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The Rockefeller University

THE ROCKEFELLER UNIVERSITY

news and notes

JUNE - JULY 1981
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Goodbye 360, Hello 570

Pretty soon 360-1000 will go the way of Regent 4-8000 and Lehigh 5-9000. (Does anyone remember what came before that?) At this writing, the University expects to change to a new, computerized phone system on a weekend in September, according to Kenneth C. Schmitt, associate superintendent of plant operations, who is coordinating the switchover. All buildings except the two newest must be completely recabled—a job that will take 5,000 hours. This could delay the September date, but any change will be announced by inter-office memo.

Our new number will be 570-8000. Individual numbers will range from 570-7500 to -8999.

The advantages of the change will be better service at less cost. For example, we will be able to transfer calls to another University line without going through the operator. While on the phone, we can be signalled that another call is waiting. We can have incoming calls forwarded to ring at another number. We can have conference calls with up to six people. If numbers need to be reprogrammed, Plant Operations can do the job without calling in the phone company repair service.

Because the system will emanate from one nearby central office recently built at East 79th Street, instead of having to be routed through three stations as was previously the case, we will save money on mileage charges and get better reception—no more crackle and other people's conversations. We will also save money on equipment rental. Vice President David J. Lyons anticipates "a savings of well over a million dollars over the next ten years."

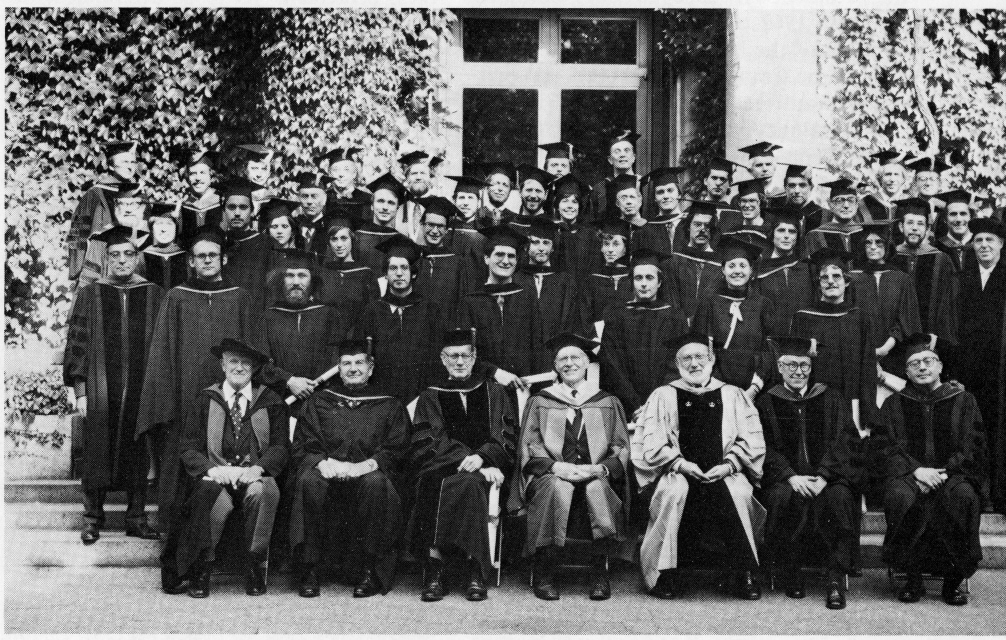
For questions or problems, call Mr. Schmitt on extension 1516.

2.25 Million From Pew Trusts

The University has been awarded a three-year grant totaling $2.25 million from The Pew Charitable Trusts, to support renovation of Smith Hall Annex for the creation of a new faculty office facility as part of a campus-wide plan for capital improvements.

This project, already underway, will result in a significant increase in the University's physical plant by reclaiming existing but presently unusable space for certain laboratories and special research groups.

University Bestows 24 Ph.D.s, Dr. Seitz Receives Honorary Degree



Commencement, June 11. Seated, left to right: Carl Pfaffmann, David Rockefeller, Frederick Seitz, William Baker, Joshua Lederberg, Clarence Connelly, Attallah Kappas. On the steps, Ph.D. recipients and their presenters.

On June 11, the University awarded the Ph.D. degree to 24 graduates at its 23rd commencement ceremonies, held at 3 P.M. in Caspary Auditorium. President Lederberg also conferred an honorary doctor of science degree on President Emeritus Frederick Seitz, 1973 National Medal of Science recipient for his contributions to solid state physics, a former advisor to the White House, a past president of the National Academy of Sciences, and president of this institution from 1968 to 1978.

As is the University's custom, the proceedings were limited to talks by presenters who explained the significance of the degree recipients' work. In a departure from tradition, Dr. Seitz had two presenters, David Rockefeller, chairman of the University's board from 1950 to 1975 and now chairman of its executive committee, and Dr. William O. Baker, the University's current board chairman and a trustee since 1960.

A native of San Francisco, California and a graduate in mathematics from Stanford University, Frederick Seitz earned his Ph.D. in physics at Princeton University in 1934. While at Princeton, he and his teacher, Professor Eugene P. Wigner, developed the Wigner-Seitz method for calculating the cohesive energy of a metal, the first such calculation, based on the known properties of the atoms involved.

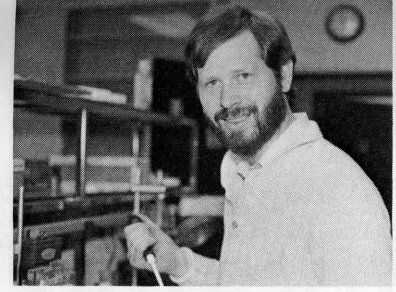
In 1940, Dr. Seitz published *The Modern Theory of Solids,* a book which is generally regarded as having been a prime influence in the development of solid state physics, including the development of transistors. His second volume, *The Physics of Metals,* was published in 1943.

He served on the faculties of the University of Rochester, the University of Pennsylvania, the Carnegie Institute of Technology (now the Carnegie-Mellon University), and was a research physicist at the General Electric Laboratories.

His career in public service began during World War II as a civilian member of the National Defense Research Committee and consultant to the Secretary of War. He was also the director of the training program in atomic energy at the Clinton Laboratories of the Oak Ridge National Laboratory from 1946 to 1947. His wartime research included work on ballistics, radar, and nuclear reactors.

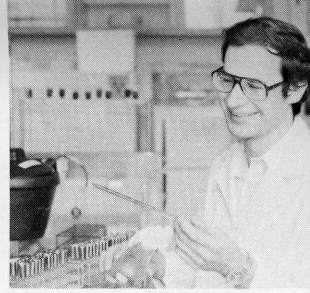
Appointed professor of physics at the University of Illinois in 1949, he became department chairman in 1957, and dean and vice president for research in 1964. He served as president of the National

ALBERT



ANDERSON

BAKER



BARANY

Academy of Sciences on a part time basis for two years before assuming full-time responsibilities in 1965. He became a member of the board of trustees of The Rockefeller University in 1966.

He was science advisor to the North Atlantic Treaty Organization in Paris from 1959 to 1960 and was a member of the President's Science Advisory Committee from 1962 to 1969. He is currently a member of the National Cancer Advisory Board, the Council on Foreign Relations, the Committee to Maintain a Prudent Defense Policy, and the board of The National Center for Atmospheric Research.

Among his numerous honors and awards, in addition to the National Science Medal, Dr. Seitz has received 25 honorary degrees from universities in this country and abroad.

Following are condensations of the remarks made by the presenters. The degree recipient's name appears first.

DAVID Z ALBERT

Nicola N. Khuri

The problem of phase transitions in condensed matter physics has occupied theoretical physicists for more than half a century. Recently it has been discovered that the behavior of statistical systems near a phase transition can be described by quantum field theories. These field theories are the basic mathematical tools of the elementary particle physicist, and developments in particle physics have turned out to be extremely useful in statistical mechanics and in condensed matter physics. David Albert has refined and improved a method used to calculate the physical properties of a statistical system near a phase transition point, starting from an analysis of certain quantum field theories. The results are in excellent agreement with experiment. The calculation is based on a mathematical summation prescription designed to make sense out of divergent infinite series. It was first introduced in the late nineteenth century by the French mathematician E. Borel, and it provides us with yet another example of a seemingly abstract mathematical idea that turns out, decades later, to be relevant to the real world. In addition to his thesis, David has been quite actively working on questions related to the foundations of quantum mechanics and measurement theory. He has been collaborating with Professor Y. Aharonov, a recognized expert in this field, and their work has already produced two provocative publications.

