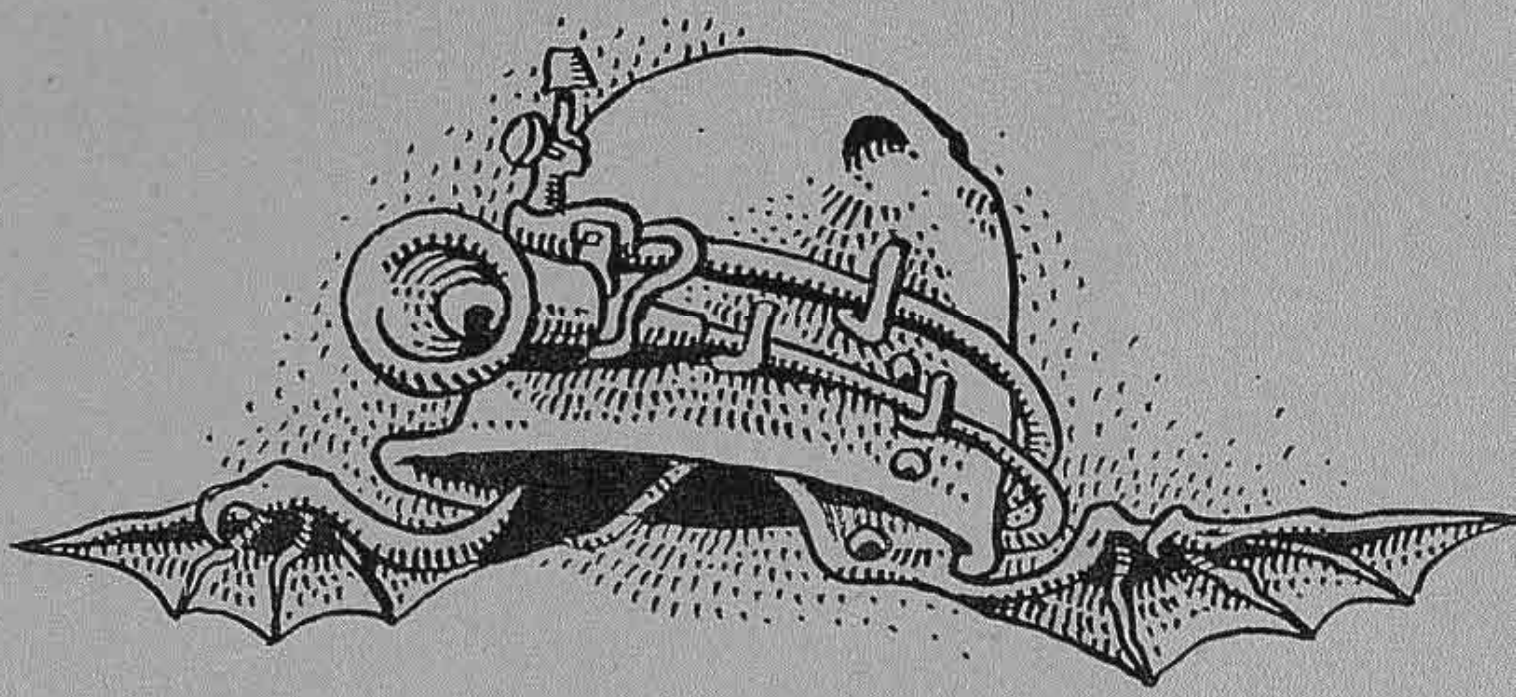
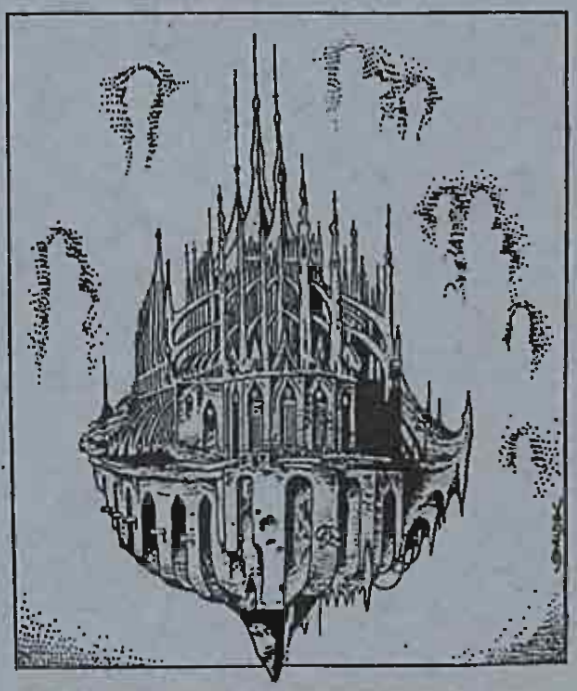
Czech Speleological Society

