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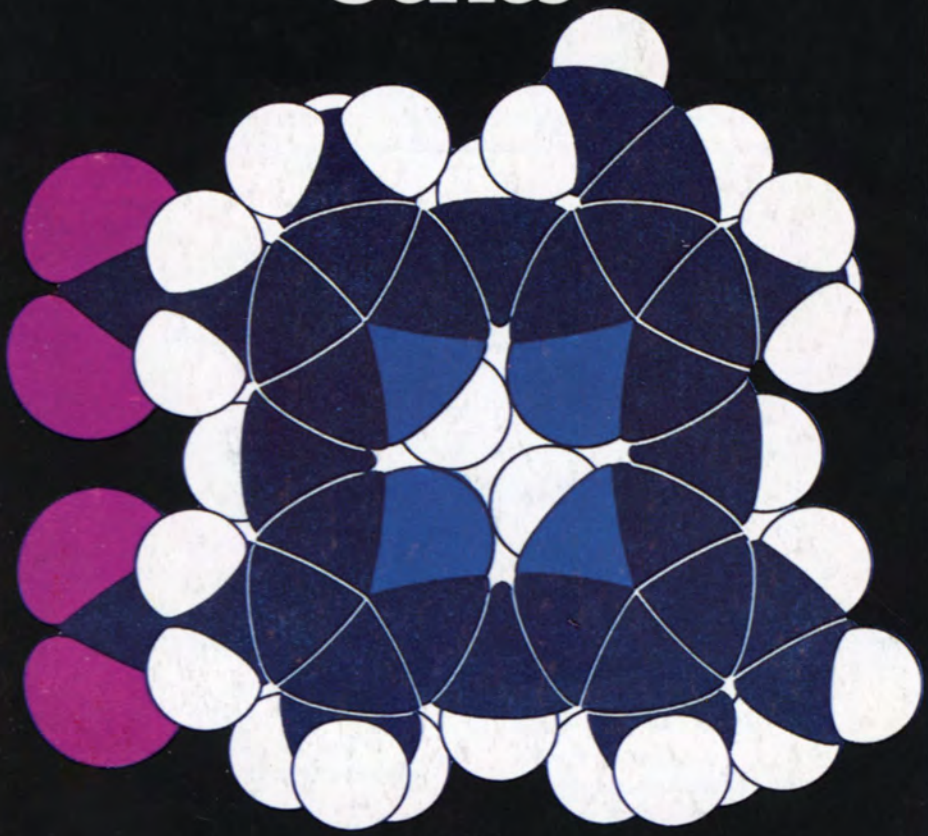
Distinguished Scientist Lecture Series Program 1985-1986

Bard College

Distinguished Scientist Lecture Series



1985-86

Sponsored by the Bard College Center with support from the National Patent Development Corporation

BARD

1860-1985: 125th Anniversary Year

Cover: Space-filling model of protoporphyrin IX, the immediate precursor of heme.

Distinguished Scientist Lecture Series

The 1985-1986 series comprises six lectures by some of the most eminent scientists of our time, including three Nobel laureates and a Fields Medalist. In addition to the lecture, each program includes a seminar for science scholars and others to further explore the life's work of the day's speaker.

Schedule of Lectures

October 12, 1985
Charles L. Fefferman
"The Mathematics Behind the Computer"

November 2, 1985
Charles Hard Townes
"Evidence for a Black Hole at the Center of our Galaxy"

December 7, 1985
Sheldon Lee Glashow
"The Challenge of Particle Physics"

March 8, 1986
Gerald Maurice Edelman
"The New Embryology: Molecules Regulating Animal Forms"

April 19, 1986
John S. Waugh
"Prospects for NMR Spectroscopy at Very Low Temperatures"

April 26, 1986
Marshall Nicholas Rosenbluth
"Fusion: Our Energy Future"

Bard College

Bard College is a coeducational college of the liberal arts and sciences, founded in 1860. It is located on a 600-acre wooded campus that borders the Hudson River in rural Dutchess County, New York, approximately 100 miles north of New York City.

The College is organized into four academic divisions: Social Studies; Languages and Literature; the Arts; and Natural Sciences and Mathematics; and also offers a Master of Fine Arts degree in the Milton Avery Graduate School of the Arts. Academic facilities include the Hoffman Memorial and Kellogg Libraries and the Milton and Sally Avery Center for the Arts.

