The Third Pugwash Conference

THE Kitzbühel-Vienna conference of scientists on "The Dangers of the Atomic Age and What Scientists Can Do About Them," held on September 14–20, was the third in the series of "Pugwash Conferences." These conferences resulted from a spontaneous movement among scientists of different countries, seeking international exchange of ideas on problems arising from the impact of science on human affairs. This had been an aspiration of "atomic scientists" ever since 1945; but it did not become a reality until ten years later, after Bertrand Russell, Einstein, and several other prominent scientists had issued in 1955 their well-known appeal to humanity. This appeal caused Mr. Cyrus Eaton, the Cleveland industrialist, to offer the hospitality of his home at Pugwash, Nova Scotia for an international conference of scientists on the problems of the atomic age. Individual scientists in England and America took the responsibility for actual organization of the conference. Cooperation of the Soviet Academy of Sciences made it truly international.

The first conference, held at Pugwash on July 6–11, 1957, was attended by twenty-two scientists from ten countries. It agreed on a general statement, as well as on three committee reports, thus confirming the opinion of its organizers that scientists with different political and ideological backgrounds might be able to find a common language not only in professional technical discussions, but also when talking about problems of the arms race, disarmament, and the general implications of science for world affairs. It was a decidedly hopeful beginning, and the continuing committee elected at Pugwash (Professors Powell and Rotblat from Great Britain, Rabinowitch from the U.S., and Skobeltzyn from the USSR, with Bertrand Russell as honorary chairman) was instructed to go ahead with the preparation of further meetings. Two such meetings have been held since. They were of very different types, and each proved successful within the framework set for it.

The second "Pugwash Conference" was held at Lac Beauport, Quebec, in March and April 1958. It was devoted to confidential discussion of the problems of the arms race and world security, with no intention of reaching a consensus, or of issuing a public statement. It was hoped that extensive private exchange of views would make the participants from different nations aware of how problems of our time appear to other nations; and that this might generate new ideas as to how these problems could be approached. Significant progress toward mutual understanding was in fact achieved during the two-weeks-long deliberations at Lac Beauport. The collected papers of the conference were sent to the respective governments, and there are some indications that they have been studied by the authorities of at least some of them. Among the twenty-two participants of this conference, coming from eight countries, several were able to discuss the conference ideas with their national leaders; others presented them to the public in articles, interviews, and speeches.

Movement Broadened

The recent third "Pugwash Conference," that at Kitzbühel and Vienna, had a different purpose. The continuing committee decided to make in this conference an attempt to expand the "Pugwash movement" considerably in breadth, by inviting participation of prominent scientists from a greater number of countries, with a greater variety of opinions. Furthermore, an attempt was to be made to explore in more detail than was possible at Pugwash or Lac Beauport the areas of common understanding of all participants, and to formulate these conclusions in a public statement. This also met the desire of the Austrian authorities and of the Theodore Körner Foundation of Vienna, which generously offered—through the prominent Austrian physicist, Hans Thirring—to serve as host of the conference. Several individuals (Mr. C. Eaton, Mr. W. Swartz, and a few others in America), foundations (New Hope Foundation), and institutions (the Soviet Academy of Sciences) provided additional financial assistance, which made travel of the participants to the conference possible.

In six days of closed sessions at Kitzbühel, attended by about seventy scientists from twenty countries, seventeen papers were presented, in the following general areas: consequences of a nuclear war; hazards of nuclear weapons tests; technical problems of disarmament; political problems of the arms race; science, technology, and education in the scientific age; international exchange and cooperation in science; and responsibility of scientists. Many of these papers will be printed in forthcoming issues of the *Bulletin*.

While the papers were being discussed, the public statement, first drafted and circulated in advance by the organizing committee, was considered—with close attention to every paragraph, if not every word—by participants representing widely different attitudes. The members of the conference were not selected because they were known to see eye to eye and could be expected to chorus support for a proposal from their "leaders." On the contrary, they were individuals with as wide a spectrum of opinions as could be persuaded to attend—communists, radicals, conservatives, military realists and

idealistic pacificists—all of them unwilling to put their signatures under any statement they did not closely scrutinize and find acceptable in every sentence and every emphasis. All that united them was that they were scientists, men who had given much thought to the implications of modern science for the future of mankind, and—hopefully—had a little more will for objectivity and tolerance than can usually be found in international gatherings.

