freedom that had made a sharp impression in the Soviet Union.

All the participants agreed that both government and private support for exchange should be greatly expanded. Edward Litchfield, chancellor of the University of Pittsburgh, commented that "there are large foundations here that have never done much in this area; these should be smoked out."

Humphrey urged that exchange not be limited to the academic world. He proposed that the Soviet lend-lease debt be used to help ordinary American families travel behind the Iron Curtain, saying that these people "are apt to find out more by accident than some of us do on purpose." He also strongly urged amendment of the Agricultural Surpluses Act so that frozen counterpart funds could be used for medical rehabilitation and student exchanges. Under this act, agricultural surpluses are paid for in the currency of the buying country, and the United States uses the money for such purposes as paying extra embassy staff help and furnishing technical aid. Humphrey stated that "at least $1½ billion is lying around the world unused today."

Rusk noted that the life expectancy in Burma is 29 years, and that that life-span could be raised to 50 in 5 years with the investment of a modest amount of money.

Blanche Thebom of the Metropolitan Opera suggested that the frozen funds be used to pay for airplane tickets and hotel accommodations to support the exchange of more young American artists like Van Cliburn.

Exchange and the National Interest

The final plenary session, which was under the chairmanship of Dean Rusk, president of the Rockefeller Foundation, was devoted to "International Exchange and the National Interest." Rusk's opening statement emphasized that "we have an enormous interest not only in giving but in taking."

Senator Karl E. Mundt reported that, in contrast to a few years ago, congressional evaluation of exchange-program budgets is increasingly favorable. He said that in the Senate there has been a change from an attitude of suspicion and skepticism to one of acceptance and even support. However, budget allocations are still far from adequate, and this is partly because Congressmen have great difficulty in learning where and how funds are spent. Mundt mentioned that Thayer, the new State Department man concerned with exchange, had had to assemble representatives from 15 different government agencies in order to "call into focus our exchange program."

Mundt said: "I feel the time is here when we should coordinate all these activities under the authority of one government executive at the Cabinet level, perhaps heading a Department which might be identified as the Department of International Public Relations." He suggested that two assistant secretaries would function under the new Cabinet officer, one to head an Office of Cultural and Educational Exchanges and the other to head an Office of Informational Media. Mundt explained: "I believe the selling programs of our information media could be kept separate from the seeing-for-yourself programs of our cultural and educational exchange, and Cabinet status would give to both offices the clarity of purpose . . . and the exclusive areas of action needed to induce Congress to provide adequate funds. . . ."

Representative Chester Bowles put forward another proposal: "We need not only to keep expanding our Voice of America program in all of its ramifications, we need to create a really large-scale 'Voices *To* America' program." He pointed out that foreign students in this country, coming from 145 countries in the world, represent a tremendous fund of knowledge and insight waiting to be tapped. He suggested that these foreign students be made available to "all the myriad business, labor, church, social, alumni and professional groups that exist in every town."

Bowles explained that this "Voices-to-America" program would need two things: (i) active committees in every town to stimulate interest in world affairs and keep all the local organizations aware of foreign-student availability; and (ii) clearinghouses on the state and regional levels, working in cooperation with the colleges and universities, to keep a register of the foreign students, their backgrounds and capabilities. In closing, Bowles observed:

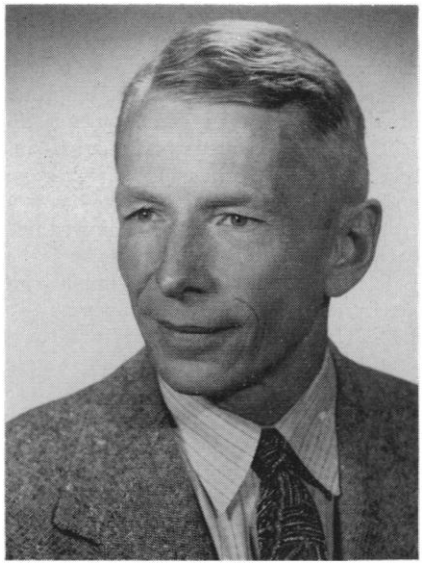
"It has often been said that these post-war years have been filled with mistakes and blunders, but when our history is someday written, these times will also go down as a period of creative ideas.

"And one of the most creative of them all has been the idea of international exchange."

Krauskopf and Steinbach Appointed to Editorial Board

The editorial board of *Science* is glad to welcome two new members: Konrad B. Krauskopf, professor of geochemistry and associate dean, School of Mineral Sciences, Stanford University, and H. Burr Steinbach, professor of zoology and chairman, department of zoology, University of Chicago.

Krauskopf, who was born in Madison, Wis., received an A.B. degree at the University of Wisconsin in 1931, a Ph.D. in chemistry at the University of California in 1934, and a Ph.D. in geology



Konrad B. Krauskopf

at Stanford in 1939. With the exception of a year as instructor in chemistry at California in 1934–35, his professional career has been at Stanford, where he began as an instructor in physical sciences (1935–39) and continued in the department of geology.

Krauskopf has enlarged his experience both by government service and travel. He has held appointments as associate geologist, U.S. Geological Survey (1942–44), geologist (1944–46 and various times since), and chief, G-2 Geographic Section, General Headquarters of the Far East Command, U.S. Army, Tokyo (1947–49). His perfomance in this last assignment brought him a citation for meritorious civilian service. He has traveled extensively to further his researches: to Mexico (1945–46) as an observer of the Parícutin volcano; to Norway (1952–53) for research as a Guggenheim and Fulbright fellow; to Jordan (1945) for a mineral survey; and to Alaska in the summer of 1955 as an employee of an oil company.

