

RF ILLUSTRATED

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THE ROCKEFELLER FOUNDATION, 111 WEST 50TH STREET, NEW YORK, NEW YORK 10020

THE WELLBEING OF MANKIND THROUGHOUT THE WORLD

THE 29: NEW GROUP AIDS AGRISearch

The future of hundreds of millions of the world's poor has been brightened by a recent, little publicized event: the organization of the International Consultative Group for Agricultural Research.

The Consultative Group is a unique consortium of international banks, assistance agencies, governments and private foundations. This year alone it has raised over \$15 million for the 1972 operations of four international agricultural research and training centers that were originally established by the Ford and Rockefeller Foundations. For 1973 it hopes to marshal some \$23 million for expanded activities of these four institutes and for the creation of two new ones. The major objective of the Consultative Group, and of the international centers it finances, is to assist the poorer nations to rapidly increase output of basic food crops both to meet the food needs of growing populations and to speed the economic development that is needed if the living standards of both rural and urban people are to be improved.

Among the centers being supported are:

The International Rice Research Institute (IRRI) founded in 1960 in the Philippines by the Ford and Rockefeller Foundations in cooperation with the government of the Philippines. This institute over the past decade has produced the widely heralded "miracle" rice varieties and their related technology. It has trained hundreds of Asian scientists and technicians and has provided direct technical assistance to national research and development organizations in most of the rice-growing nations of tropical Asia.

The International Maize and Wheat Improvement Center (CIMMYT, from its name in Spanish) established by the Rockefeller Foundation and the Government of Mexico in 1966. From CIMMYT, and from the earlier Rockefeller Foundation-Mexico cooperative agricultural program, have come the high-yielding dwarf wheats now in worldwide usage. CIMMYT also has significant work underway internationally in corn improvement. The center's work in wheat is directed by the Rockefeller Foundation's Dr. Norman E. Borlaug, the recipient of the 1970 Nobel Peace Prize.

The International Institute of Tropical Agriculture (IITA) in Nigeria, established in 1967 by the Ford and Rockefeller Foundations in cooperation with the government of that country. It serves particularly the low, humid areas of Africa, concentrating its work on cowpeas and other legumes, the long-neglected root crops, corn, rice and tropical cropping systems.



World Bank's McNamara

RF's Wortman

The International Center for Tropical Agriculture (CIAT, from its name in Spanish) near Cali, Colombia. Established in 1967 by the Ford and Rockefeller Foundations and the government of Colombia. CIAT is attempting to speed the agricultural development of the humid tropics, especially in the Americas, for human benefit. It concentrates particularly on beef-production systems and on improved production of cassava, field beans and other important crops.

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) at Hyderabad, India. This new institute will be concerned with the improvement of four crops especially important to farmers in the low-rain-fall areas of Asia—sorghum, millets, chick-peas and pigeon peas. It was established in mid-1972 by the World Bank and UNDP in cooperation with the government of India. It was organized for the Consultative Group by the Ford Foundation and is based on an original design by the Rockefeller Foundation's Dr. Clarence Gray.

The International Potato Center (CIP) in Peru. Organized initially by USAID and the North Carolina State University in cooperation with the government of Peru, this center seeks to intensify production of the white potato, a staple food of people in high elevations in the Andes and in many other regions of the world.

The Consultative Group membership comprises the three sponsors (World Bank, UNDP, FAO) the Inter-American Development Bank, the Asian Development Bank, the African Development Bank, the European Fund for Economic Development (FED), and the governments of 13 nations: Australia, Belgium, Canada, Denmark, Federal Republic of Germany, France, Japan, Netherlands, Norway, Sweden, Switzerland, United Kingdom and the United States. Also members are the International Development Research Center of Canada, the Kellogg Foundation, the Ford Foundation and the Rockefeller Foundation. Representatives of each of five developing regions of the world participate in Group meetings. It is hoped that additional nations, agencies and foundations will choose to join the worldwide effort.

According to Dr. Sterling Wortman of the Rockefeller Foundation, the creation of this network of activities may be the greatest single advance in international cooperation in agriculture of this century, and certainly it is the most significant recent one. It will bring to bear, if successful, the speedy application of scientific advances wherever they occur on problems of farming, whatever and wherever they may be. Dr. Wortman gives particular credit to Dr. J. George Harrar, former president of the Rockefeller Foundation and to Dr. F. F. Hill of the Ford Foundation for the concept of the institutes, and to the World Bank and its president, Robert McNamara, for having had the vision to find the way, in cooperation with other sponsors, to marshal the funds so urgently needed for international research.



RF PROGRAM REVIEWS UNDERWAY

During the past six months, under the leadership of a new president, John H. Knowles, M.D., officers and staff have searched for answers to two deceptively simple questions:

- What are the great needs of our times, toward whose solutions private initiative could make a decisive contribution?
- Given an inflationary trend, how could the RF compound its influence above and beyond its grant-making capacity?

As a first step, Dr. Knowles has organized the staff into 17 Ad Hoc Committees. Their mandates range from examining the position of women and young people in America to arriving at an "integrated approach to defined populations" in the less-developed countries—from analyzing the potential value of war and peace studies, to structuring a means for evaluating the effectiveness of RF grants and programs. Similar groups are examining the RF's current programs, concerned about possibly redefining their broad goals, and also about the relationships between potential benefits and inherent costs.

In their deliberations, the Committees have been assisted by distinguished men and women from outside the RF. Humanists such as Hannah Arendt, Paul Freund and Hans Morgenthau, men with great experience in public administration such as McGeorge Bundy, Don Price and Francis Fisher have met with the Committees. For the environmental sciences, Dr. Philip Johnson, Division Director at the National Science Foundation, Dr. Norton Nelson, Director of the Institute of Environmental Medi-

(continued to page five)



A New President: John H. Knowles, M.D.

During the six months that John Knowles has presided over the RF he has raised more questions than he has provided answers. (See left.) But from his first day he has set a style that is likely to characterize his administration—and very possibly the influence of the RF on changing times. A restless, probing, passionate intensity, a compulsive appetite for work, a constructive dissatisfaction with life as it is compared with life as it could be—this leavened by a self-mocking sense of humor—appear to be the characteristics of the eighth president of The Rockefeller Foundation.

Dr. Knowles came to the RF from the Massachusetts General Hospital, where in ten years he had risen from intern to General Director—at 35 the youngest in the institution's 150-year history. During the following decade he made what was already one of the world's best teaching and patient-care hospitals ever better, and increased annual donations sixteenfold by turning the hospital into one of Boston's most visible institutions. In the process, he captured the imagination of people everywhere.

"Often controversial, never w-shy-washy and certainly never dull, he has fought for his ideas and deals with a ferocity and fearlessness that has sometimes angered opponents," MGH News editorialized on his departure for the RF. "His very intensity and determined refusal to back off from what he considers a just cause have often won the war after losing the battle."

John Knowles was born in Chicago, but

his roots are in New England. At school and college (Belmont Hill and Harvard '47) he exercised his self-assertiveness through competitive sports (baseball, hockey, squash) and his sociability by playing the piano at the old Imperial Hotel in Boston's seedy Scollay Square. The result of that much high spirits and low life was that Knowles was accepted by only one of the 12 medical schools to which he applied. But he had learned his lesson: he graduated from Washington University Medical School at the top of his class and was selected as one of the few "outsiders" to intern at the Massachusetts General Hospital.

What brought Dr. Knowles from Boston to the RF is his evangelical belief in voluntarism. "One of the great disjunctions of the times we live in," says Knowles, "is now we are going to keep the idea in the heads of individuals that they, individually, are going to make a difference in an increasingly complex and interdependent world. As the press toward equalization occurs with the steady expansion of the beneficent state, how can we, as individuals, make a difference?" Dr. Knowles's record, for instance in his battles with the AMA, prove him to be a strong advocate of a far more equitable distribution of all essential services. But, warns Knowles, "We hand over the sole resolution of social problems to government at our peril. We can end up with a beneficent welfare state, but also with the hazards of its inevitable expansion—a supine citizenry, an overweening bureaucracy, an erosion of individual initiative."

What is RF Illustrated?

The decade of the 1960's saw the values and moral commitment of essentially all American institutions and establishments challenged. American philanthropy and its institutional form, the foundation, was not spared its full share of criticism, which culminated in the Tax Reform Act of 1969. The most startling revelation during the Congressional inquiry was the widespread lack of public knowledge and understanding of the unique role that American foundations have played in the resolution of scientific and social problems and the significant contributions they have made to social melioration.

With this first issue of a new publication, we of The Rockefeller Foundation are seeking to explain what we do, and why we do it. We sincerely hope that you, the American people, will respond with constructive criticism as to how we can do better. We exist because you, through your elected representatives and their formulation of our tax laws, have in essence said that private philanthropy, voluntarism, and the foundations are unique instruments for the social good—and perform important functions which Government alone cannot accomplish. We know we can do better and we count on you to help us. This first issue is being sent to over 100,000 Americans in all walks of life; in addition, RF Illustrated will

be distributed abroad, in both the less developed and the highly developed countries. Subsequent issues will be published quarterly. By modifying our routine publications, we shall reduce our costs even as we hope to gain more knowledge of and enthusiasm for our activities.

Last year alone, our support went to individuals and groups in 44 states and to 36 developing nations in Latin America, Africa and Asia. Domestic and international activities are both important, for there will be a single future for the world—or none at all.

Please write and send us your questions and suggestions. Every letter will be answered.

J. H. K.

GOOD GUYS

NED COLL On an August day in 1971, a school bus filled with dozens of black children and one white man pulled up to a private community beach in Connecticut. The children were from a Hartford ghetto. The man, 32-year-old Ned Coll, was the founder and director of Hartford's "Revitalization Corps"—a volunteer organization based loosely on President Kennedy's Peace Corps.

Ned Coll and the kids were staging a "beach-in." What happens when uninvited children appear on a private beach? First, the beach policeman arrived and explained that the beach was private property: the children had to leave. Ned Coll argued; hostile townspeople, who called it an invasion, argued back. Somebody phoned the state police; a squad car and two troopers drove up and ordered everybody back on the bus. It seemed that the beach-in was over.

But as the disappointed children picked up their brown paper bags of lunch and got ready to go home, something unexpected happened. A lady from the community walked over, presented her beach pass, and announced to the assembled policemen and townspeople that the children were her guests for the day. "I can't understand this fear," the lady said. "I think it will do the kids down here good to meet some of these children."

The black kids got back off the bus. It was the kind of "unpredictable" event that Ned Coll has learned to predict: his kind of confrontation is structured to bring out the best in people.

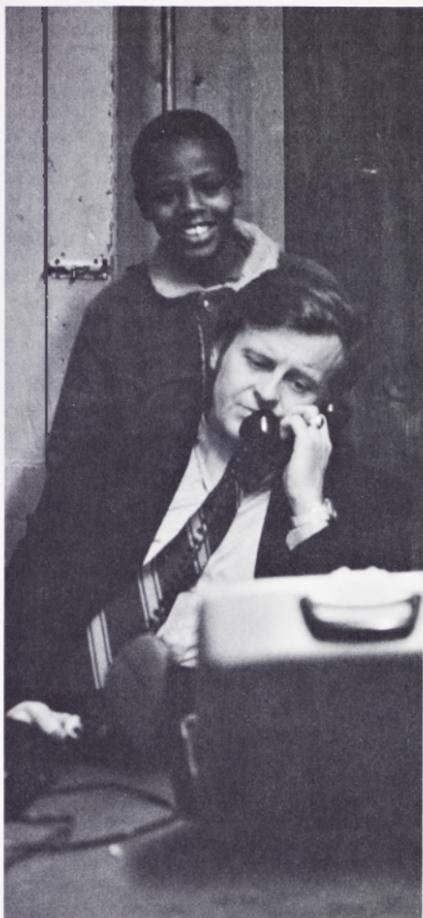
Some of the things that can happen, of course, are ugly. Coll has been called every name in the language; twice he was nearly killed.

But Coll believes there is a tremendous force for good in America that remains virtually untapped. "The present political leadership of both parties is asking too little of the American people," he said recently. "We're much better than we think we are in this country if we're challenged." He points to the various kinds of people who are willing to help: they include everyone "from the longhairs to the hardhats, from the conservative bishop to the liberal nun."

The Revitalization Corps began in 1963, after the death of President Kennedy. Coll wanted to do something as a memorial to the President, and he kept thinking about Kennedy's famous admonition: "Ask not what your country can do for you—ask what you can do for your country." A few months after the assassination he quit his job with a Hartford Insurance Company, rented a storefront office, and placed an ad in a Hartford newspaper that read: "Volunteers to serve in local-style peace corps type program. All ages. Serve three hours a week. Project dedicated to J.F.K." Pretty soon his phone started ringing; volunteers began calling and signing up.

The Corps began operations traditionally enough with a school-based tutoring program for ghetto youngsters. Later, tutors moved from the schools to the children's homes—where most teachers never visited—and the name of the program became "Operation Bridge." Because just as important as helping kids with their schoolwork—as Coll says over and over—is building a bridge of communication between people who mistrust and fear each other.

It is a tribute to Coll's organizational ability that there is now an Operation Bridge in several other cities besides Hartford. And it is a further indication of the



vitality of the program, and the energy and dedication of its staff, that over a thousand tutors were recruited in a one-week marathon last fall by twenty staff members who visited schools, knocked on doors, and stood on street corners buttonholing the passersby. Among those who signed up were: 150 Catholic high-school students, twenty young men and women from a singles bar in West Hartford, four nuns, and an unsuccessful candidate for City Council.

The Rockefeller Foundation appropriated \$150,000 to the Revitalization Corps last year, specifically for Operation Bridge. As one officer remarked, "the root of the problem may not be so much racism as inertia in middle-class America."

