his Ph.D. in organic chemistry at the University of Chicago in 1936.

He joined ACS that same year and has served as Chicago Section chairman, member of the C&EN advisory board, and in many other ACS local and national offices. He was elected Chairman of the Board in 1972.

How thoroughly he merits the Murphree Award (given for "outstanding research of a theoretical or experimental nature in the fields of industrial chemistry or chemical engineering") is shown by a partial list of his achievements:

- Development of the Pacol process for production of normal olefins, now in commercial operation around the world in the manufacture of biodegradable detergents.
- Work on control of automotive exhaust pollution.
- Publication of about 20 scientific and technical papers and 250 U.S. patents.
- Important contributions to almost all catalysis processes developed by UOP, including catalytic cracking, isomerization, reforming, alkylation, and polymerization.
- Work in the Udex liquid-liquid aromatics extraction process.

Dr. Bloch says, "We cannot divorce chemistry, as an essential and expanding science, from the chemists engaged in its practice or the society in which they function. ACS must be equally concerned with the well-being of all three. If necessary, the Society should be restructured so that it can exert a more influential role on behalf of the professional and economic interests of chemists and assert an authoritative voice in areas of public concern involving chemistry."

ACS Award in Enzyme Chemistry

sponsored by Pfizer, Inc.

One of his professors has said of **MICHAEL J. CHAMBERLIN** that his thesis work "is still widely quoted, admired, and serves as the basis for much of our present knowledge of RNA [ribonucleic acid] polymerase." Dr. Chamberlin, who is now professor of biochemistry at the University of California, Berkeley, did his undergraduate work at Harvard and received a Ph.D. in biochemistry at Stanford in 1963. He joined the Berkeley staff that year as assistant professor of molecular biology.

Dr. Chamberlin's graduate research is also described as "innovative, thorough, and meticulous; it revealed an extraordinary capacity and energy for work, a highly developed critical sense, and an instinct for knowing what's important." His work on the mechanism of RNA polymerase is considered the best in the field in the past decade.

The enzyme chemistry award qualifications state that it should go to a U.S. citizen under 40 engaged in noncommercial research and that "the presence of an enzyme action must be unequivocally demonstrated."

Through the years, enzymes have continued to be Dr. Chamberlin's main focus. His first independent research made use of RNA polymerase to synthesize a variety of RNA homopolymers. Later, with his students, he analyzed the structure of RNA polymerase holoenzyme and elucidated the role of the sigma subunit in conferring transcribing specificity to the enzyme.

Most recently Dr. Chamberlin discovered that T_7 bacteriophage relies on the host RNA polymerase to synthesize only the messenger RNA for its own RNA polymerase, a finding that reversed prevailing thinking. His investigation revealed that the RNA polymerase activity following T_7 infection did not result from a new sigma factor but from an entirely new RNA polymerase that can transcribe the late genes of T_7. This enzyme has been purified to homogeneity and its mechanism is currently being analyzed.

The James Flack Norris Award in Physical Organic Chemistry

sponsored by the Northeastern Section, ACS

DR. GERHARD L. CLOSS is widely acknowledged as a pioneer in developing chemically induced nuclear polarization, which has had a major im-

Bloch Chamberlin Closs Cotton Dahl Dahlberg Drickamer

pact on the tactics for the study of free radicals and on the methods used for the definition of the mechanisms of free radical reactions.

This work alone would recommend him for the Norris Award, his colleagues say, but he has also been a leader in small-ring chemistry and in the study of the mechanisms of carbenes and carbenoid compounds. (He coined the term "carbenoid" to describe and distinguish behavior of divalent carbon compounds and halolithium intermediates. This work also has had a major impact.)

His work has demonstrated his clear understanding of fundamental principles in the field of magnetic resonance. And it may serve as a demonstration that even the organic chemist has the opportunity to make new discoveries in a field traditionally reserved for the chemical physicist, if his understanding of the subject goes deeper than the usual empirical relationships.

Born in Wuppertal, Germany, in 1928, Dr. Closs studied at the University of Tubingen and received a Ph.D. there in 1955, working under George Wittig. He spent two years at Harvard, working under Dr. Robert B. Woodward as a postdoctoral research fellow, then joined the faculty of the University of Chicago, where he became full professor in 1963. Since 1965 he has been visiting professor of chemistry first at the University of Illinois, then at Yale, and more recently at Leiden, the Netherlands.

ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry

sponsored by Mallinckrodt Chemical Works

FRANK A. COTTON, who is Robert A. Welch Distinguished Professor of Chemistry at Texas A&M, will receive his third high honor from ACS for his work in inorganic chemistry. He received the Baekeland Medal in 1963 and the first Texas Instruments Inorganic Award in 1962.

He is credited with being a major stimulus to the revitalization of coordination chemistry that has taken place in the U.S. since 1955. He has led the way in utilizing modern physical chemical techniques to solve problems dealing with the structure and electronic properties of coordination compounds.

Dr. Cotton and his pupils have chalked up more than 300 research publications in the past 20 years. His works include several major textbooks. "Chemical Applications of Group Theory" has now gone into a second edition, and his text with Geoffrey Wilkinson, "Advanced Inorganic Chemistry," has come to be inorganic chemistry's bible. Another of Dr. Cotton's works is a high school text incorporating the concepts of CHEM STUDY. He was the originator and initial editor of "Progress in Inorganic Chemistry" and carried this serial through its first 10 annual editions.

Dr. Cotton was born in 1930 in Philadelphia. He attended Drexel, Temple, and Harvard, earning a Ph.D. at Harvard in 1955 while holding several fellowships (during the last one studying in J. Bjerrum's laboratory in Copenhagen). He worked in the chemistry department at Massachusetts Institute of Technology from 1955 to 1972, when he moved to Texas A&M.

ACS Award in Inorganic Chemistry

sponsored by Texas Instruments, Inc.

