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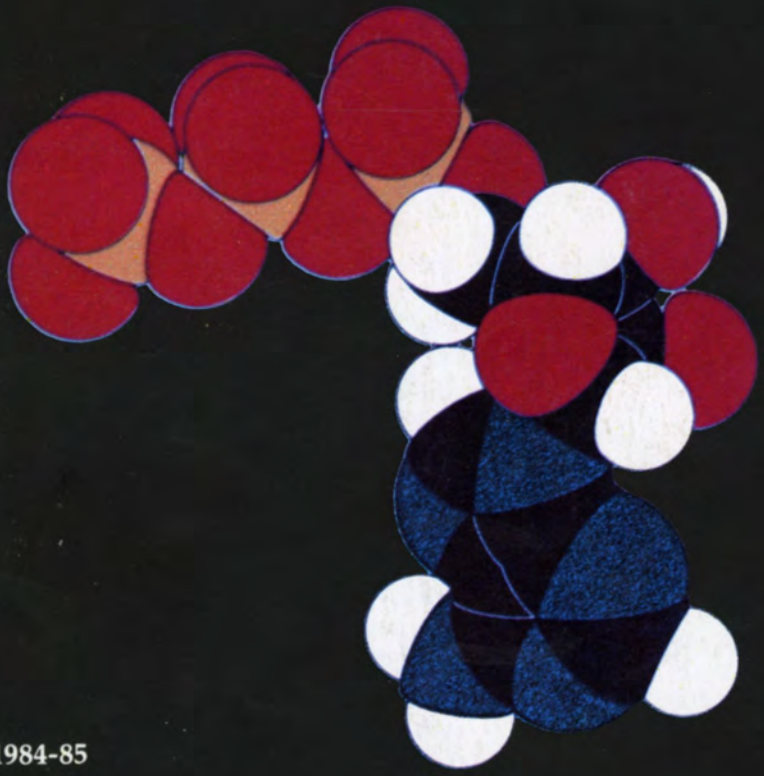
Distinguished Scientist Lecture Series Program 1984-1985

Bard College

Distinguished Scientist Lecture Series



1984-85

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

Schedule of Lectures

October 13, 1984
Baruch S. Blumberg
"Biology of Hepatitus B Virus"

November 3, 1984
Harold A. Scheraga
"Molecular Recognition in Proteins"

December 1, 1984
Nicolaas Bloembergen
"Lasers in Science and Technology"

February 16, 1985
Julius Axelrod
"Neurotransmitters and Drugs That Affect the Mind"

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

April 27, 1985
Claire M. Fagin
"Consumerism and Health: Whose Body Is It, Anyway?"

The 1984-85 Distinguished Scientist Lecture Series is dedicated to the memory of Paul Dirac (1902-1984).

Cover: Space filling models of ATP hydrogen atoms. From *Biochemistry* by Lubert Stryer. Courtesy W. H. Freeman and Company. Copyright © 1981.

The Bard College Center gratefully acknowledges the support of the National Patent Development Corporation for making The Distinguished Scientist Lecture Series possible.

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 scientific history 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.

The 1984-85 series, dedicated to Paul Dirac, comprises six lectures by some of the most eminent scientists of our time, including three Nobel laureates. 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.

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.

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."

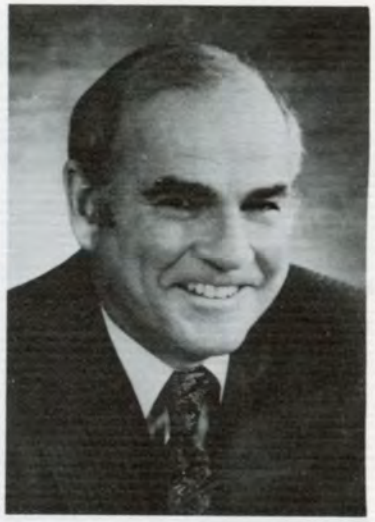
Bard College

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 124-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.

Baruch S. Blumberg, Research Physician



Dr. Blumberg, a Nobel laureate, 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. Born in New York City, Dr. Blumberg earned the M.D. degree at Columbia University in 1951 and the Ph.D. degree at Oxford University in 1957.