Coll has an instinctive flair for publicity—which is vital to a community-based organization like the Corps. He likes to talk to reporters; more important, reporters like to talk to him—his good copy. Last winter, Coll entered the Massachusetts and New Hampshire presidential primaries, even though he was three years younger than the constitutional age requirement of 35. He did it, he said, to "bring attention to the war in America"—the war between blue-collar and white-collar workers, between young and old, between black and white. After he appeared a few times on national television, inquiries about the Revitalization Corps came pouring in. "Personally," Coll wrote to a friend, "I found it to be a grueling experience but it did open doors."

JOE PAPP It's been quite a year for Joe Papp. This spring he received an unprecedented two Tony awards for productions of his Public Theater that went on to Broadway: *Two Gentlemen of Verona* was voted the best musical and *Sticks and Bones* the best play of the 1971 season. In August he signed a contract with CBS to produce thirteen full-length plays—classical and contemporary—for prime-time television. And all year long the critics have pronounced Papp's theater to be among the best in America and Joe himself a very good fellow. It was not always thus.

Papp is a tough, brilliant producer who talks like a New York cabbie and loves a good fight just as much as a good play. The son of a Brooklyn pushcart peddler, Papp absorbed high culture through the city's free libraries and free concerts—the reason for his continued insistence on free or low-cost admissions to his plays. Neither Shakespeare nor classical music, however, softened a personality so deliberately abrasive that the culture establishment has still not completely forgiven him: he has hurled too many slings and arrows at its soft underbelly over the years.

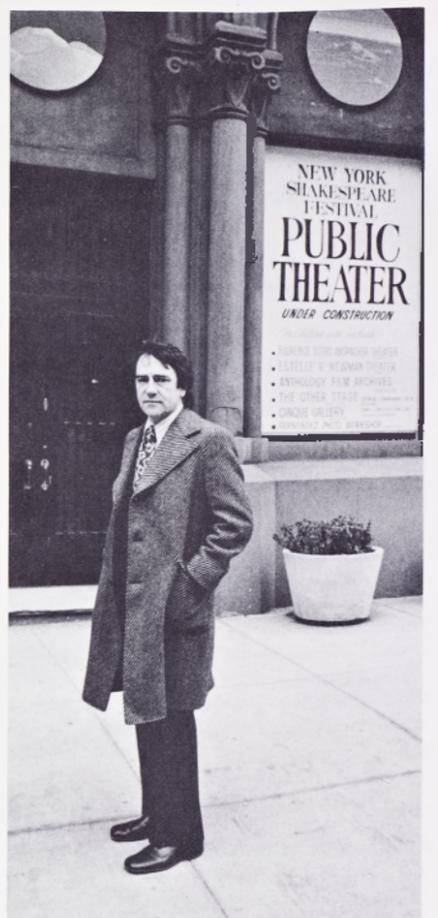
In an early dust-up back in 1959, for instance, Papp did not hesitate to take on New York—in the person of Robert Moses, redoubtable commissioner of parks. For a few years Papp had been producing free Shakespeare in Central Park—the beginning of his famous Shakespeare in the Park series; in the summer of '59 Commissioner Moses decided to insist that he charge admission. The reason—Papp's audiences did not keep off the grass. Newspapers ran lengthy articles about the controversy, political figures took sides, and Shakespeare lovers sent Moses bags of grass seed. Eventually an appellate court ruled in favor of free theater, and Joe Papp's name was a household word in Manhattan.

Shakespeare in the Park had its nineteenth season this summer; its productions have been consistently excellent, and some performances (George C. Scott's *Shylock*, James Earl Jones's *Othello*) have made theater history.

In the past five years, Joe Papp—who is still closely associated with free Shakespeare—has turned to the other end of the theatrical spectrum. His Public Theater in New York's East Greenwich Village concentrates on unknown playwrights and experimental productions—radical, contemporary, it looks to the future instead of the past.

Bold experimentation could hardly have a more unlikely setting. The Public Theater is an ornate and massive edifice that looks like a library—in fact *was* a library when it was first built over a hundred years ago. In 1966 Papp bought the building and made over the interior into four separate theaters: a modified arena stage and a more conventional proscenium stage, plus a small, hundred-seat theater and a large multi-purpose hall. (Across the street is another small theater, the Annex.)

The Public Theater is, in fact, a very mixed and racy combination of people and ideas. Besides plays there are jazz and classical music concerts—alongside the theaters is an art gallery and a photography workshop. The Public Theater's Anthology Film Archives contain classics that range from the work of film geniuses like Renoir and Cocteau up to the avant-garde experiments of Andy Warhol and Stan Brakhage. As associate producer Bernard Gersten has pointed out, this place is an



"organization" similar to the great European theater organizations like the Moscow Art Theater or the Comédie Française.

The Rockefeller Foundation was involved very early in the life of the Public Theater. In 1968 Papp was given a small grant to mount four experimental productions; a year later this was followed by a major grant of \$400,000 for the production of experimental plays. Most recently, in April of this year, the RF voted Papp another \$480,000; the grants add up to more support for Papp than any other foundation has given him.

This most recent grant will help Papp develop an idea that he and other theater people have thought about and talked about for years: a national theater network. What Papp has in mind is a string of theaters, eventually to be subsidized by the government, which would exchange plays, directors, designers, and actors—giving wide exposure to good plays and minimizing some of the risks of commercial touring.

And he believes, too, in the interaction of people with each other. Musing on the general hostility to policemen in New York City, he talks about forming an enormous police chorus, to see whether it would have a softening effect.

"I want to reach the broad spectrum of America. The blue-collar audience has been snobbed-out. The middle class is conservative, and you can't change it overnight, but people are reachable. I'm against polarization."

PADRE MAEDA El Salvador is a small country—mostly hills and mountains. Its good farmland, owned by a few big operators, is limited mainly to a coastal strip planted in cotton, sugar cane, and coffee. The small farmers work the hills—land so steep that it has to be planted with a stick.

In 1955, Padre José Romeo Maeda was a rural priest in the tiny farming village of Tamanique—a village very like the one in which he had been born. He had known these poor and isolated communities from childhood—and he intimately knew the farmers who eked out a living there. That year, Padre Maeda traveled to Panama to a Catholic conference on rural life: there he met Father L. G. Ligutti of the United States, now Apostolic Delegate to the Food and Agriculture Organization. They talked at length about ways to help small farmers; specifically, they discussed cooperatives.

When Padre Maeda came back to Tamanique he called a meeting of forty farmers, and organized the first agricultural-credit cooperative in El Salvador.

The men, like most of El Salvador's peasant farmers, were destitute. They worked small plots of three to six acres, thinly planted to maize—land that was often unable to provide them with food for more than a few months out of the year. Entire families often left their homes after the maize crop was harvested in November to pick cotton or coffee on the large plantations.

To these campesinos—men with very little margin and a great deal to lose—Padre Maeda explained that they must pool their savings; that they must learn to work as a group in order to obtain a little leverage, a little flexibility. "You've got to help yourselves," he told them. "Nobody else is going to watch out for you. And you can't do it unless you organize." Poor as they were, the farmers scraped together an average of \$7 apiece.

The cooperative functioned like a bank. Each depositor was paid 4 percent interest; the money was lent at somewhat higher rates; after awhile, additional cooperatives were formed in the neighboring villages. Padre Maeda left El Salvador to study cooperatives in Canada and Puerto Rico. When he returned, he realized that agricultural credit was not enough.

To improve their lives in any substantial way, farmers had to increase their output—in other words, they had to produce a greater quantity of maize on their tiny parcels of land. First, their families needed the food; second, the farmers had to have something left over to sell—to earn a little money.

Padre Maeda, for all his experience, is not a trained agricultural scientist; in 1962 he was very lucky to meet just the right man for this next part of the job. Jesus Merino Argueta was a native Salvadoran Indian and a maize breeder for the Ministry of Agriculture. He had developed three excellent hybrids, well suited to El Salvador—but he had no way of getting the isolated farmers to use them. Padre Maeda had organizations to reach at least some of the farmers,



but no seed to give them. The two men became an enthusiastic—and formidable—team.

By 1963, there were 22 cooperatives in El Salvador, serving the double purpose of spreading new technology and providing agricultural credit. Maeda gave up his pastoral duties—though the Church paid his and his secretary's salaries for three more years—and formed a federation of the cooperatives known as the Fundación Promotora de Cooperativas. Then he opened an office

in San Salvador and began vigorously promoting cooperatives full time. Argueta, who was still working for the government at the time, traveled with Maeda on weekends, telling farmers about the new varieties of maize—how they could get some of the seed, how they would have to fertilize the crop, and what yield they could expect if they followed instructions. The returns he promised seemed incredible.

Sometimes it took six months to a year to convince the farmers that there was not some ulterior motive behind the cooperative, even when the idea was presented by a priest and by a plant breeder who was obviously an Indian like themselves. In one neighborhood, the men were told not to come back. (They did go back, however, and managed to organize two new cooperatives in the area.)

Today, many of the small farmers are producing 70 to 80 bushels of maize per acre, and sometimes 100 bushels—a long leap forward from a few years ago, when 11 to 14 bushels was the norm. And more than 12,000 farmers now belong to the agricultural groups—in nearly every state in El Salvador.

Once the difficult beginnings were over, possibilities multiplied. The Fundación began producing and selling fertilizer, seed, and animal feed; it built a feed-mixing plant and sold feed at reduced prices to cooperative members. Money began to come in from outside El Salvador—from Catholic organizations in Germany, Belgium, Holland, and the United States.

In 1969, with some local help and a small grant from Misereor, a group of Catholic bishops in Germany, Maeda bought an old hacienda, about three hours away from San Salvador. The hacienda has been turned into a seed farm; under Argueta's direction it produces certified hybrid corn, bean and rice seed, which is made available specifically to small farmers. A river that runs beside the farm can eventually be used to irrigate it and then the land can produce an extra crop each year. The seed farm seems to be the Fundación's brightest financial hope.

In another part of the hacienda there are several classrooms. Maeda has established a small school of agriculture here on the seed farm for young men who—after a short training program—return to their villages to work in their local cooperatives. The Rockefeller Foundation provided \$90,000 in 1969 to help support the agriculture school and followed it up in 1972 with another grant of \$150,000—for further development of the seed farm and expansion of the agricultural training program; among other things, Maeda wants to include courses for women in sanitation, nutrition, home keeping, family health, and infant care.

What has happened here, under Maeda's direction, is astonishing; what is most astonishing is that it has been achieved by farmers considered too hopeless for commercial credit or official attention, on land too poor for anyone else to covet.

Trustees

The twenty men and one woman shown below are responsible for the management of The Rockefeller Foundation to which they bring a great fund of varied experiences and interests. Although the day-to-day operations of the Foundation are delegated to the President and other officers, every expenditure of more than \$25,000 must have Trustee approval.



W. MICHAEL BLUMENTHAL, an economist who served as Deputy Assistant Secretary of State for Economic Affairs in the Kennedy administration, is President and chief operating officer of the Bendix Corporation. Mr. Blumenthal has wide experience in foreign aid and economic development. He also was chairman of the U.S. delegation to the Kennedy round of trade negotiations.



JOHN S. DICKEY, senior trustee, is President emeritus of Dartmouth College. A noted educator, lawyer, and statesman, Dr. Dickey was the first director of the State Department's Office of Public Affairs. He is an authority on Canadian-American relations, and holds honorary degrees from more than 15 universities and colleges, including Harvard and Columbia Universities.



ROBERT H. EBERT, physician and educator, is dean of the Harvard Medical School and President of the Harvard Medical Center. A trustee of the Population Council, he served as a member of the Presidential Advisory Commission on Health Manpower from 1966 to 1967. He is a Rhodes Scholar; in 1968 he received the University of Chicago's Alumni Achievement medal.



ROBERT F. GOHEEN is the first full-time Chairman of the Council on Foundations, a membership organization that offers professional assistance to large and small foundations. He was previously President of Princeton University for 15 years. A classics scholar, he is interested in the development of higher education and is on the board of the Woodrow Wilson Foundation.



CLIFFORD M. HARDIN, former Secretary of Agriculture under President Nixon, is now vice-chairman of the board of Ralston Purina Company. He was Chancellor of the University of Nebraska from 1954 to 1969. An economist, he has been an enthusiastic and informed advocate of agricultural development; he edited *Overcoming World Hunger*, which was published in 1968.



BEN W. HEINEMAN, President of Northwest Industries, has been active for many years in efforts to provide equal opportunities in housing, education, and welfare to all citizens. A former chairman of the Illinois Board of Higher Education, he chaired the 1969 Presidential Commission on Income Maintenance Programs and in 1971 received the Roger Baldwin Award in civil rights.



THE REV. THEODORE M. HESBURGH became President of the University of Notre Dame at the then almost unprecedented age of 35. One of the country's most eloquent and incisive spokesmen for racial integration and equality, he has been Chairman of the U.S. Commission on Civil Rights since 1969. In 1964 Father Hesburgh received the U.S. Medal of Freedom.



VERNON E. JORDAN, JR., former director of the United Negro College Fund, became head of the National Urban League in 1971. A lawyer and civil rights activist, he at one time headed the Voter Education Project of the Southern Regional Council. Mr. Jordan is also a member of the board of the Foundation Center and is a director of the Celanese Corporation.



CLARK KERR, who was the twelfth president of the University of California, Berkeley, currently heads the Carnegie Commission on Higher Education. He is the author of *The Uses of the University and Labor and Management in Industrial Society*. Dr. Kerr is also an expert in economics and industrial relations, having served as an arbitrator in major labor disputes.



JOHN H. KNOWLES, M.D., is President of The Rockefeller Foundation. One of the nation's outstanding medical clinicians, educators, and administrators, he believes that the post-industrial world cannot survive without standards and values based on humanistic ideals. He is the recipient of honorary degrees from several universities, including Boston University and the University of Pennsylvania.

DOUGLAS DILLON is Chairman of the Board of Trustees. Mr. Dillon is an investment banker who was Secretary of the Treasury under Presidents Kennedy and Johnson and Undersecretary of State in President Eisenhower's administration. He maintains an active interest in university and international affairs as well as the arts; he is President of the Metropolitan Museum of Art.