It was with considerable trepidation that the continuing committee banked on the hope that this common background would permit the participants at Kitzbühel to arrive at a practically unanimous consensus—no other would have been of value—in the evaluation of the problems encountered by mankind in the scientific age, and the definition of responsibilities scientists must accept in the face of these problems. It was not at all certain that the scientists' tradition of international cooperation, of respect for facts and tolerance for divergent opinions, would prevail in the discussion of subjects in which scientific problems merge with political ones, in the face of sharp differences of policies and ideologies to which the individual participants were committed. It could not be taken for granted that the belief of scientists in the importance of the scientific and technical aspects of the present situation of mankind—on which they could hope to agree—would prove strong enough to prevent every one of them from insisting that his partisan convictions and favored solutions should be endorsed by the group. Yet, this is what was achieved—an all-round restraint from pursuing specific partisan programs, and all-round support for a carefully worded statement evaluating the world crisis and defining the contributions science could make toward its resolution.

Hope Fulfilled

This result was not achieved without clashes, misunderstandings, and crises which made the conference a dramatic experience; but, at the end, much misunderstanding was cleared away, and sufficient trust was established, even between participants furthest apart in their general attitudes, to permit practically unanimous (with one abstention) acceptance of the "Vienna Declaration." This Declaration is significant, above all, as a demonstration of a far-reaching agreement among thoughtful scientists, of all political and ideological allegiances, in the evaluation of the problems which now face mankind; and of their unanimous conviction that scientists must accept responsibiity and play an active rôle in helping mankind solve these problems. This was the essence of the message conveyed by the two open meetings in Vienna on September 20—a solemn morning meeting at the Academy of Sciences, addressed by, among others, the President of the Republic of Austria, the Lord Mayor of Vienna, and three leading participants of the conference, and the afternoon meeting in the immense municipal auditorium, at which eleven prominent scientists from East and West addressed 10,000 assembled citizens of Vienna.

The Vienna Declaration deserves public attention—not because it states facts or proclaims principles which have not been presented before by many individual scientists, but because of the unanimity with which seventy most prominent and representative scientists from all parts of the world have endorsed it, after pondering carefully over its contents, formulation, and emphasis.

Because of this consensus of a representative cross-section of the scientists of the world, the statements in the Vienna Declaration, however familiar they may often sound, cannot be dismissed as unimportant. Nothing in it was accepted lightly. The introductory statement, pointing to the capacity of man to destroy civilization "and indeed himself," by an all-out use of nuclear weapons, was based on objective, quantitative discussion. Equally deliberated was the statement that follows, about the danger of putting excessive faith in possible defense measures against nuclear weapons. The next consideration—the impossibility of eliminating the danger of nuclear war by excluding nuclear weapons from national arsenals in peacetime—also is worth pondering. The existence of the knowledge of how to make nuclear weapons, a knowledge which cannot be taken away from mankind, and the consequent capacity of industrial nations to produce such weapons promptly in case of war, is perhaps the most important long-range consideration on which the planning of future international relations must be based; yet this consideration has not yet been fully appreciated, neither by governments nor by the people, clamoring for nuclear disarmament as security from destruction in a nuclear war. The irreversibility of scientific and technological developments is a unique characteristic of these human activities, of which perhaps only scientists can be fully aware.

Of importance also is the agreement of scientists that far-reaching nuclear disarmament cannot be based entirely on technical controls, exercised between mutually distrustful nations—however indispensable such controls are. In contrast to the cessation of weapons tests, which can be effectively monitored by a network of detecting stations, the liquidation of stocks of nuclear weapons will be possible only if, in addition to a practical degree of technical verification, there exists a combination of political agreements, successful international security arrangements, and experience of successful cooperation in various areas, which would create a climate of mutual trust among nations. This trust, the scientists point out, does not exist now, and cannot be established simply by assertions of good will by the governments.

The evaluation of the consequences of a war warns against too much reliance on the modification of nuclear weapons (the use of clean rather than dirty bombs) or on the adoption of limited strategies (restric-

tion of nuclear targets to "tactical" ones), as means for permanent avoidance of the catastrophe of an all-out nuclear war. This, too, is not a new warning but, coming from a group of scientists as broad and competent as that assembled at Kitzbühel, it carries much weight.