LAWRENCE F. DAHL has made outstanding contributions to the understanding of the stereochemical and bonding features of organometallic transition metal complexes. Before his research there was little understanding and relatively no systemization of the detailed nature of metal-metal interactions and the particular kinds of influence of valence electrons upon molecular geometries of organometallic cluster systems.

Areas of his research include:

- Establishment from x-ray crystallographic investigations of the basic structural types of polynuclear metal carbonyls and characterization and bonding analysis of more than 50 other basic polynuclear metal structural types of complexes.
- Studies on the existence of different kinds of multicentered bonds in polynuclear metal complexes involving hydrogen and other ligands being coordinated to more than one metal.
- First direct demonstration that metal-metal electron pair interactions could alter dramatically the molecular geometries of organometallic binuclear metal complexes containing bridging groups, and first definitive evidence for the existence of a "net" one-electron metal-metal bond in such a transition metal dimer.

Dr. Dahl studied at the University of Louisville and Iowa State University, Ames, earning a Ph.D. from Iowa in 1956 under the guidance of the late Dr. Robert E. Rundle. He then joined the faculty of the University of Wisconsin, rising to the position of professor in 1964. He has been an Alfred P. Sloan fellow (1963–65) and a Guggenheim fellow (1969–70).

Dr. Dahl is much in demand because of his lecturing style which combines scientific expertise with boundless enthusiasm. In addition to speaking at various conferences, meetings, and colloquiums, he has filled a steady schedule of guest lecturing appointments in the U.S. and abroad. He has supervised 40 graduate students who have received Ph.D. degrees at Wisconsin.

ACS Award in Biological Chemistry

sponsored by Eli Lilly & Co.

Throughout his research career, **JAMES E. DAHLBERG** has been concerned with the structures of nucleic acids as they relate to function. He is associate professor of physiological chemistry at University of Visconsin's medical center, Madison.

Dr. Dahlberg's colleagues, both during his postdoctoral training period and his present tenure, are enthusiastic in describing his success as a research scientist, attributing it to his ability to choose the correct system for study and to his use of diverse approaches including genetic, chemical, and physical techniques.

Dr. Dahlberg has done pioneering studies on the structure and synthesis of ribonucleic acid and has isolated and characterized a number of cellular RNA molecules not previously described. In the process he has developed techniques later adopted by other workers.

Dr. Dahlberg, who is now 33 years old, received a B.A. degree from Haverford College (Haverford, Pa.) in 1962 and a Ph.D. at the University of Chicago in 1966. In the meantime, he spent two years as a medical student at the University of Chicago. As a postdoctoral fellow, he did further research at the MRC Laboratory of Molecular Biology at Cambridge, England, and then spent a year at the Institute of Molecular Biology at the University of Geneva, Switzerland.

He joined the Wisconsin faculty as

Enke *Ferry* *Gleekman* *Glendenin* *Hall* *Hammond* *Johnston*

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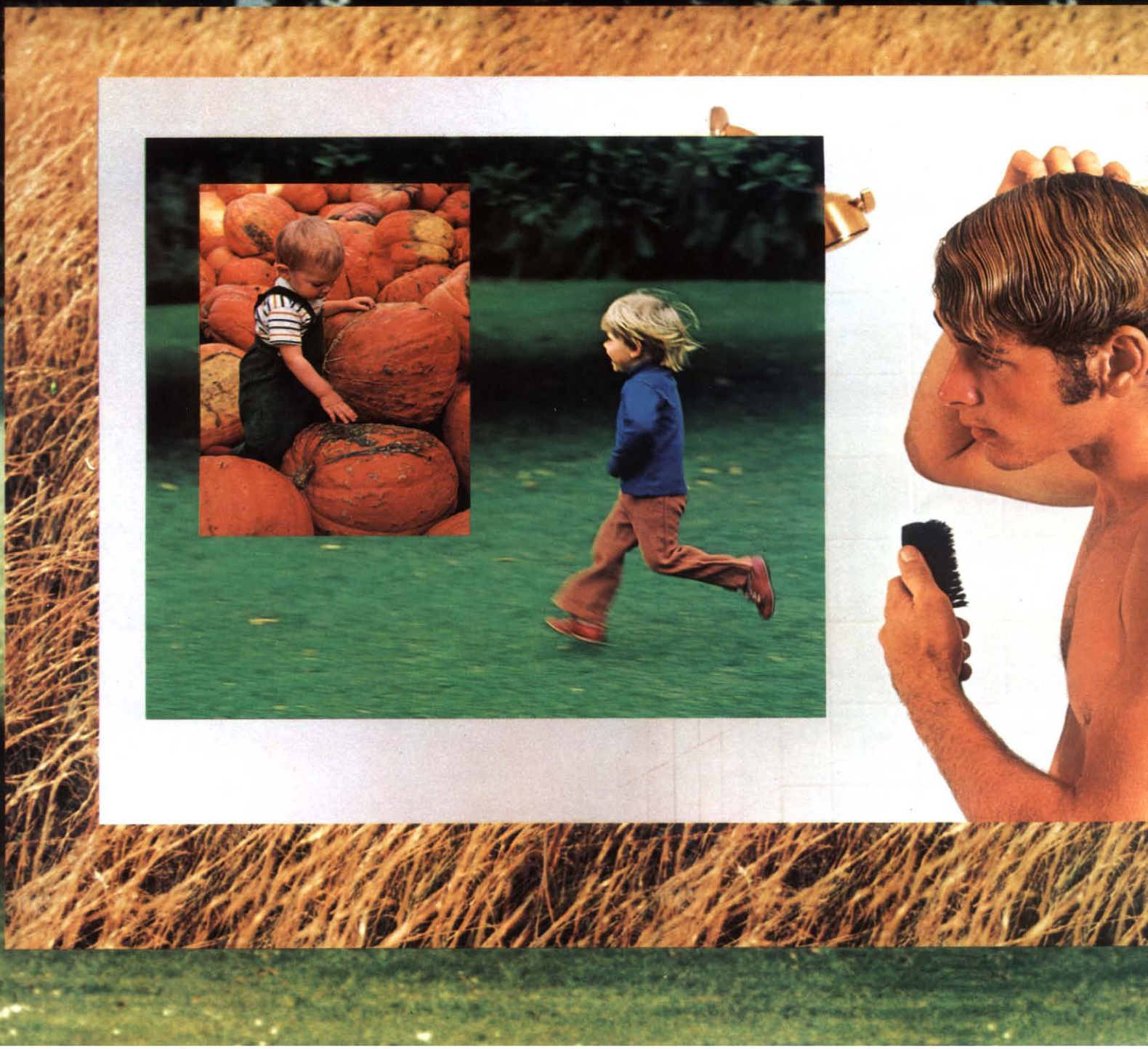