MATHILDE KRIM, an associate at the Sloan-Kettering Memorial Institute for Cancer Research, is also noted for her support of civil rights and the arts. A life member of the NAACP, she is also a director of the Urban League. She recently served on the President's Committee on Mental Retardation, and is a member of the National Endowment for the Humanities and the N.Y. Academy of Sciences.



BILL MOYERS, writer and journalist, currently anchors a weekly news analysis show for National Educational Television and is a member of the editorial board of WNET. Mr. Moyers, author of the best-selling *Listening to America*, is a director of the Council on Foreign Relations and a member of the board of overseers of the John F. Kennedy School of Government at Harvard.



JOHN D. ROCKEFELLER IV, Secretary of State of West Virginia, served as a specialist in Far Eastern affairs with the U.S. State Department before coming to West Virginia in 1964. Mr. Rockefeller is particularly concerned with the increasingly crucial problems of rural development—education, income, and health care—affecting this nation and all the less-developed world.



ROBERT V. ROOSA, an economist, is a general partner in the investment banking firm of Brown Brothers, Harriman & Co. Undersecretary of the Treasury from 1961 to 1964, he is also a former vice-president of the Federal Reserve Bank of New York. Mr. Roosa has authored several books on monetary reform and is a director of the National Bureau of Economic Research.



NEVIN S. SCRIMSHAW, M.D., heads the Department of Nutrition and Food Science at the Massachusetts Institute of Technology. As director of the Institute for Nutrition of Central America and Panama (1949-1961) he developed the formula for Inoparina, a high-protein food supplement. He recently received the first Killian faculty achievement award from MIT.



FREDERICK SEITZ, noted physicist and a former President of the National Academy of Sciences, is President of the Rockefeller University. A recipient of the Distinguished Service Medal of the U.S. Department of Defense and the medal of the Franklin Institute, Philadelphia, he holds honorary degrees from several U.S. universities and is the author of two physics texts.



FRANK STANTON, vice chairman of the Columbia Broadcasting System, holds the Ph.D. in industrial psychology from Ohio State University. An outspoken participant in public issues, Dr. Stanton has been chairman of the U.S. Advisory Commission on Information since 1964. At present he is a trustee of the Rand Corporation and a director of Lincoln Center.



MAURICE F. STRONG, Secretary-General of the 1972 U.N. Conference on Human Environment, is a former head of the Canadian International Development Agency. In addition to years of leadership in business and foreign affairs, he has held a professorship at Canada's York University and claims the distinction of speaking fluent Eskimo. He has been honored by several universities.



CYRUS R. VANCE, a partner in the law firm of Simpson, Thatcher, and Bartlett, has had an important career in government service, notably as Deputy Secretary of Defense, as a negotiator at the Paris peace talks, and as the President's special envoy to crisis areas. In 1969 Mr. Vance was awarded the U.S. Medal of Freedom. He is a trustee of Yale University and the Urban Institute.



CLIFTON R. WHARTON, JR., an economist by training, is President of Michigan State University. He brings to the Board firsthand experience in furthering Third World development as well as a deep interest in the humanistic development of all mankind. He is editor of *Subsistence Agriculture and Economic Development* and is a trustee of the Museum of Modern Art.



Saul David Alinsky

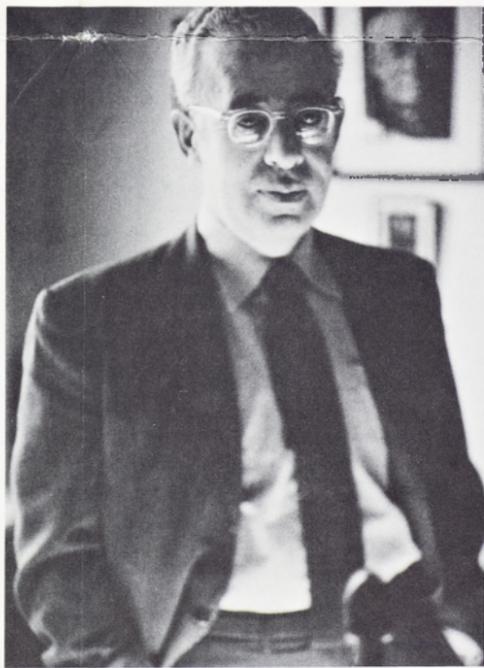
One might say he did not shun controversy. Saul Alinsky, who died suddenly in June at the age of 63, was a community organizer, a man who invented his own job and perfected it over forty years. As a young man, he was machine-gunned in Chicago and jailed in Kansas City; throughout his life, he was denounced as a professional troublemaker from coast to coast.

In fact, extreme reaction—pro or con—was something Alinsky consciously sought. "Conflict," he once said, "is the vital core of an open society: if you were going to express democracy in a musical score, your major theme would be the harmony of dissonance. You'll find consensus only in a totalitarian state."

Saul David Alinsky was born of Jewish immigrant parents in a turn-of-the-century Chicago slum. "We lived," he said, "on the wrong side of the wrong side of the tracks, about as far down as you could go." In the twenties, he worked his way through the University of Chicago and later became an organizer for the new and struggling C.I.O. But Alinsky always felt that his own role lay outside the labor movement. "What I wanted to try to do was apply the organizing techniques I'd mastered to the worst slums and ghettos, so that the most oppressed and exploited elements in the country could take control of their own communities and their own destinies."

In 1938, Alinsky began to build a community organization in one of the country's worst slums—the Back of the Yards district, behind the Chicago stockyards. Children born there, it was said, got used to a stench so terrible that if they were taken out to the country to play in the fresh air they promptly got sick.

The neighborhood—of Poles, Slovaks, Germans, Mexicans, Irish—was 95 percent Roman Catholic. Alinsky explained to local priests that they had better do something about living conditions if they wanted to keep their parishioners out of Communist-dominated organizations. And the priests agreed. "Within a few months," Alinsky recalled, "we were holding our organizational meetings in churches." He went on: "We showed the workers in the meat-packing houses how they could organize a union, and we showed the local merchants that higher wages would increase their profits, and we showed the exploited tenants how they could fight back against their landlords. Finally the concessions began trickling in—reduced rents, public housing, more and better municipal services, school improvements, more equitable mortgages and bank



loans, fairer food prices."

Radical as his sounds, it was really in the best American tradition. Alinsky, for all his baiting of the establishment, was an old-fashioned believer in hard work, cooperation and the value of the individual.

"Power," he said, "has always derived from two main sources, money and people. Lacking money, the have-nots must build power from their own flesh and blood."

Today, the Back of the Yards Council that Alinsky organized is still operating; the community has turned into a model working-class neighborhood of neat houses and trim streets. Ironically, the Back of the Yards has also become anti-Negro; at the time of his death, Alinsky was talking about going back to form a new organization there to overthrow the one he had built more than thirty years before.

Exactly this kind of recurring struggle is something that Alinsky insisted on over and over, in speeches and in print. That there are no permanent solutions—that today's revolutionary becomes tomorrow's chairman of the board. What Alinsky advocated was "a constant cycle of renewal"—"a continuing fight against the status quo." As his reputation grew, he crisscrossed the country—on a schedule, said one observer, that would drive a professional athlete to a rest home. Many of his press interviews were held at airports, between planes. At home, his Chicago-based organization, The Industrial Areas Foundation, operates a training school where organizers are involved for twelve to fifteen months in classroom and community work—the institute was funded in part by a \$225,000 grant from The Rockefeller Foundation. Another training organization that Alinsky set up in the sixties, in California, produced his most successful pupil—César Chávez of the California grape boycott, now probably more famous than Alinsky himself.

Just before he died, Alinsky had begun work on the most ambitious project of his career: the revitalization of the white middle class. Here, he pointed out, is where the power lies—in terms of sheer numbers and in terms of economic strength. "Right now," he said, "they're frozen—oppressed by taxation and inflation, poisoned by pollution, terrorized by urban crime, frightened by the new youth culture, baffled by the computerized world around them. Their personal lives are generally unfulfilling, their jobs unsatisfying, they've succumbed to tranquilizers and pep pills. All their old values seem to have deserted them. Believe me, this is good organizational material."

One way to "rub raw the sores of social discontent" (a favorite phrase) is to point out to people who their enemies really are. A prime Alinsky target was the giant corporations—"megacorporations" as he called them. In a long and difficult struggle with Eastman Kodak over job discrimination, Alinsky hit upon what may be the most potent organizational weapon of the seventies: a new use for stock proxies.

Characteristically, Alinsky was more interested in embarrassing corporations in public than in trying to take control. What he pictured was a vast stockholder's meeting, held, say, in Yankee Stadium—television cameras everywhere—where a motion was made and seconded and "75,000 people get up and yell 'Aye.' Then the board chairman looks at them and he says: 'Representing 94 percent of the proxies, I vote 'Nay' and that's it.' What's going to happen to this myth that corporations belong to small people? It makes the corporations look ludicrous.

"Once you organize people, they'll keep advancing from issue to issue toward the ultimate objective: people power. We'll not only give them a cause, we'll make life exciting for them again—life instead of existence." E. W. M.

WAS JOPLIN AMERICA'S GREAT COMPOSER?

Like jazz, ragtime music comes out of a particularly American, particularly black experience. With all its emotion, theatricality and humor, it was never, until recently, accepted as serious—it was outcast music; partly because it was so identified with Negroes, partly because it was so identified with pleasure.



Scott Joplin, a black ragtime composer and pianist, the son of a slave, personified this honky-tonk life: he spent his boyhood traveling up and down the Mississippi Valley, playing the piano in small-town Southern bars. In this raffish world he became a celebrity. But he was never recognized as a serious musician. Very few people knew or cared about his studies in advanced harmony and composition, or about his ragtime opera *A*

Guest of Honor which was performed a few times in St. Louis and later lost. Joplin's last years were completely given over to finding a producer for his most ambitious work, the full-length folk opera *Treemonisha*. But music publishers who knew him as the leading composer of ragtime urged him to stick to his specialty; none wanted to produce grand opera written by a honky-tonk pianist.

Treemonisha became Joplin's obsession. In 1911 he had it published at his own expense. In 1915 he gave an unstaged runthrough for possible backers at a small private hall in Harlem; it was total failure. Two years later he was dead at 49, ravaged by syphilis. Toward the end of his life, he had given up performing, teaching, and composing—everything but *Treemonisha*.

A half-century later, in January 1972, *Treemonisha* had its first production at last—in Atlanta's new Memorial Arts Center, by the department of music at Morehouse College with the help of a grant from The Rockefeller Foundation. A glittering first production, in fact, conducted by choral master Robert Shaw, directed and choreographed by dancer Katherine Dunham. Celebrated singers interrupted international tours to take part. At the finale, white-tie audiences rose to their feet, singing and clapping with the music.

Mrs. Vera Brodsky Lawrence

traveled to Atlanta to see *Treemonisha*. For her it must have been a particularly satisfying opening night. Five years ago, when she first heard a friend play some of Joplin's music, he was known to only a few initiates—"a ragtime underground" she calls them. She decided to collect and publish all of Joplin's work, and received a Rockefeller Foundation grant for expenses. Her *Collected Works of Scott Joplin* appeared early this year, the first time a black American composer has ever been published in a collected edition.

Dr. Wendell Whalum, Katherine Dunham



SHOULD SCIENCE HAVE A CONSCIENCE?

Consider these questions:

1. A woman in her 90's is blind and largely deaf and her mental powers have been impaired by a brain hemorrhage. In the past she has written about allowing old people to "drink the hemlock" when they find life a burden and an indignity; more recently she expressed a wish to die. Now she can be kept alive only by force-feeding. Her husband and son protest against it. What should her nursing home do?

2. A strong, intelligent young man occasionally flies into rages so violent that he endangers his family and others. Years of psychotherapy haven't helped, and he has been committed to solitary confinement for life. Tests for epileptic damage are inconclusive, but his rages could be controlled through brain surgery. Should an operation be performed, the aim of which is solely to manipulate his behavior?

3. A team of researchers obtains ova from a woman during an operation and succeeds in fertilizing them in the laboratory. The embryos grow to the point where, if created naturally, they would attach to the wall of the mother's uterus, then are destroyed. Further research promises significant gains in knowledge and perhaps the eventual culture of human beings from artificial wombs. But the line of research also raises questions about the propriety of research with human life. Should the researchers continue?

and co-founder, helped bring together people from many disciplines for these meetings: lawyers, theologians, philosophers and sociologists, as well as doctors and scientists. "The main impetus," he recalls, "came from some physicians and scientists themselves, who felt that they simply couldn't cope with these ethical issues any longer as individuals, and that they weren't getting any help or guidance." These meetings were the base upon which the Institute was formed. As Callahan once remarked, "We spent well over a year just talking."

Out of these discussions came a list of four problem areas that the group decided to single out for special attention, problems that are scientific in origin but humanistic in implication.

They are: death and dying; behavior control; population policy; and genetics counseling and engineering.

The issue of medical ethics appears in one way or another in all of these four subjects, therefore the Institute also has a medical-ethics unit, which concentrates mainly on developing a curriculum for medical schools. Its newest program, which is supported by The Rockefeller Foundation, deals with the major ethical themes that all of these areas have in common—such as, say, the relationship between individual good and the public good.

The president of the Institute and

and Dr. Robert F. Murray, Jr., Chief of the Medical Genetics Unit at Howard University.

The Institute's scale of operations was modest at first. Office space was a bedroom with filing cabinets in Callahan's home and an attic with a mimeograph machine in Gaylin's. "We held conferences around my swimming pool," said Gaylin. "The informal setting helped. I think. Somehow it's difficult to remain angry at another man when both of you are wearing only swimming trunks. But there were problems. At one point a philosopher was ready to walk out. He said, 'I'm tired of teaching Philosophy 1 to a bunch of scientists.' But I said, 'I don't get tired of teaching Psychiatry 1 to you,' and he calmed down."

