

for holding it in a Latin-American country in the autumn.

Plans were also discussed for the production of a handbook to assist those confronted with the task of collecting basic data required before schemes can be prepared to develop an arid or semi-arid area. Such a handbook would aim at serving two purposes. It would first direct the attention of persons concerned with organizing development to the various and interrelated fields in which data are needed before satisfactory plans for such development can be made. Secondly, it should give information as to the best methods of collecting and presenting basic data in a form that supplies the information needed for their practical application.

A scheme is now in operation in which certain institutions carrying out research relating to arid zone problems may be designated as suitable for the exchange of personnel and information and for the reception of visiting scientific workers. A number of applications for designation under this scheme were considered by the Committee, which recommended that the following institutions be added to those already designated at earlier meetings:

Commonwealth Research Station (Murray Irrigation Areas), Merbein, Victoria.  
 Division of Plant Industry (C.S.I.R.O.), Black Mountain, Canberra.  
 Irrigation Research Station (C.S.I.R.O.), Private Mail Bag, Griffith 58, New South Wales.  
 Katherine Research Station, Katherine, Northern Territory.  
 National Field Station, "Gilruth Plains", Cunnamulla, Queensland.  
 Information on Regional Pastoral Laboratory, Denilquim, Box 26, P.O., New South Wales.  
 Laboratorium voor Grondmechanica, Oostplantsoen 25, Delft.  
 Waterloopkundig Laboratorium (Hydraulic Laboratory), Raam 61, Delft.  
 Amarillo Conservation Experiment Station, Box 2169, Amarillo, Texas.  
 Department of Geology, University of Southern California, 3518 University Avenue, Los Angeles 7, California.  
 Inter-Mountain Forest and Range Experiment Station, U.S. Forest Service Building, Ogden, Utah.  
 Information on Reclamation Engineering Centre, Denver, Colorado.  
 South-western Forest and Range Experiment Station, Tucson, Arizona.  
 University of Arizona, Tucson, Arizona.  
 University of California Citrus Experiment Station, Riverside, California.

Particulars of these institutions and of the facilities available at each can be obtained from Unesco (19 Avenue Kléber, Paris 16<sup>e</sup>). The Committee also recommended that member States be reminded of this scheme and be supplied with a full list of institutions at present associated under it.

As a result of an earlier recommendation by the Committee, a survey has been conducted by Unesco of institutions engaged in research on arid zone problems, and the Committee recommended that the information thus collected should be made use of to compile a directory of institutions engaged in arid zone research.

On the research side the Committee recommended that assistance be given to the following projects.

(1) A project proposed by the Institut Français d'Afrique Noire to study the effects on plant cover of natural factors, mainly climatic, and of human intervention such as grazing, trampling and wood cutting. Data on this subject are much needed, especially since they bear on the deterioration of natural pastures. (2) A project proposed by Dr. F. W. Went, of the Earhart Plant Research Laboratory, California Institute of Technology, to study the role of dew in plant growth in arid regions. (3) A project proposed by Dr. K. Smidt Nielsen, of Duke University, North Carolina, to study the physiology of the camel and of other desert mammals. This work would extend that already carried out by

Dr. and Mrs. Smidt Nielsen on the physiological mechanisms which enable certain desert rodents to live on dry food without drinking water. (4) A project proposed by Prof. L. Picard, Geological Institute, Jerusalem, Israel, to investigate the climatic changes that have taken place during the Quaternary in the arid and semi-arid region of the south-east Mediterranean, initially by means of a study of the peat deposits of northern Galilee.

## EUROPEAN COUNCIL FOR NUCLEAR RESEARCH

### SESSION IN AMSTERDAM

THE third session of the European Council for Nuclear Research was presided over by Prof. P. Seherrer when it met at the Academy of Sciences, Amsterdam, during October 4-6. The main work before the Council was to consider the offers which had been made by various member States for the site of the proposed laboratory, to hear reports of progress made by its four study groups, and to consider a report from its secretary-general, Prof. E. Amaldi, on the organization and financial implications of future European co-operation in nuclear research. Last June the Council sponsored a scientific conference at Copenhagen to promote a broad exchange of views upon the problems of nuclear research which could be most profitably dealt with by international co-operation. As a result of this conference, it has been decided that the study of mesons and the other new particles which have recently been found in the cosmic rays should be developed by international co-operation, and by the construction of high-energy machines in a suitable centre so that these particles might be created artificially. Four working-groups were formed by the Council to carry out the following respective tasks: the first to design a 600-MeV. synchrocyclotron; the second to design a proton synchrotron of not less than 10 GeV. ( $10^{10}$  eV.) energy; the third to study theoretical and experimental developments having a bearing on the aims of the Council and to promote other forms of European co-operation in nuclear physics; and the fourth to explore the organization and structure of a suitable laboratory.

Rapid progress with the design study of the 600-MeV. synchrocyclotron was reported by Prof. C. J. Bakker. The main features of the magnet design have been settled, and also the layout of the vacuum chamber and radio-frequency system. At one stage it had been intended to use a rotary condenser to provide the necessary radio-frequency tuning, but as a result of a recent visit to the Radiation Laboratory of the University of California, the use of a vibrating-reed method of tuning is now being studied. The general design has advanced to the stage where it is necessary to start considering the manufacture of the various components.

