

39890

K

Prof. Ing. Dr. Jaroslav Kovařík, CSc

EDUCATION OF CARTOGRAPHERS

IN CZECHOSLOVAKIA

Technical University of Prague
Department of Geodesy and Cartography

The purpose of this paper is to present the solution how to educate the experts-cartographers in a little country such as the Czechoslovak Socialist Republic. Though the numbers of cartographers required in our country are relatively small, it is of course necessary to ensure that the education has a high quality and is always up to date. Cartography has been both scientific and practical branch of science and has its significant mission in the life and labour of the human society.

The present school education in Czechoslovakia has been tying up to a long and rich tradition. Cartography has been pursued in our country traditionally at the universities in the connection with geodesy and geography. This arrangement has been kept till now, as it is economical and ensures the necessary width and complexity of the profile of our graduates.

In Czechoslovakia great attention has been paid to the education of the young generation. The total conception of education for the present and future needs of our society was discussed and approved by the Central Committee of the Communist Party of Czechoslovakia at the session in the year 1973. The points of view for the work of the universities include adequate wide profiles of the graduates, requirement of the first-rate base of the common education and of the social maturity of the students, a high quality of the scientific-pedagogical work of the university and the up to date progressive character of the teaching plans and syllabus, as well as of the scientific work of the school and obviously also the necessity of the narrow structures between the school and practice.

The education of the experts for the branch of cartography in Czechoslovakia has been realized in three levels: at the universities, at the vocational schools and in the way of apprenticeship or in special courses. Besides, there exists an individual way of education for the scientific workers in the form of research study, which is concluded with the defence of the thesis and with bestowing of the scientific degree. The ways mentioned, their contents and conception will be now

1285/46

discussed.

Education of cartographers with the high school
qualification

AS ALREADY MENTIONED, THE CARTOGRAPHERS ARE PREPARED FOR THEIR PROFESSION AT THE UNIVERSITIES IN THE CONNECTION WITH GEODESY (TECHNICAL UNIVERSITIES) OR WITH GEOGRAPHY (UNIVERSITIES).

There is the branch of geodesy and cartography at the technical universities, which is one of the branches at the faculties of civil engineering. The study lasts five years, the first four years have an unified teaching plan. The students of the fifth year may choose from four possibilities of the professional direction, one of them being cartography. Following the bases given in the former terms the syllabus contains the subjects of mathematical cartography, mapping and cartographic production and reproduction. The contents of the lessons in cartography in the fifth year will be mentioned later.

The development of cartography at the branch of geodesy and cartography has reached its peak in the fiftieth years, that means in the period of the concentration of the civil cartography within the Department of geodesy and cartography. To start with there was a good deal of experience of our sister-school - Institute of Surveyors, Aerial Mapping and Cartography in Moscow and the soviet textbooks on cartography by Prof. Salsiczew, Prof. Volkov and others. The conception of our study has drawn from those soviet sources and that is why it does not need to be explained here. For a certain time there was a cartographic study specialization, which started about in the half time and which has crystallized later into the present concentrated optional subject group in the fifth year of study.

Since the time mentioned cartography has passed rather a quick development requiring to intensify the considerations on the substance of cartography as a science, on the application of the theory of systems and information in cartography, on the application of the mathematical statistic methods, on

the possibilities of automation and on new possibilities in the cartographic reproduction. That development went off simultaneously with the development of cartography in the Soviet Union and in the whole world. Those parts are included in the teaching plan of our school and have been actualized first of all in the optional cartographic direction of the branch. For example, the themes of the theses are at present like that: examination of the application of the automated plotters in cartography, production of topical cartogrammes or cartodiagrammes for the operational activity in the national economy, topics on reprography etc.

The graduate of our school is directed first of all to the field of geodetic cartography, that means the production of information system of geodesy and cartography, processing and application of analogue and digital maps of great or middle scales for the whole region of the national economy and of other social needs. The education of our students is finished by the defence of their thesis and with the final state examination.

The study of cartography at the university has been realized in our country together with the study of geography. During the fiftieth years the cartography developed into an independent specialization and became then a part of a unified study plan of geography, where the field of cartography stands for quite satisfactorily. The graduates are directed first of all to the geographic cartography, that means to the production and application of generally geographical and various thematic maps of small scales for scientific, economic, cultural and other needs. The course of study takes five years and is finished also by the defence of the thesis. The themes are directed to the setting of thematic maps on the area of Czechoslovakia (the density of water net, maps of nationalities and others) to the problems concerning the present direction of the cartographic production (types of road maps, tourist maps and others), further to the history of cartography etc.

As it is the priority of the graduates from the techni-

cal universities the mastering of the problems both of the surveying and cartographic recording of realities and of the engineering application of the cartographic image, so it is the priority of the graduates from the universities the mastering of both the geographic connections of the illustrated reality, their cartographic expressions and the following application of the cartographic image. Also in the study of the geographic cartography the modern progressive pieces of knowledge from the field of the information theory, automation, interpretation of aerial and satellite pictures, environment theory etc. are applied now quite naturally. At present reestablishment of the cartographic specialization is taken in account.

The graduates from the cartographic branches at the two types of the high schools mentioned are engaged first of all in the production and edition of cartographic works of all kinds in the field of geodesy and cartography, but also independently, that means the engineers first of all in the field of the economic construction, the geographers in the field of the territorial control and in other activities.

An independent part of the work of the high schools is the education of the scientific workers in the way of ordinary and external postgraduate study that is finished by the defence of the thesis followed by the gaining of the first stage of the scientific degree - candidate of science. The themes of the theses are elected from the scientific research activity of the institutes and universities, at present especially in the above mentioned live sections of the progressive development of the cartography.

A two years' s postgraduate extramural course of study at the technical university has been established for the graduates - economic leading workers. It was made possible to acquaint them in this way with new pieces of knowledge in the development of science and technique of their profession. The course of study is finished with confinement works and the defences of them.

Education of workers with middle technical
qualification for cartography

Vocational surveying and graphic schools in Czechoslovakia prepare the workers for executive works in the field of geodesy and cartography. The schools mentioned may be entered by the pupils having passed the elementary school education. Cartography is there a part of the unified teaching plan and syllabus. The course of study takes four years and ends with a leaving examination. The graduates are of use in cartography first of all in the region of calculation and graphic construction works, as inspectors on cartographic drawing, as leaders of lower organisation units (section leaders and foremen in polygraphic professions).

Education of craftsmen for cartography

The cartographic drawers and craftsmen of the respective professions are educated for polygraphic workplaces of the cartographic enterprises. There are the workers having finished some kind of apprenticeship (for example printer, reproduction graphicker, composer), who are able to be educated in the profession of cartography. It can be done also in the way of thematic courses organized by the Department of geodesy and cartography that are designed for those having passed the secondary or even the elementary nine-year schools (namely the cartographic drawers). The graduates from the secondary schools may attend the two-year's extra-mural courses at the vocational schools for surveying, too. Finally there is the possibility to attend the extra-mural courses taking six years at the technical universities or at the branch of geography at the university.

That is the whole system of education of cartographers in Czechoslovakia in a brief survey. The system is economical and operative. The particular steps differ sufficiently being able to complete each other quite well and a progressive development may be ensured in that system rather easy. In the stage of the high school education a traditionally good cooperation between the cartographers of both geodetic and geographic direction presents a fully complex working process.