ACS 1980 national award winners announced

Following are the 1980 recipients of awards administered by ACS. All will receive their awards at the 179th ACS National Meeting in Houston next March, except Gilbert Stork, who will receive the Arthur C. Cope Award at the Second Chemical Congress of the North American Continent in San Francisco in August 1980. A vignette of Milton Harris, winner of the 1980 Priestley Medal, appeared in the July 9 issue of C&EN, page 30.

ACS Award in the Chemistry of Plastics and Coatings

sponsored by Borden Foundation Inc.

Author of more than 90 research papers and holder of seven U.S. patents, **JOHN W. VANDERHOFF** is considered the leading scientist in the fields of emulsion polymerization and printing inks. His development of methods for the preparation of monodisperse polystyrene latex has led to the use of such particles as calibration standards and in medical diagnosis. In 1965 he was corecipient of the Union Carbide Chemicals Award for work on morphology of latex films.

Vanderhoff received his B.S. in chemistry from Niagara University in 1947, his Ph.D in physical chemistry from Buffalo University in 1951. He joined Dow Chemical in 1950 as a research chemist. During his 20-year stint with Dow (except for a 1965–66 sabbatical with Prof. J. Th. G. Overbeek at the Van't Hoff Laboratory at the University of Utrecht) the bulk of his research centered on colloid, polymer, and surface chemistry, particularly plastic foams and the use of latexes in coatings.

He left his position as associate scientist at Dow in 1970 to join Lehigh University where he is now professor of chemistry, director of the National Printing Ink Research Institute, co-director of the Emulsion Polymers Institute, and associate director-coatings of the Center for Surface and Coatings Research.

Vanderhoff is a member of ACS and has organized several symposia for national meetings. He is active as a lecturer and as a referee for many journals. He is also a member of the Polymer Colloid Group, Sigmi Xi, American Institute of Aeronautics and Astronautics, Technical Association of the Pulp & Paper Industry, American Association for the Advancement of Science, American Association of University Professors, and a fellow of the American Institute of Chemists.

Alfred Burger Award in Medicinal Chemistry

sponsored by SmithKline Corp.

TSUNG YING SHEN, vice president, membrane and arthritis research, Merck Sharp & Dohme, received his B.S. in chemical engineering from China's National Central University in Chungking (Chongcing) in 1946; D.I.C. in organic chemistry from Imperial College, London, in 1948; and Ph.D. (1950) and D.Sc. (1978) in organic chemistry from the University of Manchester.

He spent two years as a postdoctoral fellow at Ohio State University and four years as a research associate with the late Prof. Cope at Massachusetts Institute of Technology before joining Merck as a senior chemist in 1956. He attained his present position in 1977.

Shen is well recognized for his contributions in nonsteroidal anti-inflammatory research. "Innovative medicinal chemistry," as a colleague describes it, led to the synthesis of several anti-inflammatory drugs, including indomethacin and sulindac, under Shen's direction. Other research, reflected in his more than 85 publications and 180 U.S. patents, has centered on carbohydrate and nucleoside chemistry and in designing compounds to affect biomembrane processes.

Shen has been honored with the 1975 Outstanding Patent Award of the New Jersey Research & Development Council, Galileo Medal of the University of Pisa (1976), René Descartes Silver Medal of the University of Paris (1977), and the Medal of Merit of the Giornate Mediche Internazionali del Collegium Biologicum Europa (1977). Merck & Co. established the T. Y. Shen Visiting Professorship in Medicinal Chemistry at MIT in 1977.

Shen is active in lecturing on antiarthritic and biomembrane research, organizing symposia, and serving on several editorial boards.

James Bryant Conant Award in High School Chemistry Teaching

sponsored by Ethyl Corp.

EVELYN R. BANK is chairman of the science department at Westminster High School, Westminster, Colo. and has been teaching chemistry there since 1958. Despite the rigorous course she gives, students want to be in her classes. Because Bank is a great teacher. She knows and loves her subject. She respects her students and makes them work hard. They know that she is interested in each one, and she knows how to encourage and inspire them.

One of her coworkers wrote, "...

Vanderhoff

Shen

Bank

the finest high school chemistry teacher I have ever observed. Her ability to motivate students is uncanny."

She received her A.B. from Brooklyn College and both her M.S. and Ph.D. from the University of Denver. Among her honors are membership in Sigma Xi and the University of Colorado Outstanding Educator Award in 1971.

Because Bank believes it is important to provide solid grounding to those going on in science as well as to give all students a grasp of general chemistry, she has devised a curriculum that covers both theoretical and descriptive chemistry. Using two exams (one for students continuing in chemistry, the other for those who aren't), numerous after-school labs, and small-group work sessions, she has turned out increasing numbers of students who understand basic chemistry and has spurred many to advanced study.

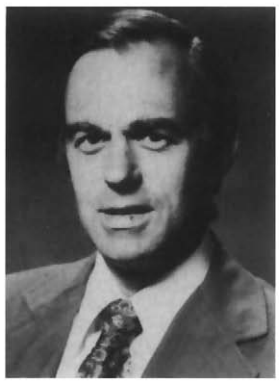
Bank's programs of simulations for qualitative analysis (presented at the Fourth Biennial Conference on Chemical Education at the University of Wisconsin in 1976) are now widely used by high school and college chemistry teachers. She is writing a chemistry text based on her methods and philosophy.

Arthur C. Cope Award

GILBERT STORK is widely recognized, according to one colleague, as a "boldly imaginative, penetratingly thoughtful, and basically creative contributor to organic chemistry who has few peers." So it comes as no surprise that he is to receive the Cope Award. Stork, Eugene Higgins Professor of Chemistry at Columbia University, is receiving this honor for development of new, basic synthetic methods and their application to the total synthesis of important natural products.

Stork's research has resulted in an impressive array of highly stereoselective total syntheses of complex natural products starting with the synthesis of cantharidin in 1951. These include the polycyclic indole alkaloids, yohimbine and aspidospermine; the pentacyclic triterpenoid, lupeol; the antitumor alkaloid, camptothecin; and the mold metabolite, byssochlamic acid. In his synthesis of lupeol, which has no less than 10 asymmetric centers (519 possible racemates) and thus could be produced only by a highly stereoselective synthesis, Stork used his own general enolate trapping method to effect regio- as well as stereospecific annelations.

Stork



Forster

Dev

Most of Stork's synthetic methods are applicable to important synthetic targets. For instance, in addition to his well-known methods for regiocontrolled carbon-carbon bond formation—such as the alkylation of enamines, of metal salts of imines and of hydrazones, and of lithum enolates—the award winner's epoxynitrile cyclizations, besides providing a new annelation method, can be applied to the synthesis of substituted cyclobutane systems and has been used to prepare the male boll weevil sex attractant, grandisol. And his regiospecific condensation of formaldehyde with ketones opens up a regiospecific annelation method that has been applied to steroid and prostaglandin synthesis.

Stork was born in Brussels in 1921 and obtained his Ph.D. from the University of Wisconsin in 1945. He joined Harvard University in 1946 as an instructor, and was appointed assistant professor in 1948. In 1953 he moved to Columbia University as an associate professor.

His previous honors include the ACS Award in Pure Chemistry in 1957, Guggenheim Foundation fellow in 1959, ACS Award for Creative Work in Synthetic Organic Chemistry in 1967, the Synthetic Organic Chemical Manufacturers Association Gold Medal in 1971, and the Roussel Prize in Steroid Chemistry in 1978.