Prof. O. Dahl reported that, since the last Council meeting in Copenhagen in June, an event of considerable scientific interest has occurred which has profoundly affected the work of the Proton Synchrotron Group. Drs. E. D. Courant, M. S. Livingston and H. S. Snyder, of the Brookhaven National Laboratory, have proposed a new focusing principle applicable to a high-energy proton synchrotron.

This principle splits the magnetic guiding field into sectors that are alternately strongly focusing and defocusing. The net effect of a combination of sectors in this way is a strongly focusing action such that any oscillations about the equilibrium orbit induced in the motions of the particles are kept small in amplitude. This is of outstanding importance since, for a given energy, the particles may be constrained within an annulus of much smaller dimensions than is the case with a machine of conventional design. Preliminary study has suggested that it should be quite practical to design a machine for 30 GeV. in which the energy to be stored in the magnetic field is not more than that required for the present 3-GeV. machine at Brookhaven. The work of the Proton Synchrotron Group has been changed to take advantage of this new idea. The Council expressed its approval of this.

One part of the work of the Council's Group directed by Prof. Niels Bohr is to promote forms of European co-operation in nuclear physics other than the creation of the laboratory. Sweden has offered to the Council facilities on the 200-MeV. cyclotron which is now working at the University of Uppsala, and Prof. Bohr reported that he has arranged on the Council's behalf for two or three young nuclear physicists from other European countries to take part in work with the machine. Great Britain also has offered facilities on the 400-MeV. cyclotron now nearing completion at the University of Liverpool, and this, too, has been accepted. Prof. Bohr also described an experiment carried out at the Institute of Theoretical Physics, Copenhagen, by Prof. J. C. Jakobsen, which was of interest to the Council because it illustrated the new focusing principle proposed for proton synchrotrons. Four sections of a magnet were used, being constructed so as to provide focusing and defocusing fields in alternate sections. Particles were injected from an alpha-particle source into these fields, and it has been shown by the use of a photographic plate that they were brought to a focus at the end of the fourth section. This experiment has provided confirmation of the first-order theory of the new focusing method. While it was recognized that the experiment still left unanswered important questions about particle stability under practical operating conditions, the Council expressed its appreciation of the work.

In a report by Dr. I. L. Kowarski, it was stated that the main work of the Laboratory Group since the Council's last meeting has been concerned with obtaining the relevant technical information about the sites offered for the laboratory and with the preparation of a draft convention for the building stage. Four member States had made formal applications to the Council to have the laboratory built in their territory, namely, France, Denmark, Holland and Switzerland; each country had supplied detailed information about its site and had been invited to make the case for it to the Council. From the information given, it appeared that any of the four sites would be satisfactory on purely technical grounds. It was generally recognized that the choice would also take into account other considerations, such as the balance between international common good, plus the national benefit from it, on one side, and the necessary sacrifice of national resources, on the other. Competition between each of the four member States to have the laboratory within its territory was keen, but the subject was debated in a courteous atmosphere, and when all but Switzerland

had withdrawn their offers, however reluctantly Geneva was unanimously chosen as the site for the future laboratories.

Since the Council had decided at its second meeting to give support to cosmic-ray research, the secretary-general reported to it the results of an international expedition which had been independently organized and operated in the Mediterranean area to carry out research in the high atmosphere using balloons. A total of thirteen balloons has been launched, and 1,300 c.c. of emulsion exposed to radiation at 70,000 ft. for an average time of 6½ hours has been recovered. This is approximately ten times more emulsion than has previously been exposed. It was considered that, besides providing a considerable amount of material for research work, the expedition has been very useful for improving the technique of balloon launching.

In his draft of an interim report for the governments of member States, the secretary-general outlined how the Council came into being, its present stage of development and its plans for the future. At the present time studies concerning the equipment and organization of a laboratory are in full progress. It is hoped that by the spring of 1953 these studies will have advanced sufficiently to allow member States to take final decisions regarding the construction of an international nuclear research laboratory, and the organization of other forms of co-operation in nuclear research. It is estimated that the next stage of development will last seven years and cost a total of 27 million dollars, after which the estimated annual running cost of the laboratory would be a maximum of 1½ million dollars. Very preliminary consideration was given to questions of organization which will arise in the third stage and to the form of the convention which will set out the constitution of the organization. This report is to be studied again by the Council before it is submitted to the governments.

## TERCENTENARY OF THE LEOPOLDINA ACADEMY, SCHWEINFURT

THE tercentenary of the foundation of the Leopoldina Academy in Schweinfurt, Bavaria, in the West Zone of Germany, was commemorated during July 13-15 under the auspices of the civic authorities and Historical Society of the town. This was in the nature of a *Nachfeier* to the main celebrations at Halle in the East Zone of Germany (see *Nature*, April 5, p. 576), at which the Schweinfurt delegate was Dr. Josef Helfrich. Prior to the zonal split, the late president of the Academy, Prof. Emil Abderhalden, who died in Zurich in 1950, had hoped for the tercentenary celebration to be held in Schweinfurt.

The Senate of the Academy at Halle, under its newly elected president, Prof. Otto Schlüter, and new senior vice-president, Prof. Heinrich Brandt, was represented by the secretary, Prof. Rudolph Zaunick, of Dresden (East Zone), who placed a wreath on the grave of the founder, Dr. Johann Lorenz Bausch (1605-65), reported on the present activity and projects of the Academy, and held a business meeting of members. The Martin-Luther University of Halle was represented by the rector, Prof. Rudolf Agricola. Prof. Michele Gortani brought greetings