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.

Dr. Blumberg has been University Professor of Medicine and Anthropology at the University of Pennsylvania since 1977. He is staff member at Jeanes Hospital and American Oncologic Hospital in Philadelphia, and is attending physician at Veterans Administration Hospital, Pennsylvania Hospital, and the Hospital of the University of Pennsylvania.

He has been a visiting fellow at Trinity College, Oxford, a fellow of the Arthritis and Rheumatism Foundation, and a fellow of the Department of Medicine, College of Physicians and Surgeons. He was chief of the Geographic Medicine and Genetics Section, and attending physician at the Clinical Center of the National Institutes of Health from 1957 to 1964.

In addition to the Nobel Prize, Dr. Blumberg has received many awards including the Pennsylvania Medical Society Distinguished Service Award in 1982, the Richard and Hinda Rosenthal Foundation Award of the American College of Physicians in 1977, the Gairdner Foundation International Annual Award and the Modern Medicine Distinguished Achievement Award in 1975. He has received a number of honorary degrees and holds membership in numerous professional organizations and medical societies.

His Work

Dr. Blumberg was awarded the Nobel Prize for his discovery of the Australia antigen, an antigenic substance in the blood. His discovery of the Australia antigen ultimately became a major breathrough in hepatitis research. Dr. Blumberg's work leading to this discovery began as a consequence of his interest in inherited polymorphisms of blood.

His Lecture

October 13, 1984: "Biology of Hepatitis B Virus"

Harold A. Scheraga, Chemist

Dr. Scheraga is Todd Professor of Chemistry at Cornell University, where he has taught since 1947. Born in Brooklyn, New York, Dr. Scheraga earned his Ph.D. in 1946 from Duke University.

After completing his studies, Dr. Scheraga was a postdoctoral fellow of the American Chemical Society at Harvard Medical School. Subsequent research fellowships included a Guggenheim Fellowship to work at the Carlsberg Laboratory in Denmark and a Fulbright Research Scholarship for work at Weizmann Institute in Israel. He has received many awards, including the American Chemical Society's Eli Lilly Award in Biochemistry, the Fogarty Fellowship from the National Institutes of Health, and an honorary Sc.D. from Duke University.

Dr. Scheraga serves on a number of editorial and advisory boards for professional journals in biochemistry and physics, as well as acting as co-editor for the ongoing Molecular Biology Series from Academic Press. He is the author of the books *Protein Structure, Theory of Helix Coil Transitions in Biopolymers,* and over six hundred articles.

A member of the National Academy of Sciences and the American Academy of Arts and Sciences, as well as several professional organizations, Dr. Scheraga has lectured in many countries and served as visiting professor at the Weizmann Institute and at Kyoto University in Japan.

His Work

Dr. Scheraga's 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 Lecture

November 3, 1984: "Molecular Recognition in Proteins"

Nicolaas Bloembergen, Physicist

Dr. Bloembergen, a Nobel laureate, is the Gerhard Gade University Professor at Harvard University. Born in Dordrecht, The Netherlands, he received his Ph.D. from the University of Leiden in 1948. He has taught at Harvard University since 1951.

In 1981, Dr. Bloembergen was awarded the Nobel Prize for Physics jointly with A. L. Schawlow, for their work in the development of laser spectroscopy. For his fundamental contributions, he has been honored by the National Medal of Science, the Lorentz Medal of the Royal Dutch Academy of Science, and the Medal of Honor of the Institute of Electrical and Electronics Engineers, in addition to many other awards and fellowships. He has directed the E. Fermi Course on Nonlinear Spectroscopy; and served as an editor for the Journal of Quantum Mechanics, the Journal of Applied Physics, and other professional journals. He has held visiting professorships at such institutions as the College de France and the University of California at Berkeley. In addition to almost three hundred papers on electronics and optics, he is the author of two books, *Nuclear Magnetic Relaxation* and *Nonlinear Optics*.