Since then the Institute has grown to a membership of 73 Fellows and 15 full-time staff members. And now it occupies one floor of a small professional office building at the edge of downtown Hastings. This headquarters and staff are called the Hastings Center, while "Institute" designates the membership of Fellows as well. Each Fellow takes part in the work of at least one of the task forces or study groups dealing with the Institute's special subjects.

The Center doesn't fit a visitor's preconceptions about what a philosophical enterprise should look like. The floors aren't carpeted in deep

is written and produced, technical information on specific subjects is prepared, and various special projects are handled—particularly in the area of curriculum development.

In a few months, several young people—from various undergraduate, graduate and professional schools—will be able to spend a month or more in residence at the Center, under a new student-internship program. There they will do their own independent research and also take part in a seminar conducted by the Institute staff.

One question that some doctors and scientists have raised is, "Who needs all this?" Many physicians and biologists would insist that they don't. The questions concerning the care of patients, some doctors maintain, are technical, not ethical, and can be answered only by the specialists involved. Only a doctor, they would say, can decide what care a dying patient requires. Only the specialists on the case can tell what to do for the young man's rages. And many professionals in other fields would claim the same discretion.

Carried to extremes, such reasoning produces real-life horror stories such as this. In one American city a new contraceptive was

a group of concerned doctors and biologists giving opinions on the ethical questions arising from the research and practice of their colleagues. One could also imagine including social scientists, to help with behavioral problems. But the Institute also includes in its membership lawyers, philosophers and theologians. What can they contribute?

The case for lawyers is easy to make. When we ask whether a given action is right or wrong, we often mean—is it legal or not? The law is an elaborate system, regulating people's relations from the smallest scale to the broadest. Furthermore, it possesses a vast body of case material that is easy to consult and it has a structure for rendering clear and binding decisions.

The value of philosophers and theologians is, to some scientists and others, less clear. They question the effectiveness of a broad moral code—in the end, doesn't morality come down to personal, private decisions? And isn't anyone who considers his actions in terms of right and wrong a moral authority equal to any other? Many people look with suspicion on a person who claims a special competence in ethics.

What members of the Institute

fields of medicine and biology—where many of our present decisions have implications for large numbers of people both living and yet to be born—it's necessary to work out some kind of social consensus. Otherwise, I suspect that an awful lot of people will feel that they're the victims of the whim and caprice of those who have power in this society."

The Institute works toward this consensus in three ways: it tries to improve the quality of research into these questions, it develops new curricula for universities, and it attempts to get the issues and discussions before the general public—mainly through its publications.

As it happens, the person who has probably done as much as anyone in the past decade to prove the social value of philosophers is Callahan himself. Earlier in his career he was the executive editor of *Commonweal*, the weekly magazine addressed principally to liberal Roman Catholics. There he developed a reputation as a spokesman for the liberal wing of Catholicism and a proponent of church reform. He edited and wrote a stream of books with titles like *Honesty in the Church*, *The Mind of the Catholic Layman* and *The Catholic Case for Contraception*.

Then he departed from this course. He obtained a contract from Macmillan and a Ford Foundation



Dr. Daniel Callahan

Questions like these are grist for the mill of a three-year-old organization based in Hastings-on-Hudson, New York, called the Institute of Society, Ethics, and the Life Sciences. Its purpose is to "examine the ethical, legal, and social implications of advances in the life sciences."

Early in 1969, a group of people with a professional interest in such questions began a series of informal meetings to discuss the ethical issues emerging in medicine and biology—under the broad theme "Freedom, Coercion, and the Life Sciences." Daniel Callahan, the 42-year-old, Harvard-trained philosopher who is the Institute's director

its second principal founder is Willard Gaylin, a 47-year-old psychiatrist with faculty appointments at both the medical school and the law school of Columbia University.

In January 1970, he and Callahan, with the help of colleagues, assembled a distinguished board of directors—18 men and women who are prominent in the sciences and humanities. Among them are Harvard psychiatrist Robert Coles, lawyer Elizabeth K. Dollard of Bennington, philosopher Paul Ramsey of Princeton, Dr. Leon R. Kass of the National Academy of Sciences, Paul Freund of Harvard Law School, Dr. Kurt Hirschhorn of Mount Sinai School of Medicine,

pile, the secretaries don't speak in whispers, there is no gloomy gothic library in which greybeards gaze blindly out of leaded windows. Rather, the atmosphere is that of a busy and overcrowded magazine office. Young people work away energetically. They are informally dressed; on a hot day the director is likely to appear in a pullover shirt and Bermuda shorts. Desks and files occupy practically all the available space, so that getting from one spot to another is a fairly involved process. In this relaxed but intensely professional place over a hundred letters a week are received and answered, a highly influential newsletter, *The Hastings Center Report*,

tested for efficacy at a birth-control clinic. Without their knowledge, a group of women was designated as a control and given fake capsules. Several of the women became pregnant. The experiment violated the principle of "informed consent" that permeates most discussions of the ethics of experimentation with humans; but otherwise, some doctors point out, the women might have turned to other methods of contraception and the control would have been spoiled.

All biomedical researchers don't share such cold-blooded attitudes, of course; many are as ethically scrupulous as anyone in our society. One could easily conceive, then, of

would argue is that in problems with enormous social implications it is not possible for every individual person to make up his own mind—the result would be chaos. What might very well happen is that those in power would then make these decisions—without the informed consent of the majority.

As Callahan says: "There is a tendency in our society to admit the problems are there, and that they're important, but at the same time to evade them—first because they're very difficult and also because of this feeling that it all comes down to personal opinion, that it's all a matter of taste. But in the

—Population Council grant to write a book published in 1970 as *Abortion: Law, Choice and Morality*. Later he joined the staff of the Population Council before moving to the Institute full-time.

What caused this change in direction? Was it disappointment with the pace of church reform following the death of Pope John XXIII?

"Not really," Callahan said in an interview. "My time at *Commonweal* was something of a diversion. I didn't like the university jobs available when I finished my Ph.D., and I had already done some work for the magazine, so the post there looked like a good one for a few years. It was natural to produce

(continued on page seven)

STAFF NEWS

In recent months five Foundation staff members have been honored by U.S. and foreign universities for their personal contributions in agriculture, the humanities, and public affairs.

HENRY M. BEACHELL, formerly Plant Breeder at the International Rice Research Institute, received an honorary Doctor of Science degree from the University of Nebraska-Lincoln. He was cited for his work in developing new and improved rice varieties.



NORMAN E. BORLAUG, head of the Wheat Improvement Program at the International Maize and Wheat Improvement Center, received an honorary Doctor of Science degree from the University of Arizona.

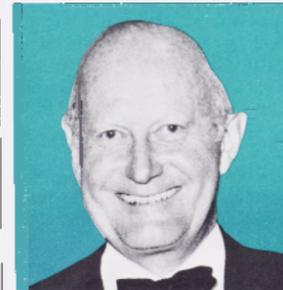
JOHN H. KNOWLES, M.D., now the Foundation's President, received honorary degrees from three universities: the Doctor of Humane Letters from Boston University; the Doctor of Laws from the University of Pennsylvania; and the Doctor of Science from Albany Medical College (Union University). He was the commencement speaker at each.

ERNEST W. SPRAGUE, director of the Maize Improvement Program at CIMMYT, was awarded the honorary Doctor of Science degree by Kasetsart University, Bangkok, in recognition of his past leadership as RF Agricultural Project Leader in Thailand and his assistance in the development of the Kasetsart graduate school.



KENNETH W. THOMPSON, Vice-President, received an honorary Doctor of Laws degree from Bowdoin College. The accompanying citation described him as "one of those who have worked most relentlessly for a rebirth of America."

TRUSTEES



DOUGLAS DILLON, Chairman of the Board, was the recipient of the 1972 New Jersey Historical Society Award. The award is presented annually "for distinguished contribution to the history of New Jersey."

THE REV. THEODORE M. HESBURGH and Chancellor Willy Brandt of West Germany are the first recipients of the newly established Reinhold Niebuhr Awards. The awards are to be made annually to persons whose contribution in the areas of social justice, public life, or world affairs exemplifies Niebuhr's commitments.

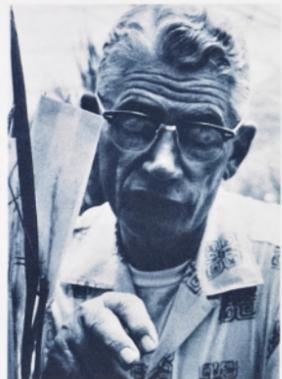
NEVIN S. SCRIMSHAW, head of the Department of Nutrition and Food Science at the Massachusetts Institute of Technology, has received the Institute's first annual Killian faculty achievement award for his pioneering work on central nervous system development and links between nutrition and infection.

FREDERICK M. SEITZ, President of The Rockefeller University, is one of 18 leaders in science, industry, and public affairs appointed by President Nixon to a new National Cancer Advisory Board.

The Asia Society has announced publication of *Contemporary Artists of Malaysia*, a study by **DOLORES WHARTON**, the wife of **CLIFTON R. WHARTON, JR.** The survey was begun during Mrs. Wharton's six-year residence in Malaya and Singapore while Dr. Wharton, now President of Michigan State University, was on assignment in Kuala Lumpur from the Agricultural Development Council.

New York & The Field

This summer marked the retirement of two key members of Foundation field staff teams in the Philippines and Thailand: **HENRY M. BEACHELL**, the International Rice Research Institute, and **JAMES H. JENSEN**, Kasetsart University, Bangkok.



Mr. Beachell, Plant Breeder at IRRI, joined the Foundation in 1963. He has received the American Rice Growers' Award and in 1965 was elected a Fellow of the American Association for the Advancement of Science. In 1969 he was co-recipient—with Peter R. Jennings of CIAT and Te-Tau Chang of IRRI—of the John Scott Award given in recognition of "useful inventions benefiting mankind."

Although retired from The Rockefeller Foundation, Mr. Beachell has accepted an IRRI assignment in Bogor, Indonesia.



James Jensen has been Acting Vice-Rector for Development at Kasetsart University since 1960. He was previously President of Oregon State University, Corvallis, for eight years.

An internationally known plant pathologist and botanist, Dr. Jensen has served as principal advisor for the planning and development of the University's research and education programs and also served as leader of the agricultural component of the RF's university development program including Farm Suwan—in Thailand.

Dr. Jensen has been appointed a part-time Foundation consultant primarily to continue to advise the University on its campus development plans.

MARIO di BONAVENTURA has been appointed a part-time consultant to research possible Foundation assistance to the recording of American music.

RALPH W. CUMMINGS, JR., an agricultural economist, began a joint appointment with Agricultural Sciences and Social Sciences this summer. Dr. Cummings has had experience in Indonesia and in India, where he was Chief, Agricultural Economics, U.S. Agency for International Development.

RF Program Reviews (continued from page one)

at New York University, and Dr. Glen Taggart. President of Utah State University attended a two-day review of the RF's program. Writers and editors, including Douglass Cater, Norman Cousins and Bill Moyers, have met informally with RF staff members. And thirteen scholars, archivists and students—all women—discussed for two days the role of women in American history. Their contributions, and those of many others, have proven invaluable.

In addition Dr. Knowles meets daily with senior officers from the professional staff, each of whom—as a social scientist, artist, medical scientist, humanist or agricultural scientist—helps form a growing consensus on future program thrusts.

The final reports of the Ad Hoc Committees are to be summarized for consideration by the trustees at their annual December meeting. But even at this stage several trends are apparent from interim reports and discussions.

In years past, the RF has enjoyed its greatest

success in applying existing scientific and technological knowledge toward the improvement of fundamental deficiencies in human welfare. The highly effective worldwide campaigns against yellow fever and malaria are examples from the past. The RF's pioneering role in dramatically raising the production of basic food crops in the developing world is another, ongoing, instance.

The very real accomplishments of past and present programs are due in large measure to the existence of the RF's field staff—a career corps of highly trained and experienced specialists who, deployed around the world, devote years, often decades, to collaborative projects with local colleagues. The Green Revolution in agriculture, the control of yellow fever, or the development of university centers in Latin America, Africa and Asia would have been impossible without them. With this in mind, and with fervent discussion still underway, the RF's current thinking is about as follows—

• The RF will continue to work in the less-devel-

oped world as well as to intensify its efforts in the United States, but will seek an even greater integration of humanistic and scientific disciplines to achieve its goals. Dr. Knowles has the wholehearted agreement of every staff member when he says, "There is only a single future for the world."

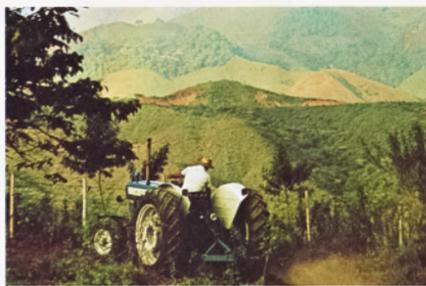
• Without short-circuiting its effective current programs, the RF is likely to place a greater emphasis on analyzing and strengthening what Dr. Knowles calls "the moral underpinnings, the values and traditions" of America.

• The possibility of developing a domestic field staff to assist local groups in finding solutions to common-denominator problems (in pollution control, rural development, and urban problems, for instance) has gained considerable support.

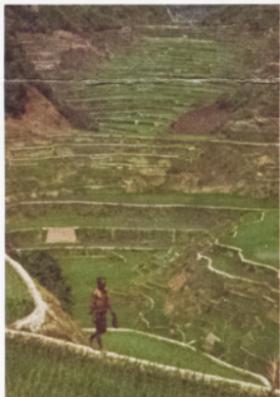
These are among the themes that are beginning to shape future programs. RF Illustrated will report their substance in future issues.



A few of the many humanists and scientists who have met with Knowles and RF staff



"The Spaniards discovered Colombia in 1500, but most North Americans have still not discovered it." So begins a report, to be issued by the RF in December, on 20 years of collaboration between the RF and the political and scientific leadership of Colombia to raise the quantity and quality of food-crops production. The RF's 100-page report, whose English and Spanish text is illustrated in full color, will be made available primarily to individuals and agencies engaged in rural development efforts.



