

38th Session of CERN Council

The 38th Session of the Council was held at CERN on 19-20 June under the chairmanship of Dr. G. Funke.

The Council opened with a report by the Director General, Professor B.P. Gregory, on the activities of CERN over the past six months. He picked out three topics for special mention — the experimental programme at the proton synchrotron, collaboration with Serpukhov, and preparation for experiments at the intersecting storage rings.

PS experimental programme

The proton synchrotron has just concluded a year's almost continuous operation. It has now been shut down for several months for extensive civil engineering work, for the connection of the new magnet power supply which will increase the repetition rate of the machine, and for rebuilding of the beam lines in the three experimental halls.

Just before the shut down there were twelve experiments using electronic techniques, set up around the machine. In addition, three bubble chambers were supplied with particles. The fact that the synchrotron was able to cope satisfactorily with the need to serve such an intense and complex programme reflected the skill of its operators, the calibre of the machine itself and the efficiency of the experimenters.

Nine of the electronics experiments finished collecting their data as scheduled. They included the 'g-2 experiment' which used the muon storage ring for a measurement of very high precision (20 times more accurate than that done at the synchrocyclotron six years ago). The measurement could reveal some subtle difference between those mysteriously alike particles — the electron and the muon, or could indicate the limit to which the very successful theory of quantum electrodynamics is applicable. The result of the experiment together with many others from CERN is expected to be announced at the major high energy physics conference at Vienna in September.

Other notable achievements from the electronics experiments have been the work on proton-proton scattering which revealed an unexpected change in behaviour at an energy around 10 GeV, and the 'missing mass' experiment which, using a different experimental method,

confirmed the strange observation first made at CERN of the splitting of the A2 resonance into two separate peaks.

The very efficient operation of the three bubble chambers made it a record year for bubble chamber output. The 81 cm hydrogen chamber recorded its ten millionth picture. The 2 m hydrogen chamber took three million pictures in the year and in terms of the number of particle interactions recorded has put at the disposal of the European physicists almost as much as had been collected in all the previous years. The heavy liquid bubble chamber, after completion of the successful neutrino experiments, was moved behind the 2 m chamber and it proved possible to use one particle beam to feed the two chambers simultaneously.

The participation of 'outside' physicists in the experimental programme is still growing. Other European Laboratories and the Universities have always been extensively involved in the bubble chamber experiments — this involvement has now grown to the extent that, of the 550 physicists basing their research on the CERN chambers, 500 are from outside CERN, 30 are fellows or visitors here for short periods, and only 20 are on the CERN staff. But outside participation has also grown in the experiments using electronic techniques. Twenty universities provide 70 % of the physicists and another 15 % are short term visitors.

To complete the picture — at the smaller CERN accelerator, the 600 MeV synchrocyclotron, from about 80 physicists only 6 are on the CERN Staff.

Serpukhov and ISR

Collaboration with the Institute of High Energy Physics at Serpukhov, USSR, is fulfilling the highest hopes. The latest stage is that, at a meeting held at CERN at the beginning of June of the Joint Committee (which has six representatives from each Laboratory who are closely involved with the work in hand), details of the scheme for the fast ejection system to be provided by CERN were agreed. (This will be covered in the next issue of CERN COURIER.)

A CERN team are preparing to go to the 70 GeV accelerator Laboratory to join their

Soviet colleagues for the first collaborative experiment (see page 128).

Performance of the accelerator itself is very promising. Protons have been accelerated to 76 GeV and energies even above this may prove possible. The linear injector has produced the remarkably high current of 100 mA at 100 MeV and the present machine intensity is 3×10^{11} particles per pulse.

Another example of collaboration, not tied specifically to the CERN-Serpukhov Agreement is a recent decision on the standardization of the size of bubble chamber film. Soviet and European bubble chamber designers have agreed to use the same type of 70 mm film — it involves the hydrogen chamber 'Mirabelle' and the heavy liquid chamber 'SCAT' for Serpukhov, and the large European hydrogen chamber and the heavy liquid chamber 'Gargamelle' for CERN. This agreement may seem rather trivial but it has taken a long time to achieve and means that experimental groups could now do experiments using different chambers without having to invest money in different film analysis equipment.

An ISR Users' Meeting was recently held at CERN (see page 128) where the preliminary thinking about the initial experiments on the intersecting storage rings was presented to a large gathering of European physicists. Following the meeting, participation of the European Universities in evolving the ISR experimental programme will grow. The lengthy preparation for specific experiments will need to begin soon.