STEVEN M. ANDERSON

Hidesaburo Hanafusa

A group of RNA tumor viruses are capable of inducing acute-type leukemia in infected animals by encoding viral products which alter the processes of blood cell differentiation. To identify such viral products, Steve Anderson investigated the organization of the genome of two acute leukemia viruses which cause erythroid and myeloid leukemia in chickens. His analysis revealed that each virus contains unique genetic information which is originally derived from host cell genome, at different regions in the viral genome. Concurrently, he found, the precise processing of messenger RNA is different for the two viruses. In both cases, however, he discovered that the viral messenger RNAs are packaged into virus particles together with genomic RNA. This finding allowed him to examine the nature of protein products made by in vitro translation of the messenger RNAs. The biological function of these proteins is yet to be determined, but Steve's work has provided important steppingstones for further studies on the mechanism of viral leukemogenesis.

CARL C. BAKER

Edward Ziff

Carl Baker entered Rockefeller with a keen interest in eukaryotic genes. For his thesis, he investigated signals in eukaryotic DNA which mark transcription initiation sites. Using adenovirus-2 as his model, and working with care, determination, and great economy of effort, Carl discovered structural homologies shared by Ad-2 promoters, and showed that RNA polymerase stutters as it initiates a mRNA precursor transcript. Based on these findings, he proposed a model for RNA polymerase II initiation at eukaryotic genes. Not content with mere hypotheses, he obtained elegant biochemical evidence from adenoviruses with altered promoter structures, and in vitro transcription, to support his model. To maintain inspiration, Carl frequently hiked, sometimes in Central Park but often in the Pacific Northwest. He eagerly shared his scientific observations with all interested parties, of whom there are many.

FRANCIS BARANY

Alexander Tomasz

Francis Barany's interest in the secrets of nature dates back to his early teens, when his studies of the somewhat obscure plant Venus Fly Trap earned him the distinction of becoming one of the finalists in the prestigious Westinghouse Competition. In fact, the cover of a 1974 issue of *The New York Times* Sunday Magazine showed a photo of the shy but confidently grinning youngster holding a Venus Fly Trap in his hands. It is a tribute to the quick maturation of Francis' intellect that he soon let the trap fly and concentrated on Venus instead. There is every indication that Francis intends to leave his personal mark on the world of sciences. This is evidenced by the explosive proliferation of boxes in the deep freeze units of our laboratory containing hundreds of bacterial mutants, plasmids constructed by him, *each* such box marked with the cryptic notation "FB"; you don't have to be a cryptographer to suspect that FB does *not* signify homage to Francis Bacon or Feruccio Busoni. In his doctoral thesis work, Francis has demonstrated his originality, independence, and imagination, and has made an elegant contribution to the field of bacterial transformation. Through this work he has already earned the respect and recognition of colleagues. It is the ultimate reward of our profession as teachers to witness the metamorphosis of the promise of a gifted student to the maturity of a young fellow scientist full of confidence and energy, ready to conquer science on his own. With Francis, I had this rewarding experience.

ANDREA D. BRANCH

Elizabeth Dickson

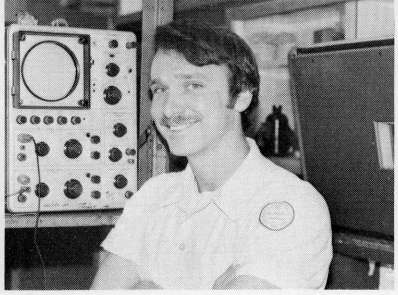
Andrea Branch's interest in developmental biology has driven her along the classical path of scientific reductionism. Beginning with studies of whole mouse embryogenesis, she narrowed her inquiries to palatal shelf development, chromosome behavior (for which she was awarded a master's degree at the University of California at Irvine), and the influence of histones on chromatin ultrastructure (at Irvine, and with Dr. Peter Hoffmann at Rockefeller). Out of a desire to study molecular events which might be involved in the control of gene expression, she took the final reductionist plunge and began a study of viroids in our laboratory. The smallest known microbes, viroids are self-replicating disease agents of plants composed of a single circular RNA species of about 350 nucleotides. Because they do not appear to have mRNA-, rRNA-, or tRNA-like activities, it is hoped they might have a regulatory function. She developed exceedingly sensitive versions of southern and northern hybridization procedures to identify and characterize nucleic acid species in infected tomato plants which are complementary to potato spindle tuber virus (PSTV). Using these methods, she first resolved a long-standing controversy by demonstrating that neither uninfected nor PSTV-infected plants contain detectable DNA complementary to PSTV; and then went on to show that PSTV-infected plants contain RNA complementary to PSTV which is heterogeneous in size, is considerably longer than PSTV, and contains regions of double-stranded structure the length of PSTV. These and other properties of the PSTV minus strand RNA permitted her to construct a model for the involvement of this RNA in PSTV replication. She hopes to test specific predictions of this model.

FRANK A. GRECO, Jr.

Alexander Mauro

Biophysical and biochemical research has shown that movement of substances across the cell membrane occurs via channels in pores provided by proteins which span the lipid bilayer. In 1962 it was demonstrated that the bilayer model could be realized experimentally, and that "a proteinaceous substance" termed EIM, obtained from a bacterium that is present in the intestinal flora of mammals, induced ionic permeability which depended on the electrical potential difference across the bilayer. More recently, it was discovered that the voltage-dependent permeability to ions in bilayer model membranes doped with EIM was the result of single channels independently opening and closing, the average lifetime of the channel in the open state being proportional to the membrane potential difference. This fundamental mechanism—observed in model membranes—has been demonstrated in a variety of biological membranes, such as in muscle and nerve cells. Frank Greco chose as his thesis research the investigation of the channel-forming properties of another bacterial protein extracted from the outer membrane of gonococcus. He showed that the purified protein did induce voltage-dependent channels in bilayer model membranes. Even more exciting, he discovered that the live bacterium could, upon coming into contact with the membrane, transfer the gating protein to it, as reflected in

BRANCH



GRECO

KARESS

KIELIAN

the appearance of voltage-dependent ionic channels. Even at this preliminary stage of research, it is clear that the ability of the live bacterium to induce channels in model membranes may be significant in explaining how the microorganism infects living cells. In an entirely different area, Frank, working with Professor Morris Schreiber, submitted an essay to Harvard, where he has been on leave from medical school. For this essay, entitled "A History of the Limit Concept," he received the Bowdoin Prize in Natural Sciences for 1977.

ROGER E. KARESS

Hidesaburo Hanafusa

The Rous sarcoma virus genome contains a transforming gene known as *src*, which codes for a phosphoprotein associated with a protein kinase activity. A sequence homologous to the *src* gene was previously found in DNA of normal chicken cells, and this cellular sequence was considered to be the source of the *src* gene of recombinant viruses which we recovered from tumors induced by *src*-deficient mutants of Rous sarcoma virus. Roger Karess discovered a normal cellular protein similar in size and function to the viral *src* protein. He then demonstrated that this cellular protein and the *src* protein of the recovered sarcoma viruses share a few unique tryptic peptides, thus confirming the recombinant nature of the recovered virus. His results led to the theory that transformation in virus-infected cells results from a change in the abundance of a normal cellular enzyme. From analyses of tryptic peptides of *src* proteins of various viruses, he also provided evidence that the amino and carboxyl halves of the protein have different functions, the latter being essential for the protein kinase activity.

MARGARET C. KIELIAN

William A. Scott

The flow of large molecules into and out of cells occurs via membrane-bounded vesicles which shuttle between the cytoplasm and cell surface. This exchange links discrete cellular compartments and requires the fusion of vesicle and organelle membranes. Margaret Kielian has for the first time been able to examine these events within the complexity of living cells. First, she developed a sensitive and reproducible method for quantitating the rate and extent of fusion between the phagocytic vacuoles and lysosomes of white blood cells. Employing this technique, she was then able to examine those determinants which both enhanced or depressed the fusion process. Interesting results quickly ensued, which in some cases destroyed our pet preconceived biases. The rate of fusion was correlated with the physiological state of white cell activation and was unrelated to the integrity of cytoskeletal proteins. The tumor promoter PMA (phorbol myristate acetate) was a potent stimulator of membrane fusion and this depended upon the synthesis of new cellular proteins. Margaret also discovered a group of highly anionic macromolecules which were stored within lysosomes and blocked their fusion with phagocytic vacuoles. Such agents occur within the body and may serve to regulate the process of intracellular digestion. Recent physicochemical evidence on the mechanism of inhibited fusion suggest alterations in the fluid nature of the lysosomal membrane.

THEODORE R. KIRKPATRICK, Jr.