In 1979, Bard assumed control and ownership of Simon's Rock, an "early college" which offers a college education in fully-accredited degree programs to high school age students. Simon's Rock is located in Great Barrington, Massachusetts, 50 miles from the Bard campus in Annandale-on-Hudson, New York. This step gave Bard an exceptional opportunity to apply its experience as a 125-year-old liberal arts college to the development of a strong liberal arts curriculum for younger students. Both Bard and Simon's Rock remain distinct and carry on quite separate academic programs at their respective campuses.

The Bard College Center

Established in 1978 as the "public arm" of the College, the Bard Center was recently described by the Rockefeller Foundation's Report of the Commission on the Humanities as "a model of mobilizing the resources of the college and the community." Through workshops, national conferences, small group seminars, lecture series, summer institutes, publications, and exhibitions at the Edith C. Blum Art Institute, the Bard Center explores the emerging issues of today in the sciences, arts, humanities, and education—to the benefit of the Bard community, the Hudson Valley region, and educators and policymakers around the country. The Center's varied efforts are complemented by the work of Bard Center Fellows who are distinguished artists, scientists, scholars, and writers appointed annually to serve as a "public faculty."

Charles L. Fefferman, Mathematician

Dr. Fefferman is Herbert Jones University Professor of Mathematics at Princeton University. Born in Washington, D.C., Dr. Fefferman earned the Ph.D. degree in 1969 at Princeton University.

At the age of 22, he was named professor at the University of Chicago and became the youngest full professor in the history of that institution.

A member of the American Academy of Arts and Sciences and of the National Academy of Sciences, Dr. Fefferman has held visiting positions at the University of Paris, the Weizmann Institute (Israel), the Institut Mittag-Leffler (Sweden), and New York University. He has lectured at several universities, including the University of California at Berkeley, Harvard University, Columbia University, Cornell University, and Indiana University.

While doing graduate work at Princeton, he was awarded a Woodrow Wilson Fellowship and National Science Foundation and Princeton National fellowships. He received the Alfred P. Sloan Foundation Fellowship in 1970 and a NATO postdoctoral fellowship in 1971. He was awarded the Salem Prize that year by the French government. In 1976, Dr. Fefferman was the first recipient of the National Science Foundation's Alan T. Waterman Award, a prestigious prize authorized by Congress. In 1978, he received the Fields Medal from the International Congress of Mathematicians. He also holds several honorary doctorates.

His Work

Dr. Fefferman's research has focused on mathematical subjects in the areas of Fourier analysis, partial differential equations, several complex variables, and mathematical physics. His work in these areas has brought clarity to topics previously considered by many too difficult to be understood at this stage in the development of mathematics.

His Lecture

October 12, 1985: "The Mathematics Behind the Computer"

Charles Hard Townes, Physicist

Dr. Townes, a Nobel laureate, is University Professor of Physics at the University of California at Berkeley. Born in Greenville, South Carolina, Dr. Townes received the Ph.D. in physics from the California Institute of Technology and has since received twenty-one honorary degrees from American and foreign universities and colleges.

Dr. Townes has been an Adams Fellow, a Guggenheim Fellow, and a Fulbright lecturer. From 1964 to 1969 he was chair of the science and technology committee for manned space flight at NASA, and in 1968 he was named chair of the President-Elect's Task Force on Space; in 1969 he became chair of the President's Task Force on National Science Policy. He has also served as chair of the President's Committee on Science and Technology (1976-77); as chair of the Committee on Scholarly Exchanges to the People's Republic of China; and as chair for the Committee on MX Basing in 1981, among other positions.

In 1964 Dr. Townes received the Nobel Prize in Physics for his "fundamental work in the field of quantum electronics, which has led to the construction of oscillators and amplifiers based on the maser-laser principle." His other honors include the Comstock Award from the National Academy of Sciences, the Rumford Premium from the American Academy of Arts and Sciences, and the Earle K. Plyler Prize from the American Physics Society (of which he has served as president). He is a foreign member of the Royal Society of London and a member of several professional societies including the National Academy of Sciences and the American Astronomy Society.

His Work

Dr. Townes's research has been primarily in the area of molecular and nuclear structure. He has done extensive work on questions involving masers and lasers; radio and infrared astronomy; microwave spectroscopy; optics; and quantum electronics.

His Lecture

November 2, 1985: "Evidence for a Black Hole at the Center of Our Galaxy"

Sheldon Lee Glashow, Physicist

Dr. Glashow, a Nobel laureate, is Higgins Professor of Physics at Harvard University. His concurrent positions include the Distinguished University Professorship at Boston University, the position of University Scholar at Texas A&M University, an affiliation as senior scientist for the University of Houston, and a consultancy at Brookhaven Laboratories.

