SIXTY YEARS SINCE THE FOUNDATION OF THE (STATE) INSTITUTE OF GEOPHYSICS AT THE CHARLES UNIVERSITY IN PRAGUE

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1. INTRODUCTION

The aim of the present article is to give, on the occasion of this remarkable anniversary, a brief description of events associated with the relatively long history of geophysical research on the territory of Czechoslovakia, which resulted in the birth of the named institution and to revive its historical role played in the development of contemporary geophysics in our country.

In the author's opinion the date of 29 December 1920, i.e. the day of the foundation of the Institute of Geophysics at the time-honoured Charles University by the Ministry of Education of the first Czechoslovak Republic (1918-1938), decree No. 87.276/20, denotes one of the most significant days of this whole history, in which Professor Dr. Václav LÁSKA (1862-1943), who may well be designated as founder of modern geophysics in Czechoslovakia [1, 3], appears as the most outstanding personality.

2. PREHISTORY

Though geophysics was declared an independent and autonomous discipline among the exact natural sciences only in the sixties of the 19th century, geophysical observations in our countries began much earlier [2]. It was in the Klementinum Astronomical Observatory of the Charles University in Prague (established 1751), that, apart from the astronomical programme, also systematic meteorological observations were initiated already in the course of the second half of the eighteenth century.

Geomagnetic measurements were also started here some time later, and, in 1839, one of the oldest geomagnetic observatories in the world was put into operation by Carl KREIL (Director of the Zentralanstalt für Meteorologie und Geodynamik in Vienna since 1851), who compiled the first geomagnetic maps of Bohemia and Moravia on the basis of his geomagnetic field measurements performed over this territory.

The first relative pendulum measurements of gravity were carried out in the mines of Příbram (Central Bohemia) in 1882 by R. STERNECK-Doudlebsky, born in Prague, and were conducted with pendulums of STERNECK's original construction.

A second geomagnetic mapping of our lands was carried out by J. LIZNAR (see below in Section 3) at the end of the 19th century. It included the whole of the old Austrian-Hungarian monarchy.

At that time an observatory for astronomical, meteorological, geomagnetic, geoelectric and seismological research was built by M. KONKOLY at Ógyalla (Stará Ďala, now Hurbanovo) in South Slovakia.

Measurements, designed to determine experimentally the effects on seismograms, recorded at various depths, were conducted on behalf of the Vienna Academy of Sciences again in the mine area near Příbram, by the world-renowned seismologist H. BENNDORF during 1903-1905.

In 1908, a seismological station, equipped with the instruments of the Vienna Academy, began to operate permanently in Cheb (Eger, NW Bohemia) in order to provide for instrumental records of earthquake swarms occurring in the region of the Smrčiny (Fichtelgebirge) Mountains and the adjacent region of the Vogtland.

On the initiative of the German geophysicists 0. HECKER and W. SCHWEYDAR, measurements of time variations of the vertical by means of horizontal pendula were begun by F. KÖHLER in the mines of Příbram at a depth of 1009 m in 1911.

The year 1911 also became important for the subsequent history of geophysics in our regions for another reason: This was the return of Professor Vaclav LÁSKA to his native city, Prague, from Lwów (Lemberg, L'vov, now in the USSR), where LÁSKA was professor of mining geodesy and director of the seismic observatory from 1896 until 1911.

Born in Prague in 1862, LÁSKA studied mathematics and physics at the Charles University in order to become an astronomer, but very soon his broader scientific interests were documented by original paper not only in astronomy, but also in geomagnetism and meteorology. He soon habilitated in geodesy; as professor of geodesy he moved to the Technical University of Lvov in 1896 for 16 years. There, beside his outstanding activities in mine geodesy, astronomy and associated fields, also including oil geology, he began to develop fundamental research into seismology and geophysics in general. His discoveries, concerning the interpretation of seismograms and the study of microseisms, drew considerable response among specialists throughout the world so that, at the beginning of the 20th century, he was considered one of the leading personalities in modern seismology. He became reporter of the Vienna Academy of Sciences for research into earthquakes occurring in Austro-Hungary. In 1901 he participated in the first International Seismological Conference in Strasbourg (then in Germany), where leading seismologist s from the whole world worked together on the programme of future investigations in global seismology. There, LÁSKA presented a paper dealing with “pendulum unrest” (in the today's terminology called "meteorological microseisms"), a monograph of interest even now.

It is a surprising and as yet not fully understood fact, why the nomination of LÁSKA as Professor of the Czech Charles University in Prague and an internationally renowned authority in seismology was stipulated in applied mathematics and not in geophysics, as he himself would have liked. In any case, in 1910, a seismic vault was built about 10 m below street level in the new building in Prague 2, Ke Karlovu 3, belonging to the Czech Charles University, where the installation of seismographs was foreseen, but which had not been adapted yet for this purpose.

It cannot be excluded that the Ministry of Education, then in Vienna, was of the opinion that the one already existing chair of this kind at the German University of Prague, where

distinguished German geophysicists like A. PREY, R. SPITALER and, later, L. W. POLLACK were proving outstanding qualities of this establishment, was enough.
Of course, in view of the rapid progress in geophysics, LÁSKA was convinced of its great importance for theory and practice. Nevertheless, he felt considerably handicapped by the difficult conditions of his new position, as his efforts to overcome the obstacles hampering the establishing of a seismological station in Prague and obtaining more time for working in geophysics, failed, in spite of the support offered to him by his colleagues, mathematicians and physicists, against the objections of his conservative opponents. Therefore, he then concentrated on elaborating courses in applied mathematics, where he found a rich pattern of problems and subjects fitting his universal knowledge, even extending to the philosophy of exact natural sciences. He continued his former intense research: his publications appeared, of course, preponderantly in applied mathematics, but in pure mathematics, physics, geophysics and meteorology, too. Finally, World War I (1914-1918) broke out. During this period, LÁSKA's activities somewhat reduced to applications mostly of mathematical methods in related branches of natural sciences, e.g., in astronomy, meteorology, seismology and in some broader subjects, which later on, delineated his progressive trends in the numerical and graphical processing of data.
The end of the war and the declaration of the independent Czechoslovak Republic on 28 October 1918 provided LÁSKA with new impulse to repeat his attempts at establishing geophysics in the young republic in a position, which would correspond - as he believed - to the possibilities of geophysics as a very promising branch of exact natural sciences, not only because of bringing new knowledge of the Earth, but also because of a complex of new objective geophysical field methods of prospection for ores, oil, mineral and other resources, which he considered an absolutely necessary basis for the national economy of the new republic. From this point of view he saw the best incarnation of his ideas in forming an institute of geophysics, associated with the Charles University.

