there still were few academic programs of basic polymer chemistry in Czechoslovakia or elsewhere, despite the early example of Herman Mark in Brooklyn. The Technical University of Brno did not even begin teaching the subject until after the war. All Czech instruction in the field lacked the latest equipment.

Hence it was necessary to go directly to the universities and recruit young researchers while they were still students. With the plans for the institute in mind, the students were encouraged to take the courses that would be most useful to them later at the institute.

The institute was thus enabled to assume quickly its present organization into two divisions, physical and chemical, each with nine departments. But this formal organization merely organizes researchers by the technique they use, not by the material or the process they study. An examination of the papers produced by the institute shows almost universal collaboration among departments and divisions.

Much of the institute's staff, naturally, devotes itself to studying various aspects of the polymerization process and the influence on polymer characteristics of such variables as the molecular weight of units, the distribution of weight, the length of the polymer, its coiling, interactions between chains, and possible crystallization. The mechanical and electrical behavior of these high-molecular-weight compounds is much more variable with temperature and pressure than the behavior of smaller molecules.

The Institute of Macromolecular Chemistry had an important opportunity to show its work and build stronger international contacts when it held a large international symposium on macromolecular chemistry at the end of August 1965. The conference followed a practice increasingly used at large chemical meetings: the papers were submitted in advance, many of them as abstracts and later as preprints. Registrants received the preprints before departing for the conference, and so the meeting itself was left largely free for discussion in small groups. There were also a number of symposium lectures by such well-known specialists as H. W. Melville of Britain, Herman Mark, and Charles Sadron of France.

Of the 750 papers submitted, about 50 came from the Institute of Macromolecular Chemistry. The numbers from Communist and from non-Communist countries were about equal. About 130 came from the Soviet Union, and there were large numbers from the United States, Britain, France, Italy, and East and West Germany.

Most research groups of the Institute of Macromolecular Chemistry presented work to the conference. There were several papers from Wichterle, Lím, Sedláček, and others on the properties of gels of the sort used in contact lenses.

The institute was thus able to show both its emphasis on fundamental research and the industrial utility of this approach. It appears that the Institute of Macromolecular Chemistry is a significant example of the growing awareness in Communist countries of the need for practical steps to encourage basic research that will stimulate industry.—V.K.M.

CERN and Serpukhov Prepare for Collaboration

London. The physicists of Serpukhov, where the Soviet Union is building a proton synchrotron with a planned maximum energy of 70 billion electron volts, hope to get their first beam by the end of 1967, but they acknowledge that they may miss this target by a year.

This information is given in a report by five physicists from the European Center for Nuclear Research (CERN), in Geneva, who visited Serpukhov in November 1965. The report was published in the April issue of the CERN magazine, the *Courier*.

The physicists' visit was part of the preparation for collaboration between CERN and Serpukhov. A. A. Logunov, director of the new Soviet laboratory of high-energy physics, and several colleagues visited CERN last fall. In December, the council of CERN gave its approval of outgoing director Victor F. Weisskopf's initiative in pushing for collaboration. CERN's new director, Bernard Gregory, visited the Soviet Union at the end of May.

When the CERN scientists looked over Serpukhov, they found most of the giant magnets, which will be used to focus the beam, in place. Installation of the magnet coils had begun. The domed experimental hall, they found, has been designed without internal supports that would interfere with placement of the equipment for experimenting with beams extracted from the machine. The hall is vast, measuring 150 by 90 meters.

The Serpukhov physicists told their CERN visitors that they would not perform experiments with neutrinos until they had installed equipment for ejection of beams. Such neutrino experiments remain a major preoccupation of the two largest proton accelerator centers now operating—CERN, and Brookhaven in the United States. The neutrinos, obtained from the decay of secondary particles in an extracted beam, are used for studies of the so-called weak interactions. Physicists think that there is a particle mediating these reactions, analogous to the pion, which mediates strong interactions. With machines of the energy of those at CERN and Brookhaven, (around 30 Gev), the effort to find the mediating particle of weak interactions, the so-called W or "intermediate" boson, has failed. This failure heightens interest in Serpukhov, where the design of two beam-extraction systems is nearing completion.

The CERN physicists said that completion of a fast-ejection system for protons (up to 40 Gev) and a slow-ejection system for protons (up to 60 or 65 Gev) is planned for a year to 18 months after the first beam is accelerated on the machine. By that time, a large French bubble chamber, now being built at Saclay, should be in place at Serpukhov.—V.K.M.