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A LOOK BACK TO CERN COURIER VOL. 8, JULY/AUGUST 1968, COMPILED BY PEGGIE RIMMER

NEWS FROM ABROAD

International Centre for Theoretical Physics

During the three weeks of 7–29 June, about 350 leading physicists from countries throughout the world gathered at the International Centre for Theoretical Physics (ICTP) in Trieste, Italy, for a major symposium to inaugurate the fine new building which has just become its permanent home.

Professor Abdus Salam, director of ICTP, described the aim of the meeting: “to review the whole spectrum of modern theoretical physics, to share the insights of different disciplines and to acquire, if possible, a deep sense of the scope and unifying nature of the subject.” Among the participants were Nobel prize winners MA Bethe, FC Crick, PAM Dirac, W Heisenberg, CH Townes, TD Lee, J Schwinger and EP Wigner.

In 1960 Professor Salam proposed the creation of ICTP to the International Atomic Energy Agency, a subsidiary body of the United Nations, particularly to help theoretical physicists from developing countries. Salam conceived the Centre as a place where scientists could come for brief periods to sharpen their minds by working alongside the most distinguished men in physics. The policy is to avoid specialization in any given area of theoretical physics and to be strictly inter-disciplinary. A major feature of each academic year is a blitz on particular topics during extended seminars (lasting four to ten weeks), when many scientific big guns are brought together at the Centre to bombard a specific problem.

In achieving his aim, Salam has had the invaluable help of Professor Paulo Budini,



Professor Abdus Salam, director, in discussion during the International Symposium on Contemporary Physics at the ICTP. (Image credit: Photos Rice, Trieste.)

who has been instrumental in securing the extensive support of the Italian government and the city and university of Trieste, which has been the mainstay of the Centre up to now.

● Compiled from texts on pp159–160.

LAMPF Users Meeting

On 20 June, the first Users Meeting for the Los Alamos Meson Physics Facility was held at the Los Alamos Scientific Laboratory; more than 100 scientists from outside the Laboratory attended. LAMPF will be a national facility with experimental time shared about equally between teams based at Los Alamos and teams from Universities and research centres throughout the USA.

LAMPF is an 800 MeV-proton linear accelerator to provide 1 mA average beam current with a 6–12% duty-factor. It will

produce meson beams about 10 000 times more intense than those at present available at comparable energies.

The construction schedule aims for a beam by July 1972; Dr L Rosen, leader of the project, reviewed progress. The injector components are well advanced. An acceptable ion source has been built and a 750 kV power supply is on order. The linac section to take the beam to 100 MeV, using a drift-tube structure, is also well in hand. The copper-clad steel is ordered and prototypes of the drift-tubes, quadrupoles and r.f. power supplies are coming together. The linac section for energies above 100 MeV will use the new concept of side-coupled cavities. An electron model (24 MeV, 1 mA) is working very well and is being used to identify any problems due to heavy beam loading and to develop a computer-based control system.

Dr Rosen concluded with what he called an “Orson Welles type of remark”: “Within the next five years, changes in computer technology may bring new management problems. Remote data links between an on-line computer at the site and a group 2000 miles away would allow a user some degree of participation in running an experiment without actually being close to his equipment. This might offer some real advantages, especially if one can transmit visual displays as well as voice and printed messages. We may yet have to worry about how much importance one attaches to suggestions relating to the strategy for an experiment in progress, made miles from the experimental site and perhaps while the strategist is sipping martinis.”

● Compiled from texts on pp190–191.

Compiler's Note



In 1954, Abdus Salam, himself to become a Nobel Laureate in 1979, was faced with the heartbreak of having to leave his own country, Pakistan, to pursue a research career in theoretical physics. Contrary to criticism that theoretical physics is the “Rolls Royce of sciences” and developing countries needed only bullock carts, Salam believed that such work – actually requiring no expensive equipment – was an obvious way to build up pure science in those countries. And, indeed, for almost half a century ICTP has been a major force in advancing scientific expertise in the developing world and stemming the brain drain from these regions.

With the first e-mail still three years in the future, Louis Rosen at LAMPF had almost 20/20 foresight of the shape of things to come in communications technology. Less clear, is whether his managerial misgivings were due mainly to a potential remoteness of physicists from experiments or proximity to drinks' cupboards!



Excavation work for the Los Alamos Meson Physics Facility, on a finger-shaped mesa bordered by canyons to the north and south. (Image credit: Photo Los Alamos.)

RENEWABLE ENERGY

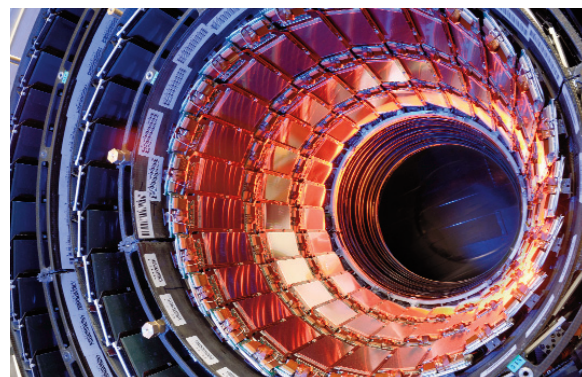


Thermonuclear fusion is one of the few truly sustainable forms of energy for the planet that will probably be available in the mid to long term. It is a technology that offers the prospect of safe, environment-friendly operation, combined with excellent fuel availability and procurement security.

ITER (originally an acronym for the International Thermonuclear Experimental Reactor, now used in the Latin sense of "itinerary") is an international project that will demonstrate the feasibility of a nuclear fusion reactor able to reproduce the physical phenomenon that occurs in stars in controlled conditions, for the purposes of generating clean energy in the future without the collateral effects typical of current fission technology (waste, contamination risk).

FUSION SUPERCONDUCTIVITY

A typical physical feature of certain materials, called superconductors, which offer zero resistance to an electrical current when cooled below a certain temperature.



LHC HIGH ENERGY PHYSICS

Large Hadron Collider - CERN
The mission of the most powerful particle accelerator in the world is to uncover some of the mysteries that still shroud the origin, creation and future of the universe, reproducing in the laboratory conditions close to those occurring during the Big Bang.



HADRON THERAPY

In this medical treatment cancer cells are irradiated with heavy hadron particles (carbon protons or ions), which have less impact on healthy tissue than other techniques.

ASG

We have been working for more than fifty years in a field that brings together high technology, research and industry. Our specialist engineers contribute to international projects and develop new products, drawing on experience gained working in high energy physics and thermonuclear fusion. Building the world of tomorrow, today.

MAGNETIC RESONANCE

An imaging technique used mainly in the field of medical diagnosis, based on the physical principle of nuclear magnetic resonance.



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Superconductors