His Work

Dr. Bloembergen's research has included nuclear and electronic magnetic resonance, solid state masers and lasers, and especially nonlinear optics and spectroscopy. Together with his co-workers, he developed a rigorous theory of nonlinear polarizability, the extension of Maxwell's equations to include nonlinear source terms and the interaction of multiple waves in the bulk and at the boundaries of nonlinear media. This latter work led to the extension of the laws of reflection and refraction.

His Lecture

December 1, 1984: "Lasers in Science and Technology"

Julius Axelrod, Biochemical Pharmacologist

Dr. Axelrod, a Nobel laureate, is Chief of the Section on Pharmacology, Laboratory of Chemical Science, at the Institute of Mental Health in Bethesda, Maryland. Born in New York City, Dr. Axelrod received his Ph.D. from New York University and did his postdoctoral work at the George Washington University Laboratory.

In 1979, Dr. Axelrod received the Nobel Prize for Medicine or Physiology jointly with Ulf von Euler for their contributions in the area of the sympathetic nervous system. Other recent awards include the Paul Hoch Award from the American Psychopathological Association, the Albert Einstein Achievement Award from Yeshiva University, the Distinguished Service Award from the Department of Health, Education, and Welfare, and the Stanley Dean Research Award from the American College of Psychiatrists. He has received honorary degrees from many institutions, among them George Washington University, The Medical College of Wisconsin, New York University, the City College of New York, and the University of Panama.

From 1949 to 1955, Dr. Axelrod was senior chemist with the National Heart Institute; in 1956 he joined the Department of Health, Education and Welfare. He is a member of many editorial and advisory boards, including the Scientific Advisory Board of the American Parkinson Disease Association, the Board of Trustees of the American Life Science Institute, and the Scientific Advisory Board for the McKnight Foundation.

His Work

A large portion of our current knowledge concerning humoral transmitters in sympathetic nerves comes from Dr. Axelrod's work. His earliest work was with tritium-labeled epinephrine and norepinephrine; later he undertook studies that led to the elucidation of the enzymes and intermediates involved in the major route of norepinephrine metabolism. Consequences of this research have included an understanding of the actions of many drugs important in cardiology, psychiatry, and neurology—notably, the introduction of α-methyldopa for treatment of hypertension and of L-dopa for the treatment of Parkinson's disease.

His Lecture

February 16, 1985: "Neurotransmitters and Drugs That Affect the Mind"

Benjamin Widom, Physical Chemist

Dr. Widom is professor of chemistry at Cornell University. Born in Newark, New Jersey, he received the B.A. degree from Columbia University and the Ph.D. from Cornell University in 1953.

Prior to his appointment at Cornell, Dr. Widom taught and did research in chemistry at the University of Carolina from 1952 to 1963. He has held several fellowships, including Guggenheim and Fulbright Fellowships at the University of Amsterdam, and he was appointed a National Science Foundation Senior Fellow in 1965. Other awards include the Boris Pregel Award for Research of the New York Academy of Sciences and the American Chemical Society's Award in Chemical Physics. He has been the van der Waals Professor at the University of Amsterdam; the IBM Visiting Professor at Oxford University; a visiting professor of chemistry at Harvard; the Firth Visiting Professor at the University of Sheffield; and in the coming year, the Lorentz Professor at the University of Leiden. He has served as distinguished visiting lecturer at Brown University, the University of North Carolina, and the Royal Society of Chemistry.

Dr. Widom has served on a number of editorial and advisory boards for such professional journals as the *Journal of Chemical Physics* and *Molecular Physics*. He is a member of the National Academy of Sciences, the American Physical Society, and the American Academy of Arts and Sciences. He recently served as chairman of the Subdivision of Theoretical Chemistry for the American Chemical Society.

His Work

The focus of Dr. Widom's research has been on phase transitions and statistical mechanics.

His Lecture

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

Claire M. Fagin, Nursing Researcher

Dr. Fagin is Dean of the School of Nursing at the University of Pennsylvania. Born in New York City, she received the Ph.D. from New York University.

While earning her doctorate, Dr. Fagin taught at New York University, concentrating on psychiatric and mental health nursing. Prior to her appointment as dean at the University of Pennsylvania, she was director of the Health Professions Institute of Herbert H. Lehman College and was associated with the Montefiore Hospital and Medical Center.