The conference expressed an "earnest hope" that the agreement between the scientific experts in Geneva on the technical possibilities of controlling nuclear weapons tests will be soon followed by an international agreement leading to the cessation of all such tests under an effective system of control. This support for test abolition is motivated by the possibility that it may become a first step toward relaxation of international tension and the end of the arms race. The Declaration also refers to the test hazards, as defined by the U.N. Radiation Committee, but it does not exaggerate these dangers, and it emphasizes that biological damage from a war in which many nuclear bombs would be used would be incomparably larger than that from tests, and that therefore the main problem of mankind is how to establish conditions that would eliminate war.

The last three sections of the Declaration deal with the contribution science can make toward improving international relations, and establishing a world community of nations. It is significant that in this context scientists of all political persuasions endorse the continuation and widening of international scientific projects. They also call for unrestricted flow of scientific information and wide exchange of scientists. They unanimously warn nations against building national security on secrecy of scientific developments, and express—in remarkable unanimity—their belief that science can best serve mankind "if it is free from interference by any dogma imposed from the outside."

While international cooperation in science has an old tradition, the suggestion that the time is now ripe for this tradition to be extended to technology and in particular to technical assistance to underdeveloped nations, is both new and significant. It is important that Russian scientists feel themselves able to endorse a policy which would free technical assistance from subservience to the purposes of the cold war. The Vienna Declaration commits scientists in all countries to trying to influence their nations, not merely to restrain the use of science for destructive purposes, but also to pool their capacities for constructive use of science to better serve the common interest of mankind. It is the hope of scientists of all nations that national or ideological controversies can be overcome—or, at least, relegated to second place—while cooperative efforts of all nations, following their common interest, will build increasingly firm bonds of understanding between them.

Finally, the Vienna Declaration expresses forcefully the unhappiness of scientists of all countries with the rôle science has now acquired in human affairs because of its importance for the arms race—a position in which scientists are alternatively admired for their contribution to their nation's security, or damned for having brought mankind into jeopardy by invention of weapons of mass destruction. Scientists deplore this diversion of science from its true purpose, which they see as the increase of human knowledge and the promotion of man's mastery over the forces of nature for the benefit of all men. This expresses genuine and deep feelings, shared by scientists of all countries, and the expression should not be dismissed lightly—even if it is not coupled with a threat of scientists to go on strike, or refuse cooperation with their governments. A majority of scientists know they cannot separate themselves from their national communities by individual noncooperation, or establish themselves, by threats, as arbiters of international relations. However, this does not mean that they are reconciled to the obsolete pre-scientific organization of the world, or satisfied with their prominence as weaponeers of the several nations or political camps.

What Is the Next Step?

All these statements well deserve to be heard and pondered upon by the world, even if they are formulated in carefully chosen, general terms, and provide no sensational assertions of new facts or spectacular proposals for solving the problems of mankind. The resolve of scientists, to which the Vienna Declaration gives expression, to play in the future an active rôle in the exploration and solution of these problems could become an important new departure. Of course, its practical consequences will depend on how widely and earnestly the commitment will be accepted and carried out by the scientific communities of the world. In the absence of concrete action, a skeptic may dismiss it as a pious expression of good intentions. However, the nature of the world developments in our time is such that it pushes scientists, however reluctant they may be, into increasingly greater participation in public affairs, and increasing influence on national and international decisions. We have witnessed this development in America in the last twelve years; we are beginning to see its outcroppings in international relations, for example, in the Geneva Conference of Experts on atomic weapons tests.

The Vienna Declaration calls upon scientists not merely to serve willingly as experts for their governments, but to assume on their own initiative a pioneering rôle in the education of public opinion and political leadership to the facts of the atomic age and in the study and analysis of these facts and their consequences. There is, at least, a reasonable probability that this appeal will not remain unheeded—although its effects may be slow to reveal themselves and, at first, be unspectacular. Future historians may look on September 20, 1958, as a significant date, and on the Vienna Declaration as an important document in the history of man's transition to living in the scientific age. —E. R.