E.G.D. Cohen

Although the theory of light scattering of gases and liquids in thermal equilibrium was completed in 1934, it was not until 1979 that two groups simultaneously and independently developed such a theory for fluids not in equilibrium. One of these groups was at M.I.T. and one was at Rockefeller. Upon arrival here in 1977, Ted immediately became deeply interested in this problem and worked day, night, and weekends to solve it. I think it is fair to say that no one contributed more to the solution than he did. He was really an exceptional student. His originality, independence, and deep commitment to science made it a pleasure for me to work with him, but also a challenge to keep up with him. I am sorry to see him leave not only for the ending of our close and enormously stimulating collaboration, but also for the departure of a friend acquired through a shared experience of trying to understand something new and unknown. I have no doubt Ted has a very bright future before him.

TERRY J. LERNER

Peter H. Model

Terry Lerner started her thesis work with a study of how bacteriophage Fl controls its level of expression. When the phage first infects, it multiplies rapidly, but then displays the restraint characteristic of many successful parasites, and host cells survive for many generations to produce, over time, an enormous number of phage. While the analysis was in its initial stages, a second problem arose that needed immediate attention. Years ago Joshua Lederberg discovered genetic exchange in bacteria and showed that bacteria express a kind of sexuality: some are donors of genetic information; others can act only as recipients. The ability to donate genes depends on the presence of a specific element called a sex factor that, among other products, codes for cell surface structures needed to transfer DNA from donors (male) to recipients (female). During the early recombinant DNA era, the existence of this specific factor for DNA transfer was viewed as a safeguard, as its absence would assure that recombinant DNA cloned into this kind of host would not spread through the bacterial population. An about-to-be-published paper came to the attention of Norton Zinder, claiming that other mechanisms of gene transfer existed in *E. coli*; that even in the absence of the sex factor, some bacteria could interchange genetic information. He and Terry began to study the problem with some sense of urgency. They found that this genetic exchange had many of the earmarks of the canonical matings described by Dr. Lederberg and colleagues. Terry went on to demonstrate that it was indeed sex factor-dependent. For the particular bacterium under study, it was the expression of the sex factor that was defective. Further work showed that there are at least two host genes, one of which must be functional if successful matings are to take place. She carried out a complete genetic analysis of this system. Terry then returned to her original problem and characterized the transition from early to late phage infection completely.

JOSEPH McCRARY McCUNE

Henry G. Kunkel

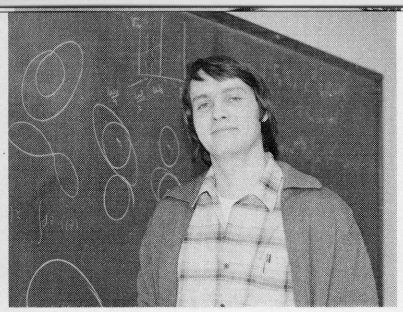
Joseph McCrary McCune, better known as "Mike," entered the M.D.-Ph.D. program from Harvard University. He had begun work on membrane proteins of human lymphocytes before arriving here, and continued this interest, centering on the question of the character of antibody molecules acting as antigen receptors on lymphocyte membranes. Are they the same as secreted antibodies found in the circulation? In the course of this work, he accumulated three advisors, Dr. Blobel, Dr. Fu, and myself, and I am speaking for the others in describing his work. He discovered that the membrane antibody was distinctly different from the secreted type. This was particularly striking in in vitro synthesis experiments in cell-free systems where two distinct proteins were formed. The membrane antibody was larger with a special C-terminal tail which permitted insertion in the cell membrane. In this initial work, Mike had a real baptism in competition. Two other laboratories made similar observations and one of these flooded the scientific community with preprints. Mike took it all quite philosophically and even appeared pleased that his observations could be confirmed. His work continued with a study of the membrane-secretion relationship for different antibody classes and some surprising observations were made, indicating a much more complex series of systems than had been suspected initially. A new field has emerged and Mr. McCune now holds a leading position in it.

MARGARET E. McVEY

Peter R. Marler

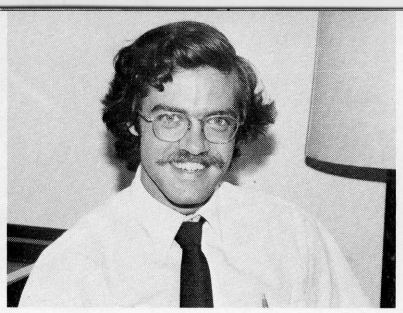
(Degree granted in absentia)

The subject of Margaret McVey's thesis was the dragonfly. Fiercely predatory, these insects emerge from the long aquatic winter to a short life devoted primarily to reproduction. This brevity is what recommends them as ideal subjects for solving a long-standing problem in evolutionary biology. In many species, including vertebrates, some males are more successful with the ladies than others. There has been much controversy about what this variation means. With dragonflies, some males stake out a territory as a dowry for females. Others are poachers. Could it be that poachers ultimately do as well as regular territory holders, harboring their resources, and perhaps living longer by sidestepping or postponing the stresses of territorial defense? Why do females favor some suitors over others? Is it because they lay claim to especially choice real estate, or are males somehow appraised more directly as potential future genetic investments? There are hotly debated questions here that have never been answered, largely because of the virtual impossibility in most species of tracking males throughout their lifetimes. For the first time, we have an adequate data base for answering these questions. By a prodigious feat of energy and patience, Meg followed more than 250 male dragonflies through their entire adult lives. It is now clear that home ownership involves no penalty in reduced life expectancy. Poaching does not pay, even in the long run. Clever and difficult experiments under field conditions, in which males were removed and replaced and the quality of territories was modified, show unequivocally that while real estate is important, male genetic quality also plays a crucial role.



KIRKPATRICK

LERNER



MCCUNE

MCVEY

RAFAEL E. G. MIRA Y LOPEZ

Edward Reich

Rafael Mira y Lopez of Rio de Janeiro was attracted to biology while in high school. He took a medical degree as a base from which to develop his interest in research. He began at Rockefeller in the laboratory of Philip Siekevitz, where he made a contribution to the methods used in analysing mixtures of membrane proteins. When he joined our group, he first explored the properties of proteolipids, a group of proteins found in the nervous system, and devised new methods for identifying and separating them. In his thesis research, he undertook a study of rodent mammary tumors. It is difficult, in a brief description, to do justice to the combination of craftsmanship, tenacity, and concentration that enabled him to develop a workable and reproducible system for the experiments he performed. As a result, he has developed a relatively simple method for identifying specific hormones that control the rate of mammary tumor growth and for predicting which hormones will slow or accelerate growth in vivo. It can be performed using small amounts of tissue such as can be obtained through biopsy. There is good reason to expect that this system can be applied to human disease, especially mammary cancer. If so, it should enhance our ability to treat cancer in general and to design custom therapy for individual patients.

WILLIAM A. MULLER

Ralph M. Steinman

Endocytosis is one mechanism whereby cells interact with molecules and particles in their environment. A vacuole pinches off from the cell surface and delivers entrapped substrates to intracellular digestive organelles called lysosomes. Membranes surrounding the endocytic vacuoles guide and control the process. Unfortunately, these membranes are difficult to study in cell-free systems. Bill Muller developed a method for radiolabeling the vacuole membrane in live cells. He fed macrophages lactoperoxidase, which catalyzes the iodination of membrane polypeptides. By allowing cells to endocytose enzyme, he could radiolabel the internalized membrane selectively. Bill first compared internalized membrane proteins with those labeled by the same enzyme on the cell surface. By using a variety of analytic techniques, he found that proteins in both sites were similar. He made a remarkable finding when he returned the cells to culture. The bulk of the radiolabel rapidly (minutes) moved from intracellular vacuole back to the surface. Furthermore, these recycled polypeptides could be reinternalized during a second endocytic meal. Thus the cell surface is not a static envelope, but a dynamic structure capable of rapid membrane recycling through the cell.

MICHEL NUSSENZWEIG

Ralph M. Steinman

Fifty-two years ago, Dr. McMaster of this institution proved that lymphoid organs generate immunity. Immunologists have since identified several subpopulations of cells in lymphoid organs, each critical to immune responses. Michel Nussenzweig studied yet another population, termed "dendritic" cells (DC) because of their branching shapes. Michel first tested DC in functional assays. They actively stimulated a proliferative response called the syngeneic mixed leukocyte reaction. Next he found that DC were potent accessory cells for killer T lymphocyte formation. He then studied the cell surface of DC using several monoclonal antibodies, each an exquisitely specific surface probe. He showed that Ia antigens, surface glycoproteins essential for cell-cell interactions, were an abundant and constitutive component of DC. Sensitive binding assays proved that DC lacked specific macrophage and lymphocyte markers. In his final, most exciting, study, Michel procured the first antibody specifically recognizing the DC. This extensive group of experiments established the DC as a significant, novel cell type.