Ipatieff Prize

At 38, **DENIS FORSTER,** research fellow at Monsanto Co., has demonstrated outstanding leadership in his experimental research in homogeneous catalysis, with particular emphasis on the chemistry of the carbonylation of alcohols and olefins. His accomplishments encompass some of the most significant work done to date on the chemistry of coordination compounds.

Forster was responsible for the elucidation and elaboration of most of the chemistry underlying Monsanto's low-pressure route to acetic acid via carbonylation of methanol using a homogeneous rhodium catalyst. Other significant contributions include: the elucidation of the rhodium species involved as catalysts for the water gas shift reaction and formic acid decomposition, mechanistic studies on the iridium-catalyzed hydrocarboxylation of olefins, and fundamental studies on the coordination chemistry of catalytically important halocarbonyl complexes.

Forster was born on Feb. 28, 1941, in Newcastle-on-Tyne, England. He received a B.Sc. from Imperial College of Science & Technology in 1962, and a Ph.D. in 1965 from London University. Forster was a postdoctoral fellow at Princeton University before joining Monsanto in 1966 as a senior research chemist. In 1970 he was named group leader, homogeneous catalysis research. He moved up to senior group leader in 1974, and Monsanto fellow in 1975, his title to date.

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

sponsored by Fritzsche Dodge & Olcott

SUKH DEV, director of the Malti-Chem Research Center, Nandesari, Baroda, India, is one of the foremost organic chemists in India. "I believe that Sukh Dev has isolated and identified more new terpenes than any other organic chemist," says a colleague. "He has uncovered so many novel structures in his studies that one is tempted to believe that he has a sixth sense for ferreting out the most unusual of the naturally occurring terpenes."

Dev has carried out extensive studies of the chemistry of more abundant and significant terpenes, both those discovered by him and those known from the work of others. His contributions have included new and economical (on an industrial

scale) syntheses of menthol and chrysanthemic acid, and structural, stereochemical, and chemical studies on longifolenes, himachalenes, deodarone, mukolol, lac constituents, bakuchiol, cheilanthatriol, humulenes, cembrenes, diterpenes, and triterpenes. These and other contributions by the award winner are now classics in the terpene field.

Dev was born June 17, 1923, in Chakwal, West Punjab, India. He obtained an M.S. in organic chemistry from Punjab University in 1945, and received his Ph.D. from the Indian Institute of Science, Bangalore, in 1950, a D.S. in 1960. He served as a research associate and lecturer at the Indian Institute of Science, and for one year as a research associate at the University of Illinois, before becoming head of the division of organic chemistry (natural products), National Chemical Laboratory, Poona, in 1960. In 1974 he became director of the Malti-Chem Research Center, where he has established a very successful school of organic chemistry.

Because of the volume and quality of Dev's work, he has attained an outstanding reputation internationally. He has been a plenary lecturer in countries all over the world. He is a member of the American Chemical Society and of the Indian Chemical Society; he was elected president of the Indian Chemical Society in 1978.

ACS Award for Creative Work in Synthetic Organic Chemistry

"No one in the world in Kishi's age group has such a record of achievement in the area of organic synthesis. I have no hesitation in pronouncing him a genius in the field which I know best." So said the late Robert B. Woodward of Harvard University, concerning the accomplishments of **YOSHITO KISHI,** professor of chemistry, Harvard University. In a relatively short time, 42-year-old Kishi has achieved a truly extraordinary record of creative work in synthetic organic chemistry.

As a graduate student at Nagoya University in Japan, working under the direction of Prof. Yoshimasa Hirata and Prof. Toshio Gogo, Kishi singlehandedly did the key experimental work leading to the elucidation of the structure of the marine poison tetrodotoxin. Beyond that and as part of his doctoral studies, Kishi determined the complicated structure of the bioluminescent substance of the Japanese sea firefly, *Cypridina luciferin,* and synthesized it. After

Kishi

Pryor

spending two years as a research fellow at Harvard University, in 1968 Kishi returned to Nagoya, where he continued his studies on the synthesis of tetrodotoxin. In 1972, "Kishi electrified the 8th International Congress on the Chemistry of Natural Products" in New Delhi, says Woodward, "with his announcement of the successful completion of his elegant synthesis of tetrodotoxin."

During his stay at Harvard as visiting professor of chemistry (1972–73) Kishi accomplished the spectacular feats of synthesizing sporidesmin and dehydrogliotoxin—substances for whose synthesis no background of previous knowledge was available. In 1976 Kishi completed the total synthesis of gliotoxin, the total synthesis of d,l-saxitoxin, and published his new synthetic route to penicillins. The total synthesis of the antitumor antibiotic in the mitomycin series was achieved by Kishi in 1977. Most recently Kishi's group accomplished the total synthesis of polyether antibiotics, truly formidable synthetic problems.

Kishi was born in 1937 in Nagoya, Aichi, Japan. He obtained his B.S. in 1961 and his Ph.D. in 1966 from Nagoya University. He joined the faculty of science at Nagoya as an instructor of chemistry in 1966. After a two-year leave of absence to serve as a research fellow in chemistry at Harvard, Kishi returned to Nagoya in 1969 as associate professor of agricultural chemistry. In 1972 Kishi again returned to Harvard, this time as visiting professor of chemistry; he was named professor of chemistry in 1974.

ACS Award in Petroleum Chemistry

Sponsored by Lubrizol Corp.

WILLIAM A. PRYOR's pioneering and lucid research into reaction mechanisms of hydrocarbons, sulfur compounds, free radicals, and polymerization initiators encompasses many fundamental topics in petroleum chemistry.

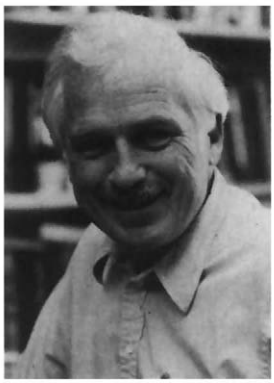
Early in his career, Pryor established the free radical nature of the mechanism of the sulfur oxidation of hydrocarbons while working at California Research Corp. (now Chevron Research).

In his recent work, Pryor has shown that the isotope effect for hydrogen abstraction from thiols is a maximum when the heat of transition state is most symmetrical, as theorized by Westheimer. His group proved that changes in rate of decomposition of initiators due to solvent viscosity can be used to determine whether initiators break one bond or more than one in their decomposition, demonstrating cage return by radicals. He has published the most extensive data on the effects of polar substituents on the reactions of radicals.

Recent research has included studies on the role of one-electron transfer in substitution reactions and the use of isotope effects to determine when electron transfer mechanisms occur. Pryor is studying the production of radicals from the interaction of nonradical reactants. In all of this work, Pryor's outstanding ability to design and execute experimental tests of critical chemical hypotheses is apparent.

In recent years, Pryor's efforts have been increasingly devoted to the role of radicals in biological systems, including smog chemistry, lipid autoxidation, and the chemistry of aging. He is the editor of "Free Radicals in Biology" and of two journals of gerontology.

Pryor, a native of St. Louis, received a "Chicago plan" undergraduate degree from the University of Chicago without completing high school. He received his Ph.D. from the University of California, Berkeley, in 1954, and is presently Boyd Professor of Chemistry at Louisiana State University in Baton Rouge. He is a member of many professional societies and is on the advisory board of a number of journals.