The International Rice Research Institute commemorated the tenth anniversary of its founding in April with a symposium *Rice, Science & Man*. Retired RF President **J. GEORGE HARRAR**, one of four convocation speakers, was later decorated by President Marcos. IRRI staff members **HENRY M. BEACHELL** and **A. COLIN McCLUNG** received plaques from the Government of the Philippines for their contributions to the agricultural development of Southeast Asia.



J. WILLIAM HESS, formerly Curator of the West Virginia Collection of West Virginia University, has been appointed Archivist for the Foundation. Dr. Hess earned A.B. and M.A. degrees from West Virginia University and a Ph.D. from Harvard.

EDITH E. KING, BMS Administrative Assistant since 1965, has been appointed Program Associate for the Biomedical Sciences. Ms. King joined the staff of the International Health Division Laboratory in 1940.

JOHN S. NIEDERHAUSER, director of the International Potato Improvement Program moved his headquarters to Peru in the fall. Previously he was stationed at the International Maize and Wheat Improvement Center in Mexico.

WAYNE M. PORTER has been appointed Assistant Geneticist at IITA in Ibadan.

LEWIS M. ROBERTS, Associate Director for Agricultural Sciences, chaired a three-day symposium in Rome of more than 30 plant breeders, nutritionists, and biochemists called by the Protein Advisory Group, a U.N. body established jointly by the Food and Agriculture Organization, the World Health Organization, UNICEF, and the World Bank. Among the participants was **NORMAN E. BORLAUG**, from CIMMYT.

A conference on "Prospects for the Immunologic Control of Schistosomiasis" sponsored by the Nobel and Rockefeller Foundations met at the Study and Conference Center in Bellagio in April. **VIRGIL C. SCOTT, M.D.**, Associate Director for Biomedical Sciences, and **PETER JORDAN, M.D.**, head of the Research and Control Department, St. Lucia, were among the 19 participants.

ROBERT E. SHOPE, M.D., Yale served as Research Unit, served as consultant to the Virology Department of the Naval Medical Research Institute in Cairo, Egypt.

CHARLES SMITH, Associate Director for Social Sciences, was the keynote speaker at the Parents Day Conference of the Gary Public Schools.

Two special staff members have been appointed to participate in the Natural and Environmental Sciences program: **MARVIN E. STEPHENSON**, who has been Associate Professor of Engineering and Fisheries and Wildlife at Michigan State University; and **CHRISTOPHER WRIGHT**, who has been director of the Institute for Study of Science in Human Affairs, Columbia University.

ROBERT M. THOMAS, who headed the Purchasing and Shipping Department for the past ten years, has retired. **LOWRY B. ANDREWS**, who had been Deputy for Purchasing and Shipping since 1969, has been appointed to succeed him.

A new book by Vice-President **KENNETH W. THOMPSON**, *Foreign Assistance: A View From the Private Sector*, was published June 30 by the University of Notre Dame Press. The fourth edition of *Foreign Policy in World Politics*, also published in June, contained a chapter entitled "The Comparative Study of Foreign Policy," on which Dr. Thompson collaborated.

Development Planning: Models and Methods by **MICHAEL P. TODARO**, recently promoted to Associate Director for Social Sciences, is one of five new textbooks especially designed for African students of economics. Developed at Makerere University in Kampala, Uganda, the series grew out of the need to provide teaching materials based on social, economic, political, and institutional problems of developing countries. "Until these books were written," says Dr. Todaro, "students had to rely on textbooks written in either a United States or British context. For the most part these texts did not deal in either a theoretical or empirical way with the many urgent problems facing nations in Africa, Asia, and Latin America."

In April Dr. Todaro presented a paper on "Appropriate Techniques for Employment Generation in Developing Nations" at a NAS study group on technology and development; he also served on a panel of experts advising U.S. AID on the role of social science research in population analysis and policy.

Twenty trypanosomiasis specialists from the U.S., Europe, and Africa attended a Foundation-sponsored conference at the RF Study and Conference Center in Bellagio to review the current status of research and to discuss development of an international laboratory on animal diseases.

WEBB de L. TRAMMELL has been appointed Assistant Treasurer of the RF.

BERNARD C. WATSON, chairman of the Department of Education, Temple University, has been appointed a Consultant for Social Sciences in the development of the internship program for minority-group school administrators and other school programs.

On June 15 **PETER H. WOOD**, Assistant Director for Arts and Humanities, received his Ph.D. degree in American history from Harvard University. His doctoral dissertation, "Black Majority: Negroes in Colonial South Carolina from 1670 through the Stono Rebellion," received Harvard's DeLancey K. Jay Prize for 1971-1972. A somewhat shortened version of the dissertation will be published by Alfred A. Knopf in the spring of 1974.

ALUMNI

VIRGINIA ARNOLD, a former Associate Director for Medical and Natural Sciences (1963-1967), has been appointed Professor Emerita at the School of Nursing, Boston University.

A study by former RF archivist **MARY BOCCACCIO**, entitled "Ground Itch and Dew Poison; The Rockefeller Sanitary Commission 1900-1914," appeared in the *Journal of the History of Medicine and Allied Sciences*, Vol. XXVII, No. 1.

On May 13 Rensselaer Polytechnic Institute dedicated the **DETLEV W. BRONK** Bio-Science Laboratory, the last of seven buildings to be constructed on the Troy campus during the six years, 1965-1971, when Dr. Bronk served as chairman of the Rensselaer board of trustees. A bronze plaque, mounted at the entrance, cited the former RF trustee as "renowned scientist, educational leader, counselor to presidents and governors, wise and influential in the development of science and technology throughout the world, warm friend of students and faculties..."

Former Secretary of State DEAN RUSK, president of the Foundation from 1952 to 1960, has been elected one of the first at-large members of the board of trustees of Davidson College, North Carolina.

MAX THEILER, whose development of a vaccine against yellow fever won him the Nobel Prize for medicine and physiology in 1951, died August 11 at his home in New Haven. Dr. Theiler was a member of the Foundation staff from 1930 until 1963 and was director of the New York laboratories from 1951 until his retirement. After leaving the Foundation, he accepted a post at Yale University.

OF MOSQUITOES, MOTHS AND MICE, a new book by **C. BROOKE WORTIL**, who retired from the Medical and Natural Science field staff in 1965, was published this summer by W. W. Norton & Company.

Progress Report

At the base of Mount Makiling, about 20 miles outside of Manila, stand a dozen sweltering little fields: totaling only a few acres, they may be the most productive plots on earth.

Richard Bradfield, one of the world's most distinguished soil scientists, has used this land experimentally to combine new technology with a centuries-old technique called multiple cropping. This means raising three, four, or even five crops a year on the same ground instead of only one or two.

Multiple cropping is best suited to the tropics, where a mild climate, sufficient rainfall, and lots of sunlight make year-round farming possible. And in fact, it has been practiced for thousands of years in Asia without spectacular results. But with modern technology—short-season crop varieties, ingenious planting and harvesting systems, and the proper use of fertilizers and insecticides—there can be dramatic gains in output.

The recent Green Revolution in agricultural production—the phenomenal increase in yields that has made such a difference to Asia in the past five years—was based on years of experimentation with individual crops. The dwarf wheats of Mexico and the dwarf rice of the Philippines were agriculture's tour de force in the last decade.

Multiple cropping emphasizes a new approach in methodology—taking in more harvests a year. "By going down both roads at once," says Bradfield, "we can multiply food production in the irrigated parts of Asia by four- to sixteenfold, depending on local circumstances."

The key word in Bradfield's statement—and the experts know it—is "irrigated."

Three-fourths of Asia's farmers can't irrigate. They must depend on an uncertain monsoon, when most of the year's rain falls in the space of three months. During those three months they may have too much water—the rest of the year almost none. And intensive land use is out of the question under these conditions. So multiple cropping is no panacea—no easy answer to the complicated problems of Asian farming.

But having pointed that out, Bradfield turns to the millions of farmers in the valleys and deltas who can irrigate—or who can extend their growing season by conserving some of their monsoon water. There are many rainfed areas where farmers settle for one rice crop a year and nothing else. In contrast—and admittedly under optimum conditions—Bradfield has raised four or five crops a year on each of his twelve plots. **This allowed him to harvest something about once a week.**

Richard Bradfield, 77-years old next April, is a happy man. All of his life—all of his *three* lives—he has done exactly what he wanted to do, with very satisfying results.

A revered scientist and teacher, Bradfield retired in 1955 as head of the Department of Agronomy at Cornell University. In 1961, having counseled The Rockefeller Foundation for more than 25 years about setting up agricultural programs in Mexico, India, Central and South America, he retired once again, this time from the board of trustees of The Rockefeller Foundation—only to move to Los Baños in the Philippines. There, as a Special Field Staff member of The Rockefeller Foundation attached to the International Rice Research Institute, he set to work quietly on his experiments in multiple cropping.

"At the present time," Bradfield says, "the tropics are that part of the world with the least to eat. But they could be the most food-productive areas on earth, far outdoing the temperate zones. And this could be true not just in terms of calories, but also in terms of the protein and vitamins necessary for a well-balanced diet."

The tropics have two tremendous advantages that are not being fully utilized, Bradfield went on to explain to me when I visited him at IRRI last year. The first is sunlight—four times as much sunlight as his experimental fields get back at Cornell University in New York State.

The second is a climate that permits farming the year round—not just from April to October. **Bradfield gets four crops a year with one of his rotations, five crops with another.** In the northern United States, farmers get one: in parts of the South, two at the most.

Bradfield has already shown that in the tropics it is entirely possible to raise ten tons of food per acre.

At the time I talked to him at Los Baños, 20 agricultural college graduates from Southeast Asia had just come for a six months' course in his methods. They spent most of their time out in the fields, actually raising crops. These students were followed by others; soon there will be a corps of trained people all over Asia teaching thousands of farmers these multiple-cropping practices.

What is the basic idea?

"It's simply taking advantage of what's here—sunlight and temperature," Bradfield said. "The secret is to keep a layer of green leaves between the soil and the sun the year round." By hurrying one crop off and another on, his acres were bare only 10 to 12 days a year—the rest of the time they were growing something.

To get maximum production, Bradfield did three things:

1. He used short-season varieties of crops. In the United States, where most farms harvest only one crop a year, farmers select varieties that will use as many days' sunlight as possible between planting time and the first fall frost. In the Philippines, Bradfield's strategy was just the opposite. In order to get four or five crops a year, he had to harvest one crop quickly in order to plant the next.

2. He inter-planted—that is, he started a new crop between the rows before the preceding one was off. He usually had two crops, sometimes three, on the same ground for part of the time. With a garden tractor, he could make enough space for them.

3. He used some crops that could be harvested green without waiting for them to ripen.

In the Philippines, Bradfield concentrated on five crops: rice, grain sorghum, soybeans, sweet potatoes, and sweet corn. His simplest rotation was rice and grain sorghum. "Over here you have to start with rice," he explained. "It's the prestige crop in Asia, the food most preferred. And it's the crop best suited to the heavy rains of the monsoon."

Before the rice was harvested, he had grain sorghum growing. Shaded and almost smothered by the rice (even though he used one of IRRI's new dwarf varieties), the sorghum fairly leapt up when the rice came off.

Many Asian farmers settle for one rice crop a year, then let the weeds take over. Bradfield substituted grain sorghum for weeds not just one crop of sorghum, but three in rapid succession. Sorghum has the propensity of ratooning: after the crop is cut, new shoots spring up from the stubble and make a second crop often as good as the first. Bradfield let this happen twice and from his three-sorghum crops took off a total of seven tons an acre. **Seven tons in place of nothing.**

Sorghum is a major food for human beings throughout Asia and Africa; in addition it provides excellent feed for cattle and water buffalo. In fact, sorghum is the third most important food grain in the world, trailing only rice and wheat.

Bradfield's other rotation was rice, sweet potatoes, soybeans, and sweet corn. Not only are all of them heavy yielders in tonnage, but each one has significant nutritional values.

Sweet potatoes, for example, are superior to Irish potatoes as a food in every respect except protein, in which they are about even. They are a particularly good source of Vitamin A. Within 90 to 100 days after Bradfield had taken off two tons of rice per acre he got a yield of 10 tons of sweet potatoes. It amazed even him.

"Millions of children in Asia are suffering from lack of Vitamin A," he says. "There are kids within ten miles of this Institute who have gone blind for lack of it. Yet just one sweet potato a week would give

them all they need. And see how easy sweet potatoes are to raise! Anybody can do it."

Before his sweet potatoes were out of the ground, Bradfield had planted soybeans between the rows. Some of the beans he harvested green, like garden peas. Boil them five minutes with a pinch of salt, and they shell readily. All over Asia they are considered a delicacy. Or he would let them go another 30 days, harvest them ripe, and take a ton of dry beans per acre.

Not only do soybeans yield well in the tropics, they are highest in protein of any crop—about 40 percent, which is twice the protein in the mung beans long grown in that part of the world.

The most profitable crop in the rotation is the last one, sweet corn. Sweet corn needs the same quantity of heat to mature no matter where it grows. In the Philippines it gets the required amount in 60 days; in Iowa it must have 85 to 90. Bradfield used a variety developed by the University of Hawaii and got around 18,000 ears an acre.

Add it up: two tons of rice, ten tons of sweet potatoes, one ton of soybeans—a total of 13 tons per acre, plus those 18,000 ears of sweet corn. This succession of crops provides calories, protein and vitamins. "On this," Bradfield points out, "people can eat well and I mean really well."

"I'm as interested in commercial agriculture as anybody. I want farmers to have something to sell. But first I want the farmer and his family to eat well. It doesn't take much land. One hill of sweet potatoes makes a meal for a family of seven."