JAMES B. PARSONS

Bruce S. McEwen

Twenty years ago, little was known about the mechanisms by which hormones stimulate mating behavior. In 1961, it was found that one class of gonadal hormones known as estrogens acts upon receptors inside cells of the uterus to trigger their growth and differentiation. In the next decade, work at Rockefeller established that certain regions of the brain contain the same kinds of receptors for estrogens as the uterus. More recently, receptors for another important hormone, progesterone, were found to reside in some of the estrogen-sensitive neurons of the hypothalamus, where they are induced by exposure to estradiol. Bruce Parsons entered this story in 1978 with a keen interest in both the cellular biochemistry of steroid hormone action and the structure and function of the brain. Combining these interests with a steadily growing command of laboratory techniques, he conclusively demonstrated that the induction of progesterone receptors in hypothalamus by estradiol is a crucial event in the hormonal facilitation of reproductive behavior in the female rat. And he was able to demonstrate that estradiol does all of this by stimulating protein synthesis during a period lasting a few hours, even though the eventual effects on reproductive behavior appear hours later. He also characterized the time course of progesterone action on reproductive behavior in animals already primed with estradiol and found that progesterone action on the brain involves two distinct periods of protein synthesis, one facilitative, and the other inhibitory. His thesis has carried the analysis of hormone action on the brain and reproductive behavior to a new level of precision and has provided a framework for future studies of the detailed mechanism of hormone action on nerve cells.

VALERIE F. REYNA

George A. Miller

Valerie Reyna came to us in 1976 from Clark University, where she had already acquired her interests in the psychology of language and in statistics and the theory of probability. Both topics grew from interests to professional competencies as she participated actively in psycholinquistic research in my laboratory and in the mathematical modeling of behavior in the laboratory of Professor William K. Estes. And both competencies were demonstrated in her own independent research. The topic of her thesis—how context helps us understand that a person who said one thing really meant something else—involves some of the most difficult aspects of human communication to study scientifically. The methods of experimentation and data analysis that she developed are testimony to her creativity, energy, and dedication, traits that make all who know her confident of her future success as a cognitive scientist.

MARK W. RIEMEN

Bruce Merrifield

Mark Riemen came to Rockefeller from Boston University as a chemistry major with special experience in protein sequencing and a general interest in peptide chemistry. He joined our laboratory to learn about the synthesis of peptides and undertook the preparation of some new enkephalin analogs, one of which was found to have especially prolonged analgesic activity. The second phase of his work was an examination by synthetic methods of a report that the full activity of murine nerve growth factor was contained within two small disulfide-linked segments of the protein. Mark cleverly overcame the difficulty of forming an unsymmetrical disulfide link between the two pure synthetic peptides by synthesizing a single linear 30-residue peptide. Intramolecular disulfide formation followed by a specific tryptic cleavage gave the desired product corresponding to the fragment isolated from the degraded protein. He showed that this peptide, when pure, does not promote nerve growth, and concluded that a larger portion of the native protein structure is required for activity.

SAUL J. STOKAR

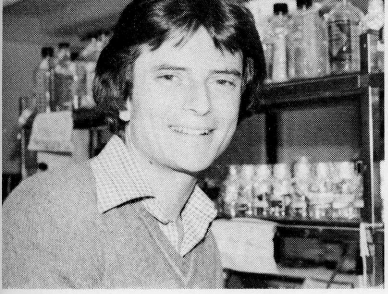
Heinz R. Pagels

Physicists, by probing beyond the atomic nucleus, found a realm of strongly interacting particles called hadrons, which are the origin of the strong nuclear force. Today these hadrons are viewed as made out of a few even more fundamental particles called quarks. According to current theoretical ideas and experimental researches, the quarks appear to be permanently bound up inside of hadrons—never to be set free. Saul Stokar's research in theoretical physics examined several experimental implications of the quantum field theory of quarks bound inside of hadrons called quantum chromodynamics. Using these ideas he was able to extract properties of the permanently trapped quarks from experimental data; in particular, he determined the masses of the lightest quarks in a variety of different, consistent ways.

NINA FELICE TABACHNIK

Anthony Cerami

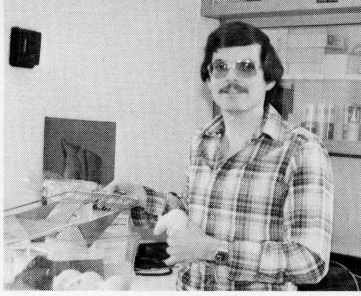
As her thesis work, Nina Tabachnik resolved to apply modern chemistry to the problems of childhood disease, specifically cystic fibrosis. Patients with cystic fibrosis produce thick mucus from glands in the lungs and intestines. The stasis of the mucus in the lungs sets the stage for bacterial infection, and despite continuous antibiotic therapy, infections kill most of the patients. Nina isolated and studied the protein



MIRA Y LOPEZ

MULLER

NUSSENZWEIG



PARSONS

in lung mucus responsible for the increased viscosity. She observed that it could be cleaved of a smaller peptide by the addition of small amounts of mild reducing agents. This modification caused a dramatic decrease in the viscosity of the protein solution. Her task then was to identify a drug that could achieve this with the thick mucus in the lungs. Previous attempts to deliver drugs to the lungs with an aerosol of small droplets of liquid had not been successful because the droplets could not get to the smaller airways. Nina developed the concept of a prodrug to avoid this problem. The drug is taken orally, converted in the body to the active drug, and delivered to the lungs. By examining a series of compounds the United States Army had developed to prevent damage from nuclear fallout, she found a compound, WR2721, that had the desired properties. In collaboration with Dr. Charles Peterson, she evaluated its effect on patients with cystic fibrosis at The Rockefeller University Hospital. Their studies showed that WR2721 was effective in reducing the viscosity of sputum. At present, WR2721 is being further developed under license by the University to a pharmaceutical company for use with cystic fibrosis patients and patients with chronic bronchitis. It is not often that a student can develop the concept for a potential drug, identify one, and carry out a clinical evaluation.

DANIEL TRANCHINA

Robert M. Shapley

Investigators in our laboratory have studied the retina of the cat by using systems analysis to unravel the responses of retinal ganglion cells, the output cells of the retina whose nerve fibers form the optic nerve. This approach has answered many questions about neural feedback and lateral interactions in the retina, but it has suffered from the limitation that we are not able to perform the same analysis on the photoreceptors and interneurons of the cat's retina. Daniel Tranchina successfully analyzed some of the interneurons of the retina of the turtle using intracellular recording with ultra-fine micropipette electrodes, which allows one to "go inside the black box" and get at the fundamental cellular electrophysiology. Only a small community of micropipetters have been able to impale and hold the small cells of the retina. Dan's thesis work allows him entry into that select group. There is another select group who have applied systems analysis of the study of the nervous system. He is a member of that company also. Dan has found that the receptors, and interneurons early in the chain of retinal signal transmission, act like neural filters which produce very little distortion of the visual image. The speed of response, he has also found, is determined almost entirely by the photoreceptors and is little affected by neural feedback. However, we know that this high-fidelity transmission is distorted in the inner layer of the retina, and as an extension of his thesis work he is beginning to investigate the mechanisms of and reason for this distortion.

DAVID VICARIO

Claude Ghez

David Vicario came to Rockefeller University from Hampshire College with a passionate interest in understanding behavior in neurophysiological terms, a keen intelligence, and a healthy distrust for accepted theoretical constructs. Moving up from his undergraduate studies of frog thalamus, his doctoral thesis addressed a question which has preoccupied neuroscientists continuously since the last century: What role does the motor cortex play in the control of movement? A variety of techniques have been used to approach this question, most recently that of single cell recording in awake behaving animals. While this technique seemed at first promising, new insights have proven strangely elusive. Nevertheless, David used this approach to study how the motor cortex controls rapid movements directed to a target, and made several major discoveries. Two are particularly striking: first, that the motor cortex includes not one but two functionally distinct compartments which appear to be responsible respectively for the initiation and for the ongoing control of movement; second, that neurons capable of initiating movement actually code sensory events from the target and the response independently. From these findings, a new perspective is emerging concerning both the motor cortex and the general physiology of movement where the classical distinction between sensory and motor processes no longer seems useful. David's quick grasp of the implications of new information, his humor, and especially his love for ideas as opposed to mere facts, have made his presence in the laboratory a joy.