3. THE BIRTH AND EVOLUTION OF THE STATE INSTITUTE OF GEOPHYSICS

As said above, the Institute of Geophysics (below frequently referred to just as the "Institute") was created and LÁSKA was appointed its director. The Institute was to have represented a centre for geomagnetic, seismological and general geophysical research in Czechoslovakia and should have gradually been developed into an independent National (or State) Institute of Geophysics, also serving - on an appropriate scale - the educational purposes of the Charles University. It was also intended to represent, on the international forum, geophysical research, being carried out in Czechoslovakia, and contribute to the international geophysical cooperation by publishing geophysical bulletins, monographs and other scientific papers; moreover, it should maintain geophysical services etc.
This included, in effect, regular observations, measurements, processing of data and their interpretation as regards natural geophysical fields (gravitational, seismic, geomagnetic, geoelectric, geothermic, radioactive, etc., partly at the corresponding stations or

observatories), geophysical mapping of the state territory, securing of observations of unexpected extraordinary phenomena such as aurorae, local earthquakes, etc. Moreover, it was necessary to solve a number of theoretical and practical problems of public interest (e.g., in constructing buildings within seismically active areas, in securing the safety of dams and other technical construction s, in use of geomagnetic data for aviation or national defence, in geophysical prospection for oil and other raw materials, etc. Considering also the need for educating young geophysicist s and training the staff the whole would represent an enormous programme even for a very large institute.
In the enthusiastic atmosphere of that time the important role of natural sciences, including geophysics, was generally recognized. Serious consultations, in which LÁSKA was deeply involved, concerning the intended construction of a joint great Observatory for Astronomy, Geophysics and Meteorology, foreseen in the district of Hanspaulka in the northern part of Prague, took place. Unfortunately, after many negotiations this progressive plan failed for economic reasons just as a subsequent project for a joint Institute of Astronomy, Geophysics, Geodesy and Meteorology, the building up of which was planned on the Barrandov hills in the SW-part of Prague.

3.1 The initial Phase

In the face of this harsh reality, fully discrepant with LÁSKA's expectations, and frequently fighting against the lack of understanding even in authoritative and competent places, the new Institute started its activities in very modest conditions of the Department of Applied Mathematics using the rooms and the personnel of the latter. LÁSKA expended enormous energy to improve this situation. With J. LIZNAR (I852-1932), a geomagnetician already mentioned, who, being of Czech nationality, returned from Vienna and was named Professor of the Charles University and co-worker of LÁSKA in the Institute of Geophysics in 1922, the new Institute aim gained a high international authority in the field of geomagnetism.
LÁSKA also proved his excellent qualities as an organizer. He succeeded in assembling a group of external specialists as collaborators of his Institute and in securing conditions and financial means for their co-operation. In particular, the following names should be mentioned: F. ČECHURA (1887-1974, Professor of the Mining Academy, Příbram) in geomagnetism and applied geophysics, B. KLADIVO (Professor of the Technical University, Brno) in gravity, J. ŠPAČEK in hydrology and oil prospecting, V. SPAČEK (Ass. Professor of the Technical University, Prague) in geodesy, gravimetry and geomagnetism, J. ŠPLÍCHAL (Professor of the Mining Academy, Příbram) in radiometry, and B. ŠALAMON (1880-1967, Professor of cartography at the Charles University) in general geophysics and geophysical cartography. The latter also supported LÁSKA in the Institute's administrative and later (1929) became Deputy-Director of the Institute. The remaining staff consisted of temporary assistants and auxiliary personnel (students).
During 1923, the seismic vault mentioned above was adapted for the installation of seismic instrumentation. In 1924, a 1000-kg Wiechert horizontal astatic pendulum was installed.

With the test recording of this instrument the history of the seismological station Prague (PRAHA) was begun; since 1927 this station has permanently appeared in the list of the stations belonging to the international seismological network.
In 1923, in order to ensure maximum information about extraordinary collectively observable geophysical phenomena, in particular macroseismic observations of local earthquakes, LÁSKA organized a network of interested amateur observer-reporters all over the country. In this way - together with the collected reports on historical earthquakes (E. MICHAL) - a very valuable base was formed for compiling seismic catalogues and for later synthetic studies.
After the creation of the International Union of Geodesy and Geophysics (IUGG) in 1923, Czechoslovakia became one of the first member countries of this summit organization, where the international reputation of LÁSKA and LIZNAR contributed much to the establishment of international contacts and the good name of the Institute throughout the world.
It was probably in this connection that LÁSKA initiated a scientific (not administrative) unification of the seismic stations existing on the territory of Czechoslovakia. With Prague (PRAHA) as the central station , these at Cheb (Eger), Stará Ďala (Ógyalla), and that of Užhorod (now in the USSR), should have formed a Czechoslovak seismic network , which was to have operated under the auspices of the Institute since 1924. However, due to the quality of the equipment, in practice only the results of Prague and Cheb (after 1937 also Stará Ďala) could be published internationally.
In 1925, Professor LIZNAR retired, but the Institute had its first permanent staff members: a talented graduated geophysicist J. PLÍHAL in seismology and geomagnetism, and 0. JEHLIČKA, master in the mechanical workshop, who also took care of the seismological station and its equipment, as well as the associated time service, and of the increasing instrument al inventory for gravimetric, geomagnetic, geodetic and other measurements of the Institute. Thanks to this care it was possible to incorporate the stations Prague and Cheb (the latter being led by Professor G. IRGANG sice 1908) into the international seismological service in 1927 and to make some improvements at the stations of Stará Ďala and Užhorod, too.
In 1927, the 1st Yearbook (Rocenka I) [4] which, apart from a preliminary map of magnetic declination 1925·5 of Bohemia by F.ČECHURA, also included other interesting papers, Seismological Bulletins I, II and a Magnetic Bulletin were issued, and drew favourable response throughout the world. Beside this, the Institute moved to larger and better quarter and this, together with the employment of a secretary to the Institute's office seemed to indicate that the greatest initial difficulties had been overcome.
The old geomagnetic station in the Klementinum, mentioned above, was still kept in continuous operation, but because of steadily growing disturbances due to the increased electrification of the city, it became impossible to operate it any longer. Therefore, its activities were terminated. A new place was found, situated at the walls of the old fortifications south of the Karlov church, not too far from the site of the Institute. Providing

the conditions proved magnetically more favourable, a new, modernly equipped station was to be built there. For the purpose of the Institute daily values of geomagnetic declination were provided by the State Observatory (a new name for the old Observatory) at Stará Ďala, directed at that time by A. DITTRICH, Professor of the Charles University in Prague.