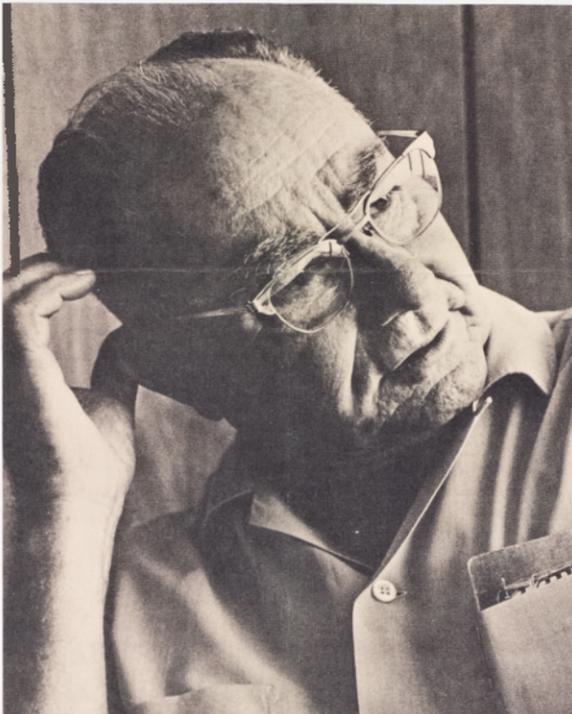
"And you know, I've got an idea that I've been talking to our animal people about. I believe we could put livestock into this picture."

"Some of my economist friends scoff at this. They point out that it takes several pounds of grain to make a pound of meat, and that Asia can't afford this. It has to have the grain for people, not animals."

BRADFIELD'S

LITTLE

ACRES



"But what they forget is that half of every crop is made of stalks and leaves that people can't eat. Animals can. If you're not going to waste all this good green stuff, you have to have animals to convert it into something that people can eat."

"Every farmer ought to have a pond or small reservoir to save some of the monsoon water and allow him to get at least two crops a year instead of just one. I'd put a few head of livestock right out alongside the pond so the manure could drain into it—making the kind of manure lagoons a lot of farmers in the United States have now. The manure would fertilize the algae in the pond and help the farmer grow at least a ton of fish per acre, and it wouldn't spoil the fish for eating. The overflow water could irrigate a piece of land, carrying a little fertilizer with it. Very little fertilizer would be lost—and that's important, for fertilizer is a high-priced item over here."

Actually, it is not a far-out idea at all. Chinese farmers in Malaysia do exactly what Bradfield was talking about, and they have snails on the bottom of the ponds and ducks on the top for good measure.

Not every farmer in Asia can match the exploits of Dick Bradfield, of course. Bradfield could irrigate and drain his few acres at will. He had the machinery and the labor to get one crop off and another in quickly. He had all the fertilizer and pesticides he needed, and all the technology of IRRI behind him. But farmers are eager to learn the method and to follow him at least part way: his findings come at just the right time.

Parts of Asia, desperately short of rice and wheat just three years ago, are now actually on the verge of surplus in both crops. This is largely due to the new and improved varieties that have been adopted on a wide scale within the last couple of years, plus the package of agronomic practices that goes with them. The result has been a yield per acre of twice, and sometimes three times, the former output. And even better varieties of both wheat and rice are on the way!

As rice and wheat supplies increase, the prices go down, and farmers begin looking around for other crops to raise—and to raise more times a year. Progressive growers are now searching for such alternatives.

For hundreds of thousands of them, Dick Bradfield with his few acres has a ready answer. And there is every prospect, as I saw on recent round-the-world agricultural inspections, that a multitude of them will eagerly accept it.

In Taiwan, the heavy concentration of people in a limited land area has produced an agricultural phenomenon: never have I seen more intensive use of land. Not only is every bit of crop space used laterally, but as far as possible it is used vertically as well. For example, A-shaped trellises span irrigation and drainage ditches too deep for rice, and

cucumbers are grown in the space over the water. Vegetables are planted under the branches of young fruit trees. Grapes hang in profusion from a wire latticework 5 or 6 feet above ground but by no means are they allowed to occupy the ground alone. In the winter when the grape leaves drop off, letting the sunshine through, a bountiful crop of staked-up tomatoes, cabbages, or some other vegetable comes on.

Two crops of rice a year are standard in Taiwan, one from early March to early July, the other from early August to November. That leaves a span of 40 days between the crops in summer and 90 days in winter. But the fields are never empty; vegetables take over both times.

It might seem impossible to grow jute, which needs 120 days to mature, in the 40 summer days between rice crops. But the farmers of Taiwan do it by letting the plants spend their first 40 days in a separate small seedling bed. During the second 40 days it is interplanted in the summer rice crop. The last 40 days, after the rice is harvested, the jute grows on the field alone, shooting up to a height of 10 or 12 feet before it is hustled off to make way for the next rice crop. It has had its full 120 days, although it occupied the field alone for only 40.

Taiwan probably raises more food per acre than any other place in the world. As a consequence her small farmers eat very well themselves, buy what they need from their cash marketings, supply city people with a good diet, and provide the nation with substantial agricultural exports.

The island now produces a surplus of rice and winter vegetables, so many small farmers are turning to other crops—mushrooms, bananas, litchi nuts, citrus fruits, pineapples, guava, hogs, poultry, and pond-grown fish—anything that commands a good price. Sizeable quantities of wheat, soybeans, and feed grains must still be imported, but of the crops and livestock that can be produced under intensive methods she has more than enough.

India, with her population growing at a rate of more than a million people a month, in 1971 won her long struggle to achieve self-sufficiency in grain. With the world watching anxiously to see whether this success is permanent or only temporary, India is now trying for a new breakthrough in production through multiple cropping.

By 1966-67 her farmers were double-cropping 11 percent of the cultivated land. Since then they have sharply increased such acreage thanks largely to the appearance of new short-season varieties that allow more crops to be squeezed into a year. Wheat, for example, has become an important crop for the first time in four of the most densely populated states of east India—West Bengal, Assam, Orissa and Bihar—because new short-season varieties of rice are harvested there by October, in time to sow wheat, instead of in January as before. Bihar has tripled its wheat acreage in the last three years while raising as much rice as ever, and West Bengal had 800,000 acres of wheat in 1971 although it had practically none the year before. In the state of Maharashtra in western India, farmers with at least 100,000 acres whose only crop had been cotton now get an additional crop of soybeans.

India has a vigorous multiple-cropping drive in motion under the direction of Dr. Akrim Singh Cheema, agriculture commissioner in the Ministry of Food and Agriculture. Cheema was one of a party of Indians who visited Bradfield in the Philippines and toured rural Taiwan a few years ago. They came home determined that India would do something similar.

Today India has fifty-one multiple-cropping demonstration projects underway in various parts of the country. Some of the most exciting research is being done at the Indian Agricultural Research Institute on the outskirts of New Delhi. An irrigated field here formerly yielded one wheat crop a year and lay fallow the rest of the time. The IARI scientists are now using it to grow four crops in twelve months—wheat, maize, mung beans, and either mustard or potatoes. In other plots they have various sequences of forage crops, pulses, soybeans, grain sorghum, cotton, and vegetables.

One interesting experiment involves sugar cane, a profitable crop that covers millions of acres in irrigated parts of India. But it is a slow starter and occupies the land for nearly a year. To the late Dr. S. S. Bains and his associates it seemed that the land and the sunshine could surely produce more than that. Hence while the cane is small and growing slowly the scientists at IARI are planting eight kinds of vegetables between the rows—radishes, potatoes, beans, onions, cowpeas, tomatoes, eggplant and a species of melon. All ripen quickly, after which the cane grows up to make a normal yield. In other experiments wheat and cane are growing together, in still others cotton and cane. In much of irrigated India sugar-cane farming may never be the same again.

Some of the unirrigated sections of the country can also benefit from multiple cropping, although of course to a lesser extent. Those that receive 24 inches of rainfall a year may be able to harvest one additional crop, and those with 50 inches or more can sometimes get two extra crops. Among the crops best adapted to multiple cropping in rainfed areas are pearl millet, finger millet, grain sorghum, peanuts, castor beans, and the grams.

The potential of multiple cropping for increasing production is beyond question. Its progress in the future will depend not so much on the availability of technology or the industry of farmers as on (a) whether farmers can get the credit to buy the inputs they need, including water, power and labor, and (b) whether it will pay them to raise the additional food. The profitability will depend on whether farmers can find an assured market for what they raise, whether they will be able to get their crops to that market, and whether they can get a fair price.

The problem is most acute with vegetables, which are highly perishable. Before he plants, a farmer needs to consider how many vegetables he can sell, to whom, and at what probable price; otherwise he may find a heap of rotting vegetables on his hands. In Taiwan some of the local farmers' associations conduct well run community markets that help solve the problem. The associations maintain quality standards, and their markets have enough volume to attract a good many buyers who bid competitively. Even then, of course, total supply cannot exceed total demand without a disastrous effect on prices.

Grain farmers are not in quite such a precarious position because their crops can be stored. Their problem usually is that they have to sell at harvest, when prices are lowest. They need storage facilities and longer-term credit to hold their crop a few months longer. Buyers with storage facilities and capital are making the profits—after the grain has left the farmers' hands.

Because of such problems, farmers who are new to multiple cropping would do well not to commit all their resources to the system in the first year. They should adopt it gradually as markets, labor supply, and their own energy allow, stepping up the pace when feasible. Meanwhile they could at least provide their families with more and better food and might begin to sell something. Often they could furnish their own market for grain and forage by feeding their own livestock and poultry—grain chiefly for hogs and chickens and forage for cattle and buffaloes.

Despite all the problems, multiple cropping carries more promise of a better life for more people in the tropics and subtropics than anything else now on the horizon. These areas could far outperform the temperate zones, where most of the world's food is now raised. And these are the areas that need food most—where there are the largest numbers of poor and hungry people.

And what's Dick Bradfield up to now? This summer he signed up once again with The Rockefeller Foundation—this time as a consultant to bring his expertise to two other international institutes: CIAT in Colombia and CIMMYT in Mexico—agricultural centers that have a strong interest in tropical lands where multiple cropping could prove a great boon to food production.

Carroll P. Streeter

books on *Commonweal* subjects. Later, more interesting university offers came along, and I spent terms as a visiting faculty member at Penn and Brown. The idea for the Institute received wider and wider encouragement as I was working on the abortion book, and I went to the Pop Council with the understanding that I wouldn't stay there very long."

Abortion itself offers an interesting example of the concerns of the Institute and its approach to them. "As a philosopher, I am as interested in how you attack a problem as I am in the position you finally reach," Callahan said.

The result is a study of strong merit. If it examines the question of how one should make ethical decisions with unusual care for a book on a social issue, it also presents abundant data and the range of positions on abortion with scrupulous care.

Psychiatrist Willard Gaylin, the Institute's co-founder, has also had a profound influence on its development. In addition to his medical and behavioral training he is a gifted writer and speaker—which is particularly useful in view of the Institute's determination to get its material before the general public. Gaylin's long article on cloning, for instance, which appeared recently in *The New York Times Magazine*, grew out of the Institute's work in genetic engineering and counseling; it has been widely read and discussed.

Cloning is a term which has applied until recently only to asexual reproduction of plants—through cutting a leaf or a branch, inducing it to produce a new root system, and then planting it. In sexual reproduction of either plants or animals the union of male and female germ cells produces a mixing and recombination of the genetic material that determines various traits—opaque or translucent kernels in maize, for instance, or blue eyes or brown eyes in people. This genetic recombination is responsible for individual variation—the characteristic that Darwin showed makes natural selection, and thus the evolution of species, possible. Superior parents may have inferior offspring and vice versa, but in the long run—the very long run—traits with superior survival value supplant the less viable ones. Cloning, on the other hand, produces offspring that ordinarily are genetically identical to the single parent—marigolds or orange trees with the same inherited characteristics—although differences in environment can result in considerable differences in the way these plants develop.

In the mid-60's John Gurdon of Oxford University succeeded in cloning animals. He took the genetic material of an ordinary cell from one frog, implanted it in an egg from another, and stimulated the egg (unfertilized by a sperm) into the process of cell division and differentiation that produces embryos and tadpoles. The result was a frog genetically identical to the first.

It is now conceivable that a similar procedure—fusing a cell with an ovum from which the genetic material has been removed—can be used for humans. The resulting embryo could be implanted at the proper time in a woman's uterus, where it would be nurtured until birth, or it could even be grown in a laboratory if an artificial womb can be developed. Direct reproduction of Albert

Einsteins—and also of Adolf Hitlers—may actually be in prospect.

In his article, Gaylin predicted that human cloning would undoubtedly develop, if it does, from humanitarian aims rather than from an obsession to create life à la Frankenstein. "Cloning—that most artificial of phenomena would in this way be exploited to serve the most fundamental of human needs, bearing and raising children," he wrote. "Yet, on the other hand, it would totally cleave that need from related physiological and procreative behavior (sexual passion, tenderness and romantic love) which have traditionally initiated, accompanied and complemented parenthood."

Gaylin then pointed out that cloning was a dramatic example of a whole range of genetic engineering possibilities that raise fundamental questions: "To what degree will the procedure itself—independent of utility—reduce man by altering the concept of the sanctity of life, birth and death? To what degree will it intrude on institutions and relationships traditionally deemed fundamental to human experience, perhaps to 'humanness'? When might a technique that satisfies certain individual needs become a sociological or psychological problem?"

Despite the gravity of the problem, however, the genetics group has decided that it will give its first attention to the more immediate problem of genetic counseling. This is a profession brought into being by rapid advances in the diagnosis and treatment of genetic defects and greatly extended by new techniques which enable scientists to examine a fetus's pattern of chromosomes.

A typical case in this area was recently described by Robert M. Veatch, the Institute's associate for medical ethics. A 41-year-old pregnant woman, concerned about the fact that a preponderant number of mongoloid children are born to older mothers, went to a genetics counselor for a test that would determine whether the child she was carrying was, in fact, mongoloid. The test showed that the fetus did not have the pattern of chromosomes that marks this form of retardation. But it did disclose an extra male sex chromosome (XYY). Some research suggests that this trait produces "supermales" inclined toward destructive behavior, but other research has not confirmed this suggestion. There was some question as to the propriety of making this information available to the mother.