Morgan

Gladfelter

Butler

ACS Award for Creative Advances in Environmental Science and Technology

sponsored by Air Products & Chemicals Inc.

Research on pollution control by **JAMES J. MORGAN,** professor of environmental engineering science at California Institute of Technology, has been quite diverse. However, he has made outstanding contributions in several areas. These include the coagulation of water and wastewater, kinetics of oxidation of Mn(II) to permit manganese removal, and thermodynamic models for water, wastewater, and natural aquatic systems.

In the area of coagulation, the award winner's work on the chemistry of hydrolyzed metal ions has added to the understanding of conventional coagulation processes using iron and aluminum salts for water and wastewater treatment. His research on the kinetics of oxidation of Mn(II) by oxygen is a basis for treating water for manganese removal and for determining the origin and fate of manganese in lakes, rivers, and estuaries. And his studies using thermodynamic models have contributed significantly to knowledge of the buffer capacity of the ocean.

Morgan has provided services to many private, professional, and government organizations. He was editor of the American Chemical Society's *Environmental Science & Technology* from its inception in 1966 until 1974. Under his guidance *ES&T* developed a subscription base of more than 25,000 persons. Since 1964 he has served as consultant to a number of companies as well as municipalities on wastewater problems.

Also noteworthy are Morgan's contributions to education in environmental chemistry. He is coauthor with Werner Stumm of "Aquatic Chemistry," a book that has established water chemistry as a scientific discipline and that has been accepted as a standard text for educating environmental scientists and engineers in this field. He has set up a program of teaching and research in water chemistry at Caltech that ranks among the best in the world.

Born in New York City, Morgan received a B.C.E. from Manhattan College, M.S. from the University of Michigan in 1956, and his Ph.D. from Harvard University in 1964. In 1963 he joined the University of Florida as associate professor of water chemistry and civil engineering. He came to Caltech in 1965 as associate professor of environmental health engineering.

Nobel Laureate Signature Award for a Graduate Student in Chemistry

sponsored by J. T. Baker Chemical Co.

WAYNE L. GLADFELTER is described by his Ph.D. adviser as the best student he has ever had. His work as a graduate student at Pennsylvania State University was extremely diligent and conscientious, traits that enabled him to complete the degree requirements for both inorganic and organic chemistry in less time than most students require to complete just one.

Gladfelter's graduate research, described as excellent and pioneering, centered on the chemistry of organometallic clusters. His work led to the development of methods for synthesis of mixed-metal clusters, including six new clusters, and to detailed NMR studies of 14 mixed-metal clusters, studies for which Gladfelter taught himself the instrumental techniques. He also provided the first evidence for intrametallic rearrangement of clusters and he derived the photochemical reaction mechanism for $H_3Re_3(CO)_{12}$.

As impressive as Gladfelter's research is his creativity and independent thinking. As a graduate student, he frequently began research areas on his own initiative, and he contributed significantly to the research projects of his adviser. His ability to generate ideas and then go into the laboratory and perform experiments to confirm or disprove these ideas was exceptional. His mature approach to chemistry, professors who know him say, made him seem more like a faculty member than a graduate student.

Gladfelter's high-quality work has already made him the recipient of several honors. These include the R. A. Baxter Award from the Colorado School of Mines, the ACS Central Pennsylvania Section Graduate Award, the Sigma Xi Research Award, and National Science Foundation postdoctoral fellowships to California Institute of Technology.

His enthusiasm for science, says one Penn State professor, combined with his penetrating insight, makes the outlook for his career in research and teaching bright indeed.

ACS Award In Polymer Chemistry

sponsored by Witco Chemical Corp. Foundation

GEORGE B. BUTLER, professor of chemistry and director of the center for macromolecular science, University of Florida, Gainesville, is one of the country's outstanding pioneer synthetic organic chemists. His discovery of cyclopolymerization, one of the fundamentally new concepts in the last decade, has generated investigations in polymer synthesis in laboratories around the world in a variety of applications.

Not only did Butler discover the cyclopolymerization concept but he demonstrated many different examples that proved its mechanism. Along with F. L. Ingley, Butler first discovered the phenomenon of cyclopolymerization in 1951. A series of experiments were made over the next decade in which many other examples of cyclopolymerization were uncovered. Commercial use of cyclopolymers began in the 1960's, primarily in water treatment and purification, paper technology, and in cancer chemotherapy.

Butler has maintained a high level of original research in other aspects of new polymer synthesis and the understanding of polymerization reaction mechanisms. Most notable among these are his recent studies on the polymerization of donor-acceptor monomer systems and the modification of diene polymers by the ene reaction.

The awardee was born in Liberty, Miss., in 1916. He received his B.A. from Mississippi College in 1938 and

PRODUCT PROSPECTUS

Labware and instruments

100 Titration system. Ionomate 80 is completely programable automatic titrator that varies volume of titrant depending on the slope of the curve. Astra Scientific

101 Gradient generator. Device combines timer, inert valve, and electric valve-driver to make linear gradients for HPLC or standard column chromatography. Hamilton

102 DNA nick translation. System uses ^{32}P-labeled dCTP to label DNA products for kinetic studies or restriction enzyme DNA probe hybridization experiments. New England Nuclear

103 Piston pump. HPLC pump provides precise flow rates from 0.1 to 9.9 ml per minute; operating pressures may be as high as 6000 psi. Kratos

104 UV light source. Cadmium 480 Penray lamp stabilizes in 30 minutes, supplies reproducible output at 229 and 326 nm; intended for gas/liquid systems, has 2000-hour lifetime. Ultra-violet Products

105 Chromatography syringe. Calibrated syringe driver that uses low-cost interchangeable barrels so entire syringe does not have to be discarded because of bent needle or cracked barrel. Kloehn

106 Water bath. Model SP 570 is stainless steel bath with thermostatic temperature control of 30° to 100° C. Techne

107 Crucibles. Line of high-purity crucibles for electron-beam evaporation studies available in 4 standard shapes and several sizes. Bay Carbon

108 Diluter/dispenser. Model 6100 uses standard pipettors or SMI's Micro/Pettors to dispense 1 or 2 reagents and combine them with samples; has fast 3-second cycle time. Beckman

Plant equipment and instruments

109 Chemical feed system. Custom-designed, skid-mounted chemical feed system for water and waste treatment chemicals; all units are pretested. Neptune Chemical Pump

110 Research pilot plant. SC4 single-core pilot plant is factory-assembled, tabletop, reverse osmosis/ultrafiltration unit for variety of development studies. Western Dynetics

111 Air-sampling pump. Model P-2500 has range of 1000 to 2500 cc per minute, compensates for changes to maintain constant rate. Du Pont

112 Fluidized zone mixing. System eliminates problem of mixing light and heavy substances, coarse and fine particles with a chamber using 2 rotors turning in opposite directions. Halvor Forberg

113 Solvent recovery. DYNA 1 solvent recovery system uses azeotropic distillation with direct steam injection for recovery of all industrial solvents regardless of viscosity, boiling point, or specific gravity. DCI

114 Process controller. 560 controller is low-cost single-loop microprocessor controller with variety of control modes and outputs; sized for fast retrofit. Barber-Colman

115 Metering systems. Custom units for storing, mixing, and dispensing chemical solutions for broad range of applications. Milton Roy

116 Process control. MV8000 system for process control features group displays, time trends, graphic displays, and multiple alarms. Beckman

117 Column packing. Plastic packing for absorption columns is highly efficient, cuts cost by reduced solvent handling and low pressure drop. Kock Engineering

Literature

118 Electrodes. Guide to instrumentation and electrodes offers details and photographs of variety of products. Orion Research

119 Epoxy adhesives. Wall chart illustrates properties, performance, processing characteristics, and applications of Araldite epoxy resins and hardeners. Ciba-Geigy

120 Oil recovery. Hydration of N-Hance polymers to increase viscosity of injected water is described for enhanced oil recovery from reservoirs. Custom Oil Recovery Technology

121 High-purity water. Brochure describes processes for producing pure water, equipment needed, and how to select components for pure water system. Aqua Media

122 Divalent cations. Note discusses improved separation of divalent cations using ion chromatography and a new eluant. Dionex

123 Filter information. Folder details wide range of disposable and porous metal filters for gas or liquid clarification. Pall Corp.