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assistant professor of physiological chemistry in June 1969. There he has continued his research on synthesis and structure of phage λ RNA, structure and function of *Escherichia coli* ribosomal RNA, and RNA tumor viruses.

The biological chemistry award of $2000 and a bronze medal is conferred on a citizen of the U.S. under 36 who "shall have accomplished outstanding research in biological chemistry of unusual merit . . . on the threshold of his career."

The Irving Langmuir Award in Chemical Physics

sponsored by General Electric Foundation

Starting as a chemical engineer with limited background in modern physical science, **HARRY G. DRICKAMER,** according to an associate, "has achieved a unique position as a high-pressure scientist." The associate calls him a "scientist," because it is difficult to tell whether he is a chemist or a physicist; his work "has contributed almost equally to both fields."

Dr. Drickamer, who is professor of chemical engineering and physical chemistry at the University of Illinois, did his undergraduate and graduate work at the University of Michigan, earning a Ph.D. there in 1946. He then joined the Illinois staff and started his high-pressure research in 1951.

His studies at very high pressure (100- to 600-kilobar range) have contributed greatly to the understanding of the electronic behavior of solids. Colleagues say that most of the major findings during the past 15 years concerning electronic structure and electronic transitions of solids at high pressure have come out of his laboratory. "His research has enabled him to develop recently the unifying concept that the widely diverse events which occur at high pressure share the common feature of creation of new ground states. His experimental methodology permits continuing investigation of the nature of these new ground states."

The techniques he has invented have been most significant because of the variety of problems they can be used to solve. Dr. Drickamer has thus created a whole new field of study—the relationship between interatomic distance and the electronic structure of solids. This is of major importance to the future of solid-state chemistry and physics in general, as well as to that of geophysics.

ACS Award in Chemical Instrumentation

sponsored by Sargent-Welch Scientific Co.

CHRISTIE G. ENKE, who is professor of chemistry at Michigan State University, has, according to colleagues, opened many new vistas for scientists. His creative accomplishments in instrumentation and electronics have cut across all scientific and engineering disciplines.

Dr. Enke is also project director of the Interdisciplinary Program in Scientific Instrumentation, which is sponsored by the National Science Foundation. A colleague says, "The educational innovations which should come out of this program are directly exportable to other universities and should be of great influence in the future."

The program supplements an existing course in instrumentation with a new one in applications of minidigital computers in the laboratory. It provides an instrumentation consulting service for campus research groups. It establishes an instrumentation minor for students in all scientific majors.

Dr. Enke received a B.S at Principia College, Elsah, Ill., in 1955 and a Ph.D. at the University of Illinois in 1959. He then joined the faculty of Princeton University and seven years later moved to MSU. Meanwhile, he has served as consultant to Heath Co., McPherson Instrument, and American Cyanamid. His ACS activities include a term on the advisory board of *Analytical Chemistry.*

Dr. Enke is coauthor, with H. V. Malmstadt, of three books on electronic instrumentation that involve new concepts of teaching. The books are used in more than 500 universities, colleges, and technical schools, as well as in many industries, hospitals, and research institutes throughout the world. Although a list of his research publications is long, his accomplishments in instrumentation development and electronics education far outweigh such a list because of their profound effect on the research effectiveness of hundreds of other scientists and engineers.

ACS Award in Polymer Chemistry

sponsored by Witco Chemical Foundation

Pioneering into new territory, ability to follow through on tough problems, and a consistent pattern of excellence in work characterize the career of **JOHN D. FERRY,** professor of chemistry at the University of Wisconsin.

Born in Dawson, in Canada's Yukon Territory, where his father was a mining engineer, he moved to the U.S. at the age of two. He received an A.B. at Stanford in 1932, did graduate work at the University of London, and returned to Stanford for a Ph.D., conferred in 1935. Dr. Ferry has received two previous ACS national awards—Eli Lilly Award in Biological Chemistry (1946) and Kendall Co. Award in Colloid Chemistry (1960). He joined the Harvard faculty in 1936 and served as an associate chemist at Woods Hole Oceanographic Institution from 1941 to 1945. He then went to the University of Wisconsin where he was chairman of the chemistry department from 1959 to 1967.

The polymer chemistry award recognizes his "significant leadership in the measurement of rheological properties of macromolecules and the interpretation of the measurements to gain new information about macromolecular structure. He has pioneered in development of new experimental techniques and amassed enormous amounts of high-quality experimental data on well-characterized macromolecular systems, thus contributing heavily to establishment of 'viscoelastic spectroscopy' as a major important tool in analysis of the structure of macromolecular systems." His work is said to be important as a link in communication among several disciplines.

In association with Dr. Peter Morrison during World War II, Dr. Ferry developed methods for preparing a fibrin film, which became the first safe and effective replacement for the dural membrane lining of the brain after an operation that removed some of the natural lining.

