EDUCATION IN THE FACULTY OF TRANSPORT ENGINEERING OF THE TWO-HUNDRED YEAR-OLD TECHNICAL UNIVERSITY, BUDAPEST

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History of the Faculty of Transport Engineering

The Technical University of Budapest commemorated its 200th anniversary in 1982. The predecessor of the University, the Institutum Geometrico-Hydrotechnicum, the so-called Engineering Institute was founded by King Joseph II in 1782. The Joseph Industrial School was founded in 1846, and in 1850, the two institutions were amalgamated and elevated to the rank of a superior school. In the academic year 1871—72 the institution was given the right to issue diplomas in engineering based on an examination, and it was named Hungarian Royal Joseph Technical University. Its name and composition was changed several times, and finally, since 1949, it has been called Technical University, Budapest.

There are six faculties, that of most recent date being the Faculty of Transport Engineering.

Under the auspices of the Ministry of Post and Transportation, a University of Transport Engineering was founded 1951 in Szeged. According to the original idea, the new university ought to have had a wide profile, including all branches of traffic and transportation together with the vehicles: transportation by rail, road, water and air, road and railway construction, design, production and operation of vehicles, etc. The university had only one faculty, in the frame of which railway construction and railway transport operation sections were included. In 1952, the University moved to Szolnok. In 1953, the section for railway construction was transferred to Budapest, and education was complemented in Szolnok with the section for road transport operation. In 1956, the University became the third faculty, Faculty of Transportation Engineering, of the University of Building and Transport in Budapest, and since then, students of the first semester started their studies in Budapest.

In 1956, for the first time in Hungary, the postgraduate education of economic engineers has started, with sections for transport and building. In 1963, the training of specialized engineers of electric and Diesel traction has started. The graduate profile of the faculty was widened in 1965 with the

branch for building machines construction, and in 1966 with that for materials handling.

In 1967, the Technical University, Budapest and the University for Building and Transport were united. The section for vehicle engineering rejoined the Faculty of Transportation Engineering in 1968.

In the meantime, the present educational profile of the faculty was developed considering the requirements of national economy. The forms of education at the faculty are the following:

— three-year graduate education of certificated engineers,
— five-year graduate education of production engineers,
— post-graduate education,
— doctoral work.

The specialization of the above educational forms is the following:

In the training of production engineers:

Navigation
— Inland Navigation
— High-sea Navigation
Ship Operation

In the training of certificated engineers:

Transport Engineering (diploma as transportation engineer)
— Transport Technology
— Transport System Design
Vehicle Engineering (degree in Mechanical Engineering)
— Automobiles
— Railway
— Ship-building
— Airplanes
Mechanization (degree in Mechanical Engineering)
— Building Machine
— Materials Handling Machines

On postgraduate level:

Economics Engineer (degree in Engineering Economics)
— General Transport
— Transport Technology
— International Transportation

1. The Building of the Institute of Vehicle Engineering

Training of specialized engineers (degree as specialized engineer)

— Materials Handling
— Building Machine Systems
— Machine Repair
— Transportation Mathematics
— Transport Process Systems
— Vehicle Engineering

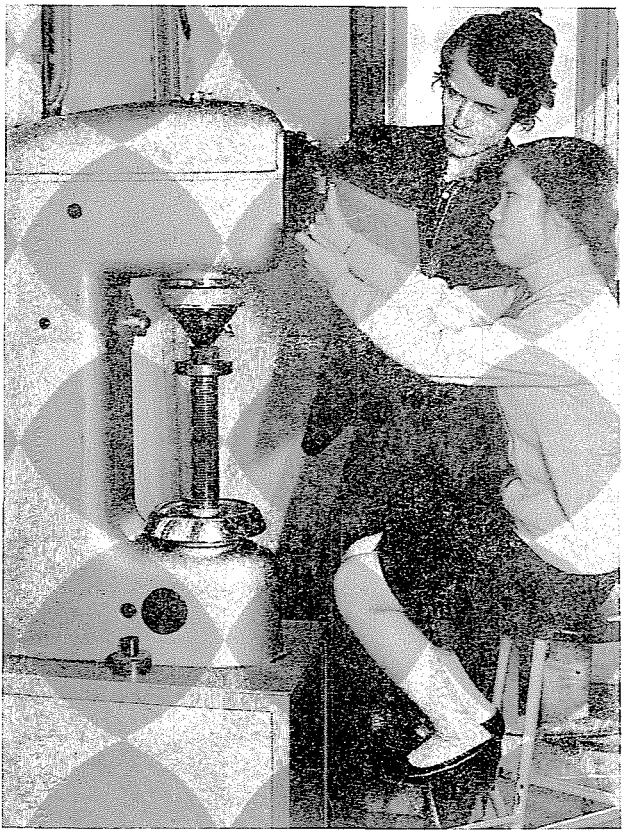
The faculty performs its teaching-educational and research work in the following organizational system:

1. Institute of Transportation Engineering and Organization
Department of Transport Organization
Department of Transport Automation
Department of Transport Economics
2. Institute of Vehicle Engineering
Department of Aero- and Thermotechnics
Department of Automobiles
Department of Railway Vehicles
3. Department of Building and Materials Handling Machines
4. Department of Machine Elements
5. Department of Machine Manufacturing Technology
6. Department of Mathematics
7. Department of Mechanics

Teaching activity at the faculty

Education is carried out according to a new curriculum. The former curriculum for the training of engineers was introduced in 1969, and, except for corrections carried out in 1971, it did not change till 1978: ten classes of students were trained according to this curriculum. The new ones, elaborated in the mid-seventies after the directives of the Ministry of Education were introduced in the autumn of 1978 for certificated engineers, for the production engineers one year later.

The new curricula correspond to the requirements of the directives: teaching of convertible theoretical knowledge is accompanied by practical application during the whole training. The examples serving the application of knowledge (design work, written tests) are always complex: the cumulative use of all the subjects is necessary for their elaboration. The emphasis of general and special knowledge is not shifted towards the latter in the course of training: mainly general knowledge is communicated also at the advanced level, partly even in the specialized subjects.

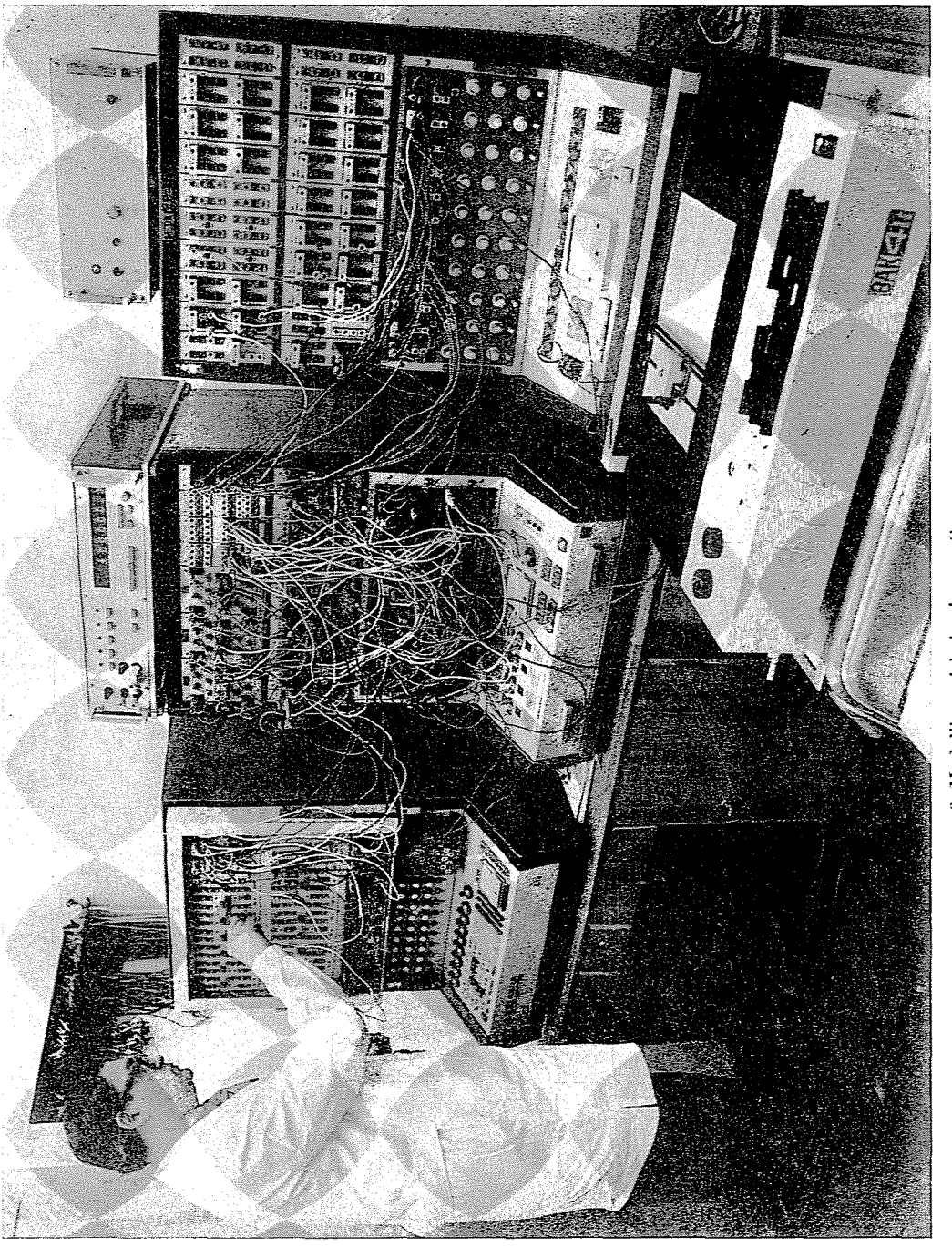


2. Laboratory Measurement

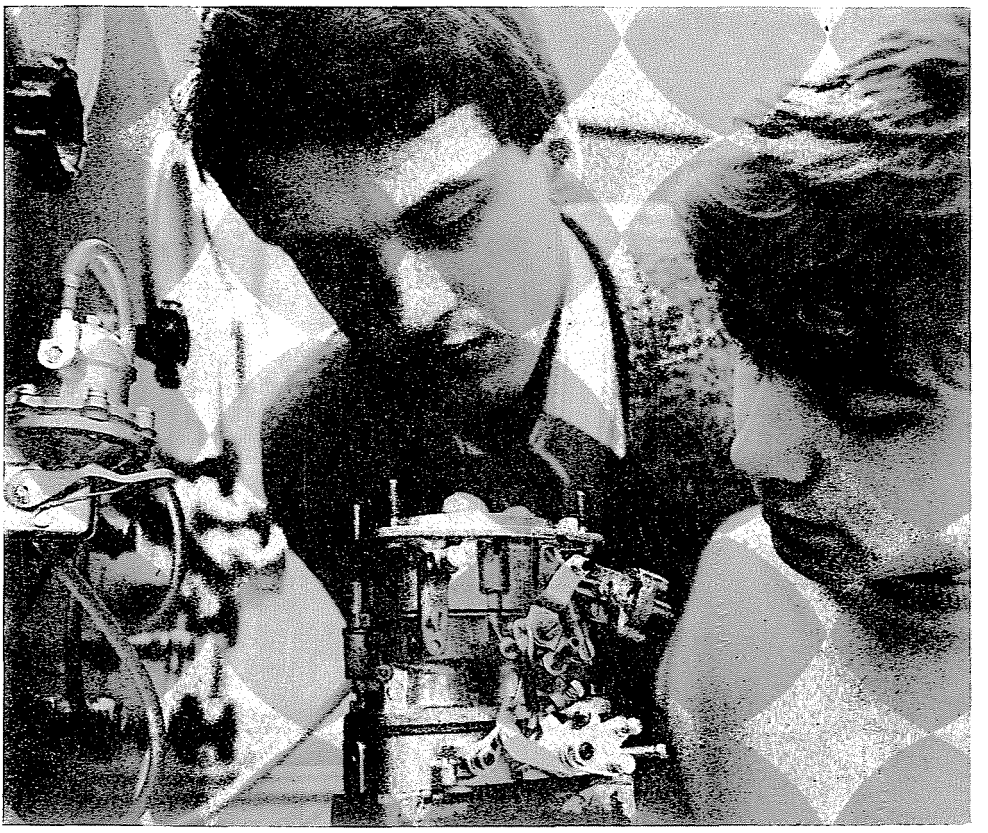
The material of the first six semesters of engineer training contains sufficient theoretically well-founded concrete practical knowledge, and provides sufficient application ability, which — complemented with some examinations — is adequate for certain technical jobs (mainly as assistants of engineers in design, developing and research work). This fact ensured the possibility of granting degrees for "production engineers" to the students not continuing their education in the seventh semester.