1993 - 1997



SPELEO 16
1994



BOHEMIA SUBTERRANEA

MALÁ AMERIKA - KUTNÁ HORA - MALEŠOV - MĚLNÍK
HRAD SLOUP - KLÁŠTER MILEVSKO - O.M.VYSKOČIL
ČECH - JENEWEIN - MUCHA - PODZEMNÍ MYTOLOGIE

SPELEO 17
1994

MACOCHA - JESKYNĚ TEPLICA - OWEN 94
ERAZIM JÁMSKÝ - TROIS FRÈRES - SOUKOP

SPELEO 19
1995

KRÁLOVA JESKYNĚ - PSEUDOKRAS - RADHOŠŤ
PROKOPSKÉ ÚDOLÍ - ŘEZNIČEK - SVATÝ PETR
LOUCKÝ KLÁŠTER VE ZNOJMĚ - OBJEV VE FRANCII

SPELEO 20
1995

HISTORICKÉ PODZEMÍ 95 - LASCEAUX 93 -
AMATÉRSKÁ JESKYNĚ - BOŽENA NĚMCOVÁ
NA SLOVENSKU - SČÍTÁNÍ NETOPÝRŮ - DĚVÍN

Czech Speleological Society

1993 - 1997

edited by
Pavel Bosák

Praha 1997

CONTENTS

Editorial

Four years since the last International Speleological Congress in Beijing, China (1993), passed so rapidly that the time of the next, 12th International Congress of Speleology, La Chaux-de-Fond, Switzerland, is here. We have to admit, that our Speleological Society did not changed substantially. The structure now is more democratic, individual caving clubs are more or less independent with all advantages and disadvantages of that system. We adopted the practice of individual membership in the Czech Speleological Society since 1996. We organized successful 1st National Congress of Speleology in Jedovnice (1994) which hosted also the regular session of the UIS Bureau. Our publication activity, in spite of shortage of funds, is developing in a relatively great extent, the complete publication list is attached below. The number of organized symposia, meetings and field workshops with excursions is also relatively high, for details see in further text. Our Society took part also in the co-organization of some foreign activities, especially in Poland.

Members and clubs of the Czech Speleological Society organized numerous international activities. Expeditions to Spitsbergen, New Zealand, Turkey, Slovenia are worth of mentioning here. The participation of our experts on numerous congresses, symposia and related events dealing with caves, speleology and karstology also increased. After a long time new PhD Thesis on karstology appeared, the summary is attached below. Scientific research performed by official scientific structures (Academy of Sciences in Prague), research institutes (Czech Geological Institute in Prague and Brno) and universities (especially Charles University, Prague, Masaryk University, Brno) is more intensive now. Caving clubs and individual cavers substantially contributed the research by their help and direct participation. Karstology and speleology represents high interest of students during undergraduate and postgraduate university courses (in Prague and Brno).

Compared with the last volume of the *Czech Speleological Society 1989-1993* there is evident a progress. Caving and speleology renewed its intensity, nevertheless it is still lower than before social and economic changes in 1989. The activity is focused not only to "classical carbonate karst", but the study of "pseudokarst" in non-carbonate rocks is highly preferred as well as activities in artificial cavities, especially in historic cities, old mines, etc. The number of cavers organized in caving clubs and as an individual members stabilized now (about 700 organized cavers paying annual contributions from total of about 1 300 cavers in central evidence).