KLAUS PETER WALTER

Günter Blobel

Peter Walter was born and raised in the divided city of Berlin. He studied organic chemistry at the Freie Universität of Berlin, then went for a year to Vanderbilt University where he received a master's degree in organic chemistry. In 1977 he started his graduate studies here at The Rockefeller University. For his thesis research, Peter chose to work on the challenging problem of how a large number of distinct proteins cross specific cellular membranes. When he started his work, evidence had already accumulated that the information for this process would reside in a discrete segment of the protein molecules. It was postulated that this "zip code" would then be decoded by a machinery in the membrane that would effect translocation. Peter has succeeded in isolating and in characterizing part of this fascinating machinery and thereby has opened the way to study the mechanism in detail.

JACK A. ZIFFER

Joseph W. Becker

Jack Ziffer's thesis work has been directed towards determining the three-dimensional structure of β_2-microglobulin, one of the two polypeptide chains that make up the histocompatibility, or transplantation, antigens. These glycoprotein antigens are the molecules that the body recognizes as foreign when a transplanted organ is rejected, and they are believed to be part of the body's natural defenses against its own cells when they become neoplastically transformed or virally infected. To prepare the crystals necessary for this study, Jack purified and characterized β_2-microglobulins from several species and sources. He showed that the bovine homologue isolated from cow's milk or colostrum could be made into large single crystals. He analyzed the X-ray diffraction from these crystals, using an ingenious combination of techniques, and used these data to prepare an electron-density map of the protein at a resolution of 6Å. His studies have given us our first view of the three-dimensional structure of part of a transplantation antigen. As had been expected from similarities in chemical structure, the three-dimensional structure of β_2-microglobulin appears very similar to a part, or structural domain, of an immunoglobulin. However, the interactions between β_2-microglobulin molecules are unique, and these intermolecular interactions may be a model for the complete histocompatibility antigen assembly.

HONORARY DEGREE

FREDERICK SEITZ

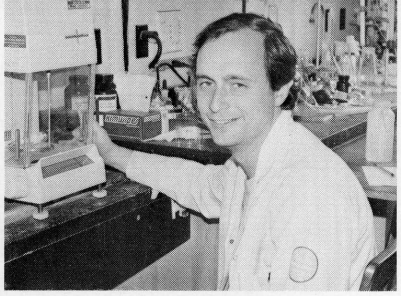
David Rockefeller

Throughout its 80 year history, The Rockefeller University has been fortunate in its leaders. All have served her well—none more than Fred Seitz. The special qualities of leadership he brought to his presidency were enormously well-suited to meet the demands of a difficult decade. He guided us through a period of accelerating social change and unprecedented economic shocks to science and education with quiet wit, patience, courage, and a steady devotion to the traditions of the University. During a period when many institutions faltered, this University maintained the highest standards of quality. There were new initiatives too. Though it was not the best of times and not all decisions came easily, the Seitz years saw the start of a number of new basic and clinical research programs, the launching of a joint M.D.-Ph.D. program with Cornell University Medical College, and the establishment of seven endowed professorships. Also during his tenure, a 1000-acre Field Research Center for Ecology and Ethology was set up at Millbrook, New York; a new Laboratory Animal Research Center and a 250-unit apartment complex were built; the Tower Building was completed; and the Rockefeller Archive Center was established in Pocantico, New York. All of this was accomplished in spite of fiscal uncertainties and the necessity to trim budgets. In fact, at the end of his term the University had been strengthened by an improved financial structure and a development program designed to maintain its stability in the future. It is characteristic of him that in his retirement he continues to have a deep concern for the future of the University and an active interest in its programs. When his aid or counsel is needed, his loyalty proves itself in unselfish response. In honoring Fred Seitz today, The Rockefeller University does honor to itself. His many services to this institution during a decade of steadfast and distinguished leadership and his many contributions to the preservation and enhancement of its unique structure and spirit form an enduring legacy in which we all share.

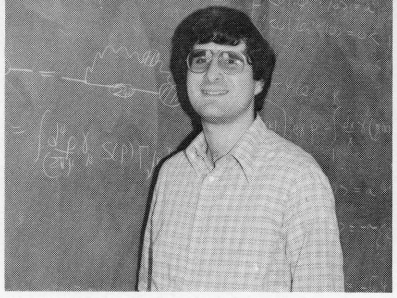
William O. Baker

The record shows, as has been eloquently said, what Frederick Seitz has done. But as befits a family festival, we speak now of why he has

REYNA



RIEMEN



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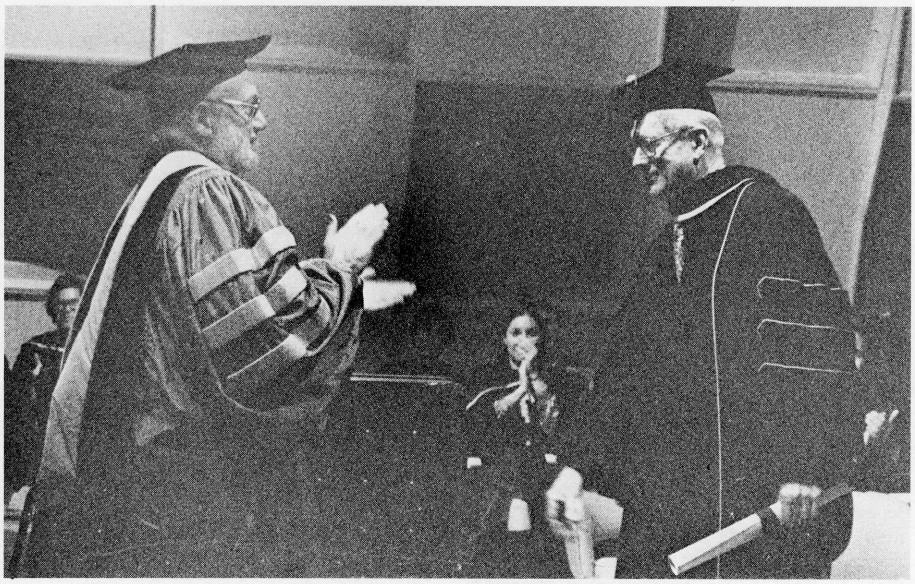
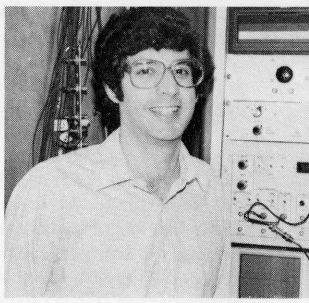
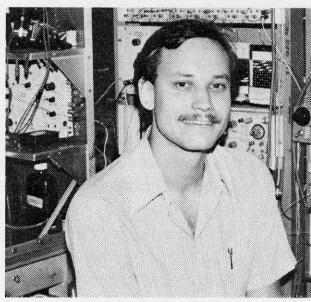


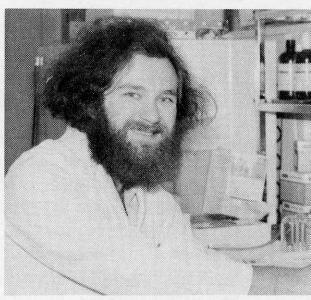
Frederick Seitz right, and President Lederberg.