James Bryant Conant Award in High School Chemistry Teaching

WALLACE J. GLEEKMAN is a science teacher at Brookline High School near Boston, where he has been since 1958. His special emphasis is chemistry and he manages to be a favorite with the students (quite an honor in itself), as well as master teacher to student teachers from Harvard, Boston University, Simmons College, and Boston College. He also is active in adult education, in preparing chemical education programs on television, and as chairman of the ACS Northeastern Section's chemical education committee.

Mr. Gleekman received a B.S. from Bridgewater State College in 1951 and an Ed.M. at Boston University in 1952. He has done graduate work at Boston University, Harvard, and Union College.

He is highly versatile. He serves on the staff of the Naval Reserve Officers School in Boston, conducting courses in chemical oceanography. He spent this past year at American International School in Israel developing an oceanography curriculum at the secondary school level. And he has mastered the art of sailing and is a sailing instructor during the summer.

Mr. Gleekman's students have won awards at local, regional, and state science fairs. They are enthusiastic about his personality and teaching methods. Says one: "Chemistry became an exciting experience for me, and I was always impressed with the organization and the logic of his presentations. He also has a knack for reducing complex ideas to their essentials and in doing so can impart in a

very real way a sense of the beauty of science."

He has presented many papers at ACS national and regional meetings covering such topics as chemistry for the slow learner, enrichment chemistry through television, the student teacher in chemistry, and, most recently, adventure in the Sinai, recounting the experiences of his chemical oceanography field trip.

ACS Award for Nuclear Applications in Chemistry

sponsored by G. D. Searle & Co.

LAWRENCE E. GLENDENIN has made contributions of great significance in the field of nuclear fission. He will be cited for the present award for his work on the chemical isolation and identification of fission products, in particular for the codiscovery of the element promethium; for his contributions in studies of fission mass and charge distributions; and for his work on the determination of half-lives of radionuclides of consequence to geo- and cosmochemistry and to reactor technology.

Dr. Glendenin is senior chemist at Argonne National Laboratory (ANL), where he rejoined the staff in 1949 after earning a Ph.D. at Massachusetts Institute of Technology. He received an S.B. degree from the University of Chicago in 1941 with a major in chemistry. Dr. Glendenin joined the Metallurgical Laboratory (now ANL) in 1942 as one of the pioneer nuclear chemists of the Manhattan Project and a year later began a three-year stint at the Clinton Laboratory (now Oak Ridge National Laboratory). It was during this period that he and Dr. J. A. Marinsky discovered and chemically identified element 61 as one of the products of nuclear fission.

At Argonne Dr. Glendenin has trained chemists in fission product research and the techniques of radiochemistry, and has served as lecturer and lab instructor in the International School of Nuclear Science and Engineering. In 1955 he served as scientific secretary for the U.S. delegation to the International Conference on Peaceful Uses of Atomic Energy, held in Geneva, Switzerland.

He presents papers regularly at meetings of ACS, the American Physical Society, and to international symposiums on nuclear fission. He is author or coauthor of more than a hundred publications.

ACS Award in Colloid or Surface Chemistry

sponsored by Kendall Co.

W. KEITH HALL has contributed substantially to the literature of catalytic chemistry and has tackled vigorously and simultaneously problems of great technical importance and of great scientific difficulty. So say his colleagues. "His work has been characterized by versatile use of techniques (infrared, ultraviolet, and NMR spectroscopy, kinetics, and tracer methods) but most importantly by formulation of quite clear models and of experiments which validate or invalidate them cleanly."

Dr. Hall began his research in surface chemistry at the Bureau of Mines, Bruceton, Pa., before completing work for a Ph.D. at the University of Pittsburgh in 1956. His earlier education was at Emory (B.S., 1940), and Carnegie Tech (M.S., 1948). In 1956 he assumed direction of the catalysis group at Mellon Institute and built it into one of the best centers for basic catalytic research in this country. More than 30 scientists, most of them with doctorates, have come to work with Dr. Hall on catalytic problems in the past decade, 13 of them from abroad.

After the fellowship at Mellon, which was funded by Gulf Research & Development, ended, Dr. Hall went to Gulf in 1970 as senior scientist. He retired this summer to accept his present post of Distinguished Professor of Chemistry at the University of Wisconsin-Milwaukee.

Dr. Hall has published more than 100 papers and patents covering many aspects of surface chemistry of catalysts. His work at Mellon on catalysis by oxides, plus his work on metals, has established him as a broadly based experimentalist without peer among catalytic chemists. He has pioneered, developed, and established many of the new techniques or adaptations of older ones for catalytic research.

Some estimate of Dr. Hall's impact may be obtained from the frequency of his citations in the *Citation Index,* where a given paper usually is cited (if at all) one to three times during a year. A number of Dr. Hall's publications received, in 1969, multiple citations. A paper on zeolites was cited 19 times.

Among many community and professional services, Dr. Hall is presently a member of ACS's PRF advisory board, and a coordinator for the joint U.S.-U.S.S.R. exchange program for research in chemical catalysis.

ACS Award in Chemical Education

sponsored by Scientific Apparatus Makers Association

GEORGE S. HAMMOND's new approaches to the teaching of chemistry and organizing the curriculum literally have shaken the foundations of chemical education, according to his associates. His book, "Organic Chemistry," in 1959, with Dr. Donald Cram of the University of California, Los Angeles, was the first to emphasize a modern mechanistic approach to this field. It has gone through several editions and has reached, in effect, many thousands of students.

Dr. Hammond graduated from Bates College in 1943, B.S. magna cum laude. He earned an M.S. and Ph.D. in chemistry at Harvard in 1947, spent a year as postdoctoral fellow at UCLA, then joined the Iowa State University faculty at Ames. He went to Caltech as professor of organic chemistry in 1958 and is now vice chancellor-sciences at University of California, Santa Cruz.