Born in New York City, Dr. Glashow received the Ph.D. from Harvard and honorary doctor of science degrees from Yeshiva University and Aix-Marseille II. In 1979 he was awarded the Nobel Prize in Physics for his research on the Weinberg-Salom theory of weak interaction.

In addition to the Nobel, Dr. Glashow has received the J.R. Oppenheimer Prize, the George Ledlie Prize, and the Castiglione di Sicilia Prize. A member of the National Academy of Sciences and the American Academy of Arts and Sciences, he is the president of the International Sakharov Committee. In addition to serving on several advisory boards, including the board for the Laboratory of Nuclear Studies at M.I.T., he has served on the editorial boards of a number of scholarly journals in the field of nuclear physics. He has contributed to publications as diverse as the *New York Times Magazine, Physics Review, Il Tempo,* and *Nature,* as well as a number of academic and general anthologies.

His Work

Dr. Glashow's research has centered on theory of elementary particles and their interactions. His work has led to a unified picture of strong, weak, and electrodynamic interactions, and to identification of the fundamental constituents of matter.

His Lecture

December 7, 1985: "The Challenge of Particle Physics"

Gerald Maurice Edelman, Biochemist

A Nobel laureate, Dr. Edelman is Vincent Astor Distinguished Professor at the Hospital of Rockefeller University. He received the Ph.D from the Rockefeller Institute, where he was a practicing physician from 1957 to 1960 and has held a teaching position thenceforward.

Dr. Edelman is currently chairman of the advisory board of the Basel Institute of Immunology as well as serving on boards for the Weizmann Institute of Science, the Salk Institute of Biological Studies, the Rockefeller Brothers Fund, and the Jackson Lab. In 1972 he received the Nobel Prize in Physiology or Medicine for research into the chemical structure of antibodies. He has also received numerous honorary degrees as well as the Regents Medal of Excellence from New York State, the Buchman Memorial Award from the California Institute of Technology, the Eli Lilly Award, and the Albert Einstein Memorial Award, among others.

His Work

Dr. Edelman's present research activities have centered on studies of cell-cell interactions during embryonic development and of cell adhesion molecules and their role in embryonic induction; studies of the molecular genetics of connectional defects in the nervous system; analysis of the control of cell division cycles and of DNA replication in eukaryotic cells; development of cell fractionation procedures; analysis of the three-dimensional structure and sequence of proteins central to the immune response; and theoretical work on the organization of higher brain functions and on the construction of non-von Neumann machines and recognition automata.

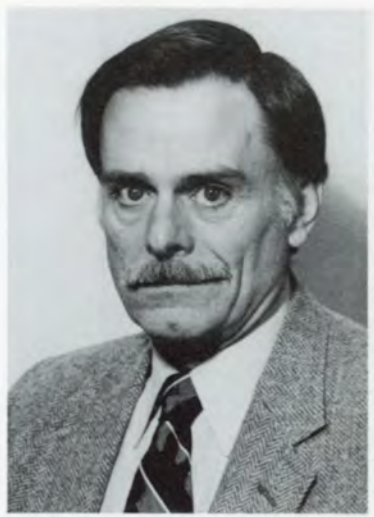
His Lecture

March 8, 1986: "The New Embryology: Molecules Regulating Animal Forms"

John Stewart Waugh, Chemist

Chemist John Waugh recieved the A.B. *summa cum laude* from Dartmouth College and the Ph.D. from the California Institute of Technology. He has been a member of the faculty of the Massachusetts Institute of Technology for many years and was named Albert Amos Noyes professor there in 1973. In his career as a scientific educator he has taught in the most distinguished institutions in this country and abroad, including Columbia University, Notre Dame, Tufts University, Princeton, Dartmouth, the University of California at Berkeley, the California Institute of Technology, Harvard University, the Max Planck Institute in Heidelberg, and the USSR Academy of Sciences. He has been a member of the chemistry advisory panel of the National Science Foundation, a member of the scientific and educational committee of the Lawrence Berkeley Laboratory and a member of the National Academy of Scientists and of the American Association for the Advancement of Science. He is the recipient of the Irving Langmuir Award and of fellowships from the Sloan and Guggenheim foundations and has been a fellow of the American Academy of Arts and Sciences and the American Physical Society. He is the author of *New NMR Methods in Solid State Physics* (1978), co-editor of *Advances in Magnetic Resonance*, associate editor of *The Journal of Chemical Physics* and *Spectrochimica Acta*, and member of the editorial board of *Chemical Reviews*.

In 1984 he received the coveted Wolf Prize.



His Work

Dr. Waugh's research has focused on the areas of molecular spectroscopy, magnetic resonance, and solid state physics. He is known for his fundamental contributions to the field of high-resolution nuclear magnetic resonance spectroscopy in solids.

