THE INSTITUTE OF PHYSICS

Technical higher education in Hungary looks back on a past of nearly 200 years. The Technical University, Budapest is more than one hundred years old. József Sztoczek, to become its first Rector, had lectured on physics as early as 1847. The first Department of Physics was established 120 years ago. As compared to these 200 and 120 year periods our Institute of Physics is a very young institution.

The Institute of Physics of the Technical University Budapest was established on September 1st, 1974 from the Physics Departments Group established in 1971 and now integrates all units previously teaching physics at this University: the Departments of Physics, of Experimental Physics, of Atomic Physics and the Section of Physics for Chemical Engineering. Two former research groups of the Hungarian Academy of Sciences, the Research Groups for Quantum Chemistry and for the History of Sciences now also belong to our Institute.

The basic task of the Institute is to teach physics. The number of students, including all Faculties and types of education (daytime, evening and correspondence courses) is approx. 2,700. The training in physics consists of two parts:

a) experimental physics, a fundamental training for 1st and 2nd-year students,

b) higher-grade physics courses for senior undergraduates.

Besides teaching, the Institute undertakes tutoring students working on their degree-papers and provides guidance to Students' Scientific Circles. Members of the staff hold lectures within the system of specialization training for engineers and take part in the work of the Institute for Post-Graduate Courses in Engineering.

One of the main tasks of the Institute is to promote the existing good relations with all Faculties and at the same time, taking advantage of the possibilities of integration, to improve the co-operation among the units of the Institute. Discussions and seminars are organized for the staff members on the methods and syllabuses of education as well as on the problems of influ-

encing the students' ideology through the philosophical background of physics. The Institute has just started organizing a joint laboratory for demonstrations which, it is hoped, will be a further important achievement in this field.

All units of the Institute carry out scientific research activities, mainly of fundamental research character. The aim set at the integration of the Institute was to continue and develop these research activities retaining the fundamental research character, but at the same time paying more attention to the possibilities of application, in co-operation with the various Departments of the University and with other research institutes and enterprises.

The articles published in the present issue of Periodica Polytechnica reflect the actual level of research activities of various units of the Institute.

The Research Group of Quantum Chemistry continues the theoretical work, in which it has already produced some important results before the integration. The papers on theoretical nuclear physics and quantumchemistry show achievements in the field of computing methods and special calculations.

Two of the Institute's research projects of special importance are the projects co-ordinated under the High Priority National Research Programme No 1 entitled "Research into Solid State Physics". The researchers in charge of these projects report on their results in nine papers. Papers have been submitted on the behaviour of low pressure gases, this time containing mainly calculated results. In crystal physics research is in progress on the physical parameters of crystals and their application possibilities in laser technique. Practical applications are shown over a wide range of holographic interferometry.

Spectroscopy, a discipline cultivated by generations of Hungarian physicists, is here represented by analytical investigations of optically diffuse scattering samples.

A theoretical study on irreversible thermodynamics is concerned with heat conduction.

The aim of the Research Group for the History of Sciences is to approach the scientific-technical revolution of our age from the science-historical aspect. The principles of this approach are expounded in one of the articles, the others show results of the research into particular historical periods.

The Institute is in charge of carrying out research that can easily be made use of in practice. Direct relations and co-operation have been developed with several large industrial plants (e.g.: Csepel Works, the Videoton Radio and Television Factory, the Light-Metal Works in Székesfehérvár, etc.) with several Departments of this University as well as with research institutes (e.g.: the Central Research Institute for Physics, Industrial Research Institute for Electronics, Computer and Automation Institute of the Hungarian Academy of Science, etc.).

In the period between 1974—1976 the staff of the Institute prepared about 50 scientific reports and constructed instruments, units of instruments

and complete equipment in a value of approx. 1.5 million Forints. The close relation between the commissions and the scientific projects of the Institute is reflected by the 13 lectures, 18 publications, 8 theses, one dissertation for C. Sc. degree and 4 patent claims on this basis.

This short Introduction can give but a modest picture of the Institute's educational work, research tasks and commissions. In any case it has been attempted to demonstrate the seriousness of the task to start work in a new organizational system. The lesson is to think at a higher level of a greater organizational unit, creating newer and newer forms of co-operation both in the field of education and research and in the relations with other institutions outside the University. And this is only the beginning of a long process the perspectives of which will be revealed gradually.

Our main task in the future will be to further the educational integration and to keep scientific research at an up-to-date level as to both contents and organization. In particular our tasks — corresponding to the Principles of Science Policy of the HSWP — are to further the advancement of co-ordinated and concentrated research work, to approach the demands of practice as well as to promote international scientific co-operation.

Social organisations also give us a helping hand in drafting and carrying out our plans. The Party Group of the Institute, the Trade Union and the Communist Youth League, of students and young teachers greatly contribute to the work of the Council of the Institute, of its Committees and of its leaders.

We acknowledge with thanks the help of the Editors of Periodica Polytechnica in granting the possibility of publishing the first results of our collective work within the new organizational system.