124 Silicon compounds. Catalog of physical and chemical properties of 700 silicon compounds and polymers; reviews on syntheses, reactions. Petrarch Systems

125 Diethyl ketone. Booklet describes properties and characteristics of this intermediate for organic syntheses and component of herbicides and dyes. Union Carbide

126 Hydrogen production. Paper describes impact and energy savings of Amine Guard monoethanolamine systems on production of refinery and petrochemical hydrogen. Union Carbide

Chemicals and materials

127 Adhesive. Flexbound 149 is high-solids, vinyl acetate copolymer emulsion developed for pressure-sensitive and laminating applications. Air Products & Chemicals

129 Polypropylene film. Marlex HNS-080 homopolymer offers high slip and medium antiblock characteristics; resin meets FDA regulations for food packaging. Phillips Chemical

130 Fire retardant. Organic brominated additive for use with thermosetting and thermoplastic resins has high bromine content; classified environmentally and toxicologically safe. Formulated Resin

131 Leak sealant. Celvaseal seals leaks in high-vacuum systems as large as 2 microliters per second; low vapor pressure adds no background. CVC Products

132 Metal crystals. Single crystals of more than 40 metals for study of structural properties of alloys; available in standard lengths and purities to 99.9999%. Aremco

133 Surfactant. Oligomeric surfactant, Polywet AX-7, is designed for vinyl acetate and acetate-acrylate latex polymerizations. Uniroyal Chemical

134 Zinc oxide. Unique manufacturing process greatly improves reactivity, produces highly porous, reticulated zinc oxide particles with 10 to 15 times more surface area. Sherwin-Williams

For information on these items or numbered ads, see Reader Service Card

his Ph.D. from the University of North Carolina, Chapel Hill, in 1942. Butler worked several years for Rohm & Haas before joining the University of Florida as an instructor in 1946. He advanced to assistant professor (1947–51) and to associate professor (1951–57) before being named professor of chemistry in 1957. In 1970 he became director of the center for macromolecular science at the university.

Butler is a member of numerous professional organizations. He was chairman of the ACS Florida Section in 1954, and also has served as president of the Florida Chapter of the American Institute of Chemists, 1967–69.

ACS Award in Chemical Education

sponsored by Union Carbide Corp.

HENRY A. BENT, professor of physical chemistry, North Carolina State University, has, over his 27-year teaching career, earned a reputation as an exceptionally skilled instructor. Possessed of a unique ability to "teach teachers," he has, through his own experience in innovation, been able to inspire others to innovate. "He causes many of us to examine why we teach as we do and how to improve our own instruction," states an admiring colleague.

Bent was born in Cambridge, Mass. He served in the U.S. Navy as a radar technician in World War II. After the war, he attended Oberlin College (1946–49) and obtained a Ph.D. from the University of California, Berkeley, in 1952. He was an instructor at the University of Connecticut, Storrs, 1952–55. In 1955 he joined the University of Minnesota, Minneapolis, working as a research associate with Bryce Crawford, and later was promoted to professor of inorganic chemistry. Bent joined North Carolina State University, Raleigh, as a professor of chemistry in 1969.

From his earliest teaching days, Bent demonstrated a lively interest in chemical thermodynamics. His highly innovative book, "The Second Law: An Introduction to Classical and Statistical Thermodynamics," was originally published in 1965. Reprinted since and now available in paperback, it has been an important instruction manual in a variety of courses at different levels and at different institutions. His second major area of interest has been molecular structure, and he has published numerous papers in this field.

Bent is an active member of ACS, particularly in the Division of Chemical Education, serving as chairman of the division in 1978. He also is very active as a speaker before various local section groups. Bent has given generously of his time and talent by serving on numerous committees and has been elected to chairmanships of many organizations and conferences.

At North Carolina State, Bent has been elected to the Academy of Outstanding Teachers, an indication of the esteem in which he is held by his students and peers. In 1972, he received a national College Chemistry Teacher Award from the Manufacturing Chemists Association.

ACS Award in Colloid or Surface Chemistry

sponsored by Kendall Co.

In combining both an industrial and academic career, **HOWARD REISS,** a professor of chemistry at the University of California, Los Angeles, has achieved many significant firsts. His contributions both theoretical and experimental span all states of matter—gaseous, liquid, and solid.

To cite some specifics: When monodispersed colloids appeared and proved their use in research and technology, Reiss made a major contribution to the explanation of their mechanism of formation. In another (and still very significant) contribution, although the formula for the dependence of vapor pressure on drop size was known theoretically, Reiss was the first to perform significant validating measurements on isolated drops. The award winner was the first to conceive of the elemental semiconductors, silicon and germanium as the analogs of water as reaction media for defects, including holes and electrons.

Reiss is one of the leading workers in the field of nucleation and associated phenomena. He is responsible for some of its most important theoretical advances and recently has been the pioneer in the application of nucleation and growth to the detection and amplification of chemical physical phenomena.

A native of New York City, Reiss received an A.B. in chemistry (magna cum laude) in 1943 from New York University. He received his Ph.D. in chemistry from Columbia University. His career in industry includes working on the Manhattan Project, at Celanese's central research lab, U.S. Steel, Bell Telephone Labs, and North American Aviation (later Rockwell International) where he was corporate vice president and founder and president of North American's Science Center. His academic career began at Boston University as an instructor and assistant professor in 1949–51. Reiss joined the University of California, Los Angeles, as professor of chemistry in 1968.

Reiss was the founder and first editor of both *Progress in Solid State Chemistry* and of the *Journal of Statistical Physics* and is the author of a book titled "Methods of Thermodynamics." In 1973 he received the Tolman Medal of the Southern California section of the American Chemical Society. He is a member of the National Academy of Sciences.

ACS Award in Analytical Chemistry

sponsored by Fisher Scientific Co.

His outstanding innovative developments in chemical separation have won this coveted award for **J. CALVIN GIDDINGS,** professor of chemistry at the University of Utah. His contributions fall into three major areas: development of a comprehensive theoretical framework for chromatography, invention of field-flow fractionation, and development of theory and concepts for unifying the discipline of chemical separations.