His textbook, *Fundamentals of Physical Science* (McGraw-Hill, New York), which was first published in 1941, will go into its fourth edition this year. Further, he is at present serving as associate editor of *Economic Geology*. His research interests have dealt with problems in chemistry, geochemistry, and geology: the kinetics of photochemical gas reactions, structure of batholiths, tungsten deposits, mechanism of volcanic eruptions, trace metals in sea water and sedimentary rocks, solubility of silica, separation of manganese and iron in geochemical processes, and composition of magmatic gases. At present he is investigating the solubility of sulfides at high temperatures, the geochemistry of ore deposits, and the geochemistry of laterite weathering.

H. Burr Steinbach is an experimental zoologist and general physiologist who took his Ph.D. degree under Heilbrunn at the University of Pennsylvania in 1933. He conducted postdoctoral research at the University of Chicago and at the University of Rochester as a National Research Council fellow; then, between 1935 and 1946, he taught at the University of Minnesota, Columbia University, and Washington University, St. Louis. In 1947 he returned to Minnesota as full professor and remained there for 10 years, with a sabbatical as a Guggenheim fellow in England and at the University of London in 1956. In 1957 he returned to the University of Chicago as chairman of the department of zoology.

For many years he has spent the summer at Woods Hole, Mass., where he has devoted himself to research at the Marine Biological Laboratory. He has been as intimately connected with the Woods Hole laboratory as with any institution at which he has taught during the academic year, and he is a trustee of the laboratory and a member of the corporation.

Steinbach has fulfilled several significant special assignments. In 1953–54 he took a year's leave from the University of Minnesota to serve as assistant director for biological and medical sciences at the National Science Foundation in Washington. He has been editor of the *Biological Bulletin* and president of the Society of General Physiologists. He is now president of the American Society of Zoologists. Further, he is chairman of the Division of Biology and Agriculture of the National Academy of Sciences–National Research Council, where his term expires on 30 June 1960. He is not a newcomer to this division, having played an important role in the organization of the American Institute of Biological Sciences, which originally was a part of the division. At present he is also a member of the National Science Foundation's Divisional Committee for Biological and Medical Sciences.

H. Burr Steinbach

His research papers have ranged from studies on the ontogeny of enzyme systems and intracellular localization of enzymes through acclimatization phenomena in fish to active transport of ions across cell boundaries and the origin of bioelectric potentials. His recent interests are concerned with the general biochemistry and ecology of the alkali metals and their compounds. He has also written on some aspects of the history of science.

The varied interests and activities of these two men, coupled with their editorial experience, make them valuable additions to the Board.

Dupont Grants

Grants totaling nearly $1.2 million have been awarded to 139 universities and colleges in the Du Pont Company's annual program of aid to education. The entire program is for fundamental research by universities and for strengthening the teaching of science and related liberal arts in the 1959–60 academic year.

Du Pont nearly doubled its grants for unrestricted research in the physical sciences because of the growing need for this type of work, which the company has been supporting since 1949, and because of the flexibility of this form of support. These funds may be used for fundamental research in any way the institutions wish, including the support of graduate students that the company has previously aided through a separate series of postgraduate fellowships started in 1918. The universities determine the research to be undertaken and are free to publish the results.

For this work, the company gave $450,000 to 36 universities in grants ranging from $5000 to $20,000 for fundamental research in chemistry, chemical engineering, physics, mechanical engineering, and metallurgy. An additional $27,000 was awarded for 18 summer research grants of $1500 each. The purpose is to enable individual staff members of 17 universities to undertake research of their own choosing in chemistry and engineering during the summer.

As has been the case in recent years, the largest part of Du Pont's program is to help strengthen the education of scientists and engineers. Grants totaling $696,000 were awarded to more than 100 colleges and universities to support the teaching of science and mathematics as well as other subjects. These awards include:

1) $4000 each to 76 colleges to help maintain their records of strength in chemical or technical education. Each grant provides $2500 for chemistry teaching and $1500 for advancing the teaching of other subjects.

2) $4000 each to 23 major universities to help strengthen undergraduate teaching of courses that contribute to scientific and engineering education.

3) $3000 each to 12 medical schools to support education and research in biochemistry.

4) $184,000 for 46 postgraduate teaching assistantships, chiefly in chemistry, shared by 42 universities.

5) $80,000 for fellowships and scholarships for prospective high school teachers of science and mathematics. This includes 26 postgraduate fellowships at seven universities and 54 summer scholarships for undergraduates at six colleges.

Grants for other university work round out the total program. The total increase over the grants for the present academic year is about $45,000.

Space Handbook

A 250 page document, titled *Space Handbook: Astronautics and Its Applications,* has been made available by the House-Senate Committee on Astronautics and Space Exploration. The booklet, in its four parts and 29 chapters, covers in outline the history of thinking and work in regard to space activities, scientific and technical considerations in regard to current work in this country and others, and possible future uses for space vehicles operating at and beyond the periphery of the earth's gravitational field. The work was done by the Rand Corporation of Santa Monica, Calif., a private, nonprofit research organization specializing in study and evaluation of matters affecting national security. John W. McCormack, chairman of the committee and representative from Massachusetts, requested the study to aid the new Congress, the new congressional Committee on Science and Astronautics which succeeds his committee, and the public in gaining the best possible appreciation of the state of astronautics and the future trends.

In addition to an introduction, the document has sections on technology (covering such subjects as vehicles, propulsion systems, power sources, communication), on applications (presenting the use of satellites for observation, meteorology, navigation, and exploration), and on astronautics in the United Kingdom and the People's Republic of China.