The broad spectrum of activities in last five years was possible only thanks to the governmental financial support directed to our Society via the Ministry of Environment of the Czech Republic. This kind of direct financial support finished this year. What will happen in the future, you will be able to read (I hope) after next four years in a brochure Czech Speleological Society 1997-2001 at the occasion of the 13th International Speleological Congress.

I have to conclude this short introduction by the statement from 1993 that the Czech Republic, a state of polite and friendly people, welcome you to come caving in numerous "karst" and "pseudokarst"regions and in artificial cavities of high historic, cultural and scientific value.

Pavel Bosák
Editor

I.

Organized and co-organized congresses, symposia and workshops

1993

Bohemia Subterranea - the international symposium on underground quarries, Praha

1994

Speleofórum 94, Rudice

1st National Speleological Congress, Jedovnice

5th International Symposium on Pseudokarst, Szczyrk, Poland

13th International Speleological School, Mięzigórze, Poland

1995

Speleofórum 95, Rudice

Symposium of Ferry Skřivánek on historical underground, Štěchovice

Hranická Abyss, R.O.V. dive, Hranice na Moravě

14th International Speleological School, Mięzigórze, Poland

1996

Speleofórum 96, Rudice

Workshop Pseudokarst features in neovolcanics of the Czech Republic, Ústí nad Labem

Workshop Pseudokarst features in rocks of the Bohemian Cretaceous Basin, Teplice n. Met.

15th International Speleological School, Lądek Zdrój, Poland

1997

Speleofórum 97, Rudice

Workshop on pseudokarst on Ostaš, Broumov

II.

Publications edited by the Czech Speleological Society

Knihovna ČSS (Library of the Czech Speleological Society)

1987-1992

Vol. 1: *Studijní texty Speleolog I.stupně (1.část) [Textbook Speleologist of the first level, Ist part]*, Praha 1986

Vol. 2.: Jan Vítek: *Bibliografie pseudokrasu v ČSR [Bibliography of Pseudokarst]*, Praha 1986

Vol. 3: *Studijní texty Speleolog 1.stupně (2.část) [Textbook Speleologist of the second level]*, Praha 1986

Vol. 4: Ferdinand Šmikmátor: *Úvod do jednolanové techniky [Introduction to Single Rope Technique]*, Praha 1987

Vol. 5: *Průvodce k exkurzím III. sympozia o krasu Krkonošsko-jesenické soustavy [Excursion Guide, IIIrd Symposium on Karst of Sudetes]*, Praha 1987

Vol. 6: *III. sympozium o krasu Krkonošsko-jesenické soustavy [Symposium of Karst of Sudetes]*, Praha 1987

Vol. 7: Igor Audy: *Fotografování v podzemí [Photography in Caves]*, Praha 1988

Vol. 8: Jaroslav Hromas - Jaroslav Weigel: *Základy speleologického mapování [Principles of Cave Survey]*, Praha 1988

Vol. 9: *III. seminář o historickém podzemí Stříbro 1987 [Symposium on Historical Underground Stříbro 1987]*, Praha 1988

Vol. 10: *2. sympozium o pseudokrasu. Sborník referátů [Second Symposium on Pseudokarst. Proceedings]*, Praha 1988

Vol. 11: Hugo Havel: *Základní organizace ČSS 6-08 Dagmar v Brně 1973-1988 [Dagmar Caving Club No. 6-08 in Brno 1973-1988]*, Praha 1988

Vol. 12: Martin Vrána: *Jeskynní výzkum u Březiny [Cave Investigation at Březina]*, Praha 1988 (published in 1989)

Vol. 13: Pavel Bosák (Ed.): *Sborník příspěvků: Vědecký program 2. sjezdu ČSS [Proceedings. The Scientific Program of the Second Congress of the CSS]*, Praha 1989

Vol. 14: Hugo Havel: *Přehled průzkumných prací a jejich výsledky v historii Moravského krasu [The Review of Exploration Activities and Their Results in the History of the Moravian Karst]*, Praha 1989

