

THE INTERNATIONAL CENTER FOR THEORETICAL PHYSICS

By Abdus Salam

The idea of creating an international center for theoretical physics was conceived in Rochester at the High-Energy Physics Conference in September 1960. In his banquet address, John A. McCone, who was then the chairman of the US Atomic Energy Commission, mentioned with approval a suggestion that nations collaborate in setting up a joint high-energy accelerator. Some of us—Hans Bethe, Robert Sachs, Nicholas Kemmer—who assembled afterwards, wondered whether it might not be more practical to start on a smaller scale with a modest, truly international center for theoretical physics—financed, perhaps, by one of the United Nations family of organizations. No such institutes existed then; a theoretical physics institute possibly might even set a pattern for a future United Nations University.

The same month I had the honor of being able to voice, on behalf of the Pakistan government, this visionary ideal in the form of a resolution at the Annual Conference of the International Atomic Energy Agency (IAEA) at Vienna. The resolution was cosponsored by the governments of Afghanistan, the Federal Republic of Germany, Iran, Iraq, Japan, the Philippines, Portugal, Thailand, and Turkey. As the list of sponsors indicates, the setting up of such a center was of interest not only to the developed countries, but also to some of the less privileged ones. The hope was that a center of this type could help in resolving one of the frustrating problems which active scientists in poorer countries face—the problem of isolation. Such men might come fairly frequently to the center to renew their contacts and engage in active research in fields like nuclear theory, high-energy physics, and the theory of plasma and solid-state physics.

Right from the beginning the idea met with enthusiastic support from IAEA's directorate and from the physics community. Neils Bohr, before

his death, expressed his whole-hearted support for it; scientific panels* convened in 1961, and again in 1963, by the Agency's director general, S. Eklund, forcefully recommended its creation. Unfortunately, there was not the same unanimous response from all Atomic Energy Commissions around the world. Even though the idea was accepted in principle, at the 1962 Annual Conference of IAEA (where these Commissions are represented) the feeling among the Board of Governors was that they could not recommend the committing of purely IAEA funds towards its creation, at least to begin with. Additional offers of financial assistance from interested member states were solicited; of the four received (from the government of Italy, for a center to be located in Trieste, from Denmark for Copenhagen, from Pakistan for Lahore, and from Turkey for Ankara) the most generous was the Italian government's offer. The moving spirit behind it was Paolo Budini. This offer was accepted in June 1963, and the Center started functioning from October 1, 1964, with a charter at Trieste for a period of four years.

Among those spending one or more terms at the Center this academic year are A. O. Barut, S. M. Berman, C. Fronsdal, J. J. Giambiagi, E. Inönü, F. Janouch, S. Kamefuchi, T. W. B. Kibble, K. Nishijima, C. R. Oberman, J. Polkinghorne, I. Saavedra, S. Tzitzeica, J. Toll, J. Werle, Y. Yamaguchi, and W. H. Zachariasen. In addition to these senior visitors there are some twenty-five postgraduate and postdoctoral fellows, most of them with prior experience in research, sponsored both by the IAEA and UNESCO. It has never been the intention of the Center to award de-

*The members of these panels included Aage Bohr, P. Budini, B. T. Feld, L. Infeld, N. Kemmer, L. S. Kothari, M. M. Lévy, R. E. Marshak, A. Salam, W. Thirring, J. Tiomno, and L. Van Hove.

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Abdus Salam, director of the International Center for Theoretical Physics in Trieste, and author of the present article, is shown standing as he spoke at the ceremonies held last October to mark the opening of the Center. Others shown, from left to right, are: P. Budini, president of the Citizens Committee for ICTP; W. Thompson, co-director, Plasma Physics Seminar; G. Gerin, Italian government representative to ICTP; S. Eklund, director general, IAEA; A. Sanielevici, deputy director, Division of Research and Laboratories, IAEA; and C. Oberman, scientific secretary, Plasma Physics Seminar. (A brief report on the seminar by Dr. Oberman appears on page 56.)

grees; in the few special cases of fellows who need advanced instruction for research, they are asked to attend lectures at the Advanced School of Theoretical Physics of the University of Trieste. This School has close affiliations with the Center.

The current year's activities have included provision for two seminar courses: one on theoretical aspects of plasma physics and one on the physics of elementary particles. The seminar course on plasma physics was held October 5-31, 1964, with some eighty participants from various plasma laboratories. It was co-directed by M. N. Rosenbluth, B. B. Kadomtsev, and W. B. Thompson. This must be the first occasion when all three Schools of Plasma Physics (those of the United States, the Soviet Union, and the European countries) have collaborated in running a joint advanced course. Among those who lectured were: R. Balescu (Belgium), J. W. Dungey (UK), S. F. Edwards (UK), G. Francis (UK), H. P. Furth (USA), M. S. Ioffe (USSR), M. Kruskal (USA), C. R. Oberman (USA), R. Z. Sagdeev (USSR), A. Simon (USA), and J. B. Taylor (UK). The seminar on elementary particles and high-energy physics is scheduled for May and June 1965. It will have the same broad scope as the theoretical seminar on the same subjects, which was held in Trieste during the summer of 1962, and whose proceedings were reviewed in the September 1963 issue of *Physics Today* (p. 68).

As I said earlier, we had envisioned that, in addition to its primary function as a research establishment *organized on a multidisciplinary basis*, a center like this might also play a special role in helping the first-rank theoretical physicists in developing countries. To achieve this, one of the Center's projects is a scheme of "associateships". These confer on selected individuals the privilege to come to the Center for one to four months every year at times of their choosing with no formalities except a letter to the Center's

office. We hope that this (financially) guaranteed possibility of remaining in touch, even while they are permanently located in their own countries, might help in persuading at least some of the physicists from smaller countries not to become exiles abroad.

The Center is fortunate in having a Scientific Council consisting of Professors S. Vallarta, J. R. Oppenheimer, V. Weisskopf, A. Bohr, A. Abragam, and V. G. Soloviev. The Center's inception and its organization mark it as a new type of venture—an assay in collaboration among the East and the West and the smaller nations, an assay in collaboration for pure science organized under the aegis of the United Nations. The idea is the embodiment of the international ideal; it must succeed.



The present provisional quarters of the International Center for Theoretical Physics are in this building, located on the Piazza Oberdan in Trieste, Italy.