Veatch suggests we have to consider both the consequences of the courses of action and inherent obligations. He concluded:

"When one considers only the consequences of the isolated case, the harm from telling or not telling has similar weight. But when the consequences of the widespread practice of withholding information are added, the total consequences lead to the conclusion that Mrs. Lawrence should be told. Then one adds to the balance the obligation stemming from the limited nature of the counseling 'contract' and the fundamental obligation to maintain a relationship of trust and dignity. It seems to me that these obligations also lead to the conclusion that the counselor—making sure she under-

stands the equivocal nature of our information about XYY—ought to share his discovery."

Mass programs of genetic screening such as those now being promoted for sickle-cell anemia, a fatal genetic disease that attacks mostly blacks, raise their own set of problems. Many thoughtful scientists object to such programs unless something can be done to help the victims and their families—that there be counseling services available, for example, and built-in safeguards for the protection of privacy.

Last May, the genetics group published a report in the prestigious *New England Journal of Medicine* entitled "Ethical and Social Issues in Screening for Genetic Disease." The group had been urged by Dr. Robert Murray, a black geneticist and an Institute trustee, to produce this report as rapidly as possible: Congress has recently appropriated a great deal of money to set up sickle-cell anemia screening programs, and he and others are concerned that these mass programs might be begun hastily and without adequate preparation. The social, ethical, and legal guidelines which were developed in that article—which dealt with such matters as the necessity for maintaining confidentiality of records, protection against compulsory participation, freedom of choice in childbearing, and so on—have been taken very seriously by the doctors who are setting up these programs. And various state legislatures, that had been talking about putting mandatory screening laws on the books, have had second thoughts about the wisdom of such laws.

The case of the woman who asked to "be allowed to drink the hemlock" illustrates one of the concerns of the Institute's group on death and dying. The woman is Lucy Griscom Morgan, wife of Arthur E. Morgan of Yellow Springs, Ohio, who was the first chairman of the board of the Tennessee Valley Authority and who, as president of Antioch College in the 1920's, established its well-known cooperative work-study program.

Morgan, who is now 94, wrote in a letter published in *The Hastings Center Report* that his wife had been mentally impaired for several years and was confined to a nursing home. "I sometimes think that living does not seem an asset to her," he wrote, adding that a few years ago she had expressed a wish to die.

He included an article Mrs. Morgan had written many years earlier expressing concern about the feelings of people who outlive their capacity to care for themselves. She and several of her friends, she wrote, would like it "recognized as honorable and proper for a person who has done a good life's work and is honestly weary from the burden, to so signify. We feel that after mature consideration, such a one should be allowed to drink the hemlock in some dignified and simple way. We also feel it no longer should be a professional duty in a physician to needlessly prolong suffering in a very old person."

In the *Report's* next issue Morgan added that the nursing home was force-feeding his wife despite protests from him and their son, Frank. The note quoted Frank Morgan as saying: "I was frankly shocked by this... Mother deserves peace and dignity—not to be unwillingly

dragged along."

The death and dying group, which is funded by the New York Foundation, has not formulated a recommendation on euthanasia and the problems of old people, but it has advanced suggestions regarding the legal definition of death. The gist of them is that cessation of the brain's activity, as determined by several tests, should be a sufficient criterion.

This definition of death, however, has been the subject of a lively debate within the group. An alternate view is held by Dr. Robert S. Morison, co-chairman of the group, formerly the Director for Medical and Natural Sciences at The Rockefeller Foundation, and now Professor of Science and Society at Cornell. He maintains that death is a "process" that commonly occupies a span of time and that it is often impossible to identify the single instant at which death occurs. He thinks some of the pressure to re-define death might arise from an unseemly eagerness to obtain, for transplant, organs that are "less dead." He agrees with other members of the group, however, that attitudes and laws "that now restrain the individual from taking an intelligent interest in his own death" should be changed.

Another aspect of the death and dying program was a course taught this past summer at Dartmouth by two of the Institute's staff members. One session dealt with Eastern concepts of death—specifically, those of ancient Egypt and Buddhism—on the theory that understanding the concepts of other cultures can help us to discover our own. It was taught by Marc Lappé, the 32-year-old associate for the biological sciences (his doctoral dissertation is entitled "The Role of Immunologic Surveillance during Carcinogenesis in the Mouse") whose master's degree is in Oriental thought.

The class met on a roasting hot day in Dartmouth Hall, the college's often burned and rebuilt original building overlooking the Hanover common—16 students around a table, mostly young, one or two older, half of them women.

Lappé, looking scholarly behind round gold-rimmed glasses, contrasted Egypt's concern to preserve the body with the practice, in Tibetan Buddhism, of hastening the body's dissolution.

Then, during an open discussion, he gently explored some of the students' feelings about death and the integrity of the body. He asked one voluble young woman whether she felt that all her parts should go to the grave with her or whether she would be willing to donate organs for transplanting.

"Oh, I'd be perfectly willing for that to happen," she said.

"Well," Lappé said, "pretty soon we'll be distributing cards for you to sign that will authorize removal of organs on your death. Would you like to sign one now?"

The woman smiled wanly. "I'll really have to think about that," she said. "I guess when it comes to the crunch I'm not so ready for that as I thought."

The Institute's task force on behavior control has conducted two conferences in a series of six—all for the purpose of assembling data and assessing the social significance of various forms of behavior control. The mandate of this task force is

that it look at psychological forms of control like those forecast by Anthony Burgess in *A Clockwork Orange*—or case histories like the one of the violent young man, mentioned at the beginning of this article, whose unhappy alternatives were prison or brain surgery. In that instance, Willard Gaylin, director of the task force, was unenthusiastic about either letting the subject remain in prison, considering the present state of prisons, or letting the surgeon into his brain.

The group has discussed other possibilities. Electrical stimulation of the brain perhaps even by remote control—may prove effective; there is the example of the scientist who stopped a fighting bull in mid-charge with a radio signal. Also, tranquilizing drugs are a possible, less extreme, solution.

The task force also discusses more ambiguous forms of behavior manipulation—such as advertising, for example, or selective distribution of information in newspapers or television programs—and eventually the group will take on the task of formulating a systematic concept of behavior control and recommending changes in public policy.

The Institute's population program, which is supported by the Ford Foundation, aims to help make ethics an integral part of national and international planning programs. This group, which is directed by Callahan, already has one substantial achievement to its credit—a three-volume study prepared for the Presidential Commission on Population Growth and the American Future. The study asserted that the "ultimate goal of a population policy should be human welfare" and warned that "a policy which did not take account of human values, which failed to respect freedom and justice, which ignored the range of grave problems in our society, would almost certainly be doomed to practical failure." It also warned that any hint of a double standard—any basic difference in what the United States urges in its international programs versus what it urges for its own citizens—would obviously damage our credibility abroad.

The program in medical ethics has focused almost exclusively on developing a curriculum for medical schools. (In the process it has gathered a large collection of case histories, which are now being prepared for textbook publication.) The impetus to create this program came from a group of students at the College of Physicians and Surgeons of Columbia University. In the spring of 1970 the student group asked if a lecture and seminar series could be arranged; in response, the Institute set up a short lecture series for first-year students plus a discussion series in which cases were presented by third-year students—cases which involved decisions as to the allocation of scarce medical resources, the fixing of medical priorities, the rights of patients to information and so on. In addition, with support from the Commonwealth Fund, the task force has worked out a plan to test different ways of teaching ethics in medical schools and to explore the status of the subject in various other graduate and undergraduate departments.

The Institute's newest program, supported by The Rockefeller Foundation, stems from a realization that common

ethical themes arise in all the program areas. Population control is, after all, a form of behavior control; policies affecting the control of death rates have important implications for population growth rates; genetic counseling and engineering focus on the genetic quality of human life, which has ramifications for the quantity of human life. The main issue which arises in all these contexts is how a proper balance is to be struck between the good of the individual and the good of society. To deal with these common themes, the Institute has created a new humanities project and has recently appointed an associate for the humanities—30-year-old Peter Steinfeld, an intellectual historian and, like Callahan, a former editor of *Commonweal*.

In a way, this new program deals with a problem of success. The response to the work of each of the research groups has been so overwhelming that they have tended, more and more, to focus in on specific tasks and, necessarily, narrower issues. The humanities project is conceived as a mechanism to insure that the larger problems are pursued equally vigorously—that they don't fall between the cracks.

Although the Institute has channeled most of its energies into the programs described here, it remains free to attack any appropriate target that comes into view. An example occurred last spring when the *Archives of Dermatology*, a journal of the American Medical Association, published an FBI poster seeking information on a fugitive who might seek treatment for a skin ailment.

Gaylin set out to find out why the poster was published. He found that one man had okayed its publication without extensive consultation: the chief of the AMA's Division of Scientific Publication. The division chief saw the move as a routine editorial decision and said he would not hesitate to do it again because "no questions of medical ethics are involved."

Gaylin wrote up the story for *The Hastings Center Report*, but because its next publication date was some time off the staff tipped off the news media. Articles in several large publications resulted. In his own piece, under the piquant headline "What's an FBI Poster Doing in a Nice Journal Like That? The AMA, Ethics, and a New Role for the Physician," Gaylin wrote:

"It seems ironic that the AMA, which has consistently opposed government intrusion into medical matters even where a legitimate public interest has been proved, should now have volunteered the services of organized medicine into a government function—and in an area so alien from the traditional medical mission as tracking down criminals."

He concluded: "If... an entire organization such as the AMA proves so insensitive to questions of ethics as to deny their existence here—it could be disastrous."

The Institute of Society, Ethics, and the Life Sciences addresses itself to some of the knottiest, most complicated questions of our time: in so doing it may greatly influence the society of the future. It is heartening, then, to discover that these questions are being asked while there is still time—and equally heartening that they are being asked by such gifted and thoughtful men.

Charles Pepper

The Dartmouth summer course on death and dying:



Doug Taylor

Jean Fahey

Glenn Strauss

Rev. Bill Nelson

Dr. Marc Lappé

Nancy Lieberman

Mike Sharp

Rev. Jane Raible

GRANTS: January/February/March/April/May/June/July/1972

CONQUEST OF HUNGER: University of Chile: research on protein malnutrition in children, \$7,500. International Center of Tropical Agriculture, Colombia: Completion of its headquarters facilities, \$1,357,195. University of Valle: improvement of protein quality in food plants, \$33,000. Inter-American Institute of Agricultural Sciences, Costa Rica: operation of the Secretariat of the Latin American Association of Plant Science, \$15,000. Foundation for the Development of Cooperatives, El Salvador: increasing agricultural productivity among small landholders, \$74,900. East African Agriculture and Forestry Research Organization, Kenya: sorghum improvement, \$45,000. University of Nairobi: increasing protein quality in fish, \$7,900. International Maize and Wheat Improvement Center, Mexico: International Potato Program, \$113,200; Puebla Project, \$73,326.44. National School of Agriculture: graduate program, \$60,000. Association for the Advancement of Agricultural Sciences in Africa, Nigeria: \$15,000. International Rice Research Institute, Philippines: completion of the collection of world germplasm of rice, \$28,620. Joint Commission on Rural Reconstruction, Taiwan: fish ecology, \$25,000. Kasetsart University, Thailand: improvement of protein quality

in rice, \$1,400. Mahidol University: nutrition research, \$24,000. Middle East Wheat Improvement Project, Turkey: \$131,850. Food and Agriculture Organization of the United Nations: pilot for a computerized agricultural research information system, \$15,000; symposium on nutritional improvement of food legumes, \$2,500.

UNITED STATES: University of California, Davis: study of hybridization of plants, \$14,940. University of California, Riverside: research in wheat production, \$40,000. Atlantic Council of the United States, District of Columbia: research study, "U.S. Agriculture in a World Context," \$25,000. National Academy of Sciences: study of efficiency of agricultural production in the United States, \$50,000. University of Minnesota: research on small farming in Japan, \$12,900. Cornell University, New York: research on cold tolerance in maize, \$15,000. Michigan State University: studies in protein quality of grains, \$16,500. North Carolina State University: research on rice blast disease, \$10,000. University of Wisconsin: potato research, \$15,000; research study "Microeconomic Decisions and the Long-run Development of Agriculture," \$5,965.

EQUAL OPPORTUNITY: Los Angeles City Unified School District, California: school-community advisory councils, \$300,000. Office of the Los Angeles County Superintendent of Schools: leadership training program for school administrators, \$300,000. Ravenswood City School District: internship for a school administrator, \$33,519. San Francisco Unified School District: internship for a school administrator, \$26,607. Sequoia Elementary School District: internship for a school administrator, \$33,799. Watts Labor Community Action Committee: paramedical training program, \$200,000. Yale University, Connecticut: research on methods of increasing public participation in community housing programs, \$15,000. Wilmington Public Schools, Delaware: internship for a school administrator, \$31,720. Americans for Indian Opportunity, District of Columbia: development of Indian programs in schools, \$15,000. Education for Involvement Corporation: Project Youth Involvement, \$15,000. George Washington University: workshops for careers in the arts, \$25,000. Howard University: planning a National Commission on Higher Education for Black Americans, \$5,000. Public Schools of the District of Columbia: internship for a school administrator, \$23,680. Urban Institute: study of cost differentials among school districts, \$15,000. University System of Georgia: Rural Development Center at Tifton, \$500. Community Consolidated School District No. 65, Cook County, Illinois: internship for a school administrator, \$600. Harvard University, Massachusetts: research on ra-

cial attitudes toward black candidacy for high political office, \$70,000; health careers program for students, \$50,000; W. Barry Wood scholarships for medical students, \$25,000. New England Hospital: vocational training, \$950,000. Flint Community Schools, Michigan: internship for a school administrator, \$30,422; Metropolitan Detroit Youth Federation: leadership development, \$72,000. Alcorn Agricultural and Mechanical College, Mississippi: general support, \$79,500. Boy Scouts of America, New Jersey: leadership development, \$150,000. Trenton Board of Education: internship for a school administrator, \$25,731. Board of Education of the City of New York: Open Classroom Program, \$325,000. Cornell University: program for black graduates in the social sciences, \$25,000. Interracial Council for Business Opportunity: expansion of its programs in education for business leadership, \$300,000. College of the Albemarle, North Carolina: education assistance and community development, \$200,000. Duke University: symposium on redevelopment, \$6,000. School District of Philadelphia, Pennsylvania: internship for a school administrator, \$33,173. Oglala Sioux Community College, South Dakota: appointment of a development officer for the Lakota Higher Education Center and Sinte Gleska College, \$15,000. Fisk University, Tennessee: honors program, \$134,500. Sequatchie Valley Planning and Development Agency: director's salary, \$14,400; rural development program, \$6,000.