3.2 From the IUGG General Assembly in 1927 till LÁSKA's Retirement in 1933

The most important event of 1927 was, of course, the 3rd General Assembly of the IUGG , which this Union decided to hold in Prague. The Assembly was attended by the foremost representatives of world geophysics and was very successful. Professor B. ŠALAMON was elected Vice-President of the International Association of Seismology of the IUGG.
This fact was a mighty impulse for boosting the development of geophysics in Czechoslovakia. Above all, plans for purchasing modern geophysical instruments for gravimetry, geomagnetism and seismology were submitted. In order to gain practical experience from abroad, PLÍHAL and ŠALAMON were sent to sojourns in France, Switzerland and other countries. Professor ŠALAMON was charged to read encyclopedical courses in geophysics in the Faculty of Sciences of the University for geographers (not physicists !!). Several students became attracted to the Institute as potential future geophysicists, and, later on, a few of them graduated from the University, when they had succeeded in solving some minor geophysical problems.
Numerous publications on geophysical subjects or results by LÁSKA and his co-workers issued by the Czech Academy of Sciences and Arts and (or under auspices of other scientific bodies): are characteristic of this period. Papers by ČECHURA, ŠPAČEK J., ŠPAČEK V., PLÍHAL, KLADlVO, ŠPLÍCHAL and (later) SANTHOLZER proved the high standard achieved in the fields of geomagnetism and magnetic mapping, gravimetry and radiometry.
Unfortunately, already in 1929, the beginnings of the subsequent world economic recession, which turned into a world economic crisis, appeared in Czechoslovakia, too. Gradually it also affected the activities of the Institute more and more. This effect was still in evidence in 1934 and even 1935.
The Institute's funds were drastically reduced; with a few exceptions it became impossible to continue purchasing new instruments; sometimes, it was even necessary to decrease the extent of field measurements of longer duration.
In spite of all these difficulties and not withstanding his high age, LÁSKA did not diminish his scientific production; more and more papers, filled with new ideas, were steadily submitted to the press.
In April 1929, the Institute, under its new name of the CZECHOSLOVAK STATE INSTITUTE OF GEOPHYSICS (Československý státní ústav geofysikální (SÚG) or Státní ústav geofysikální Republiky Československé), was given its provisional statute. The Institute was withdrawn from the competence of the Charles University, except that its Director was named from the competent professors of this University, and subordinated as Director directly to the Ministry of Education. The tasks of the Institute were delineated, as indicated above, but its

scientific staff (excluding the Director, Professor of the Charles University) was systemized with two co-workers graduated in science or technology (Doctors), posted in the lowest class of university graduates, without any chance of being promoted in the future.
No wonder that J. PLÍHAL, a highly qualified graduate (Doctor of Sciences) in geophysics, after his return from a long sojourn abroad, decided to leave the Institute and to exchange the career of a geophysicist for a more promising position in the glass industry. For the Institute, and for LÁSKA personally, this was a hard blow, as there was no possibility of engaging anybody of equivalent qualification and experience in the Institute.
Also, the indoor temporary scientific co-workers, after graduating in physics or geography or in another related branch, were leaving the Institute and searching for a position as teachers in secondary schools or, exceptionally, as university assistants in other departments. Later on, the interest of students, in view of the bad outlook for the future in geophysics slowly decreased and, finally, all routine work fell into stagnation. Only the seismograph was kept in uncontrolled operation and the evaluation of seismograms was stopped, too.
In such circumstances, the 2nd Yearbook (Ročenka II) for 1928-29 [4] appeared as late as in 1931, including, apart from one paper by LÁSKA, ten contributions written by his external collaborators; these contained no paper dealing with a seismological problem. Nevertheless, two papers on the declination maps 1925·5 of Bohemia and Moravia-Silesia by F. ČECHURA, as well as two on the relative determinations of gravity acceleration in Brno (Moravia) and their comparison with Potsdam and Vienna by B. KLADIVO, three on interesting geomagnetic topics by V. ŠPAČEK and, finally, two papers treating the determination of geological contacts in the region of Příbram, based on geomagnetic and radioactive measurements by F. ČECHURA and J. ŠPLÍCHAL, respectively, deserve to be mentioned (though they had been published earlier) not only because of their high scientific qualities, but also as an expression of the authors' devotion for LÁSKA and their common work.
Somewhat later (1933), two interesting papers on the earthquakes which occurred in the region of Opava (Silesia) in 1931, were published abroad by J. ŠPACEK .
As Deputy-Director, Professor ŠALAMON was doing his best to help LÁSKA to break the stagnation of the Institute's work and to restore its former activities. In November 1932, the first of the two systemized scientific positions was awarded to R. BĚHOUNEK (1902-1974, graduated in mining sciences (Dr. techn.)), who was a former assistant to Professor F. ČECHURA. In the beginning, BĚHOUNEK began to work in seismology, but soon he started intensive research work in the fields of geomagnetism and applied geophysics. By measurements he confirmed the former result of PLÍHAL that the place foreseen for the new geomagnetic station, mentioned above, was strongly disturbed by tramways and not suitable for a geomagnetic station. Therefore, it was decided, in agreement with Professor ŠALAMON, to look for a more appropriate place at a larger distance from the city.
The time for LÁSKA to retire from the University came with the year 1933. He also resigned as Director of his Institute. Professor ŠALAMON became his successor.

3.3 The Development during the Period 1933 -1938

Professor ŠALAMON always saw his first and most important task in struggling to fill the systemized capacity of scientific personnel of the Institute. He made repeated attempts in this respect. During the spring of 1934, A. ZÁTOPEK, graduated in mathematics and physics (RNDr.), entered the services of the Institute as seismologist.

After the repair and thorough calibration of the Wiechert seismograph, a regular evaluation of records could be started. Since 1st October, 1934, monthly seismological bulletins were permanently issued, and, beginning with 1935 also the quarterly and annual ones. Gradually, seismic materials from 1928 to 1933 were evaluated and the results published. Thus the continuity of seismic analyses, edited by the Prague station, was achieved and the cooperation with the system of world seismic stations was re-established, particularly with the Central International Bureau of Seismology in Strasbourg.

Care was also given to the control of and improvements in the affiliated stations at Stará Ďala and Užhorod, as well as in the geomagnetic observatory at Stará Ďala.

A similar procedure took place with geomagnetic bulletins so that a regular exchange of bulletins and other scientific publications of the Institute with geophysical institutions the world over was fully reorganized. By the total number of cooperating stations had increased to about 250. In 1934, after test measurements of the geomagnetic behaviour of rocks and soils, made by BĚHOUNEK and ŠALAMON throughout the broader surroundings of Prague with regard to the location of the future geomagnetic observatory, the most appropriate place was found in the southern part of the English park at the chateau of Průhonice, situated at a distance of about 13 km SE of KREIL's old Klementinum station.

After R. BĚHOUNEK had performed precise topographic measurements and a preliminary dense mapping of the Z-component, definite dense measurements of Z and of its time variations were made in this park, together with measurements of D, H and I by means of modern, highly precise Askania variometers, magnetic theodolite and Darth inductors at a number of selected points. Using all this information compiled in 1935-1937, the optimal spots for locating both the absolute and variation houses were determined. After elaborating details, the projects of these buildings, designed by R. BĚHOUNEK, were submitted by B. ŠALAMON to higher authorities at the end of 1937.