Giddings is the author or coauthor of about 200 publications. He has published more than 100 papers

Bent

Reiss

Giddings

dealing directly with chromatography. Editor of 18 books, Giddings wrote the textbook, "Chemistry, Man, and Environmental Change," as well as a definitive book entitled "Dynamics of Chromatography." The scope of his theoretical work ranges from elegant mathematical derivations to qualitative insights into complex chromatographic processes; from descriptions of column effects to descriptions of molecular effects; and from specific mechanisms to general theories that encompass the entire field of chromatography.

Field-flow fractionation, the development of which has been the primary objective of Giddings and his coworkers for the past decade, is a chromatographiclike process that uses external fields to control retention and thus does away with the need for a second (stationary) phase. It shows particular promise for complex macromolecular, colloidal, and particulate systems.

Long interested in unifying separation concepts, Giddings has found that many separation processes are based on common transport phenomena. For example, the process of electrodiffusion (responsible for band spreading in electrophoresis) is analogous to chromatography. He showed, for instance, that a term equivalent to the plate height could be defined for electrophoresis and sedimentation. He then obtained equations for resolution and peak capacity that enable the direct comparison of electrophoresis and sedimentation with chromatography.

A native of Utah, Giddings received a B.S. from Brigham Young University in 1952 and a Ph.D., under Henry Eyring, from the University of Utah in 1954. He then did postdoctoral work on the theory of flames with J. O. Hirshfelder at the University of Wisconsin. He joined the staff at the University of Utah as assistant professor in 1957.

ACS Award in Pure Chemistry

sponsored by Alpha Chi Sigma Fraternity

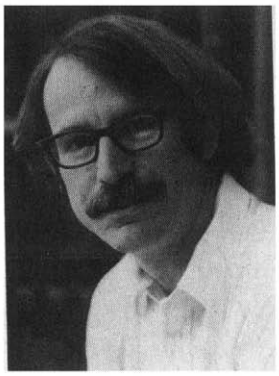
JOHN E. BERCAW, professor of chemistry at California Institute of Technology, is one of the "most outstanding and promising young chemists in the world today," says one admiring colleague. In the relatively short time that he has been at Caltech, he has established a productive research program that has yielded results of major significance. These include his pioneering work in dinitrogen and carbon monoxide fixation-reduction.

Bercaw's approach to the problem of nitrogen fixation-reduction has been to synthesize metal-dinitrogen complexes that will undergo reduction under mild conditions. In 1974 he prepared and isolated a dinitrogen complex of bis(pentamethylcyclopentadienyl)zirconium(II). He and his coworkers find that, on treatment with hydrochloric acid, one of the three dinitrogen ligands in this compound readily reduces to hydrazine in 86% yield.

Taking a similar approach to the problem of carbon monoxide reduction, Bercaw searched for metal carbonyls that would undergo CO reduction to methanol or other products. And in 1976 he found that mononuclear carbonyl and hydride complexes of bis(pentamethylcyclopentadienyl)zirconium can promote the reduction of CO to methoxide under very mild conditions. More recently, Bercaw has made some impressive advances in understanding the mechanisms of reduction of metal-bound carbon monoxide.

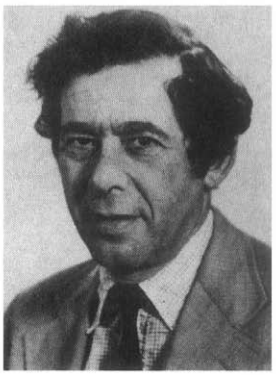
The award winner received his B.S. from North Carolina State University in 1967, and his Ph.D. in chemistry at the University of Michigan in 1971. He was a postdoctoral research associate with Jack Halpern at the University of Chicago in 1971 and 1972 prior to joining the faculty at Caltech as a research fellow. He became an assistant professor at Caltech in 1974, associate professor in 1977, and professor this year.

Bercaw has about 30 publications to his credit to date.



Bercaw

Martell



Klemperer

ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry

sponsored by Mallinckrodt Inc.

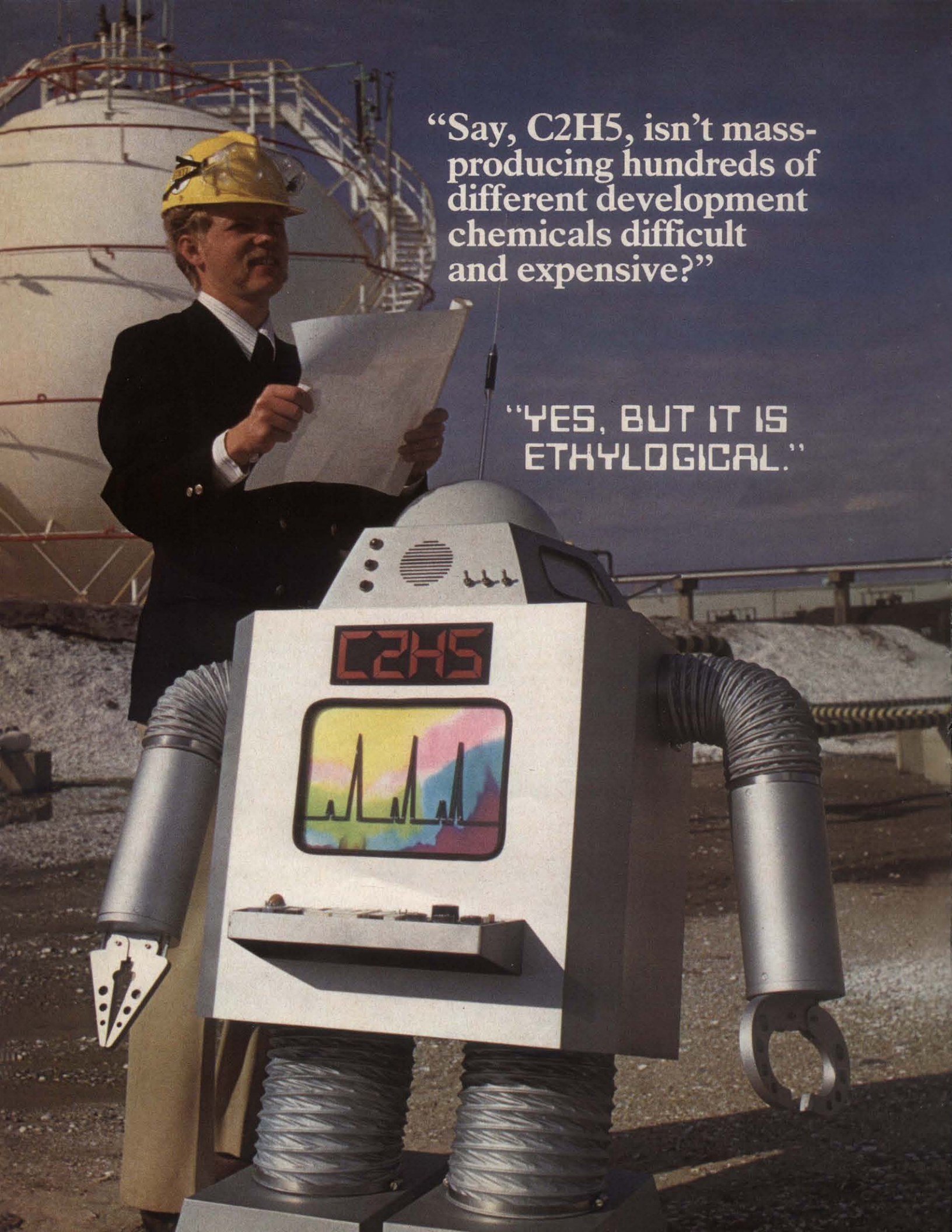
ARTHUR E. MARTELL's research over the years has had a tremendous effect upon understanding the behavior of metal ions and ligands in aqueous solution. His original contributions are contained in more than 275 journal articles. His work contains the data that explain many of the coordination trends now utilized in the design of metal ligands for biological and environmental use.

