that these incredible forces would presently be tamed for nonmilitary use, the magnitude of our break with the past became visibly greater and greater.

"We are just beginning to see that even these advances, tremendous as they are, constitute the signal, rather than the substance, of what is to come. Our successful probing into the nucleus of the atom is but an example of the clear fact that science is entering a new and accelerated stage of advancement, which will give to man the possibility of control over his environment, over himself, and over his destiny, which we have as yet only vaguely sensed. By probing the atom, man is exploding into the universe. With prospects that are—just as they were in the case of nuclear energy—both marvelous and frightening, we are on the threshold of an equally revolutionary probing of the cell and of the mind.

"Man is breaking with the past, its limitations and its safeguards. The prize is greater than ever before—so are the risks. The question is not, 'Do we like this?' The question is, 'What role do the people of the United States wish to play in the drama of the future?' We cannot hide. We must not relax. How can we play a noble part?

"What concerns us here is far and away larger than any question about a satellite, or even about a battery of long-range guided missiles, although these dramatic devices have precipitated discussion, and have produced a readiness to consider drastic action.

"We are in fact saying that man is on the very edge of a new relation to the atom, to the cell, to himself, and to the universe in which he is set. Many forces have been active, but clearly it is science which has been chiefly instrumental in bringing about this new relation. The new relation will place new demands on all man's resources—especially on his capacity to handle this new power with restraint and decency.

"This scientific revolution will totally dwarf the industrial revolution and the other historical instances of great social change. It will be more compelling, and will pose more urgent problems, due both to the pace and the magnitude of the changes which now impend.

"What faces man is not, in any restricted sense, a scientific problem. Scientific issues are vitally and almost universally involved. The special knowledge of the scientist is necessary, to be sure; but that knowledge would be powerless or dangerous if it were not effectively pooled with the contributions of social scientists, humanists, statesmen, and philosophers and brought to the service of all segments of our society.

"What on earth—excuse us, it is difficult to adjust—what in the universe ought we to do? The scientists certainly have no arrogant illusion that they have the answers. But they do want to help. At the very least, they have the duty of briefing their colleagues in other fields. They are, moreover, convinced that the time is overripe for a more understanding collaboration between their special profession and the rest of society.

"Because it is urgent for scientists to organize their own thinking about the problems raised in the preceding paragraphs, and urgent for society to understand those problems and their implications, the Council (the legislative body) of the American Association for the Advancement of Science decided that the Association should convene a special meeting, widely representative of all fields of science, to consider certain definite and pressing aspects of the current problems. For obvious practical reasons, the discussion will be largely restricted to actual proposals for increasing support for science and improving education."

Exchange of Scientists

During the 5-year period 1952–56, 6108 scientists participated in the State Department's international educational exchange program. Of the total number of persons exchanged during that period, one out of every five was a scientist.

Of the nearly 5000 scientists who came to the U.S., the largest number were in the field of medicine; others were in engineering, chemistry, physics, mathematics, and biochemistry.

More than 1200 American scientists went abroad to lecture, study, or conduct advanced research. The largest groups were in physics, chemistry, engineering, and mathematics.

The range of scientific pursuits which relate to peaceful uses of atomic energy has grown tremendously in the last few years. During 1956, 183 exchanges under the State Department's program were related to such endeavors.

Research in Human Behavior

A citizens' group of 15 people closely associated with behavioral science urges a national effort to expand research in human behavior as a means of fostering improved international relations and strengthening national defense. In a 7000-word statement the group describes the perils of inaction in the "sciences of man" and outlines a series of recommendations for action by both governmental and private agencies.

The group, which is a temporary body, was organized some 3 months ago by James G. Miller, director of the Mental Health Research Institute at the University of Michigan. It came into being following a discussion with Vice President Richard Nixon. The proposed program was also discussed with James R. Killian, Jr., special assistant to the President for science and technology, and with members of his committee. The Ford Foundation awarded a grant to the AAAS to support the group's work.

The statement, which may be obtained from Dr. Miller, says, in part:

"The present situation facing our country calls for an evaluation of the role and potential contribution of behavioral science. This is the combined endeavor of many fields, investigating all aspects of behavior leading to understanding of human beings as individuals and in social relations.

"Behavioral science therefore includes many studies in the fields of anthropology, biochemistry, ecology, economics, genetics, geography, history, linguistics, mathematical statistics, neurology, pharmacology, physiology, political science, psychiatry, psychology, sociology, and zoology.

"Applications ramify into advertising, business administration, education, government, human engineering, labor relations, law, medicine, military science, operations research, personnel selection, public relations, and many other aspects of human endeavor. Some of these sciences are still in early stages of development, but American research in them at the moment has a clear lead over Russian, which is constricted by Communist dogma.

"Behavioral science has demonstrated its usefulness to human welfare and national security. Its further development could increase its contribution in areas of international relations, military defense, and national vigor.

"To accomplish these goals, the following recommendations are offered:

"I. Formation of an advisory panel of behavioral scientists to work closely with the special assistant to the President for science and technology. There is need for more understanding, backing, and use of behavioral science throughout the government and by the people of the United States, and for encouraging the scientists themselves in their research tasks.

"II. Provision of increased funds for behavioral science research, training, and facilities in the National Science Foundation, the Department of Defense, the National Institutes of Health, the Atomic Energy Commission, and other appropriate governmental and private agencies, in order to: (i) establish additional university programs or institutes to conduct research in designated crucial areas; (ii) finance more fellowships, both predoctoral and postdoctoral, especially in all the social sciences; (iii)

increase financial support for basic research in behavioral science; (iv) make available special facilities for behavioral science, including buildings and equipment; and (v) support centers devoted to foreign area studies."