In 1935, on July 24, an earthquake with an epicentral intensity near 6° MCS took place at the border of North Moravia and Silesia, the macroseismic field of which was well covered by local observations. A ZÁTOPEK's analysis revealed some very interesting relationships between the accompanying macroseismic phenomena and the tectonic structure of the affected region.

In the same year the Statistical Atlas of the Czechoslovak Republic (Statistický atlas Republiky Československé) [5] was issued. LÁSKA was the spirit of this extremely valuable and representative scientific work. There, he applied his principle of working "with measure and number" in elaborating huge sets of data and amalgamating them into uniform and complete information of Czechoslovakia based on collective calculus. The consultations of

LÁSKA with the co-authors took place in the Institute of Geophysics and LÁSKA - though retired - presented his collaborators with a splendid demonstration of his enormous knowledge, creative power and scientific effectiveness.
In 1936, a 80-kg Wiechert vertical seismograph was added to the equipment of the seismological station; it was installed another seismic vault, situated in the underground of the Faculty building in Prague 2, Albertov 6, at a distance of about 240 m from the Wiechert horizontal pendulum. The installation and calibration were carried out solely by A. ZÁTOPEK. The records proved useful above all for unambiguous determinations of the sources of stronger shocks.
At that time, thanks to the pertinent efforts of the Director and the staff of the Institute, its situation was improving. The Institute acquired new magnetic, gravimetric and geoelectric sets of instruments. In spite of the Statute of 1929, even the members of the scientific staff were promoted, and it was hoped that more scientific personnel could be hired.
During 1936 and 1937, A. ZÁTOPEK was sent several times in order to study macroseismic fields of some characteristic shocks felt in Slovakia and (or in the former Podkarpatská Rus, now the Transcarpathian Ukraine, USSR), always immediately after the earthquake in question. This improved considerably the quality of "on-the-spot" information by talking to eye-witnesses and taking photographs.
Half a century after LIZNAR's geomagnetic mapping of all elements, the compilation of new maps became one of the most urgent tasks of the Institute. For this purpose extensive field measurements were conducted by R. BĚHOUNEK in 1936-1938, above all in Slovakia and, on a minor scale, also in other parts of the state territory. Regrettably, because of the political development, this important work could not be concluded; the data were published in 1939.
In the autumn of 1938, the events just described led to the decay of the first Czechoslovak Republic and, consequently, the seismic station of Cheb (Eger) fell to Germany, the Stará Ďala (Ógyalla) Observatory with the seismic and magnetic stations and the seismic station of Užhorod (Ungvár) to Hungary.
J. BOUŠKA (1908- 1978), RNDr., graduated in mathematics and physics, who a year earlier had been specially trained in the Prague Institute in seismology and geomagnetism and then was working at Stará Ďala, returned to Prague as a geomagnetician, as well as B. BEDNÁŘOVÁ, RNDr., née NOVÁKOVÁ, graduated in astronomy and specialized in solar physics. Some years later, she became a member of the staff of the Geophysical Institute, specialized in the study of the external geomagnetic field, while J. ŠTĚPÁNEK, RNDr., a former astronomer, began to work in applied geophysics, especially in geoelectric methods.

3.4 Period 1939 -1945: The Protectorate and World War II

The collapse of the Czechoslovak "second" Republic with the proclamation of the Slovak Republic on 14 March 1939 and the establishment of the Protectorate Bohemia-Moravia (Protektorát Čechy a Morava, Protektorat Böhmen-Mähren) on 15 March 1939 were

outwardly characterized by a change of the name of the State Institute of Geophysics into the Geophysical Institute in Prague (Geofysikální ústav v Praze, Geophysikalisches lnstitut Prag).
Internally, the strengthening of the staff of the Institute in the autumn of 1938 was reflected in a bigger volume of field measurements planned for 1939. In fact, among the minor tests, calibrations etc., a more extended application of geomagnetic methods in the border region between Bohemia and Moravia near Skuteč (location of magnetite lenses) and in the region of Zlín (now Gottwaldov, magnetic testing of oil promising structures) should be mentioned. In the park of Průhonice the construction of the geomagnetic station was started according to somewhat modified projects.
In January, 1938, the 3rd Yearbook (Roenka III) of the Institute [4] was issued, containing papers published during the period 1930-1938 by V. SANTHOLZER (radioactivity of sources in the Giant Mountains), F. ČECHURA (magnetic declination 1932·0 in the Transcarpathian Ukraine and in Slovakia), R. BĚHOUNEK (magnetic measurements at Průhonice and building projects of the magnetic houses), A. ZÁTOPEK (earthquake of 24 July 1935 in the north of Moravia-Silesia) and B. ŠALAMON - R. BĚHOUNEK (isogones 1938·5 in Czechoslovakia).
In the course of the year 1939, the staff of the Institute was increased again by people from the disbanded army and the shut-down universities up to a total of about 20 persons.
The scientific activities of LÁSKA were concluded with a booklet entitled "Introduction to Philosophy".
As already mentioned, in 1939, the results of geomagnetic measurements from 1936-1938 by R. BĚHOUNEK were published. In 1940, a series of "Special Papers" [6] of the Institute was opened by J. BOUŠKA's paper on the dynamical effects of East-Alpine earthquakes, observed in the area of Greater Prague, and by A. ZÁTOPEK 's monograph on the observations of earthquakes in Slovakia and the former Subcarpathian Ruthinia 1923-1938.
In the work of the Institute the year 1940 was characterized by a steadily increasing volume of applied geophysics; above all electric resistivity methods were applied. The construction work connected with the geomagnetic station at Průhonice was terminated.
With the outbreak of World War II on 1st September 1939 the international contacts and the exchange of bulletins and scientific papers became impossible. The original scientific production in Czech institutions was throttled; Czech scientific journal s and monographs, among them also the Special Papers of the Institute, were stopped. Therefore, during the period 1939-1943, BĚHOUNEK, ZÁTOPEK and BOUŠKA adapted their scientific articles, written in Czech, to a form acceptable for printing in semi-popular reviews. For example, in an article by A. ZÁTOPEK on seismic unrest of July 1940 a rare case of microseismic vibrations caused in the neighbourhood of a damaged Vltava (Moldau) weir in Prague could be described and explained (1941).
The field programme of the Institute, as planned for 1941, consisted mainly of magnetic and electric prospecting for ore deposits. At the beginning of 1941 rather rare, but in the course of the year more and more frequent visits of German specialists, interested in establishing a form of collaboration in applied geophysics on the territory of the Protectorate, and - above

all - in the new gravimetric, geomagnetic and geoelectric equipment of the Institute became more and more conspicuous.