The American school of aqueous coordination equilibria (comparable to the European schools under Schwartzenbach, Bjerrum, Sillen, Irving, and many others) is almost exclusively "the Martell school." "He [Martell] has been our one, uniquely important big gun in this entire area," says a colleague.

Martell was born in Natick, Mass., in 1916. He received his Ph.D. from New York University in 1941. He spent 20 years at Clark University before joining Illinois Institute of Technology, Chicago, in 1961. Since 1966 Martell has been at Texas A&M University, where he is Distinguished Professor and head of the department of chemistry.

Martell is uniquely qualified to receive the award for Distinguished Service in the Advancement of Inorganic Chemistry. His work in compiling two volumes of selected and critical tables of "Stability Constants" (2nd ed., 1964; supplement 1971) in collaboration with the late L. G. Sillen (with some assistance from J. Bjerrum and G. Schwartzenbach) exemplifies service in the finest sense of the word. These reference books have now been followed up with "Critical Stability Constants," (research associate Robert Smith, coauthor) which selects the most reliable data for research workers on complexes in solution.

Martell was the founding editor of the *Journal of Coordination Chemistry,* now in its eighth volume. He serves on the editorial boards of *Bioinorganic Chemistry, Journal of Inorganic & Nuclear Chemistry,* and *Biochemistry of the Elements.* Under his leadership at Texas A&M, the chemistry department has grown enormously in stature; he received the ACS Southwest Regional Award in 1976 in recognition of his accomplishments there.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Irving Langmuir Award in Chemical Physics

sponsored by General Electric Foundation

WILLIAM A. KLEMPERER, professor of chemistry at Harvard University, is best known for his contributions in molecular spectroscopy. His innovative, lively work, involving numerous collaborators in an array of fields, has established him as a leader in chemical physics.

Klemperer has had a great influence on the understanding of the subtle forces responsible for molecular structures and electronic properties. Using the techniques introduced by I. Rabi and his students, Klemperer has elucidated details of the hyperfine structure of molecules and developed much more versatile techniques than were originally conceived. One of the most exciting research accomplishments in this area has been the production, detection, and analysis of spectra of very weakly bound molecular associates, pairs of molecules held together by either hydrogen bonds or by van der Waals forces.

Klemperer has pioneered the application of molecular beam electric resonance techniques to the high-resolution spectroscopy of small molecules. He recognized the potential for creating van der Waals weakly bound systems by isentropic expansion. These molecules, once generated in a molecular beam, could be studied by mass spectroscopy, electric resonance, and microwave spectroscopy. Klemperer's studies have opened up a new domain of spectroscopy and molecular structure, with important and unexpected implications for a much wider area of science, due to the importance of intermolecular forces.

Also important are Klemperer's studies of the chemistry of the molecule in interstellar space. He has detailed theories of how some of the molecules recently observed by astronomers could be formed.

Klemperer was born in New York City in 1927. He served in the U.S. Navy Air Corps in 1944–46. In 1950 he obtained his A.B. from Harvard and in 1954 received his Ph.D. from the University of California, Berkeley. Klemperer joined the faculty of Harvard University in 1954 as an instructor. He was named assistant professor in 1957, associate professor in 1961, and professor in 1965. He is a member of the National Academy of Sciences, American Academy of Arts & Sciences, and the American Physical Society.

E. V. Murphree Award in Industrial & Engineering Chemistry

sponsored by Exxon Research & Engineering Co.

MILTON ORCHIN, professor of chemistry and director of the Hoke S. Greene Laboratory of Catalysis at the University of Cincinnati, has been described as an academic research chemist who has successfully "crossed the boundary into the industrial scene."

Orchin received his B.S. in chemistry in 1936, M.S. in 1937, and Ph.D. in organic chemistry in 1939 from Ohio State University. After working with the Food & Drug Administration and the Department of Agriculture (1939–42), he joined the staff at the Bureau of Mines' synthetic fuels branch as chief of the organic chemistry section. It was there that he began his research in hydrogen transfer, the basis of current developments in liquefaction of coal. Also at BuMines he began his initial studies of the oxo process, which he continued when he left the bureau to become associate professor of applied science at the University of Cincinnati, setting up a laboratory to expand his interest in catalytic chemistry applied to industrial problems. He was head of the department of chemistry in 1956–62.

As a consultant to Houdry Corp., his research with triethylenediamine led to the development of Dabco, the major polyurethane foam catalyst produced today. Research on noble metal catalysis in cooperation with National Distillers & Chemical led to the company's breakthrough vinyl acetate process. He holds 20 patents. Orchin has authored or coauthored six books and more than 200 papers; he has trained many students who have achieved distinction in industrial research.

He has served as consultant to many companies and serves on numerous advisory and editorial boards. Orchin has received a number of grants for his research, including a $40,000 grant from the Petroleum Research Fund. He has lectured extensively in the U.S. and abroad.

Orchin received the Cincinnati Chemist Award in 1957, a tour speaker award in 1972, and in 1976 the Distinguished Scientist Award of the Technical Societies of Cincinnati. He is a member of ACS (chairman of the Cincinnati Section in 1962), AAAS (chairman, Chemistry Section, 1963), Phi Beta Kappa, and Sigma Xi.

Garvan Medal

When **HELEN M. FREE** was named director of specialty test systems for the Ames Co. division in 1976, she became the only woman scientist to reach the executive level at Miles Laboratories. A 1944 graduate of College of Wooster with an A.B. in chemistry, she joined Miles that year as a control chemist. During a more than 20-year stint in the lab her work in research and development of convenient diagnostic test systems involving chemical reagents led to a long list of publications and patents. Free's pioneering work triggered the introduction and expansion of dip-and-read tests for various urinary constituents that are now standard procedures in clinical laboratories.

In 1968 Free was appointed new products manager. Under her direction more than 40 new chemical and microbiological reagents and instruments for blood and urine chemistry, histology, and cytology have been introduced. And last year she became director of clinical laboratory reagents for the new Research Products Division of Miles.

She has taught biochemistry courses at Goshen College; conducted workshops in clinical studies in the U.S. and in India, Pakistan, and Malaysia; and has defined new techniques for teachers of clinical chemistry and medical technology. The

Orchin

Free

Lovelock

book "Urinalysis in Clinical Laboratory Practice," by Free and her husband Alfred, is a classic in its field.

Not content solely with research and teaching, Free also is active in the American Association for Clinical Chemistry and the American Society for Medical Technology as well as in church and civic organizations. An ACS member since 1945, she has been active on the local, divisional, and national levels. Under her chairmanship, the society's Women Chemists Committee became actively involved in promoting women's rights and status.

Free has been a corecipient of the Honor Scroll Award of the Chicago Chapter of the American Institute of Chemists and in 1976 received the Professional Achievement Award in Nuclear Medicine from the American Society for Medical Technology.

As one colleague puts it: "Helen Free has championed the cause for women in science and serves as an excellent role model for others to follow."

ACS Award in Chromatography

sponsored by Supelco Inc.