His Lecture

April 19, 1986: "Prospects for NMR Spectroscopy at Very Low Temperatures"

Marshall Nicholas Rosenbluth, Theoretical Physicist

Dr. Rosenbluth is director of the Institute for Fusion Studies at the University of Texas at Austin, where he has taught since 1980. Born in Albany, New York, he received the Ph.D. in physics in 1949 from the University of Chicago and became instructor of physics at Stanford. Prior to his association with the University of Texas, he was research advisor at the General Atomic Lab and professor at the University of California, San Diego, as well as visiting lecturer at Princeton University.

Honors accorded to Dr. Rosenbluth have included the E.O. Lawrence Prize, the Albert Einstein Award, and the James Clerk Maxwell Prize in Plasma Physics awarded by the American Physical Society. He has been a member of the National Academy of Sciences since 1969, and has served in a number of professional capacities, including an ongoing consultancy at Livermore and Los Alamos laboratories and membership on the U.S.-U.S.S.R. Joint Commission of the National Research Council.

His Work

Dr. Rosenbluth's work has been a dominant force in the development of plasma physics as a new field of science. He was not only instrumental in laying the foundations of plasma physics and its relationship to magnetohydrodynamics, but his vast volume of work has led the way to a variety of important applications in the field of controlled fusion research. Most recently, his research on anomalous transport caused by magnetic fluctuations is required reading for anyone wishing to understand this active field.

His Lecture

April 26, 1986: "Fusion: Our Energy Future"

Director of the Series

Dr. Abe Gelbart, a mathematician, is a Bard College Center Fellow, dean emeritus of the Belfer Graduate School of Science at Yeshiva University, and the David and Rosalie Rose Distinguished Professor in Natural Sciences and Mathematics at Bard College. A former member of the Institute for Advanced Study in Princeton, New Jersey, Dr. Gelbart was a Fulbright Lecturer in Norway in 1951. He taught at Syracuse University from 1943 to 1958, and was associated with the journal, *Scripta Mathematica,* first as an associate editor and then, for 14 years, as editor. Dr. Gelbart is the co-developer of the theory of pseudoanalytic functions, the mathematical foundation for modern fluid dynamics. He has received several honorary degrees, has lectured at many American and European universities, and was lecturer at the Institute for Fluid Dynamics, Paris, France. Bar-Ilan University in Israel recently named a chair in mathematics after Dr. Gelbart. He is currently writing a history of twentieth century science.

Associate Director

Dr. Peter Renz, mathematician and editor, is associate professor of mathematics at Bard College. Before coming to Bard, he taught at Reed and Wellesley Colleges. He retains his editorial connection with W.H. Freeman and Company and Scientific American Books, where he had been in charge of publications in various areas of physical science and mathematics for over ten years. He has worked on editorial projects aimed at wider public appreciation of science, including the Scientific American Library as well as more specialized scientific texts and monographs.

Previous Participants in the Series

The origin of the Distinguished Scientist Lecture Series goes back to the fall of 1979 when the late Nobel laureate physicist Paul Dirac accepted an invitation from The Bard College Center to deliver a lecture on "The Discovery of Anti-Matter."

His talk combined scientific analysis with the history of science and personal reminiscence to present a view of modern science rarely seen by the general public—science as a record of personal achievement as well as a body of facts and knowledge. Professor Dirac's lecture drew an audience from throughout the East Coast, and its success inspired the establishment of The Bard College Center Distinguished Scientist Lecture Series. The first two years of the Distinguished Scientist Lecture Series were supported by the Pre-College Teacher Development in Science Program of the National Science Foundation.

For all those interested in the field of science—students, teachers, researchers, professionals in scientific industries, and lay people—the series provides a rare opportunity for first-hand contact with men and women who have shaped modern science—the chance to see how they think and work, how they view their own achievements, and how they assess the challenges that scientists face, now and in the future.

To date, including the 1985-86 lectures, audiences have heard 43 eminent scientists, including 28 Nobel laureates and a Fields Medalist, speak on scientific issues of current and timeless concern. The brief account of speakers and topics that follows gives an indication of the range and depth of lecture presentations.

Philip W. Anderson, Physicist

December 4, 1982
"Seeing the World Through Spin Glasses"

Dr. Anderson shared the 1977 Nobel Prize in Physics with Sir Nevill Mott and John H. Van Vleck, for their theoretical investigations of the electronic structure of magnetic and disordered systems. He is the Joseph Henry Professor at Princeton, and the director of physics principles research at Bell Laboratories.