Then, on 9 February 1942, by a decree of the Reichsprotector in Böhmen und Mähren - Erlass Nr. I 1d-6674 - the Institute was dissolved and its staff and inventory divided between the Institute for Geophysics of the Prague German Charles University (Director Professor T. SCHLOMKA) and the Amt für Bodenforschung in Böhmen und Mähren (earlier the Czech Institute of Geology in Prague), working under a German supervisor, in such a way that the staff and inventory serving the purposes of pure geophysics (including the seismological station in Prague and the geomagnetic one at Průhonice), were allotted (also for the future) to the German University, while the remaining part of the staff and inventory, working in or being used for applied geophysics, were absorbed by the Amt für Bodenforschung. Thus, J. BOUŠKA and A. ZÁTOPEK, together with meteorologists A. DŘEVIKOVSKÝ and Z. SEKERA (later professor of meteorology in Los Angeles, USA) continued to work in the rooms of the former Institute of Geophysics; the seismological station continued to operate, but the measurements at the geomagnetic station of Průhonice were interrupted. The staff and inventory of applied geophysics moved to the Amt für Bodenforschung under R. BĚHOUNEK, who organized, partially with new co-workers, a strong group of applied geophysicists engaged mostly in prospection work, frequently together with German field geophysicists, in various parts of the Protectorate.

Under the new conditions, J. BOUŠKA devoted his time to certain mathematical problems of waves in the atmosphere and to the preparation of a working programme for the geomagnetic station at Průhonice as a regional central observatory for the purposes of planned geomagnetic mapping foreseen for the near future. He also conducted some field tests with a new Eötvös balance.

A. ZÁTOPEK with T. SCHLOMKA produced a paper on the theory of similar magnetic fields and a study dealing with model forecasting of geomagnetic storms (1944).

In the summer of 1943 LÁSKA died in Černošice near Prague, leaving to posterity over 300 scientific papers, as well as a number of books. Many of his ideas were in advance of the evolution in natural sciences by some decades; in geophysics, e.g., he anticipated the role of time in the elastic, viscous and plastic character of the phenomena in the same system of masses under different thermodynamic conditions within the Earth. He was thus able to formulate the present-day fundamentals of geodynamics. His merits in the exact sciences are enormous; as far as geophysics is concerned, the author has made a modest attempt to show LÁSKA as a scientist, organizer and human being. He should never be forgotten by Czechoslovak geophysicists.

Returning to the developments of the time, the publication of some Czech papers by BOUŠKA and ZÁTOPEK on seismic, geomagnetic or generally geophysical topics should be mentioned. Early in 1945, a few months before the end of the war, a study on the history of the seismic station in Prague by A. ZÁTOPEK and that in Cheb (Eger) by G. IRGANG were published in German [7], together with the seismic bulletins of both stations: Prague 1940-1943 and Cheb 1942-1943. The latter operated in 1939-1942 under the auspices of the

Institut für Erdbebenforschung (director A. SIEBERG) in Jena (Germany), but, since 1942, was affiliated to the station of Prague again.
After the division of the lnstitute between the German University and the Amt für Boden-forschung in 1942, Professor ŠALAMON was ordered to "liquidate" the rest of the Institute, i.e. to compile a complete li t of the Institute's remaining inventory including some instruments and technical devices, remnants of the library and the ample collection of the so-called small literature and documentation. He always managed to extend the dead-line for this liquidation so that, on the remarkable date of 9 May 1945, the day of the liberation of Czechoslovakia, the continuity of the Institute was sanctioned by the post-war Ministry of Education. The activities of the Institute in pure geophysics were restored, as the group of applied geophysics under the leaderhip of R. BĚHOUNEK became a component of the renewed State Geological Institute.

3.5 Renaissance and Final Phase of the Institute in 1945 - 1950

The evolution of the re-established State Institute of Geophysics after 1945 may well be characterized as a renaissance. Under the directorship of Professor ŠALAMON the filling in of gaps caused by the occupation proceeded in a very satisfactory way. The old statute of 1929 was replaced by a new project of development, in which, at the very beginning eight leading geophysicists, specialized in various branches of geophysics, were suggested. A number of valuable instruments from the former German institute were included into the Institute's inventory. New young graduates and undergraduates from the Charles University and the Technical University could be employed and included in the staff of the Institute, now located in more spacious rooms in Prague 2, Ke Karlovu 3, and Dittrichova 13. The post-war activities of the Institute were started in the following four departments:
1) Seismology, under A. ZÁTOPEK, with affiliated stations of Cheb (G. IRGANG, succeeded by K. SIEBERT), Stará Ďala (now Hurbanovo) and Skalnaté Pleso (in the High Tatra Mountains), built in 1943, which with its 1772 m elevation represents the highest seismic station in Europe.
2) Geomagnetism, under J. BOUŠKA, with affiliated stations of Průhonice (where one more building was erected for experimentation and special observations) and Stará Ďala (Hurbanovo).
3) Gravimetry, under J. PÍCHA, graduated in mathematics and physics, and charged with gravimetric field measurements and mapping, and somewhat later with re-establishing and operating the tidal station in the mines of Příbram at a depth of about 1 009 m.
4) Geoelectricity, under J. ŠUBRT, graduated in physics, who, later on, conducted various geoelectric measurements, observations and research into telluric currents.
ad 1) As the operation of the seismic stations of Prague and Cheb was not interrupted and the records were being continuously evaluated, it was relatively easy to restore the edition of the 10-days, monthly and yearly bulletins and the exchange of publications with world

seismological centres; somewhat later the stations of Hurbanovo and Skalnaté Pleso joined in, too. As original seismic research was concerned, A. ZÁTOPEK's paper on the propagation of East-Alpine earthquakes through the Bohemian Massif already mentioned, re-opened the interrupted series of ,,Special Papers" [4] of the Institute in 1948. In the said paper, the main traits of deep block structure of the Bohemian Massif were discovered statistically for the first time.

A series of papers by the same author was published during 1945-1948, which were devoted to the regional characterization of seismic activity in space and time. Several papers issued during the same period treated some problems associated with the structure and properties of the Earth's interior. A deeper significance may be attributed to papers by A. ZÁTOPEK, dealing mathematically with the response of a seismograph excited by shocks of various types (1946, 1948, 1950), because of their internal connection with the subsequent studies on the earthquake magnitude and the seismicity in the European area, extended over three decades, in which the author's followers J. VANĚK and V. KÁRNÍK have gained a high international reputation. Besides, an extended study of seismic unrest and meteorological microseisms was started in 1947. With regard to a comparative research into magnitudes as determined in Prague and Pasadena (USA), an original highly sensitive modification of the torsional Anderson-Wood seismograph was constructed. With this pattern of research, some results of which were presented by A. ZÁTOPEK at the IUGG General Assemblies in Oslo, 1948, and Brussels, 1951, respectively, a promising basis was created for many following years. In this period Prague was considered as a key station of the world seismological network.

ad 2) As regards the field of geomagnetism, it became obvious that a new detailed and complete magnetic mapping of Czechoslovak territory had become the most pressing task of the State Institute of Geophysics. In view of the form and geomorphic character of this area, it was seen that this would be a question of a number of years. Therefore, it was decided, in preliminary considerations of Professor ŠALAMON and J. BOUŠKA, in 1945-1946, to perform the measurements before the end of 1950 in two stages, i.e. Bohemia-Moravia-Silesia (156 observation stations) and Slovakia (96 stations), respectively, based on permanent recordings at the variation stations of Průhonice and Hurbanovo. Seven points were chosen as secular stations (apart from Průhonice and Hurbanovo) with 2 year intervals between the successive measurements.