As a teacher, Dr. Hammond began to question the effectiveness of all chemistry curriculums still in the traditional framework. He argued that chemistry should be divided into the two main areas, structure and dynamics, which reflect the lines defined by contemporary research. He designed what was the first truly new, three-year undergraduate chemistry curriculum in 50 years. It began with a general course based on structure, energetics, and dynamics, and continued in the second and third years with rigorous treatments of structure and dynamics. The old areas of organic, inorganic, physical, and analytical chemistry were integrated as they went along. The course began with freshmen at Caltech, where Dr. Hammond developed tremendous rapport with the students.

The most important part of the experiment was the dramatic change in teaching style. Dr. Hammond encouraged graduate teaching assistants to get involved in all aspects of the courses. The old "I'm the Prof—you're the GTA" relationship was no more; all were equals. Colleagues of Dr. Hammond say that his influence in turning teaching in chemistry toward a much more personal and involved style will stand and be remembered long after the syllabus he designed has given way to still newer approaches.

ACS Award for Pollution Control

sponsored by Monsanto

Nitrogen oxide exhaust from supersonic aircraft threatens grave damage to the earth, says **HAROLD S. JOHNSTON,** professor of chemistry at the University of California, Berkeley. Dr. Johnston has pinned down in precise and documented form exactly what is meant by this statement. The ozone shield in the atmosphere absorbs much of the sun's ultraviolet radiation. With a modest reduction of this shield, tissue damage to life on earth would be severe. With a large reduction of this field, many forms of life could no longer exist.

Through his technique of molecular-modulation spectroscopy, Dr. Johnston has demonstrated that the ozone layer is very vulnerable to increases in nitrogen oxide concentrations. His calcula-

tions have shown that the distribution of nitrogen oxides in the stratosphere is as important as the quantity in determining the amount of ozone reduction.

By releasing nitrogen oxides, SST aircraft would cause catalytic destruction of the ozone. Dr. Johnston's pioneering studies are expected to have an increasing impact as other scientists follow his lead and exploit his methods.

Dr. Johnston was born in Georgia. After taking an A.B. from Emory University in 1941, he served for three years as a research assistant at California Institute of Technology. He earned his Ph.D. there in 1948 and later became an assistant professor at Stanford. He joined the University of California faculty at Berkeley in 1957.

Dr. Johnston was a member of the editorial board of the *Journal of the American Chemical Society,* 1954–64, and has been associate editor of *Annual Reviews of Physical Chemistry* since 1956. Among many other honors, including the ACS California Section Award in 1956, Emory University conferred upon him an honorary D.Sc. degree in 1965.

Garvan Medal

JOYCE KAUFMAN, as a graduate student, worked on experimental problems, but although she produced about 20 papers during that period, her career as experimentalist was short. After receiving her Ph.D. in 1960 at Johns Hopkins (where she also had done her undergraduate work), she became more interested in the theoretical aspects of structural chemistry. So she embarked on a new career as a theoretician.

Dr. Kaufman is largely self-taught. Her fields include performing quantum chemical calculations for small molecular systems (such as A + BC three-atom reactions) as well as applying quantum chemical calculations, topological analysis, topographical analysis, and systems analysis of the mechanism of action of drugs that affect the central nervous system. She has done calculations on large drug molecules such as chloropromazine, trifluoperazine, piperidopromazines, and morphine.

Dr. Kaufman's investigations stimulated international interest, and she was invited to present a plenary lecture on her work in Copenhagen in 1972. She has also given invited lectures at Karolinska Institute in Stockholm, Rhône-Poulenc in Paris, National Institutes of Health, Army Chemical Center, and at several drug companies.

Dr. Kaufman has served as a consultant to NIH in quantum chemical calculations of molecules of pharmacological and biological significance. Also, she is serving as a member of the National Academy of Sciences' panel on heavy ion sources' committee on nuclear science.

According to a colleague, "There seems little doubt that she is already one of the better quantum chemists, male or female, in the country and . . . is now the best of the female theoretical chemists."

But her creativity does not end with her research. She is on the editorial advisory board of the *Journal of Molecular Pharmacology* and since 1965 has been on the editorial advisory board of book publisher John Wiley, as adviser in theoretical chemistry and chemical physics. She has served as chairman of the ACS Maryland Section and during her term she established the member assistance, the professional relations, and the governmental liaison advisory committees.

She is now principal research scientist in the department of chemistry at Johns Hopkins and associate professor in the division of anesthesiology of the school of medicine.

Kaufman

Kotulak

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Schmidbaur

James T. Grady Award for Interpreting Chemistry to the Public

Science is on the threshold of giving man some control over his own heredity. And the public needs to be informed of these and other scientific advancements in an understandable manner to make intelligent decisions about their use. The importance of a skilled interpreter who can build such bridges of understanding cannot be overestimated.

Such a person is **RONALD M. KOTULAK,** whose articles for the *Chicago Tribune* are syndicated in several major cities.

Mr. Kotulak's articles on cancer, the importance of correct diet, weight problems, effect of smog on the lungs, and evidence of life on other planets all illustrate a style of writing that holds the reader's interest and shows an accurate understanding of the subject matter. An admirer in the scientific field says that Mr. Kotulak has performed outstanding work in reporting factual news concerning chemical and biological events in a manner that not only catches the eye of the public but also reflects a sincere credit to the scientific community.

Mr. Kotulak was born in Detroit and joined the *Tribune* in 1959 after graduating from the University of Michigan. He previously had attended Wayne State University in Detroit, then worked for a year as a merchant seaman on the Great Lakes to earn money for further education. On the *Tribune,* he filled various assignments until 1963, when he began writing medical and scientific articles. He became the newspaper's science editor in 1965.

Mr. Kotulak has received many honors and citations, including several in recognition of a series of articles on heart disease. He has written extensively on the role of chemistry in life. He has done stories on experiments to duplicate the primitive conditions on earth eons ago that led to the buildup of complex chemical structures believed to be the forerunners of life.