In the words of one of his colleagues, **JAMES E. LOVELOCK** is "one of those rare people in science who combine substantive contributions through publications with a deep personal interest in enhancing the stature of chemistry within the scientific community." These contributions have led him to the ACS Award in Chromatography.

A native of the U.K., Lovelock received a Ph.D. in medicine in 1948 from the London School of Hygiene, and later took a D.Sc. in biophysics at London University. It was while doing medical research at the British Medical Research Council that his work on instrument development and design flourished.

His development of the argon selective ionization detector in 1958 was only the first of a series of detectors developed by Lovelock for gas chromatography. The culmination was the electron capture detector first devised in 1960. This has become the most widely used selective detector, and has revolutionized environmental analysis, particularly in pesticide analysis and trace determination of hydrocarbons.

The breadth of Lovelock's analytical work is tremendous. He has authored more than 150 scientific papers in medicine and biology, gas chromatography, and atmospheric science. His instrumentation studies include research on capillary columns, electron attachment spectroscopy, the palladium transmodulator, ultrasensitive measurements of trace elements in air, and many applications of the electron capture detector.

Lovelock was elected a fellow of the Royal Society in 1974 and received the M. S. Tswett Chromatography Medal in 1975. His work for the U.S. space program earned him a Certificate of Recognition from the National Aeronautics & Space Administration for "creative development of a scientific contribution which has been determined to be of signal value in the advancement of the aerospace technology program." He currently is occupied with independent research from his own laboratory in Cornwall.

Poskanzer

Kwolek

Sargeson

ACS Award for Nuclear Chemistry

sponsored by EG&G Ortec

ARTHUR M. POSKANZER is a pioneer in nuclear chemistry. His exceptional work in the use of high-energy nuclear reactions has led to the discovery of 29 isotopes, mostly in the light-element region at the limits of particle stability. Of particular importance was the finding of ^{11}Li and ^{14}Be because both had been predicted not to exist.

Poskanzer, senior scientist at Lawrence Berkeley Laboratory's nuclear science division, has brought a number of firsts to the field of high-energy reactions. He and his colleagues performed the first differential recoil study, and, later, the first counter study of nuclear fragmentation. In the area of more relativistic heavy-ion reactions, he obtained the first results on central collisions, which led to the nuclear fireball and coalescence models that describe the first stages of relativistic nuclear collisions.

The sophisticated instrumentation and techniques of nuclear chemistry also owe much to Poskanzer's work. He developed the first ΔE-E-time-of-flight technique for Z and A identification—a procedure that is standard practice today. He has contributed much to methods for direct atomic mass measurements of short-lived nuclei. He is also central in the development of a relatively low-energy beam line for heavy-ion beams at the Bevalac accelerator at LBL.

Poskanzer's experience with a wide variety of accelerators may be unique. His work at LBL includes use of 6-Gev protons at the Bevatron, heavy ions at the 88-inch Cyclotron and the SuperHILAC, and relativistic heavy ions at the Bevalac. Other experience includes the Cosmotron at Brookhaven National Laboratory and the LAMPF at Los Alamos Scientific Laboratory.

Poskanzer received his Ph.D. in 1957 from Massachusetts Institute of Technology and began work at the Brookhaven lab. He moved to LBL in 1966. Among his honors are a Guggenheim fellowship in 1970 and a NATO senior fellowship in 1975. He was a member of the National Academy of Sciences panel on the future of nuclear science and has been chairman of the ACS Division of Nuclear Chemistry & Technology.

ACS Award for Creative Invention

sponsored by Corporation Associates

STEPHANIE L. KWOLEK, research associate in Du Pont's textile fibers department, was the first to prepare and observe liquid crystalline solutions of an aromatic polyamide and to produce high-strength, high-modulus fibers from them. Her research led to the development of Kevlar aramid fiber, used in passenger car tires; pressure vessels; lightweight ballistic vests, work gloves, and other safety apparel; inflatable boats; and aircraft interiors.

Kwolek received her B.S. with a

major in chemistry from Margaret Morrison Carnegie College of Carnegie Institute of Technology in 1946. She joined Du Pont's textile fibers department that year, was named research chemist in 1959, senior research chemist in 1967, and research associate in 1974. She holds 15 patents covering her work with polyamides and is the author or coauthor of 20 publications on polymers and polycondensations.

She received the Howard N. Potts Medal of Philadelphia's Franklin Institute in 1976 for "contributions to the development of vastly improved fibers by low-temperature polycondensation; for the discovery of liquid crystals of stiff synthetic polymers; and for the discovery of technology for spinning fibers of such polymers."

She also was cited by the American Society for Metals for her contributions to the development and application of Kevlar, for which Du Pont was awarded the 1978 Engineering Materials Achievement Award. Currently she is working on high-performance polymers.

Kwolek is a member of ACS and received the Delaware Section's best paper award (jointly) in 1960. She is also a member of Sigma Xi.

ACS Award in Organic Chemistry

sponsored by Monsanto Co.

"He combines an imaginative flair in all areas with truly outstanding experimental skills especially in the area of preparative chemistry." This is the way one associate views **ALAN M. SARGESON,** professor of inorganic chemistry, Research School of Chemistry, Australian National University in Canberra. These attributes have led the award winner to some noteworthy achievements, particularly in the stereochemistry of complexes, and the reactions of coordinated ligands.

Born in New South Wales, Sargeson obtained his bachelor's, doctor's, and diploma of education degrees from the University of Sydney. He worked for his Ph.D. under the direction of one of Australia's foremost chemists, the late Francis P. Dwyer. Sargeson was a lecturer at the University of Adelaide in 1956 and then a fellow in Australian National University's medical research school. He joined the university's Research School of Chemistry soon after it was established in 1967.

Sargeson and his coworkers have made many major contributions to structural, mechanistic, and preparative aspects of chemistry. For instance, his studies have aided the development of novel methods for peptide synthesis and degradation where the metal can act both as a protecting and an activating group. Also, his research has provided insight into the ways a metal can stabilize or destabilize organic molecules, into how such systems can be exploited for synthesis, and into how the metal center may be involved in mechanisms of enzyme action.

Sargeson has spent leaves from Australian National University at Stanford University and at the University of Copenhagen, and has been a guest professor at Cornell University and at the University of Western Ontario. He has contributed considerably to the stature of chemistry in the U.S.—more than 60% of his publications have been in ACS journals.

The award winner is a fellow of the Royal Australian Chemical Institute and of the Australian Academy of Science, and he has been elected to the Danish Royal Society of Science and Letters.

James T. Grady Award for Interpreting Chemistry for the Public

Reaching a vast audience as the science editor for the *New York Daily News,* **EDWARD EDELSON** plays a most important role in reporting and disseminating chemical information to the public. His articles are characterized by timeliness, clarity, accuracy, and, perhaps most of all, by a deep concern for his readers.

A native of New York City, Edelson received both his B.S. and M.S. in journalism in 1953 from New York University. He was a Sloan-Rockefeller fellow in the advanced science writing program at the graduate school of journalism of Columbia University 1963–64. Prior to joining the *Daily News* in 1971, he was science editor of the *New York World Telegram,* science editor of the *New York World Journal Tribune,* and science editor of "Newsfront," WNET-TV, New York. In addition, he worked as associate editor of *Nuclear Industry* magazine, and as a senior staff writer for *Family Health* magazine.