Dr. Fagin has edited and written a number of books, including *Nursing in Child Psychiatry* (1972) and *Family Centered Nursing in Community Psychiatry* (1970), chosen as Books of the Year in their respective areas by *The American Journal of Nursing*. Her articles have appeared extensively in professional journals and published anthologies on nursing, psychiatry, and nursing administration.

Among Dr. Fagin's many awards have been two fellowships from the National Institute for Mental Health, a Special Distinguished Alumnus Award at the 50th Anniversary of Nursing at New York University, and an Honorary Doctorate of Science degree from Lycoming College in Pennsylvania. She has served on the Executive Committee of the Board of Directors of the American Orthopsychiatric Association, on the Expert Advisory Panel on Nursing World Health Organization, and on the National Institute of Mental Health's SCOPCE Research Panel. She is a member of the American Academy of Nursing and the Institute of Medicine of the National Academy of Science. Her professional and public service activities have also included service on editorial and advisory boards and on the special task force on the Mental Health of Children and the New York State Governor's Committee on Children.

Her Work

Dr. Fagin's major area of research has been the affects of maternal attendance during children's hospitalization, and many improvements in practice have been based on her work. Continuing to investigate this area, she is currently doing research on the cost effectiveness of nursing intervention and nurse-consumer collaboration.

Her Lecture

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

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 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 lectured at many American and European universities, and was lecturer at the Institute for Fluid Dynamics, Paris, France. 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 Distinguished Scientist Lecture Series

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. Among his numerous awards are the Guthrie Medal and Prize, and the Golden Plate Award of the American Academy of Achievement.

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 (1954), a Guggenheim Fellowship (1958), and a National Science Foundation Travel Award (1959). Dr. Anfinsen is a member of the National Academy of Sciences, the Royal Danish Academy, the American Philosophical Society, and the Pontifical Academy of Science.

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 received the Gairdner Foundation and the New York Academy of Sciences Awards, and the Albert Lasker Medical Award. Dr. Berg and his colleagues have been active in experiments designed to explore the chemistry and biology of mammalian and human chromosomes.

David Botstein, Biologist

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

Dr. Botstein is professor of biology at Massachusetts Institute of Technology. He was elected to the National Academy of Sciences in 1981. He has received the NIH Career Achievement Award, and the Eli Lilly and Company Award in Microbiology and Immunology. Dr. Botstein serves on several scientific advisory committees, and is the author of *Advanced Bacterial Genetics*, as well as many articles on genetics and molecular genetics.

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 Fritzche Award of the American Chemical Society.

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. He also received the Royal Medal of the Royal Society, the Copely Medal of the Royal Society, the Queen of England's Order of Merit, and was a member of the Papal Academy. Dr. Dirac was professor emeritus and a fellow of St. John's College, Cambridge, England, and professor of physics at Florida State University.

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, which manufactures and markets pet care and agricultural products. Among his awards are the American Chemical Society Award in Pure Chemistry, the Baekeland Medal, the Chemical Pioneer Award of the American Institute of Chemists, and the Perkin Medal, awarded by the Society of Chemical Industry. An authority on fertility control in humans as well as insects, he played a major role in the development of the first oral contraceptive.

Charles Fefferman, Mathematician

April 14, 1984
"Twentieth Century Geometry"

Dr. Fefferman is professor of mathematics at Princeton University. At the age of 22, Dr. Fefferman was named professor of mathematics at the University of Chicago, becoming the youngest full professor at any United States university. In 1976, Dr. Fefferman was the first recipient of the Alan T. Waterman Award of the National Science Foundation, and in 1978 he received a Fields Medal from the International Congress of Mathematics. He also holds many honorary doctorates.

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 received the American Physical Society's High Polymer Physics Prize, the American Chemical Society's Priestley Medal, and the National Medal of Science. Dr. Flory has been a teacher in research of the chemistry and physics of giant molecules, or polymers, which make up such materials as natural and synthetic rubber, fibers, and plastics. He first entered his field as a member of the research team under Dr. Wallace H. Carothers of DuPont, whose original investigations led to the discovery of nylon.