J. BOUŠKA was extremely careful in preparing the preliminary measurements at both variation stations and in their surroundings. Š. OCHABA from Hurbanovo was specially trained in Prague, in order to ensure the necessary degree of homogeneity of the Slovak part of the map, for which he was made responsible.

Since 1946 the Průhonice magnetograms were systematically evaluated and the results published in yearly magnetic bulletins. In co-operation with the Military Geographical Institute the 1st stage field measurements of all elements in the 1st order and of declination in the 2nd order network were terminated in 1948. The corresponding map of declinations 1949·5 J. BOUŠKA and J. VYKUTIL was published in 1950, but the resulting maps of all

elements 1960·0, prepared by J. BOUŠKA, were considerably delayed, being issued in 1955 for reasons, which will be mentioned in the next paragraph as characteristic for the following "period of transition". The same reasons then partially affected the magnetic mapping in Slovakia, so that Š. OCHABA was only able to publish his complete geomagnetic maps 1952·5 as late as in 1959. The whole complex of geomagnetic maps 1958·0 of Czechoslovakia was published by J. BOUŠKA, V. BUCHA and A. KOČÍ in 1959.

Shortly before 1950, a group was created under B. BEDNÁŘOVÁ-NOVÁKOVÁ in the geomagnetic department in order to study the outer geomagnetic field with particular emphasis on relationships between the solar and geomagnetic activities; the prediction of geomagnetic storms became the main subject of this long-term study.

ad 3) In addition to the previous projects of gravimetric studies in Czechoslovakia, a post-war project of a Czechoslovak gravimetric network was prepared by the State Institute of Geophysics (J. PÍCHA and B. ŠALAMON) in co-operation with the Institute of Astronomy and Fundamentals of Geophysics of the Technical University, Prague (Professor E. BUCHAR) and the State Institute of Geodesy and Cartography (M. WITTINGER) in 1947, and, in 1948, measurements with a NØRGAARD gravimeter were started in Bohemia and Moravia. In 1949, J. PÍCHA and V. CHUDOBA, repeating the measurements made earlier by R. BĚHOUNEK and V. STANĚK in the Anna mine of Příbram down to depth of 1500 m, determined the vertical gradient of gravity acceleration and representative values of corresponding densities. PÍCHA also performed comparative measurements of gravity with a NØRGAARD gravimeter at some pendulum stations; his results were published in the last issue of the "Special Papers" series [6] in 1951, during the "period of transition", see Section 4. Similarly, his investigations of the gravity field in the south-west of Bohemia were published during this year by the geologists.

At the end of the fourth decade, J. PÍCHA started his long-term project, devoted to the study of tides in the mines of Příbram . This research represents a continuation of the old investigations by KÖHLER (see Section 2) and the later ones by ČECHURA, based on ZÖLLNER pendulum records made in 1926-1928 and 1936-1939, respectively. The evaluation of these records thus constituted the initial stage of PÍCHA's investigations.

After 1945, there existed an older project to use these pendula for surface measurements of plumb-line variations in the underground cellars of trigonometric towers, but this plan was abandoned after A. ZÁTOPEK's critical study of the unfavourable factors that would depretiate the results (1950). The way was then open for PÍCHA to continue his research into tides in a restored station at a depth of 1009 m. The results achieved will be mentioned in the next Section.

ad 4) The magnetotelluric measurements and other geoelectric investigations, performed then and later at the Budkov Observatory, have established a basis which, after being complemented with appropriate instruments, served all purposes of the study of the external electromagnetic field of the Earth, mainly of its short-period variations.

To terminate this Section, it may be stated in general that the period between 1945 and 1950 was characterized by a rapid growth of the Institute along the lines once delineated by

LÁSKA. In particular, after the victorious February of 1948, when the working class of Czechoslovakia, led by the Communist Party, assumed political power to develop Czechoslovakia into a socialist republic. The importance of geophysics, especially for ensuring the industrial and economical base of the state, was fully recognized. The main task of the State Institute of Geophysics was seen preponderantly in its orientation towards basic research, the results of which were to provide theoretical support to numerous existing departments of applied geophysics, where qualified specialists were badly needed. Concerning the last point, the education and training of young geophysicists was introduced at the Department of Physics of the Faculty of Sciences of the Charles University. Thus, geophysics were given the same position as astronomy and meteorology had had since many years ago in the framework of mathematical and physical sciences. At this very beginning, syllabi compiled by A. ZÁTOPEK (1946) were first adopted for both pure and applied geophysics and the first students of geophysics were enrolled.
In March 1950, a co-ordination conference was convened, where the State Geophysical Institute offered its help in planning geophysical research to geophysical establishments. The new tasks were reflected in a steady increase of the staff from about 10 persons in 1948 to over 30 co-workers in 1950, and in a very realistic approach to future work. The international contacts of the Institute increased to some 300 partnerships; a number of original papers were in preparation, and a very promising future seemed to be ensured. This favourable evolution changed completely in the late autumn of 1950. In order to reach maximum concentration of forces in physical sciences within a newly organized Centre of Scientific Research and Technical Development, a Central Institute of Physics was created and the State Institute of Geophysics was incorporated into this Institute as its Geophysical Sector, except for a few persons who went over to the Charles University. In this way, the State Institute of Geophysics ceased to exist as an independent scientific body.

4. PERIOD OF TRANSITION FROM THE STATE INSTITUTE TO AN INSTITUTE OF THE NEW CZECHOSLOVAK ACADEMY OF SCIENCES

Experience very soon proved that the new organization began to generate problems and substantial difficulties to both partners, associated only organizationally. As regards the Geophysical Sector, led by J. BOUŠKA, its structure and working programme with the observatories and services represented a quite heterogeneous element in comparison with the usual style of work of the physical part of the Central Institute. The accommodation of the sector by moving it to smaller premises in Prague 6, Cukrovarnická 10, and/or to the calculating-machine factory Aritma in Vokovice, created rather strenuous conditions in the publishing activities and the exchange of publications, as well as in the research work itself and thus in operating the stations and observatories.

The group of people, who had joined the University, formed a small geophysical unit at the Department of Physics, working since 1947, under A. ZÁTOPEK, Associate Professor of Geophysics. For historical reasons this unit was allowed to use the name of "Institute of Geophysics of the Charles University", since 1953, also including the seismological station Praha (Prague). The main task of this unit consisted in the education of qualified geophysicists. Professor ŠALAMON, who had returned to his University Department of Cartography, began to help in this education, too.