Edelson is the author of numerous books including: "Parent's Guide to Science," "Poisons in the Air" (with Fred Warshofsy), "Healers in Uniform," "The Book of Prophecy," "Visions of Tomorrow," "The Heredity Factor" (with William Nyhan, M.D.), "Chemical Principles" (with Robert S. Boikess), "Great Monsters

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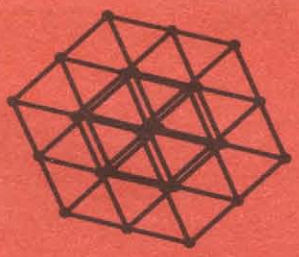

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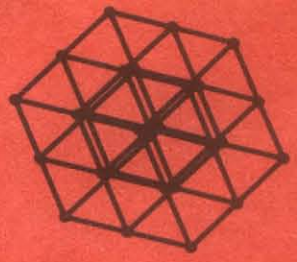

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Edelson

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of the Movies," and "Who Goes There?" He has written many chemistry articles for magazines, such as *New Scientist, Medical World News, Redbook, Saturday Review, Smithsonian, Popular Science, Harpers,* to name just a few. Edelson has also served as science commentator in televised sessions of the American Association for the Advancement of Science, and as interviewer on their "Speak of Science" cassette series.

As one of America's most distinguished, most prolific, and most influential science writers, Edelson certainly fulfills—and most commendably so—the role of communicating and "interpreting chemistry for the public." He involves the reader—tying the information to the reader's life and experiences, thereby helping one not only to learn about science, but to share the writer's curiosity and feelings about the subject.

Edelson is the recipient of many awards, including science writing awards from: the American Dental Association (1970), American Institute of Physics (1973), American Academy of Anesthesiology (1975), American Cancer Society (1976), and American Academy of Pediatrics (1977).

Edelson is a member of the American Association for the Advancement of Science and of the National Association of Science Writers. He was secretary-treasurer of NASW (1975–76) and is currently its president.

James Flack Norris Award in Physical Organic Chemistry

sponsored by the Northeastern Section ACS

RONALD BRESLOW, one of the world's outstanding physical organic chemists, is widely recognized as a scientist of great versatility, unusual insight, and extraordinary originality.

Breslow was born in Rahway, N.J., in 1931, and received his Ph.D. in organic chemistry at Harvard in 1955. After a year at Cambridge University, he joined the staff at Columbia University, where he is S. L. Mitchill Professor of Chemistry.

His scientific contributions to organic chemistry are legion. A partial list of his research accomplishments would include preparation of the first derivatives of a cyclopropenyl cation, leading to synthesis of the parent compound, cyclopropenyl, representing the first examples of the simplest aromatic ring systems; and, from detailed kinetic and electrochemical studies of the cyclobutadienes, Breslow was able to provide direct evidence for conjugative destabilization of this 4N pi ring system. Breslow was the first to provide evidence for the antoaromaticity of this system.

He has done highly significant research on the mechanisms of biochemical reactions. His work on the action of thiamine pyrophosphate, showing that the mechanism involved exchanging a hydrogen from the thiazole ring, has become a classic textbook example for this and related enzymic reactions.

Breslow has demonstrated brilliant work in novel synthetic methods, and pioneered in the use of template-directed functioning, in which organic reactions mimic the style of enzymes in reacting with complicated substrates. Using this method, Breslow has, for example, designed an elegant synthesis procedure for steroids.

The idea of mimicking enzymes in organic synthesis has led to the making of an "artificial enzyme." Breslow, in related work, combined the hydrophobic binding effect of a cyclodextrin with a metal catalytic group and made a compound that directs regiospecific halogenation.

In addition to his notable research efforts, Breslow has been active in professional activities. He has served as chairman of the ACS Division of

Organic Chemistry and was chairman of the Division of Chemistry of the National Academy of Sciences. His contributions have been recognized by the ACS Award for Pure Chemistry, the Fresnius Award of Psi Lambda Upsilon, the Baekeland Medal, the Mark Van Doren Medal, and the Harrison Howe Award.

Frederic Stanley Kipping Award in Organosilicon Chemistry

sponsored by Dow Corning Corp.

EVELYN A. V. EBSWORTH has made a number of outstanding contributions to the field of organosilicon chemistry during the past 10 years. Combining chemical intuition, ingenuity in syntheses, and skillful measurements, he has achieved many fascinating and stimulating results.

Ebsworth and his colleagues have opened new synthetic pathways for formation of silyl derivatives and have made pioneering measurements of these compounds' physical properties using infrared, nuclear magnetic, and, especially, photoelectron spectroscopic techniques.

Ebsworth's research always has combined elegant chemical syntheses with critical interpretations of data from physical methods. One of his major contributions has been the derivation of useful information on structure, bonding, and dynamics of organosilicon systems from newly introduced physical measurement techniques.

Born in Yorkshire, England, in 1933, Ebsworth received his B.A. degree from King's College, Cambridge, in 1954, and his Sc.D. in 1967. That same year, he was appointed Crum Brown Professor of Chemistry at the University of Edinburgh, a position he still holds. Ebsworth is a fellow of the Royal Society of Edinburgh, of The Chemical Society (London), and of the Royal Institute of Chemistry. He was president of the Dalton Division of The Chemical Society (London) from 1977–79.

ACS Regional Awards in High School Chemistry Teaching are:

Carl L. Bruce, Northwest Region
Charlie C. Chaffin, Southwest Region
Richard Ebeling, Great Lakes Region
Leila McMullian, Southeast Region
Ethel L. Schultz, Northeast Region
Robert L. Watson, Central Region

ACS Awards for Outstanding Performance by Local Sections are:

(Large) **Akron**
(Medium Large) **Eastern New York**
(Medium Small) **Central North Carolina**
(Small) **Wilson Dam**

Harold M. **Agnew,** former director of Los Alamos Scientific Laboratory, and Wolfgang K. H. **Panofsky,** director of the Stanford Linear Accelerator Center, have received the Department of Energy's Enrico Fermi Award for 1978. The Fermi award is the highest scientific award given by DOE. It consists of a Presidential citation, gold medal, and $25,000. Agnew was cited for his many innovative contributions to nuclear physics and nuclear weaponry, his dynamic leadership of LASL, and for his forthright counsel to the government in the field of national security. Panofsky was cited for his very important contributions to elementary particle physics, his leading role in advancing accelerator technology, his positive influence on younger scientists, and his scientific advice to the U.S.

The first fellowship in colloid and surface chemistry administered by the ACS Division of Colloid & Surface Chemistry and sponsored by Procter & Gamble Co., has been awarded to Claudia G. **Borman,** department of chemistry, Harvard University. The fellowship, consisting of a $7500 award to the fellow's department to cover stipend and expenses, is expected to be an annual affair.

William E. **Wallace,** Distinguished Service Professor of Chemistry, University of Pittsburgh, has received the first Frank H. Speding Award for Rare Earth Intermetallic Studies. Wallace was selected for this international award in recognition of his outstanding research and service in the field of rare-earth science and technology. Among his many achievements was the preparation and characterization of $SmCo_5$, the world's most powerful permanent magnetic material.

MAN AND MOLECULES

FIGHTING WORLD FAMINE

Jean Mayer
Tufts University

This "Man and Molecules" program is currently being released to radio stations. Check with ACS News Service for stations broadcasting in your area; telephone (202) 872-4446.