Mr. Kotulak says, "Everything in science and medicine revolves around chemistry. Studies of the brain, of cancer cells, of ecology problems, of organ transplants, of disease control, all of the important areas of investigation today—even the possibility of life on other planets—it's all chemistry."

Ernest Guenther Award in the Chemistry of Essential Oils and Related Products

sponsored by Fritzsche-Dodge Olcott, Inc.

GÜNTHER OHLOFF, his associates say, "demonstrates in a most impressive way how first-class scientific work and successful industrial research can be complementary to each other."

Dr. Ohloff is director of research at

Firmenich, S.A., Geneva, Switzerland and one of the world's foremost experts in terpene chemistry. His important contributions to this field have been of both theoretical and synthetic importance.

Examples of his contributions include work on photooxygenation of cyclopentadiene which led to the discovery of a new peroxide rearrangement, a photochemical cyclopropane cyclization which was observed with caryophyllene, and oxidations of citronellol and limonene—oxidations now performed on a large scale in the industrial syntheses of tetrahydrocannabinol, the active principle of marijuana.

A colleague cites as especially important Dr. Ohloff's "systematic exploitation of photooxidative procedures for the syntheses of new terpenes."

Born in Germany, Dr. Ohloff attended the Technische Hochschule Dresden where he received a Diploma in Chemistry in 1950 and a Ph.D. in 1951. After two years at Schimmel, Inc., Miltitz, and four years at Dragoco, Holzminden, as research chemist, Dr. Ohloff became a fellow of the Max-Planck-Institut für Kohlenforschung, Mülheim/Ruhr, where he remained for three years. In 1963 he joined Firmenich, S.A. He was awarded the Ruzicka Prize of the E. T. H. Zürich in 1967.

ACS Award in Chromatography

sponsored by Supelco, Inc.

LOCKHART B. ROGERS, professor of chemistry at Purdue University, is a leading analytical chemist who has made valuable contributions in many areas. These include selective reagents, polarography, spectrophotometry, thermal methods, radioactive methods, reflectance, and fluorescence.

Dr. Rogers' work covers fundamental aspects of chromatography as well as its applications. He was one of the first persons to suggest and demonstrate the use of heavy metal salts as adsorbents in gas chromatography to separate a variety of organic compounds.

Other work includes use of gas chromatography as a diagnostic tool to study phase transitions and surface characteristics for crystalline column materials, tailoring of adsorbents for the separation of closely related molecules, and development of sophisticated digital techniques to obtain precise chromatographic measurements.

Dr. Rogers is more than willing to share his knowledge of chromatography not only with his own students but also as a visiting lecturer at other universities and industrial laboratories. He also serves on a number of advisory committees.

Dr. Rogers received a B.A. from Wesleyan University in 1939 and his M.A. and Ph.D. from Princeton University. In 1942 he joined the chemistry faculty of Stanford University. From 1946 to 1948 he served as a group leader at Oak Ridge National Laboratory. In 1948 he accepted an appointment to the faculty of Massachusetts Institute of Technology where he became full professor in 1959. He moved to Purdue University in 1961 as professor of chemistry and head of the analytical division.

Dr. Rogers has been very active in ACS affairs. He has served as chairman and councilor of the Northeastern Section and as secretary-treasurer and chairman of the Division of Analytical Chemistry. He is currently a councilor for the Purdue Section and serves on the Council Committee on Nominations and Elections.

Ipatieff Prize

For a young man **GEORGE A. SAMARA** has had a remarkable impact in his field of high pressure research. He is the author of more than 50 papers and has given 17 invited talks in addition to 25 other oral presentations in the past nine years. This, an associate says, "is a truly fantastic record for an industrial scientist." And he has been elected chairman of the 1974 Gordon Conference on High Pressure Research.

Dr. Samara's primary research interest is the effect of high pressure and temperature on the physical properties of solids. This work has covered a number of areas—insulator and semiconductor-to-metal transitions, ferroelectric properties, dielectric properties, and ferromagnetic properties.

A colleague describes Dr. Samara's high pressure studies as "characterized by experimental ingenuity, a sound understanding of theory, and excellent scientific judgment in the selection of critical experiments. They illustrate beautifully the power of high pressure as a significant tool for investigating electronic behavior of solids."

Dr. Samara received his B.S. in chemical engineering from the University of Oklahoma in 1958 and his Ph.D. from the University of Illinois in 1962. After graduation he joined the technical staff of the applied physics research department of Sandia Laboratories, where he has remained except for a two-year tour of duty with the Army during which he was able to continue his high pressure research. He is now head of the physics of solid research department at Sandia, in which position he has maintained an active personal research program.

Frederic Stanley Kipping Award in Organosilicon Chemistry

sponsored by Dow Corning Corp.

HUBERT SCHMIDBAUR, professor of inorganic chemistry at the University of Würzburg, West Germany, has made extensive contributions to the understanding and development of organosilicon chemistry.

He is perhaps best known for his work with organosilicon polymers containing various inorganic moieties in the silicate backbone. Dr. Schmidbaur and his students at Munich and Marburg made many systematic investigations in which more than 40 different elements (X) were incorporated in Si-O-X structural unit and their specific effect studied. This work gave basic information on the general properties of these materials.

But Dr. Schmidbaur's contributions are not limited to this area. An associate says that he "has contributed most of what is now known of the chemistry of organosilyl esters of strong oxygenated acids, has established himself as the leading expert on organosiloxy derivatives of heavy metals, developed the principle of isoelectronic substitution in siloxane chemistry, and developed the chemistry of organosilyl phosphorus ylides."

A native of Landsberg am Lech, Germany, Dr. Schmidbaur received a Diplom Chemiker in 1957 and Doctorate of Natural Philosophy summa cum laude in 1960 from the University of Munich, where he remained for two years as a scientific assistant. He held the same position at the University of Marburg for two years before joining the faculty of the University of Würzburg. In 1965 Dr. Schmidbaur received the Dozent Prize of the German Chemical Industry.