Vol. 15: Reiner Horušický - Jiří Malík - Václav Velechovský (Eds.): *Setkání v Jizerských horách Liberec 21.9.-24.9.1989. Průvodce k exkurzím [Meeting in the Jizerské Mts. Liberec September 21-24, 1989. Excursion Guide]*, Praha 1989

Vol. 16: Derek C. Ford: *Charakteristika jeskynních systémů vzniklých rozpouštěním v karbonátech [Characteristics of Dissolutional Cave Systems in Carbonate Rocks]*, Praha 1989

Vol. 17: Jaromír Demek (Ed.): *4. sympozium o historickém podzemí Mariánské Lázně 29.9.-1.10.1989 [Fourth Symposium on Historical Underground, Mariánské Lázně September 29-October 1, 1989]*, Praha 1989

Vol. 18: Josef Wagner a kol.: *Jeskyně Moravskoslezských Beskyd a okolí [Caves of the Moravskoslezske Beskydy Mts. and its vicinity]*, Praha 1990

Vol. 19: Fraňo Travěnec: *Bibliografie Hranického krasu [Bibliography of the Hranice Karst]*, Praha 1990

Vol. 20: *Příručka mapování pseudokrasu [Handbook of Pseudokarst Survey]*, Praha 1990

Vol. 21: Václav Cílek (Ed.): *Krasové sedimenty [Karst Sediments]*, Praha 1993

Vol. 22: Radomil Matýsek: *Speleoalpinismus [Speleoalpinism]*, Ostrava 1994

Vol. 23: Josef Wagner (Ed.): *IV. sympozium o pseudokrasu Podolánky 1990. Sborník referátů [Fourth Symposium on Pseudokarst Podolánky 1990. Proceedings]*, Praha 1990

1993-1997

Vol. 24: Josef Řehák (Ed.): *Kras Sudet, IV. sympozium o krasu krkonošsko-jesenické soustavy [Karst of Sudetes. Fourth Symposium on Karst of Krkonoše-Jeseník System]*, Praha 1993

Vol. 25: Václav Cílek (Ed.): *Svět v podzemí, Sborník příspěvků z 1. Národního speleologického kongresu ČSS v Jedovnici, 25.-27.11. 1994 [World Underground. Proceedings of the First National Speleological Congress 1994]*, Praha 1995

Vol. 26: K.L. Kukla: *Podzemní Praha, Dobrodružné romanetto z hlubin a bludiště pražského podsvětí [Underground Prague. The Adventurous Romanetto from Depths and Labyrinths of Prague's Underworld]*, Praha 1995

Vol. 27: Václav Cílek: *Podzemní Praha - Soupis podzemních objektů hlavního města a vybraná bibliografie [Underground Prague. The list of underground objects of the Capital and selected bibliography]*, Praha 1995

Vol. 28: Richard Zatloukal (Ed.): *Speleologie na Holštejnsku. Výzkumy v letech 1966-1996 [Speleology in the Holštejn Area. Explorations in 1966-1996]*, Brno 1996

Vol. 29: Václav Cílek (Ed.): *Archeologie a jeskyně, Sborník věnovaný památce archeologa F.Proška (1922-1958) [Archaeology and Caves. The Memorial Volume of archaeologist František Prošek, 1922-1958]*, Praha 1997

Vol. 30: Ladislav Pecka - Roman Živor (Eds.): *Tetín speleologický a historický, Sborník příspěvků k 20. výročí objevu jeskyně Martina a vzniku speleologické skupiny Tetín [Speleological and Archaeological Tetín. Volume dedicated to the 20th Anniversary of the Discovery of the Martina Cave and of the Foundation of Tetín Caving Club]*, Praha 1996

Vol. 31: Vojen Ložek - Jaroslav Vašátko: *Měkkýši Národního parku Podyjí [Molluscs of the Podyjí National Park]*, Praha 1997

Other Publications (1987-1997)

Václav Cílek - Stanislav Kácha - Zdeněk Hašek: *Czech Speleological Expedition Himalaya '85 (Report)*, Praha 1985

Radko Tásler a kol.: *Tasmánie 87 (Zpráva o expedici)[Tasmania 87. Report on Expedition]*, Praha 1989