The improvement of the teaching methods is directed by the Committee for Education. The methodology of teaching is greatly influenced at this faculty by the fact that the branches are relatively small. The small number of students in one branch is partly of advantage because of the higher efficiency of teaching and education, but has also drawbacks, demanding more teaching staffs and class rooms.

The small group training means that in each section lectures are held in groups of ca. 60 persons, study group activities include 30 students per



3. Modelling with Analogous Computer



4. Investigation of a Carburator

group. In drawing room activities one teacher deals with 15 students, in laboratories — depending on the nature of measurements — with 8—15 students. Recently, instead of separate lectures and practices in study groups so-called complex lecture-room activities gain importance, where the communication of new knowledge and demonstration of examples illustrating it, are not disconnected. Experiences are good with this form of training. Students of the correspondence courses take part in 3-day conferences four times in every semester.

Pedagogic work at the faculty

The pedagogic aim of training at the faculty is the education of devoted and highly professional engineers with social commitment. All the activities are grouped around this aim:

— the faculty increases consequently the standard of training and its efficiency;

— it pays increased attention to the formation of the political and ideological views of the students, of the development of their character, of their consciousness and conduct;

— it strives to improve the discipline of the students by making them more aware of the requirements, and supervising their observation in a just and consequent manner;

— it increases the stimulation for learning and the esteem of students achieving good results and outstanding social activity;

— it becomes increasingly strict and rigorous with students of inadequate ability or with those neglecting their studies.

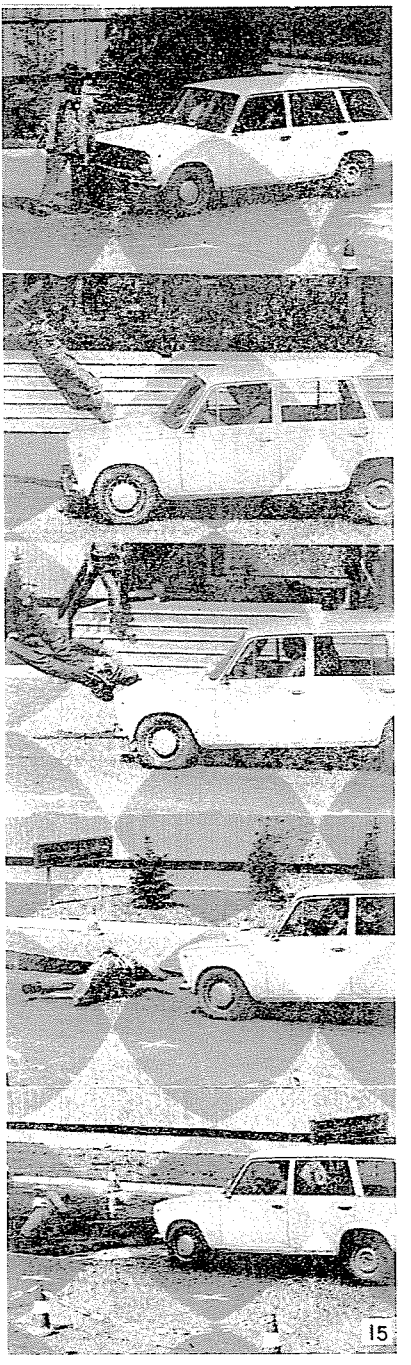
The faculty wants to turn spontaneous formation into an organized, consciously directed one, to increase further the role of educational work, to pay more respect to the outstanding educators both morally and financially.

An increasing role is played by the tutor of classes, not only in their own work, but also in the coordination, inspiration and recording of the different educational influences.

The faculty is aware of the fact that the society needs professionals responsive to the problems of the society, playing an active role in the life of the community, therefore the faculty considers, beside professional training, also the education for public life, (interpreting public life in its wider sense) its first rank task. Participation in public life has to be learned and practised. This is organized, coordinated and evaluated by the tutors of classes according to a given program. They also pay attention that the students during their 5 years of study acquire all the necessary theoretical, ideological and methodical knowledge, needed for practising activities in public life and they also ensure the possibility for this type of activities.