Recently he accepted a chair of inorganic chemistry at the Technische Universität in Munich.

ACS Award in the Chemistry of Plastics and Coatings

sponsored by Borden Foundation, Inc.

The cumulative impact of **VIVIAN T. STANNET**'s work has done a great deal to establish the scientific foundations that have led to the immense growth in plastics, films, adhesives, and paints. So say his associates.

Dr. Stannet's research interests can be divided into three main areas—diffusion and permeation of gases and vapors in polymers, radiation chemistry of polymers, and graft and block polymerization.

His work on the preparation and characterization of cellulosic graft polymers "is one of the best studies of structure/property relationships in graft polymers and contributed to the understanding of compatibility relationships of polymer blends." Information such as this is necessary not only to the researcher but to the correct formulation of industrial processes.

A native of England, Dr. Stannet received a B.S. in 1939 from London Polytechnic Institute. He was a research chemist for several British firms before coming to the U.S. for graduate work, and received his Ph.D. from

Polytechnic Institute of Brooklyn in 1950. From 1952 to 1961 he was a professor at the State University College of Forestry in Syracuse, N.Y. In 1961, Dr. Stannet became associate director of Research Triangle Institute in Durham, N.C. In 1967, he became professor of chemical engineering at North Carolina State, where he has been Camille Dreyfus Professor since March 1969.

Dr. Stannet has also been active in professional aspects of chemistry. He is a past chairman of ACS's North Carolina Section and was an organizer of that section's polymer group. Also, he has served on both the publications and programs committees of the ACS Polymer Division, and on the executive committee of the Cellulose, Wood, and Fiber Division.

The Peter Debye Award in Physical Chemistry

sponsored by Exxon Chemical Co. U.S.A.

An associate describes **WALTER H. STOCKMAYER**'s contributions to physical chemistry as "singularly noteworthy for their incisiveness and rigor. He combines a thorough mastery of physical principles and methods with a disciplined approach to the problems he addresses. The high standards of his scientific work are unsurpassed by those of any of his peers."

High praise indeed, but a quick look at some of Dr. Stockmayer's contributions to the field bears it out. Early in his career he showed that addition of a permanent dipole term to the Lennard-Jones potential sufficed for a good prediction of the thermodynamic properties of polar gases, and in recent years this kind of interaction often has been used in the study of rotational motion and correlations in gases and liquids.

His version of the theory of light scattering in multicomponent systems is also still in general use. Dr. Stockmayer helped to develop the general theory of polymerization kinetics and molecular weight distribution in branched polymer systems. And his work on the equilibrium properties of dilute polymer solutions "represents a profound increment in our understanding of the field," says an associate.

Dr. Stockmayer's present work deals with conformational statistics and relaxation, particularly with the high-frequency chain motions that cannot be described by Rouse-Zimm normal modes, and for which he has offered simple models.

Dr. Stockmayer is presently professor of chemistry at Dartmouth College. He received an S.B. in 1935 from Massachusetts Institute of Technology, a B.Sc. in 1937 from Oxford University, where he was a Rhodes scholar, and a Ph.D. in physical chemistry from MIT in 1940, working under J. A. Beattie.

He was an instructor at MIT in 1939–41 and at Columbia University in 1941–43. He returned to MIT in 1943 as an assistant professor advancing to professor in 1952 and moving to Dartmouth in 1961.

ACS Award for Creative Work in Synthetic Organic Chemistry

sponsored by the Synthetic Organic Chemical Manufacturers Association

EDWARD C. TAYLOR is being honored for, among other achievements, the development of a new synthetic methodology based on the use of thallium and thallium reagents. The many new reactions that he has discovered in collaboration with a former postdoctoral associate, Dr. Alexander McKillop of the University of East Anglia, England, are applicable to aliphatic, alicyclic, aromatic, and heterocyclic chemistry. These reactions have "astonishing versatility, scope, specificity, and manipulative simplicity," a colleague says. He adds: "It seems realistic to make the prediction that this new methodology will rank with the Grignard and Sandmeyer reactions in synthetic importance to aromatic chemistry."

Dr. Taylor also has made important contributions to pteridine and purine chemistry and is a "world authority on synthetic heterocyclic chemistry." According to associates, "One of the most important effects of Dr. Taylor's work has been his vivid dramatization of the importance and effectiveness of imagination in heterocyclic synthesis, and his repeated demonstrations that rational syntheses of complex systems can be devised via sequential condensation, ring-cleavage and rearrangement reactions."

Dr. Taylor received A.B. and Ph.D. degrees from Cornell University. He joined the faculty of the University of Illinois in 1951 and moved to Princeton University in 1954, where he is now A. Barton Hepburn Professor of Organic Chemistry. He received an honorary D.Sc. from Hamilton College in 1968.

In addition to his research and teaching activities at Princeton, Dr. Taylor has held several visiting professorships both here and abroad. He is editor of *Advances in Organic Chemistry*, coeditor (with Dr. Arnold Weissberger) of "The Chemistry of Heterocyclic Compounds" and "General Heterocyclic Chemistry," and is the author of several books and more than 240 papers. Dr. Taylor also has prepared an ACS Audio Course and an ACS Film Course, Principles of Heterocyclic Chemistry, both to be released next year.

ACS Award in Pure Chemistry

sponsored by Alpha Chi Sigma Fraternity

In doing his Ph.D. research at California Institute of Technology from 1960 to 1963 **NICHOLAS J. TURRO** studied and developed many of the basic processes that are used in present-day "classic" mechanistic studies in organic photochemistry.

From this promising beginning, Dr. Turro has continued to produce important, leading, and imaginative work in many areas. This is illustrated by his work on the reactivity relationships in ketone photochemistry and his quantitative measurements of the yields of excited states in chemiluminescent reactions. His book "Molecular Photochemistry" has served as a standard guide and reference.