Christian Anfinsen, Biological Chemist

March 13, 1984
"The Formation of Three-Dimensional Structures of Proteins"

Dr. Anfinsen is professor of biology at Johns Hopkins University. In 1972, he shared the Nobel Prize in Chemistry with Stanford Moore and William H. Stein for their study of the enzyme ribonuclease. He has received the Rockefeller Foundation Public Service Award and a Guggenheim Fellowship, and is a member of the National Academy of Sciences and the Royal Danish Academy, among others.

Julius Axelrod, Biochemical Pharmacologist

February 16, 1985
"Neurotransmitters and Drugs that Affect the Mind"

Dr. Axelrod received the 1979 Nobel Prize in Medicine or Physiology jointly with Ulf von Euler for their contributions in the area of the sympathetic nervous system. Consequences of Dr. Axelrod's research have included an understanding of the actions of many drugs important in cardiology, psychiatry, and neurology. He is chief of the section on pharmacology, Laboratory of Chemical Science, at the Institute of Mental Health in Bethesda, Maryland.

Paul Berg, Biochemist

May 22, 1982
"Gene Isolation and Manipulation: A New Window on Our Heredity"

Dr. Berg won the 1980 Nobel Prize in Chemistry for his studies of the biochemistry of nucleic acids, particularly recombinant DNA. The Willson Professor of Biochemistry at Stanford University Medical Center, he has been active in experiments designed to explore the chemistry and biology of mammalian and human chromosomes.

Konrad E. Bloch, Biochemist

November 6, 1982
"On the Evolution of Small Molecules"

Dr. Bloch shared the 1964 Nobel Prize in Medicine and Physiology with Fedor Lynen, for their contributions to our knowledge of the complex pattern of reactions involved in the biosynthesis of cholesterol and of fatty acids. He is the Higgins Professor of Biochemistry at Harvard University. Among his many awards is the Fritzsche Award of the American Chemical Society.

Nicolaas Bloembergen, Physicist

December 1, 1984
"Lasers in Science and Technology"

Dr. Bloembergen was awarded the 1981 Nobel Prize in Physics jointly with A.L. Schawlow for their work in the development of laser spectroscopy. The Gerhard Gade University Professor at Harvard University, he is the author of *Nuclear Magnetic Relaxation* and *Nonlinear Optics*. Honors for his work include the National Medal of Science and the Lorentz Medal of the Royal Dutch Academy of Science.

Baruch S. Blumberg, Research Physician

October 13, 1984
"Biology of Hepatitis B Virus"

Dr. Blumberg was awarded the Nobel Prize in Medicine and Physiology in 1976 for his discovery concerning new mechanisms for the origin and dissemination of infectious diseases. He has been University Professor of Medicine and Anthropology at the University of Pennsylvania since 1977 and is Eastman Visiting Professor at Balliol College, Oxford University, and associate director for clinical research and senior member of the Institute for Cancer Research in Philadelphia.

David Botstein, Biologist

May 5, 1984
"Mapping the Human Genome DNA Polymorphisms"

Dr. Botstein is professor of biology at Massachusetts Institute of Technology. A member of the National Academy of Sciences since 1981, he has received the NIH Career Achievement Award, and the Eli Lilly and Company Award in Microbiology and Immunology. Dr. Botstein is the author of *Advanced Bacterial Genetics*, as well as many articles on genetics and molecular genetics.

Paul Dirac, Theoretical Physicist

May 15, 1982
"From Einstein to Anti-Matter"

One of the great mathematical physicists of the twentieth century, Professor Dirac was one of a select few, including Albert Einstein, Erwin Schrödinger, and Enrico Fermi, whose theories have transformed our understanding of the physical universe. His pioneer work in the quantum mechanics of the atom won him the Nobel Prize in Physics along with Schrödinger in 1933 at the age of 31.

Carl Djerassi, Chemist

May 23, 1981
"The Politics of Contraception"

Dr. Djerassi is professor of chemistry at Stanford University, a Bard College Center Fellow, and president of Zoecon Corporation. Among his awards are the American Chemical Society Award in Pure Chemistry and the Baekeland Medal. An authority on fertility control in humans as well as insects, he played a major role in the development of the first oral contraceptive.

Claire M. Fagin, Nursing Researcher

April 27, 1985
"Consumerism and Health: Whose Body Is It, Anyway?"

Dr. Fagin is dean of the School of Nursing at the University of Pennsylvania. Her major area of research is the effects of maternal attendance during children's hospitalization; she has also investigated the cost effectiveness of nursing intervention and nurse-consumer collaboration. Her books include *Nursing in Child Psychiatry* and *Family Centered Nursing in Community Psychiatry*, both chosen as Books of the Year by the *American Journal of Nursing*.