Revised Apportionments on Fish and Game Restoration

Revised apportionments of federal aid funds to the states for restoration of fish and game have been announced by the Department of the Interior. The new apportionment is based on Treasury certifications of money available from excise taxes on certain sporting goods. Under the revisions the 48 States and Hawaii will receive $21,306,000 for fish and game restoration instead of the $25,130,000 previously announced. The revised figure for game restoration is $16,974,000 compared with the $19,130,000 allotted previously; the amount available for the restoration of fish is $4,332,000 instead of $6,000,000.

This money is distributed to the individual states and to Hawaii in accordance with formulas established by law and based upon license sales and land and water areas. Distribution is made on a reimbursable basis, with the states financing projects initially and being repaid $3 in federal aid money for each $4 expended, or a net expenditure of $1 state money and $3 from federal funds.

In addition to the afore-mentioned apportionments, Alaska is to receive $90,000 for game restoration and $75,000 for its sport fishery. Guam, Puerto Rico, and the Virgin Islands will each receive $12,000 for game restoration, and each will get $10,000 for fish restoration. These amounts are fixed by law rather than by formula.

Legislation also provides that no state can receive more than 5 percent of the total apportioned for game restoration, nor can it receive less than 0.5 percent of that amount. Limits for fish restoration apportionment are 5 percent maximum and 1 percent minimum.

Kolthoff Comments on Soviet Trip

I. M. Kolthoff, head of the analytical chemistry department of the University of Minnesota, has recently returned from the U.S.S.R., where he attended a symposium for scientists in his field and lectured at Moscow University. Some of his comments about the trip follow.

"When I arrived in Moscow December 1 it had been 12 years since my last visit to the Russian capital. The great official respect for scientists and the prestige of the Russian Academy of Sciences which were already quite evident in 1945 were made plain to me immediately again. At the airport, the reception committee expedited my passage through customs and immigration procedures with no fuss or red tape and no bother to me.

"I had been invited to Moscow to take part in a three-day symposium. . . . Other participants . . . included 18 scientists from the 'satellite' countries. . . . Harry Irving of Oxford University was the only other guest from a capitalist country.

"There were, in addition, three Chinese chemists present—two men and a woman. One of the men and the young lady had taken their Ph.D. degrees in the United States (University of Wisconsin, 1937, and University of Illinois, 1951). . . . The third Chinese chemist had won his Ph.D. at the University of Munich under the late Professor Hoenigschmidt, one of the world's experts on the determination of atomic weights.

"Although all three Chinese were avowed Communists and supporters of the Red Government in Peiping, the two American-educated chemists referred with affection to their stay in the United States. Indeed, throughout all the many talks and discussions which we had in Moscow, Irving and I never heard a disagreeable word about the United States and Britain.

"The Chinese trio spoke flawless English, and we conversed without inhibition. They admitted that their education system is not yet as advanced as Russia's; it is possible to get only a bachelor's degree in China. But they hope study for advanced degrees will become possible reasonably soon.

"I was impressed by the large number of Chinese studying for advanced degrees at Moscow University. This educational link between Russia and China is not without significance in world affairs, and I could not help regretting once again our government's policy which makes it impossible for us to play a part in training China's future scientific and educational leaders.

"The Chinese chemists invited me to visit them at home and proposed to have an official invitation extended to me on their return. I would have been happy to accept, but sadly had to admit that again in this respect State Department policy might stand in the way.

"This is too bad, for scientific visitors like myself are in a unique position to establish much-needed relations with countries like China. From scientific contacts frequently come exchanges of opinion on other matters.

"As to scientific research in the Soviet Union, we found that—as was true in 1945—most work is carried out in special institutes, which are under the auspices of the U.S.S.R. Academy of Sciences and entirely separate from a university. Except for the fact that most of the advanced research workers also teach at a university (with extra pay), there is no direct relationship between a university and the institutes. . . . Emphasis is entirely on fundamental research, for which apparently unlimited funds are being made available.

"In 1945, I had noticed that practically none of the instruments and equipment was of Russian make. This time I was impressed, if not awed, by the fact that almost all the instruments for refined measurement are made in Russia. . . . .

"The number of research workers in chemistry is greater in Russia than in this country. The quality of their work varies from excellent and good to acceptable. Their papers and journals, in general, compare favorably with those in the Western World. . . . [But] the great advancements in pure and applied science are brought about by contributions of an original and fundamental nature. In this respect the Russians have not got the lead over the West as far as chemistry is concerned. But they definitely hold their own. . . .

"There is no reason for hysteria now. But we do need fully to recognize the fact that fundamental research is the source of applied research and that no nation can remain strong without leadership in basic research."

Grants, Fellowships, and Awards

Behavioral sciences. The most serious difficulty encountered by the Russell Sage Foundation in its work for more effective collaboration between the social sciences and the professional services is the scarcity of trained personnel. In order to help meet this shortage, the foundation offers postdoctoral residencies in operating agencies or professional schools for the purpose of providing qualified sociologists, social psychologists, and anthropologists with specialized training and experience relevant to professional practice. Award recipients must not be over 35 years of age and must definitely be interested in careers involving applications of behavioral science in a field of professional practice. For information, write to the Russell Sage Foundation, 505 Park Ave., New York 22, N.Y.

Biophysics. The Massachusetts General Hospital has established a biophysics training program designed to assist candidates holding doctorate degrees in mathematics, physics, or engineering to apply their knowledge to biological and medical problems. This program is supported by the National Institutes of Health and is presented with the co-