Dr. Turro also has made major contributions to the chemistry of small-ring compounds. He was the first to prepare and characterize cyclopropanone, a compound of great theoretical interest. Among other important contributions are his studies on the thermal decomposition of 1,2-dioxetane derivatives. He discovered that these molecules fragment with efficient production of the triplet excited state of the fragments, and he advanced a reasonable explanation of the mechanism by which electron unpairing occurs during this thermal process. These results have crucial significance to theories of chemical reactivity and energy exchanges within a reacting molecule.

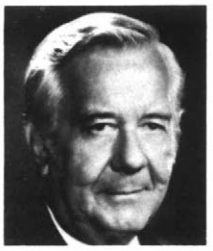
Dr. Turro is professor of chemistry at

Stannet

Stockmayer

Taylor

Turro



West

Columbia University. Colleagues describe him as "an excellent teacher whose graduate students are not only exceptionally well-trained but also enthusiastic."

Dr. Turro received a B.A. from Wesleyan University in 1960 and his Ph.D. in chemistry from Caltech in 1963.

ACS Award in Analytical Chemistry

sponsored by Fisher Scientific Co.

PHILLIP W. WEST recognized the problems of environmental pollution more than 20 years ago and has pioneered analytical methods for determining pollutants in air and water.

In the area of air pollutants he introduced the West-Gaeke method for sulfur dioxide measurement, which is today the world standard reference. Dr. West also developed the chromatrophic acid method for determining formaldehyde and a specific procedure for measuring ozone. He initiated development of ring oven methods and atomic absorption techniques for airborne particulates of toxic and carcinogenic species, thus providing utility and reference methods for determining the principal health hazards in polluted atmospheres.

Dr. West is also credited with developing the accepted standard method for determining nitrate in water. He also has been very active in other areas of analytical chemistry, including microchemical and trace analysis, in developing spot tests, and in applying coordination chemistry and organic reagents to inorganic analysis.

Dr. West received B.S. and M.S. degrees from the University of North Dakota and his Ph.D. from the University of Iowa in 1939. He joined the Louisiana State University faculty in 1940 as an instructor. By 1949 he was a full professor and in 1953 he was named Boyd Professor of Chemistry.

In addition to his teaching and research activities, Dr. West is director for the Institute of Environmental Health Sciences at LSU. Also, he has served as a consultant to the World Health Organization as well as to several industries and governmental agencies. He is a member of the First Working Party for SCOPE (Scientific Committee on Problems of the Environment). He is editor of *Analytical Chimica Acta* and *Science of the Total Environment* and is on the editorial or advisory staffs of several other publications.

Resignation notices

ACS members who wish to resign membership at the end of 1973 should do so now by letter to the ACS Executive Director. ACS Bylaws specify that anyone who fails to resign by Dec. 31 will be carried on the rolls in 1974 as a member and will be responsible for dues. Failure to pay your 1974 dues does not constitute resignation.

The program for deferred dues for unemployed members has been extended through 1974. Members under 65 who are unemployed and looking for full-time employment may apply for deferment of 1974 dues and subscriptions. Write Dr. Robert W. Cairns, Executive Director, ACS, 1155—16th St., N.W., Washington, D.C. 20036.

COMMENT

Cabinet-level science department needed

This country needs two things desperately: a rational continuing science and technology policy and a means for implementing it when we get it. At the recent organizational meeting of the Committee of Scientific Society Presidents, the attendees agreed that the country does not now have a national science policy and that much of what we do in science and technology on government initiative is in belated response to urgent needs. Witness the space program, the crash cancer program, and the current flap about the energy "crisis."

There are many reasons for this. One of these certainly is the failure of the scientific and engineering societies to represent properly the needs of their memberships to the Government. Science and engineering have influenced government through bodies such as the National Academy of Sciences, the National Academy of Engineering, the National Science Board, the President's Scientific Advisory Committee, and other forms which, while prominent and prestigious, do not represent the scientific engineering constituencies but act as consultants to various agencies of the Government.

Another problem is that most of the people who set our current course, such as it is, are short-termers—two-year Congressmen, a four-year President, and six-year Senators—with one eye on the compass and the other on the ballot box. The ongoing people, our civil servants who administer government science, work for a variety of government agencies, chiefly the Departments of Defense; Health, Education, and Welfare; Transportation; Commerce; Agriculture; and Justice, each of which uses the portion of science or technology that is applicable to the needs of that agency. Nowhere in the Government is there a Cabinet-level department that is responsible for developing and maintaining an overall forward-looking policy on science and technology. In recognition of this serious need the ACS Board of Directors recently endorsed the principle of the formation of a Department of Science and Technology, as an idea "whose time had come."

There is another aspect to this matter—almost every important segment of our populace sees a Cabinet department in the Government that they can identify with—lawyers with Justice; farmers with Agriculture; organized workers with Labor; physicians, educators, and the poor with Health, Education, and Welfare (there is some wry humor in that grouping); businessmen with Commerce; shippers and travelers with Transportation; and the military with Defense. But where is the department that scientists and engineers can identify with? Surely it is timely to recognize that scientists and engineers are an important segment of our population whose services are greatly needed and whose morale has been gravely impaired by their recent experiences. The opportunity to identify as an ongoing group rather than ephemeral employees of individual employers should be useful both to them and to the nation.

However, we in the technical tribe should not be so naive as to think that this sort of recognition will be achieved automatically. Both Congress and the Administration will have to be persuaded that this is a desirable course of action. The Department of Science and Technology will not be created unless powerful people in both camps can be convinced that it makes sense. To convince, we must communicate. We must advise the Administration and we must conjure the Congress. Such an effort is not only wise and worthy; it is also good citizenship. Surely the 1.75 million scientists and engineers in this country can do much to promote positive public-spirited programs by expressing their views as individuals to members of Congress.

Alan C. Nixon
President