Charles Fefferman, Mathematician

April 14, 1984
"Twentieth Century Geometry"

Professor of mathematics at Princeton University, Dr. Fefferman has focused on Fourier analysis, partial differential equations, and several complex variables in his mathematics research. He was the first recipient of the National Science Foundation's Alan T. Waterman Award and has received the Fields Medal from the International Congress of Mathematicians, among other awards. Honors for his work have come extraordinarily early, beginning with his appointment at the age of 22 as full professor at the University of Chicago.

Paul J. Flory, Chemist

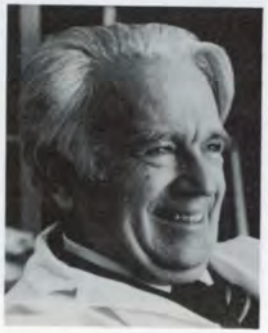
February 13, 1982
"Spatial Configurations of Macromolecules"

A leader in the field of polymer behavior, Dr. Flory was the sole recipient of the 1974 Nobel Prize in Chemistry. The J.G. Jackson-C.J. Wood Professor of Chemistry at Stanford University, Dr. Flory has also received the American Physical Society's High Polymer Physics Prize and the National Medal of Science. His research has been in the chemistry and physics of giant molecules, or polymers, which make up such materials as natural and synthetic rubber, fibers, and plastics.

Dudley R. Herschbach, Chemist

April 9, 1983
"Single Collision Chemistry"

Dr. Herschbach is the Frank B. Baird Jr. Professor of Science at Harvard University. The major theme of his research has been the molecular dynamics of chemical reactions. He has received the Pure Chemistry Prize of the American Chemical Society, the Linus Pauling Medal, and the Michael Polanyi Medal, among others.



Gerhard Herzberg, Physicist, Chemist

November 5, 1983
"Spectroscopic Studies of Simple Free Radicals"

Dr. Herzberg is Distinguished Research Scientist of the National Research Council of Canada. In 1971, Dr. Herzberg received the Nobel Prize for his study of molecular structure. He is an honorary member or fellow of many scientific societies, including the Royal Societies of Canada and London, and holds honorary degrees from universities in Canada and abroad. Dr. Herzberg is author of many books on molecular and atomic spectroscopy.

Roald Hoffmann, Chemist

April 16, 1983
"What Chemists Really Do—The Logical Structure of Modern Chemistry"

Dr. Hoffmann shared the 1981 Nobel Prize in Chemistry with Kenichi Fukui. The John A. Newman Professor of Physical Science at Cornell University, he is the only person ever to have received the American Chemical Society's Award in Pure Chemistry in two different subfields—the A.C. Cope Award in Organic Chemistry in 1973 and the Award in Inorganic Chemistry in 1982.

Mark Kac, Mathematician

October 18, 1980
"Chance and Regularity"

Dr. Kac is professor of mathematics and theoretical physics at The Rockefeller University. He has twice won the Chauvenet Prize of the Mathematical Association of America, and is the recipient of the 1976 Alfred Jurzykowski Foundation Award in Science and of the 1978 Birkhoff Prize. Dr. Kac is an authority on probability theory, particularly its use in mathematical analysis and statistical physics.

Arthur Kornberg, Biologist

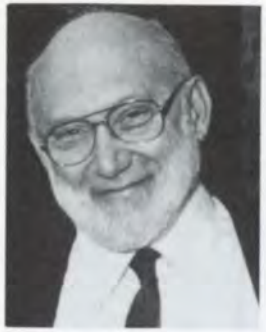
February 21, 1981
"DNA Replication"

Dr. Kornberg won the 1959 Nobel Prize in Medicine and Physiology, with Dr. Severo Ochoa. A professor at the Stanford University School of Medicine, his most notable achievements have grown out of his research into the structure and dynamics of DNA. In 1967, working with a team of biochemists at Stanford, he became the first to synthesize biologically active DNA outside a living cell.

Willis E. Lamb, Physicist

April 25, 1981
"Simple Problems in Physics"

Dr. Lamb was awarded the 1955 Nobel Prize in Physics with Dr. Polykarp Kusch for his discoveries regarding the structure of the hydrogen spectrum. A professor of physics and optical sciences at the University of Arizona, he was a Fulbright Lecturer at the University of Grenoble. He has won the Rumford Premium of the American Academy of Arts and Sciences and the Guthrie Award from the Physical Society of London.