During the Council session, Dr. K. Johnson, Director of the ISR Construction Department, reported the encouraging progress so far on the building of the intersecting storage rings. There is every indication that this vast project will be built on schedule and that the expenditure will be within the estimated budget.

300 GeV

The discussion on the proposed 300 GeV accelerator project opened with the following statement by the UK delegate, Professor B.H. Flowers: "At the Council meeting in December, I said that my Govern-

ment were giving very careful consideration to the question of participating in the 300 GeV project. They had obtained advice from various scientific bodies, which has since been published. My Government were particularly concerned at the effect which participation in this project might have on the balance of resources between high energy physics and other scientific activities and they also had to review the implications of the devaluation of sterling.

My Government have now decided in the light of their other commitments that expenditure involved on this very large project would not be justified. H.M.G. regret this decision because they fully appreciate that the project is well conceived and that strong scientific views have been expressed in its favour. But they are satisfied, after an exhaustive review of the arguments, that they should not enter into this commitment.

In reaching this conclusion my Government have had in mind that through CERN, which they will continue to support, the European high energy nuclear physics community already has an important project in hand in the Intersecting Storage Rings. This will give European physicists a unique instrument which will enable some further advances to be made in the physics of very high energies."

Professor Flowers continued with a personal statement which, however, carried the unanimous support of the UK Science Research Council of which he is Chairman. He recalled that UK nuclear physicists consider the 300 GeV project as first priority even at the cost of closing down a national Laboratory before the end of its useful life. The scientific and technical merit of the project has never been in question and Professor Flowers hoped that some way will be found to go ahead without the UK and that high energy physics in Europe will prove strong enough to withstand one adverse decision. It remains the policy of UK physicists to urge their government to support the project and, in the meantime, they will avoid taking any steps which could prejudice eventual participation.

The Chairman of the European Committee for Future Accelerators and delegate for Italy, Professor E. Amaldi, said that the UK contribution to CERN, financially

and scientifically, has always been of the greatest importance but urged that other countries should now do everything they can to keep the project going, leaving the door open for the UK to join at a later date. CERN, of all the European Organizations, has always been the most successful both from the point of view of the governments and of the scientists. The project must not be allowed to decay.

Spokesmen for other delegations including France and Germany echoed the same feelings and Professor G. Puppi wound up the discussion by announcing that the Scientific Policy Committee, of which he is Chairman, has already considered what could be done to keep the project viable in the advent of the withdrawal of a major State or a group of smaller States. There has been no thought of changing the main features of the machine and the final aim would still be an energy of 300 GeV, high beam intensity and capacity for extensive exploitation. The revision has concentrated on such things as a longer time-scale to reach full exploitation, a reduction of the investment in experimental equipment, constructing only one experimental area, and the possibility of beginning operation at an intermediate energy. Accepting restrictions of this nature would reduce the annual budgets. A detailed analysis of the possibilities will be available very soon.

Finally, the Director General urged all the other countries to press forward for a decision as quickly as possible, taking it as a premise that a sound variant of the project will be produced.

Others topics

Three other topics from those covered at the Council meeting have been picked out for mention.

In June 1967, the German delegation requested that German should be recognized as a language of CERN (the two official languages being English and French). A Working Party consisting of Mr. A. Chavanne (Switzerland), Dr. W. Kummer (Austria) and Ambassador Chr. Sommerfelt (Norway) was set up to examine the problem and to present recommendations to the Council. These recommendations were accepted at the Council meeting.

They involve an amendment to the Council 'Rules of Procedure'. From now on, interpretation will be provided at meetings of the Council and its subordinate bodies in English, French and German and the associated documents will carry a summary in these three languages. In addition, a German text of the CERN Convention will be published. Otherwise the present practice, whereby the use of languages other than English and French is left to the discretion of the Director General, who decides whether it is in the interests of CERN, will continue.

The Council approved the Agreement between CERN and the European Southern Observatory (ESO) which allows the staff of the Observatory to join the CERN Staff Insurance Scheme. The number of ESO personnel is very small (around twenty) and it is obviously impracticable for them to establish an Insurance Scheme themselves. Since their conditions of service are very close to those at CERN they can readily be absorbed into the CERN scheme.

The Council renewed for three years the appointment of Dr. M.G.N. Hine as Director of the Applied Physics Department.