Important fields of professional training are the scientific student circles, study excursions and visits, summertime production practices in Hungary or abroad, therefore a great care is taken of these activities, mainly through the Specialty Committees, but also by the conscious shaping of the whole training system. E.g. in the flourishing of the scientific student circles a significant role is played by the fact that in the majority of the branches the teaching of special subjects starts already in the first academic year. The teaching staff of institutes based on the existing branches can deal with students of individual branches in a uniform requirement- and condition-system from the first to the last semester in a fraternal atmosphere creating good personal connections. In addition to professional training, attention is also paid to increasing the general educational level.

An outstanding field for education is the college. In the present college system (faculty college) the main direction of college education is in the hands of the faculties or faculty organizations.



5. Investigation of a Pedestrian Accident

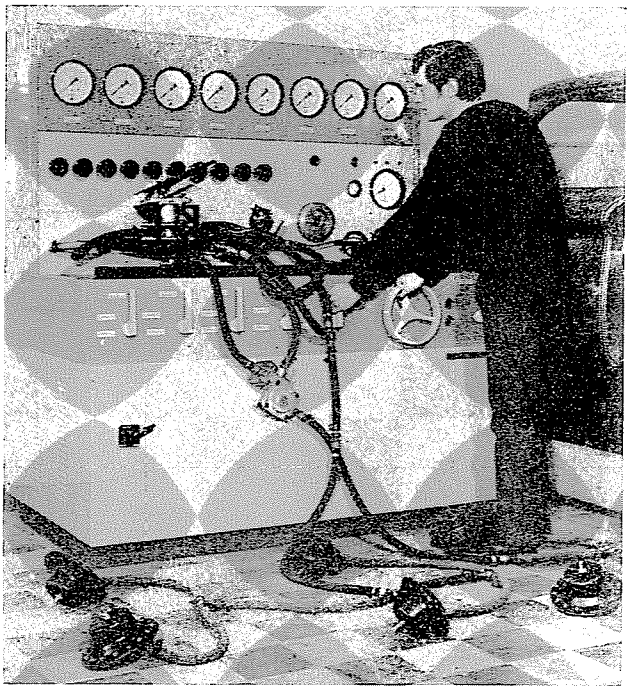
Further tasks

No significant changes are to be expected in the profile of the faculty. The present convertible branches based on engineering activity will, for a time, remain.

From the point of view of training level, — in cooperation with colleges — the faculty wants to make its educational system open, i.e. it wishes to ensure that, independently of registration, every student might and should reach the level of training corresponding to his abilities and the requirements of the national economy.

In order to increase further the standard of teaching, the efficiency, demands and requirements of the training process should be raised, the reliability of the measurement of achievements should be improved, and individual accomplishment, aptitude for self-contained, creative work and self-education should be made the goal of learning.

The methods of training are permanently modernized. As the next task, passive teaching forms should be reduced for the benefit of active forms (learning requiring thinking and mental effort from the students, practice demanding individual effort, e.g. homeworks, written exercises, design work, laboratory practice, scientific students' circles, but mainly systematic exami-



6. Measurement in the Automobile Laboratory

nations). Simultaneously, the time for active learning or work should be increased.

The main aim of the educational work remains further the complex training for the profession. Teaching and educational work should be organized in such a way that the knowledge and abilities needed for practising the profession of engineer combine already in the course of training into a integral whole. For this purpose, it is necessary to strive for the permanent coupling of theoretical studies with their practical application, integration between different subjects should be increased as far as possible, the coordination activity of the special committees should also be improved, etc.

On the other hand, the students should be made acquainted in theory and in practice with the real conditions and methods of practising the profession chosen, and in order to achieve this, the process of educating socialist professionals should have the same priority as the professional courses, including methodological and practical preparation for public life.

The methods of education should be permanently developed. The organization and standard of conscious directing educational work should be further increased, the coordination of manifold influences exerced by teachers should be improved ensuring a higher flexibility. Conditions for a good teacher-student relationship should be ensured in all sections so that the students can work together with the teachers responsible for their professional education in a uniform requirement and condition system for the whole time of their training.

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