Joshua Lederberg, Geneticist

October 10, 1981
"Styles and Patterns in Biomedical Research"

At the age of 33, Dr. Lederberg was named a co-recipient of the Nobel Prize in Medicine and Physiology along with Dr. E.L. Tatum and Dr. George Beadle. The president of The Rockefeller University, Dr. Lederberg pioneered in the field of bacterial genetics with his revolutionary discovery that bacterial strains could be crossed to produce an offspring containing a new combination of genetic factors.

Tsung-Dao Lee, Physicist

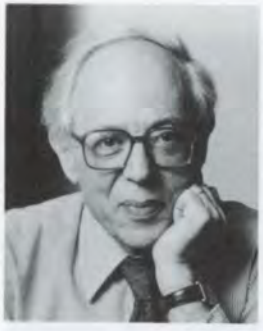
May 1, 1982
"Is Vacuum a Physical Medium?"

At the age of 30, Dr. Lee was named co-recipient of the 1957 Nobel Prize in Physics with Dr. C.N. Yang, for discoveries that challenged the principle of "Conservation of Parity," on which much of modern physics had been based. They theorized that in key cases parity need not be observed; subsequent experiments proved them right. The Enrico Fermi Professor of Physics at Columbia University, Dr. Lee has received the Albert Einstein Award in Science.

William N. Lipscomb, Jr., Chemist

March 19, 1983
"How Do Enzymes Work?"

Dr. Lipscomb won the 1976 Nobel Prize in Chemistry for his original research on the structure and bonding of boron hydrides and their derivatives. The Abbott and James Lawrence Professor at Harvard University, he has long been the dominant figure in the field of boron chemistry. His numerous other honors include the Alexander von Humboldt-Stiftung Senior Scientist Award and the Peter Debye Award in Physical Chemistry.



Abraham Pais, Physicist

April 3, 1982
"Einstein, the Science & the Life"

Detlev W. Bronk Professor of The Rockefeller University, Dr. Pais has received the J. Robert Oppenheimer Memorial Prize. A founding father of particle physics, he and his colleagues have investigated fundamental particle processes at high energies, symmetries of strong and weak interactions, and quantum field theory. He has played a leading role in developing an explanation for the behavior of the interactions in particle physics.

Arno A. Penzias, Astrophysicist

February 28, 1984
"Our Changing View of the Universe"

Dr. Penzias is vice-president of Bell Laboratories Research. He is best known for his part in his discovery of evidence supporting the "big-bang" theory of the origin of the universe, for which he shared the 1978 Nobel Prize for Physics. He is a member of the National Academy of Sciences, as well as many other scientific organizations. He is the only American to hold an honorary doctorate from the Paris Observatory.

George C. Pimentel, Chemist

April 24, 1982
"From Chemical Lasers to the Atmosphere of Mars"

Dr. Pimentel is director of the Laboratory of Chemical Biodynamics and professor of chemistry at the University of California at Berkeley. He has received many awards including the Distinguished Service Gold Medal from the National Science Foundation. His pioneering development of rapid scan techniques for infrared spectroscopy led to the design of a unique infrared spectrometer for the 1969 Mariner interplanetary spacecraft to determine the composition of the atmosphere of Mars.

Ilya Prigogine, Chemist

November 13, 1982
"Probing Into Time"

In 1977, Dr. Prigogine won the Nobel Prize in Chemistry for his contributions to nonequilibrium thermodynamics, particularly the theory of dissipative structures. Professor at the Free University in Brussels and director of the International Institutes of Physics and Chemistry, he has received numerous honors including the Rumford Gold Medal of the Royal Society of London and the Descartes Medal of the University of Paris.

I.I. Rabi, Physicist

March 14, 1981
"Molecular Beams, Experimental Discovery, and Theoretical and Mathematical Insights"

Dr. Rabi received the 1944 Nobel Prize in Physics for developing the molecular beam resonance technique, a major tool in nuclear research. Professor of physics at Columbia University, he has served on the U.S. Atomic Energy Commission, conducted research at Brookhaven National Laboratories on peacetime uses of atomic energy, and advised the government on science under a succession of presidents.

Frederick C. Robbins, Physician

December 3, 1983
"The Impact of Science on Medicine and Health"

President of the Institute of Medicine of the National Academy of Sciences and dean emeritus of the Case Western Reserve University School of Medicine, Dr. Robbins received the Nobel Prize in Medicine and Physiology in 1954, jointly with Dr. John F. Enders and Dr. Thomas H. Weller, for their work in the cultivation of the poliomyelitis virus in tissue culture and the application of this technique. He has also been honored with the Modern Medicine Award for Distinguished Achievement, and the Medical Mutual Honor Award.