QUALITY OF THE ENVIRONMENT: California Institute of Technology: research on heavy metal pollutants, \$150,000; research on control of automobile emissions, \$15,000. Claremont Colleges: faculty-student investigations of electric power, mass transit, and land use, \$10,000. University of California, Berkeley: research on pesticides, \$50,000; research on insect pheromones, \$25,000. University of California, Davis: Division of Environmental Studies, \$490,000; research on plant resistance to insects, \$24,619. University of California, Riverside: research on pesticides, \$50,000; research on insect pheromones, \$25,000. Thorne Ecological Institute, Colorado: ecological studies of two regions in Colorado, \$10,000. University of Colorado: study of land development practices in the Colorado mountains, \$9,500. National Public Radio, District of Columbia: coverage of the Stockholm conference on the environment, \$15,000. Smithsonian Research Foundation: staff for an advisory committee on the Stockholm conference on the environment, \$25,000. University of Illinois: research on pesticides, \$50,000. Harvard University, Massachusetts: environmental planning in New England, \$25,000. Woods Hole Oceanographic Institution: study of marine resource exploitation, \$14,455; workshop on Critical Problems of the Coastal Zone, \$5,175. University of Michigan: en-

vironmental research at the Douglas Lake Biological Station, \$15,000. University of Missouri: research on heavy metals and organic compounds in the environment, \$183,000. Mississippi State University: research on plant resistance to insects, \$30,220. Princeton University, New Jersey: development of mass spectroscopic sensor for air quality measurements, \$15,000; research in ecology by its Center of International Studies, \$15,000. Administrative and Management Research Association of the City of New York: environmental intern program, \$12,500. City College, City University of New York: research on effluent mariculture as a system of tertiary sewage treatment, \$25,000. Columbia University: pollution studies, \$25,000. Cornell University: research on pesticides, \$50,000; research on insect pheromones, \$25,000. Institute on Man and Science: evaluation of guidelines for impact studies, \$14,100. Scientists' Institute for Public Information: to help the public assess the problems of the environment, \$25,000. State University of New York at Stony Brook: Urban and Policy Sciences Program, \$385,000. Case Western Reserve University, Ohio: phosphorus studies, \$500,000. Texas A & M University: study of plant resistance to insects, \$116,300. Wisconsin University: improvement of environmental quality in the Lake Superior region, \$656,000.

ALLIED INTERESTS: University of Valle, Colombia: health care studies, \$500,000. University of Reading, England: conference on "Multi-national Enterprise and Economic Analysis," \$5,000. National Research Council, Italy: schistosomiasis research, \$8,300.

UNITED STATES: Salk Institute for Biological Studies, California: study of drug use, \$10,000. University of Southern California: study of resource sharing with other universities, \$25,000. American Association for the Advancement of Science, District of Columbia: support of the Office of International Scientific Affairs, \$25,000. Brookings Institution: young scholars' program, \$200,000. Institute for the Study of Health and Society: program development, \$15,000. National Academy of Sciences: studies of establishing an "International Foundation for Science," \$25,000; visits of Chinese physicians to the United States, \$25,000; essays on revolutions in scientific thought, \$15,000. Overseas Development Council: research on problems of less-developed countries, \$125,000. Florida State University: study of economic aspects of increased grain production in less-

developed countries, \$15,000. University of Notre Dame, Indiana: for use by the Ecumenical Institute for Advanced Theological Studies, Jerusalem, \$500,000. Johns Hopkins University, Maryland: young scholars' program, \$100,000; seminars for young foreign service officers from developing countries, \$75,000; schistosomiasis research, \$15,000. Harvard University, Massachusetts: schistosomiasis research, \$54,000; study of surgical care in the United States, \$25,000. Massachusetts Institute of Technology: research on Chilean inflation, \$5,937. University of Michigan: schistosomiasis research, \$9,000. African-American Institute, New York: operation of information center, \$22,000. American Assembly: program on the role of foundations, \$25,000. Carnegie Endowment for International Peace: training programs for young foreign service officers from developing countries, \$7,960. Columbia University: study of corporate responsibility, \$25,000. Cornell University: schistosomiasis research, \$10,000; Council on Foundations: Public Affairs and Education Program, \$100,000. U.S. Conference for the World Council of Churches: study of nonviolent methods of social change, \$15,000.

CULTURAL DEVELOPMENT: Experimental Arts and Crafts Center Association, Alaska: general support, \$25,000. Arizona State University: internships in university administration, \$10,500. Magic Theatre, California: residency of Jeffrey Mark Wanshel, playwright, \$10,000. Mills College: expansion of its Center for Contemporary Music, \$75,000. San Francisco Conservatory of Music: community education in cooperation with the Community Music Center, \$181,000. University of California, Berkeley: history of Gros Ventre Indians, \$3,000. University of California, Los Angeles: Graduate Dance Center, \$80,000. Connecticut College: American Dance Festival, \$15,000. American University, District of Columbia: scholarships to the National Youth Orchestra given by the Wolf Trap American University, \$20,000. National Endowment for the Humanities: Jefferson Lecture in the Humanities, \$6,000. Washington Drama Society: The Living Stage, program for young people, \$25,000. University of Florida: completion of a film of Ruth St. Denis's dance work "Radha," \$15,000. Indiana University: research on emancipation celebrations, \$7,000. University of Iowa: seminar for graduate students including courses in film-making and the American heritage, \$90,000; research on poet-novelist Jean Toomer, \$615. Berea College, Kentucky: Puppetry Caravan, \$23,530. Free Southern Theater, Louisiana: Ensemble and Drama Workshop, \$25,000. New Orleans Philharmonic Symphony Orchestra: instrumental and orchestral youth training program, \$22,129. Center Stage Associates, Maryland: improvisational theatre in elementary schools, \$14,912. Johns Hopkins University: program integrating the American heritage with that of Africa, Latin America, and the Caribbean, \$99,802. St. Mary's City Commission: program to provide historians with an introduction to archeology, \$25,000. Universal Christian Church: workshops in the performing arts in Pipestem, West Virginia, \$25,000. Berkshire Theatre Festival, Massachusetts: general support, \$25,000. Radcliffe College: to enable Gail Thain Parker to begin research on the papers of Charlotte Perkins Gilman, \$5,150. Minneapolis Society of Fine Arts, Minnesota: construction of a building for the Children's Theatre,

\$500,000. University of Minnesota: Office for Advanced Drama Research, \$65,000. St. Louis Symphony Society, Missouri: experiments in acoustical technology, \$15,000. American Universities Field Staff, New Hampshire: to enable Lael Warren Morgan to document the current transitions of Eskimo life in Alaska, \$11,000. Institute for Advanced Study, New Jersey: study of Caribbean eighteenth-century revolutions, \$15,840; review of Soviet studies in the United States, \$3,500. Princeton University: development of a professional theatre program, \$200,000. African Cultural Center, New York: residency of Charles Gordon, playwright, \$10,000. Brooklyn College of the City University of New York: studies in American music, \$25,000. Cell Block Theatre Workshops: workshops in prisons, \$23,980. Circle in the Square: operations in new theatre, \$25,000. Colgate University: internships in academic administration, \$15,000. College Entrance Examination Board: conference on academic policy co-sponsored by Harvard University, \$3,500. Henry Street Settlement: multi-ethnic activities of its New Federal Theater, \$100,000. Hunter College of the City University of New York: Arts Center, \$25,000. Institute of Society, Ethics and Life Sciences: \$46,666. LaMama Experimental Theatre Club: resident troupes, \$225,000. National Music Council: study of possibility of pooling administrative facilities of New York offices of certain non-profit music organizations, \$1,800. New York Shakespeare Festival: general support, and development of a national agency to interchange plays, directors, scripts, etc., \$480,000. Paper Bag Players: holding of workshops and other expansion of activities, \$100,000. St. Felix Street Corporation: activities of the Brooklyn Academy of Music, \$500,000. Street Theater: workshops in prisons, \$75,000. Saratoga Performing Arts Center: drama training program and residency of the Juilliard acting company, \$10,000. Theatre for the Forgotten: workshops in prisons, \$23,200. Cincinnati Playhouse in the Park, Ohio: residency of Maria Irene Fornes, playwright, \$10,000. Pennsylvania State University: program in religion and the American heritage, \$30,000. University of Texas: workshop for playwrights, \$3,000.

UNIVERSITY DEVELOPMENT: University of Valle, Colombia: scholarships for graduates, \$57,000; library acquisitions, \$55,600; Division of Sciences, \$34,000. Association of African Universities, Ghana: workshop, "Creating the African University," \$15,000. Gadjah Mada University, Indonesia: buildings to house staff, \$60,000; development of Indonesian institutions of higher education, \$58,500; study of problems of university development in Asia, Africa, and Latin America, \$5,000; symposium on plant protection, \$2,000. Italy: seminar on unemployment in Africa at the Bellagio Study and Conference Center, \$14,000. University of Nairobi, Kenya: Department of Economics, \$15,125; Department of Government, \$13,625; staff development, \$6,517; workshops in music and dance, \$5,600. Ahmadu Bello University, Nigeria: program in agricultural marketing, \$6,500. University of Ibadan: graduate training, \$86,715; research on employment opportunities in agriculture, \$60,482; study of employment of graduates, \$24,383; postdoctoral fellowship, \$9,580; staff development, \$9,620; establishment of West African Association of Agricultural Economists, \$8,736; acting director computer centre, \$8,525. University of Lagos: research on unemployment, \$30,000. University of the Philippines: family planning and child health, \$69,783; School of Economics, \$40,950; Social Sciences and Humanities Center, \$1,222. University of Dar es Salaam, Tanzania: staff development, \$29,750; rural development, \$25,000; teaching through research programs, \$9,450; three issues of the *African Review*, \$8,400. Kasetsart University,

Thailand: agricultural program, \$58,000; graduate assistantships in agriculture, \$37,800; consultations and travel, \$5,000; research leadership positions, \$5,000. Mahidol University: Faculty of Medicine, \$85,000. Thammasat University: textbooks in Thai, \$45,589; research in Asian drama, \$10,755; graduate scholarships in economics, \$9,690; research on income distribution, \$2,650. Makerere University, Uganda: Faculty of Social Sciences, \$10,500; research on retail and service centers in Kampala, \$3,674; conference of East African university administrators, \$3,040.

Related grants: University of Guelph, Canada: visiting professor in agricultural economics, \$32,000. University of Toronto: university development assignments, \$15,000.

UNITED STATES: University of California, Santa Barbara: research on crime in West Africa, \$7,497. University of Notre Dame, Indiana: university development assignments, \$275,000. Harvard University, Massachusetts: participation of a Kenyan scholar in the ILO Mission to Kenya on Employment, \$1,000. Massachusetts Institute of Technology: university development assignments, \$275,000. Tufts University: research on economic development of Zaire, \$5,000. University of Minnesota: university development assignments, \$275,000. State University of New York at Stony Brook: toward computerizing admissions at University of Ibadan, \$42,424. University of Oregon: research on urban behavior in Nairobi, \$5,900.

PROBLEMS OF POPULATION: Queen's University, Canada: research position in reproductive biology, \$47,800. University of Bristol, England: research in reproductive immunology, \$300,000. University of Ghana: study of labor migration in West Africa, \$2,000. East-West Center, Hawaii: study of technology in a developing country, \$14,620. Gadjah Mada University, Indonesia: regional conference of Asian universities on population education, \$15,000. University of Indonesia: teaching of family planning, \$15,000. Pahlavi University, Iran: teaching of family planning, \$15,000. Cayetano Heredia University of Peru: research in reproductive endocrinology, \$15,000. Children's Medical Center, Philippines: study of midwives as motivators for family planning, \$15,000. National Science Development Board: study of motivators of family planning, \$12,500. Mahidol University, Thailand: research in reproductive biology, \$28,500.

on the population problem in the world, \$25,000. University of Miami, Florida: research in reproductive immunology, \$15,000. Emory University, Georgia: family planning program, \$5,900. Planned Parenthood Association of Maryland: population education in Baltimore schools, \$86,000. Harvard University, Massachusetts: program on population and child health in Haiti, \$24,000. University of Michigan: analytical study by its School of Public Health of family planning programs, \$15,000. Washington University, Missouri: study of the teaching of family planning in medical schools in the United States, \$22,000. American Bureau for Medical Aid to China, New York: teaching program in family planning in Taiwan, \$25,000. James Madison Constitutional Law Institute: program in population law, \$50,000. Population Council: new approaches to control of conception, \$500,000. University of North Carolina: study of function of university population centers, \$34,000. Wake Forest University: research in reproductive immunology, \$98,000. Pennsylvania State University: research in reproductive biology, \$210,000. University of Pennsylvania: research in reproductive biology, \$350,000; research on population growth and socio-economic development in the developing countries, \$265,000; training for family planning workers, \$7,900. Baylor College of Medicine, Texas: family planning research, \$50,000.

UNITED STATES: University of Alabama: research in reproductive biology, \$136,500. Yale University, Connecticut: family planning program, \$10,000. Association of American Medical Colleges, District of Columbia: regional seminars in Africa on family health, \$7,500. Citizens Committee on Population and the American Future: operating costs, \$25,000. Population Crisis Committee: distribution of a report