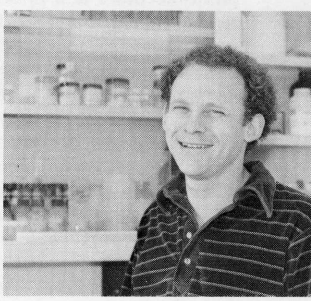
TRANCHINA



VICARIO



WALTER



ZIFFER

done it. For in the near half century since Stanford, he has shown by words and acts the role of ideals and intellect in living and learning. Namely, he has enhanced the reason to have universities, and especially how wise men and women can gather there—to heighten insight and to brighten the long, hard path of humanism. First, he studied in the great surge of quantum physics of the thirties, when Einstein, Wigner, Robertson, and von Neumann gathered at Princeton to see whether atoms and molecules, the cosmos and the universe, could be formulated discretely, as Planck and Heisenberg had said. But Wigner and Seitz added the crystal to this venture, and brought modern scientific theory and group theoretic mathematics to the understanding of solids—the metals, the rocks, the gems, the living tissues of which our earth is made. And very soon, in his first book, *The Modern Theory of Solids*, Seitz took up a role of combining understanding and discovery with ever helping others to learn. To this he has brought remarkable multi-dimensions. These are based on his own mastery and understanding of what it means to discover, to disclose, to peer into the realms of nature never before perceived, and then to combine that with leading a community. His research even helps to explain what Bernal meant in saying: "All that glisters may not be gold, but at least it contains free electrons!" Thus he extends the abilities of a few among many, whether in the National Academy of Sciences, the European NATO Community, the Guggenheim and Rockefeller Foundations, or the Carnegie-Mellon, the University of Illinois, and The Rockefeller University, as well as others. In a form rivaled only by Maxwell's demons, he has reduced the entropy of scientific and scholarly affairs—with corresponding gains in free energy. But we come back to why he has accomplished this. "Why"—that ever-pervasive query that animates science and activates people. So we think of why Fred Seitz, following distinguished achievements in pioneering the vast science of the solid state chose also to lead university departments, then the whole research effort at Illinois, next the national and world scientific community of the National Academy of Sciences, and ultimately to lead this University in its onward path to understanding and discovery? We assert this role of leading as well as doing comes from confidence in the abilities of humankind, and belief in the ideals of science and scholarship, and a liking and loyalty for faculties and friends. So for these, and a host of deeply personal reasons arising from decades of cherished association with him, I have the high honor to present Frederick Seitz for the degree of Doctor of Science *honoris causa.*

Here's Where They're Going

The University's graduates are off in new directions.

Of those who are members of the joint Rockefeller-Cornell University Medical College M.D.-Ph.D. program, **Carl Baker, Joseph McCune,** and **William Muller** begin their final year of medical training. **Nina Tabachnik**, who completed both degrees this year, starts a pediatric internship at Children's Hospital Medical Center, Boston.

Frank Greco and **Michel Nussenzweig,** who interrupted medical school for research at Rockefeller, return to Harvard and New York University respectively to earn their M.D. degrees. **Jack Ziffer** has entered the University of Miami Medical School.

Remaining at Rockefeller as postdocs are **Francis Barany**, who will go to Johns Hopkins early next year, **Rafael Mira y Lopez, Daniel Tranchina,** and **Peter Walter.**

David Albert has an appointment at Tel Aviv University in Israel, **Steven Anderson** has a Damon Runyon-Walter Winchell Cancer Fund fellowship at the National Cancer Institute in Bethesda, and **Margaret Kielian** has a research post at Yale Medical School. **Margaret McVey** and **James Parsons** have NATO fellowships, she to Oxford University in England and he to the Max Planck Institute in Göttingen, Germany.

Those who had already begun new posts earlier in the year are **Roger Karess,** at the Carnegie Institution of Washington in Maryland; **Valerie Reyna**, as an assistant professor at the University of Texas; **Mark Riemen**, at the University of California at Berkeley; and **Saul Stokar**, at the Weizmann Institute of Science in Israel.

Nottebohm to Direct Millbrook Center

Professor Fernando Nottebohm, a member of the animal behavior faculty since 1967, has been appointed director of the University's Field Research Center in Millbrook, New York, effective July 1. He succeeds Professor Peter R. Marler, director since the center's establishment in 1972, who now wishes to devote full time to research.

The Field Research Center, which recently held its second open house for the University community (see p. 9), provides a natural setting for a variety of animal behavior studies, complementing laboratory research at Millbrook and on the New York campus. Work in Millbrook has been led by Professor Donald R. Griffin, a major contributor to the understanding of animal orientation and migration, and by Drs. Marler and Nottebohm, both of whom are experts in the study of animal communication, particularly vocal learning in birds. In recent years, Dr. Nottebohm has become deeply involved in research on the neuronal and hormonal aspects of this phenomenon.

Council Hears About Cancer

Cancer: A Problem in Fundamental Biology was the subject of The Rockefeller University Council meeting, held June 10 in Caspary Auditorium.

President Lederberg, chairman of the President's Cancer Panel, introduced the program theme. Professor James E. Darnell, Jr., Molecular Cell Biology, discussed the ways that genes influence cancerous growth, and Professor William S. Hayward, Viral Oncology, described the role of viruses as cancer-causing agents. The appointment of two new council members was announced: Olavo E. Setubal, president, Banco Itau, Brazil, and Dr. Paolo Villares, president, Villares Group, Brazil.

1981-82 Concert Schedule

The Rockefeller University Concerts for 1981-82 will be presented in two series on Wednesday evenings at 8 in Caspary Auditorium, with the exception of Tuesday, December 15, Tuesday, January 26, and Thursday, February 25. The schedule is:

Series A: Andras Schiff, pianist (October 21); The Panocha String Quartet (November 18); I Solisti di Zagreb Chamber Orchestra (December 15); Janos Starker, cellist (January 26); The Kibbutz Chamber Orchestra (February 10); The Chamber Music Society of Lincoln Center (March 3); The Guarneri String Quartet (March 31); and Kathleen Battle, soprano (April 28).

Series B: The Tokyo String Quartet (October 28); Gold and Fizdale, duo pianists (November 11); The Branko Krsmanovitch Chorus (January 13); The Virtuosi di Roma Chamber Orchestra (February 25); Radu Lupu, pianist (March 10); Christian Altenburger, violinist (March 24); The Empire Brass Quintet (April 14); and The Emerson and Primavera String Quartets (March 12).

IN PRINT

An Imagined World, a new book by Senior Research Associate **June Goodfield,** Life Sciences and Public Policy Program, has been published by Harper & Row. The book presents a personal and compassionate view of the life of science and the processes of scientific discovery, based on five years that Dr. Goodfield spent in close association with a real-life immunologist whose identity has been kept anonymous. Highly praised by reviewers and members of the science community, the book has been chosen as a Book of the Month Club Alternate Selection and Science Book of the Month Club Main Selection.

Another recent publication by Dr. Goodfield is a 128-page monograph, *Reflections on Science and the Media,* commissioned by the American Association for the Advancement of Science. In it she examines and comments on the interactions and responsibilities of scientists, journalists, and the public in the dissemination of scientific information, using for her examples four "headline" science stories: thalidomide, recombinant DNA regulations, the "painted mouse" scandal, and the "cloned" human baby.

A greatly revised and enlarged edition of *The Question of Animal Awareness: Evolutionary Continuity of Mental Experience,* by Professor **Donald R. Griffin,** has been published by The Rockefeller University Press. The Press issued the first edition in 1976. The new book has been chosen as a Macmillan Science Book Club selection, and a paperback of the volume will be brought out in the fall by William Kaufmann, Inc. (*Animal Solar Systems,* published last year by Plenum Press, was dedicated to Dr. Griffin in honor of his 65th birthday.)

Estrogens and Brain Function by Professor **Donald W. Pfaff,** Neurobiology and Behavior, has been published by Springer-Verlag, New York. The book provides a neural analysis of the hormonally controlled reproductive behavior of the female rat.

Noguchi and His Patrons, a comprehensive biography of Hideyo Noguchi, who was associated with The Rockefeller from 1904 to 1928, has been published by Fairleigh Dickenson University Press. Author Isabel Plesset describes Noguchi's failures and triumphs as he rose from an impoverished farm family in a remote Japanese village to full membership in The Rockefeller Institute.

Brian Poole Dies

Associate Professor Brian H. Poole died of diabetic complications on May 17 in Oslo, at the age of 41. He was taken ill shortly after his arrival in Norway, where he was to lecture at the University of Oslo.

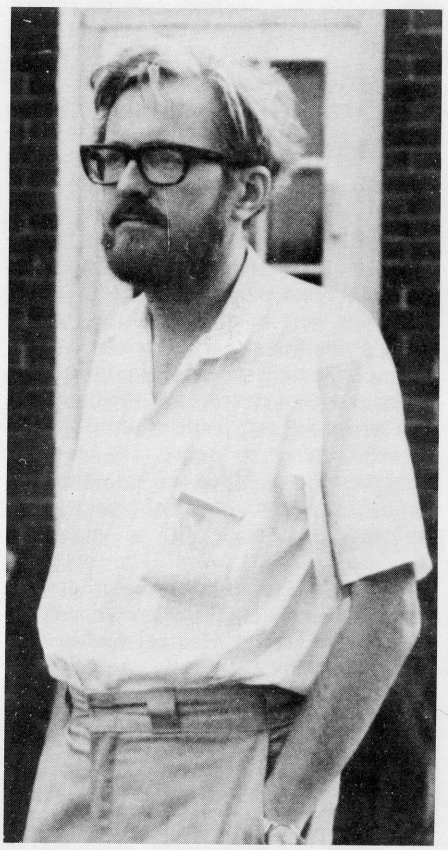
Dr. Poole came to The Rockefeller in 1963 as a graduate student and earned his Ph.D. in 1968 in the biochemical cytology laboratory of Professor Christian de Duve. He spent a year at the Free University of Brussels, Belgium as a postdoctoral fellow and then returned in 1969 as a research associate, later becoming an assistant professor and associate professor in Dr. de Duve's lab.