Harold A. Scheraga, Chemist

November 3, 1984
"Molecular Recognition in Proteins"

Dr. Scheraga is Todd Professor of Chemistry at Cornell University. His research has focused on the physical chemistry of proteins and other macromolecules, on the chemistry of blood clotting, and on the structure of water and dilute aqueous solutions. His many distinctions include a Guggenheim Fellowship, a Fulbright Research Scholarship, the American Chemical Society's Eli Lilly Award, and membership in the National Academy of Sciences and the American Academy of Arts and Sciences.

Edward Teller, Physicist

December 13, 1980
"The Persian Gulf—If It's Still There"

Dr. Teller is director emeritus of the Lawrence Livermore Radiation Laboratory and a senior research fellow at the Hoover Institution on War, Revolution and Peace. He has received the Joseph Priestley Memorial Award, the Albert Einstein Award, and the Fermi Award. Dr. Teller is interested in the application of nuclear energy, particularly as part of a comprehensive energy plan for the United States.

Samuel C.C. Ting, Physicist

October 16, 1982
"Search for the Fundamental Structure of the Universe"

In 1976, Dr. Ting was named co-recipient of the Nobel Prize in Physics with Dr. Burton Richter. Dr Ting and Dr. Richter, working in separate groups, electrified the world of high energy physics in November of 1974 with the discovery of a new particle with remarkable properties. The implications of their experiments continue to stimulate reformulation of our basic understanding of matter.

George Wald, Biologist

March 28, 1981
"Life in the Universe"

Dr. Wald won the 1967 Nobel Prize in Physiology with Haldan K. Hartline and Ragner Granit. A professor emeritus at Harvard University, he has also received awards from the American Public Health Association and the American Academy of Arts and Sciences. Dr. Wald is an expert on the chemistry and physiology of the human eye, especially the chemical process by which light is transmuted into sight.

Frank H. Westheimer, Chemist

March 20, 1982
"Photoaffinity Labeling: Marking the Receptors for Biological Molecules"

Dr. Westheimer is Morris Loeb Professor of Chemistry at Harvard University. Among the distinctions received for his work is the National Academy of Sciences Award in Chemical Science. Dr. Westheimer's research has included mechanisms of the hydrolysis and phosphate esters, photoaffinity labeling, and biochemical oxidation-reduction reactions.

Benjamin Widom, Physical Chemist

March 23, 1985
"The Critical Points of Phase Transformations"

Professor of chemistry at Cornell University, Dr. Widom has focused his research on phase transitions and statistical mechanics. Awards for his work include Guggenheim and Fulbright fellowships and the appointment as National Science Foundation Senior Fellow in 1965. He is a member of the National Academy of Sciences, the American Physical Society, and the American Academy of Arts and Sciences.

Eugene Wigner, Physicist

November 1, 1980
"Problem of Quantum Mechanics Measurement Process"

Dr. Wigner won the 1963 Nobel Prize in Physics. He is best known for his pioneering work in nuclear structure, especially the application of the mathematical system of group theory to atomic and nuclear problems. While at the University of Chicago he participated with Enrico Fermi in the experiment that produced the first controlled nuclear reaction. He has received the Fermi Award, the Albert Einstein Award, and the National Medal of Science.

E. Bright Wilson, Chemist

May 9, 1981
"Recent Developments in Molecular Spectroscopy and Some of Their Implicatons"

Dr. Wilson is professor emeritus at Harvard. Since 1977, he has been the chairman of the Committee of Radioactive Waste Management of the National Academy of Science. For the past several decades he has worked on the microwave spectroscopy of large molecules, and is continuing his studies of the internal and overall rotational motion of chemical species in gases. Among his many awards is the National Medal of Science.

Rosalyn Yalow, Medical Researcher

April 11, 1981
"Radioactivity in the Service of Man"

Recipient of the 1977 Nobel Prize in Medicine, Dr. Yalow is senior medical investigator for the Veterans Administration Medical Center and chairman of the Department of Clinical Sciences at Montefiore Medical Center. She has received awards from the American Diabetes Association and the World Federation of Nuclear Medicine and Biology. Dr. Yalow has been a pioneer in the use of radioimmunoassay (RIA) in medical research and diagnosis.

Chen Ning Yang, Physicist

October 15, 1983
"Albert Einstein and Contemporary Physics"

Dr. Yang is Albert Einstein Professor and director of the Institute of Theoretical Physics at the State University of New York at Stony Brook. In 1957, he was named co-recipient of the Nobel Prize in Physics with Dr. Tsung-Dao Lee. In addition to the Nobel Prize, his honors include the 1980 Rumford Prize and the 1957 Albert Einstein Commemorative Award.

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