Though the State Institute of Geophysics no longer legally existed, its former ideas and LÁSKA's heritage did not die. It became more and more obvious that the Central Institute of Physics was not in the position to play the role of a national geophysical scientific centre under the conditions of the rapidly increasing importance of geophysics in Czechoslovakia and in the world. Therefore, the leaders of the Central Institute of Physics themselves finally agreed with the unanimous call of geophysicists in Czechoslovakia, including people working in applied geophysics, for such a centre. This matter of fact was clearly expressed at the 1st National Geophysical Conference held in Liblice near Prague in March 1952. There, the participants unanimously expressed their desire to have a central establishment of basic geophysical research, an Institute of Geophysics, incorporated into the Czechoslovak Academy of Sciences, the foundation of which was just being prepared by a Governmental Commission. The Conference also adopted the general trends of a national plan of geophysical research both into pure and applied geophysics with particular emphasis on the former as suggested for the future Institute of the Academy.

The recommendations of the Conference were than submitted to high Party and Government authorities and adopted by the said Governmental Commission for the establishment of the Czechoslovak Academy of Sciences. As a result, on November 17, 1952, the opening day of the Academy, the Institute of Geophysics was included among the establishments of the new highest scientific institution of Czechoslovakia.

In the meantime, the Ministry of Education fulfilled the demand of the Conference for ensuring geophysical education and training, above all at the Charles University, already at the beginning of 1952, by the nomination of A. ZÁTOPEK as the first Professor of Geophysics at the Faculty of Mathematics and Physics. Later on, in 1954, R. BĚHOUNEK was nominated Professor of Applied Geophysics at the Faculty of Sciences.

In this way, the principal ideas of LÁSKA materialized.

5. EPILOGUE FOR 1953 - 1980

The Institute of Geophysics of the Czechoslovak Academy of Sciences began to work under the provisional guidance of J. ŠUBRT with about 30 co-workers, grouped in rapidly growing, gravimetric, seismological, geomagnetic, geoelectric and, somewhat later, also ionospheric, geothermic and radiometric departments, with adherent laboratories, workshops and central geomagnetic, seismological and ionospheric observatories in Průhonice, the

seismological station at Cheb, the electromagnetic and telluric observatory at Budkov and a tidal station in the mines of Příbram. At the beginning, a department of atmospheric physics was also incorporated into the Institute, but soon it began to develop as an independent Laboratory and later became the Institute of Physics of the Atmosphere of the Academy.
For a short period the Institute of Geophysics took care of the evaluations at Hurbanovo and Skalnaté Pleso in Slovakia until the Slovak Academy of Sciences was founded in 1953 as a leading Slovak scientific institution, in the framework of which a Geophysical Laboratory was established, purposefully developed into the Institute of Geophysics of the Slovak Academy of Sciences, which, later on, established a number of further geophysical stations and observatories (e.g. [16]).
By a delimitation of the library and the other inventory of the former State Institute of Geophysics between the Academy, as its official successor, and the Charles University, the Geophysical Institute of the latter was enabled to develop its educational and research activities, including full operation of the seismological station of Prague, while the Institute of the Academy took over the tasks of the central office for the national seismological service. As in the case of the magnetic data, in later years this was divided between the Czechoslovak and Slovak Academy according to the new constitution of Czechoslovakia as a federation of two national socialist republics .
The development of geophysics proceeded tempestuously. The delayed publications mentioned above were issued; seismological and magnetic bulletins and other data perfected; a wide platform for energetical study of earthquakes using magnitudes of surface and body waves was prepared, and also extended investigations of the wind-unrest and meteorological microseisms executed; as systematic and thorough analysis of the Příbram tidal records and associated movements was developed; a research into the geoactive effects of solar activity intensified ; a systematic analysis of palaeomagnetic phenomena introduced, as well as preparatory work in geo-radiometry and geothermics, which were then developed in the late sixties and the seventies into an important tool of geophysical synthesis.
A number of publications concerning these items was published in various scientific journals in Czechoslovakia and abroad, including the issues of the IUGG and its affiliated bodies in the early fiftieths, but Czechoslovak geophysicists obviously were in need of their own publication. This was first GEOFYSIKÁLNÍ SBORNÍK - TRAVAUX GÉOPHYSIQUES - GEO-FIZICHESKIY SBORNIK [8], edited yearly by the Institute of Geophysics of the Czechoslovak Academy of Sciences, as a collection of monographic papers on geodetic, geophysical and meteorological subjects, published since 1953/4 in the Publishing House Academia of the Czechoslovak Academy of Sciences. This international publication has now reached (1980) its 28th volume and includes a series of 546 original monographs, a considerable part of which is related to geophysical topics associated with the territory of Czechoslovakia.
In 1957, an international scientific journal, called STUDIA GEOPHYSICA ET GEODAETICA [9], was founded in order to publish original contributions in geodesy, geophysics and meteorology oriented towards the solution of problems of basic research in pure geophysics

and related sciences. Four issues a year, somewhat over 100 pages each, inform the reader of the progress achieved in Czechoslovakia in the named disciplines. Occasionally, relevant contributions from abroad are also accepted. The international response to the journal is good. News, comments and historical articles, referring to significant events of the development in the named sciences in the country are also being published. The 25th volume of the STUDIA journal is just being prepared for publication by the Publishing House Academia of the Czechoslovak Academy of Sciences.

The Institute of Geophysics was one of the first Academy institutions, for which the construction of a new building was incorporated into the plan of Academy investments. The foreign participants of the successful 1st International Seismological Conference, organized by the Institute at the Chateau of Liblice near Prague as an overture to the International Geophysical Year 1957/58 (IGY), highly appreciated the disposition of the building in Prague 4 - Spořilov and also the geomagnetic, seismological and ionospheric observatories of Průhonice, just being prepared, with a new ionospheric station at Panská Ves in North Bohemia, and a first order seismic station of Kašperské Hory for the IGY, the first world-wide scientific action, in which Czechoslovakia participated with "devotion and skill" as Sydney Chapman said [10].

An important role in the evolution of Czechoslovak geophysics after 1948 is to be attributed, as one could see above in the case of the Institute of Geophysics of the Czechoslovak Academy of Sciences, to the National Conferences of Czechoslovak geophysicists, at which - apart from a review of significant scientific contributions - also plants for the development of research and organization of Czechoslovak geophysics as a whole were discussed by the whole geophysical community on a national level, regularly in the presence of representatives of the Party and the Government. On being presented to the deciding Party and State authorities, the resulting recommendations have always found full understanding and support.

Each of these seven Conferences organized up to now (the 7th National Conference took place in Gottwaldov (Zlín) in November 1980) has represented a milestone in the progress of geophysics in Czechoslovakia not only as a scientific discipline, but also in the implementation of its economic and social tasks.