His research encompassed many aspects of the structural and functional organization of living cells. His recent work focused on lysosomes, subcellular organelles with widespread digestive functions. He did an extensive survey of compounds, including a number of important drugs, that exert their biological effects by acting on the lysosomes, in which they accumulate in large quantities.

"His numerous friends and colleagues will remember his acute intellect, broad range of interests, and versatile scientific abilities," says Dr. de Duve.

Dr. Poole is survived by his wife, Elizabeth Davidson-Poole, for several years a member of the laboratory of biochemical cytology, his parents and a brother.

A memorial service was held in Caspary Auditorium on May 27. Among the speakers who eulogized Dr. Poole for his special qualities as man and scientist were President Lederberg and Drs. de Duve, Miklós Müller, and William E. Bowers.



Brian Poole

Cheers for Leo Wachsmuth, second left, from former Faculty and Student Club officers E.G.D. Cohen, left, Mabel Bright, and George Uhlenbeck.

Here's Looking At You, Leo

There were laudatory and loving speeches from past and present officers of the Faculty and Students Club and a letter from David Rockefeller expressing "my personal appreciation and admiration." But it was Leo Wachsmuth himself who brought down the house at his retirement party on May 29. "As the great German philosopher Schopenhauer said," quoth Leo, "everything has an end, only the bratwurst has two."

Leonhard Wachsmuth opened the club 23 years ago with high hopes and no liquor license. The license came and the club prospered, largely, as everyone agrees, because of the Wachsmuth blend of superb management and good fellowship.

Although officially retired, Mr. Wachsmuth will continue at the club on a reduced schedule after he and Mrs. Wachsmuth return from vacation. In the meantime, he has asked *news and notes* to extend to all his friends on campus his deep appreciation for the "wonderful party and thoughtful gifts and don't forget Oktoberfest!"

Double Thanks to Dr. Brink

The contributions of Professor Frank Brink, Jr. to the science of biophysics and to the graduate education program of the University were honored on June 16.

Dr. Brink, who became emeritus this year, is an authority on the biophysics and biochemistry of neurons, particularly the ionic processes directly relevant to the cycle of excitation, response, and recovery in nerve fibers. Much of his scientific research was done in collaboration with the late Detlev Bronk, with whom he was associated for 40 years. They worked together at the Johnson Research Foundation of the University of Pennsylvania, at Cornell University Medical College, at Johns Hopkins University, and at The Rockefeller from 1953, when Dr. Bronk was appointed president. The collaboration extended to the creation and development of the University's graduate education program, which Dr. Brink headed from its inception in 1954 until 1972. He was named Detlev W. Bronk Professor in 1974.

On June 16, colleagues and friends, many of them Rockefeller alumni, gathered at the University for a lecture in Dr. Brink's honor. It was presented by Bertil Hille, class of 1967, professor of physiology and biophysics at the University of Washington, whose thesis research was done in the Brink lab. He spoke on Ions, Axons, and Excitability: 1940-1980.

At a reception which followed, the early days of the graduate program were recalled by, among others, Professor and Nobel laureate Gerald M. Edelman, class of 1960, Professor Robert M. Shapley, class of 1970, and Mabel Bright, now retired, who was for many years presidential administrative assistant and unofficial surrogate mother to the University's students.

Frank Brink, right, at the reception following the lecture in his honor. Among the tokens proferred, verbal and otherwise, a box of giant matches for him and Mrs. Brink (center) to keep their wood-burning stove as warm as their smile

HONORS & AWARDS

Dr. William O. Baker, chairman of the University's board of trustees and retired chairman of Bell Laboratories, has been selected as the second recipient of the National Science Board's Vannevar Bush Award for his contributions to scientific and technological welfare.

Professor **René J. Dubos** received an honorary doctor of science degree from Notre Dame University on May 16.

Professor **Hidesaburo Hanafusa,** Viral Oncology, received the Howard Taylor Ricketts Award of the University of Chicago Medical Center, presented May 19. He delivered the award lecture on Virus-Induced Cell Transformation: Expression of Cellular Genes.

Adjunct Professor **Brian F. Hoffman,** Cardiac Physiology, received the 1981 American College of Physicians Award for his contributions in science related to medicine, presented during opening ceremonies of the college's annual scientific meeting, held April 6 in Kansas City, Missouri.

President Lederberg received an honorary doctor of science degree from Rutgers University on May 21. At the same occasion, Rockefeller Trustee Philip Handler accepted an honorary doctor of science degree on behalf of Andrei Sakharov.

Professor **Maclyn McCarty,** Bacteriology and Immunology, was elected to the American Philosophical Society in April.

Adjunct Professor **Aaron J. Shatkin,** Roche Institute of Molecular Biology, was elected to membership in the National Academy of Sciences. Dr. Shatkin is a 1961 Rockefeller alumnus.

Maclyn McCarty, center, at lunch on the day of his celebration. To his right, facing the camera, Mrs. McCarty and John Zabriskie. To his left, Emil Gotschlich and Vincent Fischet

Appreciating Maclyn McCarty

In 1941, Maclyn McCarty, a young physician with a bent for bacteriology, joined The Rockefeller Institute for Medical Research as a National Research Council Fellow. Three years later, Oswald Avery, Colin MacLeod, and Maclyn McCarty published a paper on some pneumococcal studies that demonstrated for the first time that genes are made of DNA. The rest is history.

Dr. McCarty is a world authority on pneumococci, streptococci, and rheumatic fever. For many years, he and the late Rebecca C. Lancefield headed the University's laboratory of bacteriology and immunology. He was physician-in-chief of the Hospital from 1960 to 1974 and University vice president from 1965 to 1978. In 1977, he was named John D. Rockefeller Jr. Professor.

On June 2, his 40 years of prodigious service to this institution and to science were celebrated in a day-long symposium in Caspary Auditorium titled Maclyn McCarty: An Appreciation by His Friends and Colleagues. The speakers were: Adjunct Professor Richard M. Krause, director of the National Institute of Allergy and Infectious Diseases; Visiting Professor Lewis Wannamaker of the University of Minnesota; Dr. Dietmar Braun of Ciba-Geigy Research Laboratories; Dr. Darrel Liu of the Food and Drug Administration; and Professors Vincent A. Fischetti, Emil C. Gotschlich, Ivo van de Rijn, and John B. Zabriskie of the McCarty lab.

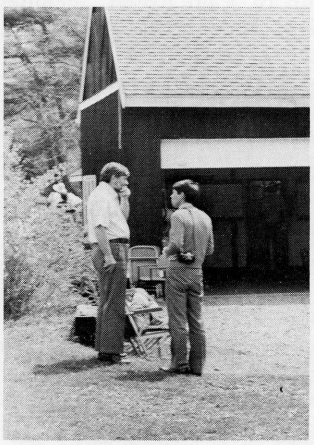
Scientists Honor Sakharov

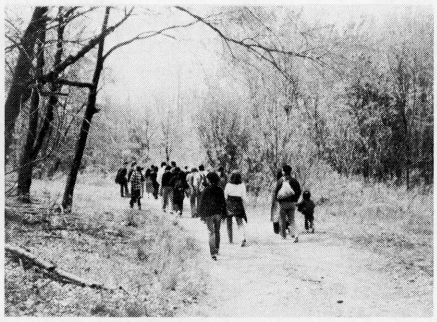
An international conference in honor of Andrei Sakharov, world-famed Soviet physicist and 1975 Nobel Peace Prize winner, was held at the University on May 1-2. It was sponsored by The New York Academy of Sciences, the American Institute of Physics, and the American Physical Society. Sakharov, who was 60 years old on May 21, has been confined to internal exile in the city of Gorky, in the Soviet Union, since January 1980, for his human rights activities in the USSR.

Professor Heinz Pagels, a member of the University's theoretical physics group and president of The New York Academy of Sciences, welcomed the participants and introduced Dr. Sidney Drell of Stanford University, conference chairman. The program was presented in three sessions: Andrei Sakharov's contributions to science, issues of war and peace, and human rights and justice.

Dr. Pagels, President Lederberg, and Professors Kenneth M. Case and Mark Kac were members of the international organizing committee.

Millbrook Open House





Members of the Rockefeller community visit the Field Research Center in Millbrook, New York on May 9, welcomed by Manager Alethea Michie, above, and Professors Peter Marler, in white shirt photo left, and Fernan Nottebohm, photo right. They found food and fun and guided glimpses i nature.