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 Hertzberg, Physicist and Chemist

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

Dr. Hertzberg is Distinguished Research Scientist of the National Research Council of Canada. In 1971, Dr. Hertzberg 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. Hertzberg 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 of chemistry—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, Dr. Kornberg has received the Paul Lewis Award in Enzyme Chemistry, the Max Berg Award for Prolonging Human Life, the Scientific Achievement Award of the American Medical Association, and the National Medal of Science. 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. Prior to his discovery that bacterial strains could be crossed to produce an offspring containing a new combination of genetic factors, scientists had known little about the bacterial genetic mechanism and many even doubted that bacteria possessed a genetic mechanism similar to that of higher organisms.

Tsung-Dao Lee, Physicist

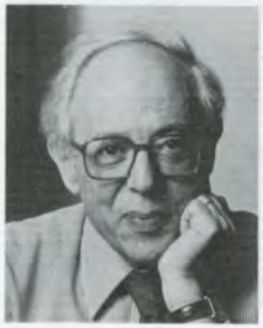
May 1, 1982
"Is Vacuum a Physical Medium?"

Among the youngest men ever to receive a Nobel Prize, Dr. Lee, at the age of 30, was named co-recipient of the 1957 Nobel Prize in Physics with Dr. C.N. Yang, for their 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 and a series of 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 of the American Chemical Society.



Abraham Pais, Physicist

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

Dr. Pais is Detlev W. Bronk Professor of The Rockefeller University. He has received the J. Robert Oppenheimer Memorial Prize. An eminent theoretical physicist and 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 several developments which aim to provide 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 holds several honorary degrees and 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 the Alexander von Humboldt Senior Scientist Award, the E.K. Plyler Prize in Molecular Spectroscopy, the Ellis R. Lippincott Medal, and 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. He has been professor at the Free University in Brussels since 1947, and director of the International Institutes of Physics and Chemistry in Solvay, Belgium since 1962. He has received numerous honors including the Rumford Gold Medal of the Royal Society of London in 1976 and the Descartes Medal of the University of Paris in 1979.

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. A professor of physics at Columbia University, he has served on the General Advisory Committee of the U.S. Atomic Energy Commission, has conducted research at the Brookhaven National Laboratories on the peacetime uses of atomic energy, and has been science advisor to the government under a succession of presidents. Among his many awards and honors is the Atoms for Peace Prize.

Frederick C. Robbins, Physician

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

Dr. Robbins is 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 was honored with the Modern Medicine Award for Distinguished Achievement in 1963, and in 1969, the Medical Mutual Honor Award. He is a member of many professional and scientific organizations, among them the American Academy of Arts and Sciences, the National Academy of Sciences, and the American Pediatric Society.

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 implication 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 received the Albert Lasker Award of the American Public Health Association and the Rumford Premium of the American Academy of Arts and Sciences. Dr. Wald is an expert on the chemistry and physiology of the human eye. Most of what we know about the chemical process by which light is transmuted into sight has come directly or indirectly from his work.

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. He has received the James Flack Norris Award in Physical Organic Chemistry, the Willard Gibbs Medal, and the National Academy of Sciences Award in Chemical Science. Dr. Westheimer's career has included mechanisms of the hydrolysis and phosphate esters, photoaffinity labeling, and biochemical oxidation-reduction reactions.

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. One of his most noted achievements was the application of the mathematical system of group theory to atomic and nuclear problems. From 1942 to 1945 he worked at the University of Chicago, where he participated with Enrico Fermi in the experiment that produced the world's 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 Implications"

Dr. Wilson is professor emeritus at Harvard. He has received the American Chemical Society Award, the Rumford Medal of the American Academy of Arts and Sciences, and the National Medal of Science. Since 1977, he has been the chairman of the Committee of Radioactive Waste Management of the National Academy of Science. Dr. Wilson is an authority on molecular spectroscopy, the analysis of polyatomic molecules. 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.

Rosalyn Yalow, Medical Researcher

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

Dr. Yalow won the 1977 Nobel Prize in Medicine. She 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 the Albert Lasker Basic Medical Research Award, the Rosalyn Yalow Research and Development Award of the American Diabetes Association, and the Gratum Genus Humanum Gold Medal of 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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