The creation of the Institute of Applied Geophysics in Brno, as suggested by the 3rd National Conference of Geophysicists, held at Liblice in 1956, may serve as an example thereof. By concentrating forces of highly qualified specialists into this Institute, the urgent tasks of geophysical prospection for natural deposits of raw materials have been effectively attacked since its founding on January 1st, 1959. Geophysical maps of high quality, above all the gravimetric map of Czechoslovakia, compiled by J. IBRMAJER, Director of the Institute, became fundamental documents provided by the Institute for Czechoslovak geophysics. In the sixties, a reliable experimental basis for a complex geophysical synthetic study of the crust and upper mantle below the territory of Czechoslovakia was established by means of the methods of explosion seismology, developed in the Institute of Applied Geophysics under the leadership of B. BERÁNEK. The new Institute grew rapidly into the greatest

geophysical working unit with branch offices in Prague and Bratislava. Organized in the framework of the Czech Bureau of Geology it greatly contributed to the development of the structural geology of Czechoslovakia. In co-operation with geologists it provided Czechoslovak geophysics with a three-dimensional model of the crust, suitable for inclusion of characteristics of all geophysical fields in the form of a unique synthesis. Among the roughly 1 600 employees (1980) of the Institute, re-organized about ten years ago as a national enterprise, a relatively very strong component of basic research has always been working and intensively co-operating with the research teams of the Geophysical Institutes of Czechoslovak and Slovak Academies (these have increased to about 200 and 100 co-workers, respectively), those of the Universities and other establishments.

For its main' task, i.e. the field work, the Institute of Applied Geophysics is equipped with the most progressive instrumental equipment for the whole complex of geophysical field and laboratory methods. Moreover, it possesses a specialized computer centre, a department for the development and construction of geophysical apparatuses with workshops and a reproduction centre. Good international publicity of its results (13-15), extended domestic and international contacts, outstanding individual experts and prospection groups working in the Middle East and in Africa, organization of national and international geophysical meetings also became very helpful in the participation of Czechoslovakia in international geophysical and interdisciplinary projects mostly executed under the guidance of the Geophysical Institutes of the Czechoslovak and Slovak Academies of Sciences.

After the International Year 1957/58 and the Year of International Geophysical Co-operation 1959 [10], Czechoslovak geophysicists were able to play, so to say, with united forces, a successful part in the Upper Mantle Project 1961-1971 [11], the Quiet Sun Years 1964-1965, the Geodynamics Project 1971-1979 [12], and the International Magnetospheric Study, as the reader can find in the volumes of this journal.

Czechoslovak specialists also accomplished a great deal of work in the international regional studies organized since 1952 by the European Seismological Commission; in 1959 its centre of research into the seismicity of the European continent was transferred to the Geophysical Institute of the Czechoslovak Academy of Sciences. A further complex of geophysical investigations conducted in Czechoslovakia is related to the joint research carried out in 1962-1965, within the so-called Geophysical Region, including the territory of the USSR and those of the adjacent socialist countries. This programme was transformed, in 1966, into a co-ordinated research programme of the Commission of the Academies of Socialist countries for Planetary Geophysics (CAPG, Russian abbreviation KAPG), which is closely following the recommendations of the ICSU, lUGG and other leading international scientific institutions. A similar role is being played in the framework of the Czechoslovak participation in the INTERKOSMOS (IK) project, a project of the socialist countries for the peaceful investigation of outer space. In this connection, the Czechoslovak sub-satellite MAGION of 1978 deserves to be mentioned. Czechoslovak specialists in geophysics also proved their professional qualification in the Development Programme of the United Nations and their organs, such as UNESCO, etc.

It is impossible to list the names of individual specialists involved in these activities associated with the development of Czechoslovak geophysics at the beginning of the eightieths: their number has grown from units to tens and hundreds, as compared with the era of LÁSKA, but the progress still continues along LÁSKA's lines. Such was the progressive power of his ideas. As regards the Institute of Geophysics of the Czechoslovak Academy of Sciences as a direct successor of the State Institute of Geophysics, founded by LÁSKA, the present article can only give an outline of all that has happened. This was depicted in much greater detail on the occasion of the 25th anniversary of the Institute of the Academy by its present Director, V. BUCHA, Corresponding Member of the Czechoslovak Academy of Sciences [17].

6. CONCLUSION

It was the intention of the author to present, on the occasion of the sixtieth anniversary of the foundation of the Institute of Geophysics on Dec. 20th, 1920, a sequence of events and episodes connected with the history of geophysics in Czechoslovakia, in which the most significant role was played by the State Institute of Geophysics and its founder Professor Václav LÁSKA. In many cases LÁSKA's ideas have preserved their vitality up to the present and, perhaps, they will prove to be a new inspiration even to younger generations of Czechoslovak geophysicists.

Alois Zátopek

References

[1] Collection of papers: Sborník prací matematických a fysikálních na počest 60. narozenin Dra V. LÁSKY. JČMF, Praha 1923.

[2] J. Bouška, V. Procházka: Úvod do geofyziky. Nase vojsko, Vel. voj. knih. sv. 49, 1954.

[3] V. Láska: Úvod do geofysiky. Praha 1927.

[4] Coll. of papers: Ročenka čs. státního ústavu geofysikálního I (1927), II (1928-1929) , III (1930-1938).

[5] Statistický atlas Republiky Československé. Orbis, Praha 1935.

[6] Speciální práce SÚG No 1 (1940), No 2 (1940), No 3 (1948), No 4 (1950).

[7] Prager seismische Veröffentlichungen. I. Geophys. Inst. d. Deutschen Karls-Univ., Praha 1945.

[8] Travaux Géophysiques, vol. I-XXVlll (1953-1980), Academia, Praha.

[9] Studia geophysica et geodaetica, 1-24 (l957-1980), Academia, Praha.

[10] International Geophysical Year and Cooperation in Czechoslovakia 1957-1959. Collected papers, Academia, Praha 1960.

[11] Upper Mantle Project Programme in Czechoslovakia, Final Report, Geophysics, Collected papers; Final Report, Geology, Collected papers; Academia, Praha 1971.

[12] Geodynamic Investigations in Czechoslovakia (Final Report), Collected papers, CSAV - SAV, Veda, Bratislava 1979.

[13] Collected Papers (Sborník) of the 6th National Conference of Geophysicists, Plzeň, 4 - 6 Nov., 1975, vol. I-III, Brno 1975.

[14] Proceedings, XIInd International Geophysical Symposium, Prague, Sep. 13 - 16, 1977, vol. I, II, Geofyzika n. p., Brno 1978.

[15] Užitá geofyzika (Applied Geophysics), vol. 1 -16, ÚÚG, Academia, Praha 1963 - 1979.

[16] Contributions Geophys. Inst. Slovak Academy of Sciences No 1 -12, Veda, Bratislava 1969 - 1980.

[17] V. Bucha: Twenty Five Years of the Geophysical Institute of the Czechoslovak Academy of Sciences. Studia geoph. et geod., 22 (1978), 208.