BRIEFS

Professor **James E. Darnell, Jr.**, Molecular Cell Biology, delivered the Christian A. Herter Lecture of the New York University School of Medicine on May 18. He spoke on What in 1981 Can We Anticipate About Mammalian Gene Control.

The René Dubos Center for Human Environments, named for and under the chairmanship of Professor **René J. Dubos,** has announced a series of state forums nationwide to focus on resource issues, under the sponsorship of the center and the Governor's Council of State Planning Agencies. The center also announced its first National Land Management Program, a Westchester "wood-for-fuel" project.

Professors **Donald R. Griffin** and **Peter R. Marler,** Animal Behavior, were moderators at the Dahlem Conference on Animal Mind-Human Mind, held March 22-27 in West Berlin. Professor **Robert Seyfarth** was a rapporteur and Research Associate **Carolyn A. Ristau** delivered a paper on Cognitive Aspects of the Ape Language Experiments.

Professor and Physician-in-Chief **Attallah Kappas** has been appointed by the National Research Council, Board on Toxicology and Environmental Health Hazards, to a committee that will review the health effects of certain environmental pollutants.

The University was one of six sponsors of the Second Regional Conference and Workshop on Women in Medicine, held April 10-12 at Rockefeller and at Cornell University Medical College. Among the participants were Senior Research Associate and Physician **Mary Jeanne Kreek** and **Barbara Ehrenreich,** a 1968 Rockefeller alumna. Dr. Kreek organized and chaired a workshop on Women in Research.

Reports of recent work by Professor **Bruce S. McEwen** and Graduate Fellow **Bruce Parsons** on progesterone, by Professors **Robert G. Lahita, H. Leon Bradlow, Henry G. Kunkel,** and **Jack Fishman** on estradiol and lupus, and by Research Associate **Jill Schneider** and Dr. Fishman on obesity and estrogen metabolism were presented at the 63rd Annual Meeting of the Endocrine Society, June 17-19 in Cincinnati.

Professors **Floyd Ratliff** and **Robert M. Shapley,** Biophysics, were speakers at The New York Academy of Sciences Conference on Evoked Potentials, held June 16-19 in New York. Dr. Ratliff also served on the advisory committee and as a session chairman.

Professor **Philip Siekevitz,** Cell Biology, was an invited participant at a meeting of the Advisory Committee to the Director of the NIH, held March 16-17 in Bethesda. The meeting was on government-industry-university relationships.

Dr. Siekevitz and Rockefeller Alumnus Lee Peachey, professor of biology, University of Pennsylvania, were the featured speakers at the Annual Forum of the Michigan Electron Microscopy Society, held May 7 in Detroit.

Sydney A. Woodd-Cahusac, Treasurer, has been elected to the Board of the Union Theological Seminary in New York.

Pacemaker Revisited

Professor Alexander Mauro, Biophysics, and Senior Research Associate Lawrence Eisenberg of the Electronics Laboratory were guest speakers in May at a Grand Rounds Presentation in celebration of the 20th anniversary of the opening of the Yale University School of Medicine's Clinical Research Unit. The initial project of the unit involved work with the first cardiac implant, developed by Dr. Mauro and Dr. Eisenberg in collaboration with Dr. W.W.L. Glenn of Yale.

Dr. Mauro's vacuum-tube radio frequency pacemaker had a receiver coil under the skin with a pair of wires running to the heart. A transmitter unit outside the body broadcast a signal that was picked up by the coil under the skin and converted to pulses that stimulated the heart muscle. Subsequently the unit was transistorized and thus made fully portable by the patient.

How the prototype pacemakers were developed and the basic principle extended to the stimulation of the phrenic nerve (which affects the functioning of the diaphragm) — a story that exemplifies the interaction of scientific and technological expertise at Rockefeller—was the subject of the talks by Drs. Mauro and Eisenberg at Yale.

Their first instruments can be seen in the display in Caspary Gallery, under the Auditorium.

Watch for "Landscapes of Hope," a film featuring Professor René J. Dubos, to be shown on public television in the fall.

Toxic Waste Meeting Held

On June 1-2, the Life Sciences and Public Policy Program convened its first forum, a Symposium on Assessment of Health Effects at Chemical Disposal Sites. President Lederberg and Program Director Dr. William W. Lowrance co-chaired the conference.

"The meeting catalyzed good-faith exchange among 75 widely differing experts and leaders from industry, government, special interest groups, medicine, academia, and the press," said Dr. Lowrance. "We believe the symposium helped develop a better sense of the complexion of the public issue and of the scientific uncertainties surrounding it."

The symposium discussed the nature and extent of waste-site pollution, technical strategies for analyzing chemicals in the environment, difficulties of demonstrating human health effects attributable to toxic waste, and options for research and policy making. Genetic, reproductive, and neurotoxicological analyses were given special attention. Proceedings will be published and distributed widely by fall.

APPOINTMENTS

D. Martin Carter, Investigative Dermatology, as professor, effective April 1.

Susan Schwartz-Giblin, Neurobiology and Behavior, as assistant professor, effective April 1.

Charles Shopsis, Laboratory Animal Research Center, and **Terry J. Smith,** Metabolism-Pharmacology, as assistant professors, effective May 1.

F. Aladar Bencsath, Mass Spectrometry and Gaseous Ionic Chemistry, as senior research associate, effective June 1.

Arthur K. Balin, Investigative Dermatology, as assistant professor, effective July 1.

Barry W. Peterson, professor of physiology, Northwestern University Medical School, as a member of the adjunct faculty, effective June 1.

Housing Committee Reports

Last November, an Ad Hoc Committee on Housing was formed by President Lederberg to consider a variety of options for dealing with the urgent need for additional living units for the University community. The 17-member group, under the chairmanship of Paul Rosen, includes representatives of the faculty, students, administration, and the Rockefeller University Faculty House Tenants' Association (RUFHTA). To aid in formulating their recommendations, they distributed a questionnaire to all academic personnel.

The committee's initial report, including the results of the questionnaire, was sent to Dr. Lederberg in January. Copies of the report and an April 14 memorandum from Treasurer Sydney A. Woodd-Cahusac on actions taken by the executive committee of the board of trustees in response to the committee's recommendations, are available at the circulation desk of the Library. Further reports of the committee's activities will be forthcoming.

An appropriate gift for Bonnie LoBue, who was supervisor of Media and Glassware before becoming radiation safety officer, presented at a farewell party in April. She has left the University after 17 years to turn her hobby, playing the bagpipes, into a business, The Bonnie Piper in Ridgefield Park, New Jersey, where she sells bagpipes and Celtic crafts.

In the playroom at Faculty House, recently redecorated by a group of tenant volunteers with the help of the building staff and Plant Operations.

PERSONALS

Editorial Assistant **Cheryl A. Platzman,** Public Information, was married on June 14 to David S. Weinstock, an attorney.

DEATHS

Mary J. McGee, 73, a member of the food services staff until her retirement in 1973, on April 26. Mrs. McGee came to Rockefeller in 1957 as a lunchroom waitress.

Winston H. Price, 58, an internationally known virologist and professor emeritus at Johns Hopkins University, on April 30. Dr. Price joined The Rockefeller in 1946 as a special investigator in general physiology and was an assistant from 1949 to 1951.

Sidney Rothbard, 73, professor emeritus at Cornell Medical College, who was a microbiologist and physician at the Rockefeller Hospital from 1941 to 1948, on June 17. (His son, Jonathan Rothbard, is a postdoctoral fellow at the University.)

Barbara Ward, 67, famed British economist and writer and member of the Rockefeller University Council from 1973 to 1978, on May 31.

PROMOTIONS

Nam-Hai Chua, Plant Molecular Biology, and **Bruce S. McEwen,** Neuroendocrinology, to professors, effective July 1.

Edward M. Johnson, Cell Biology, to associate professor, effective May 1.

Sidney Strickland, Chemical Biology, to associate professor, effective June 1.

Donald M. McNamara, Cholesterol Metabolism, to associate professor, effective July 1.

Timothy J. DeVoogd, Animal Behavior, to assistant professor, effective April 1.

Thomas J. Dougherty, Microbiology, and **Peter Streit,** Developmental and Molecular Biology, to assistant professors, effective May 1.

Stanley R. Hoffman, Developmental and Molecular Biology, and **Angela G. Piperno,** Chemical Biology, to assistant professors, effective July 1.

Roger Rusack, Experimental High-Energy Physics, to senior research associate, effective July 1.