Radko Tásler a kol.: *Owen 90 New Zealand*, Trutnov 1991

Speleofórum'88: H. Šimíčková, O. Šimíček, V. Kahle, J. Otava, P. Zajíček (Eds.), Brno 1988

Speleofórum'89: H. Šimíčková, O. Šimíček, V. Kahle, J. Otava, P. Zajíček (Eds.), Brno 1989

Speleofórum'90: V. Kahle, O. Šimíček, J. Otava, J. Urban, M. Dočekal (Eds.), Brno 1990

Speleofórum'91: J. Otava, J. Horák, V. Kahle, O. Šimíček, P. Zajíček, M. Tomášková (Eds.), Brno 1991

Speleofórum'92: J. Otava, J. Horák, O. Šimíček (Eds.), Brno 1992

Speleofórum'93: J. Otava, J. Horák, O. Šimíček (Eds.), Brno 1993

Speleofórum'94: K. Sobotková, M. Šenkyřík (Eds.), Brno 1994

Speleofórum'95, Praha 1995

Speleofórum'96, Praha 1996

Speleofórum'97, Praha 1997

Czech Speleological Society 1982-1986, Praha 1986

Czech Speleological Society 1986-1989: Jaromír Demek (Ed.), Praha 1989

Czech Speleological Society 1989-1993: Pavel Bosák (Ed.), Praha 1993

Pavel Bosák a kol.: *Jeskyňářství v teorii a praxi [Caving in a Theory and Practice]*, Praha 1988

Co-edition of the ČSS with other Subjects

Attila Kósa, David Havlíček, Kinga Székely: *Atlas propastí Dolného vrchu[Atlas of Chasms of the Dolný Vrch]*, Budapest 1992

Luboš Stárka - D.Bílková (Eds.): *Pseudokrasové jevy v neovulkanitech České republiky, Sborník příspěvků ze semináře pořádaného při příležitosti 20. výročí vyhlášení chráněné krajinné oblasti České středohoří [Pseudokarst Features in Neovolcanites of the Czech Republic. Proceedings from the Symposium organized on the occasion of the 20th Anniversary of the Foundation of the Landscape Protected Area of České středohoří Mts.]*, Praha 1996.

Luboš Stárka - Dana Bílková (Eds.): *Pseudokrasové jevy v horninách české křídové pánve, Sborník příspěvků ze semináře [Pseudokarst Features in Rocks of the Bohemian Cretaceous Basin. Symposium Proceedings]*, Praha 1996.

The Bulletin of the ČSS - *Speleo* (1980-1997)

Speleo 1 (1990), Speleo 2 (1990), Speleo 3 (1990), Speleo 4 (1991), Speleo 5 (1991), Speleo 6 (1991), Speleo 7 (1992), Speleo 8 (1992), Speleo 9 (1992), Speleo 10 (1993), Speleo 11 (1993), Speleo 12 (1993), Speleo 13 (1993), Speleo 14 (1994), Speleo 15 (1994), Speleo 16 (1994), Speleo 17 (1994), Speleo 18 (1994), Speleo 19 (1995), Speleo 20 (1995), Speleo 21 (1996), Speleo 22 (1996), Speleo 23 (1996).

III.

The most important activities and discoveries in the Czech Republic

The Amatérská Cave

The most important activities in our republic were concentrated especially to the large system of the Amatérská Cave in the Moravian Karst developed on the underground Punkva River and its tributaries of Bílá voda Creek and Sloupský Creek. There are several so-called corridors - i.e. the Sloupský Corridor from the northwest along the Sloupský Creek, the Bělovodský Corridor from the northeast along Bílá voda Creek, and the Macošský Corridor from the confluence of both creeks southwards. About 35 km of passages belong directly to this system or they are attached to it. The system directly consists also of open-to-public caves of Sloupsko-šošůvské and Punkevní Caves. Also other tourist caves belong to the system. The exploration was focused to climbing up a lot of high chimneys occurring in the system which have not been still explored. Other works were focused to the prolongation of the system also using cave diving techniques. Summaries of activity reports are summarized in this chapter. The reports were published mostly in proceeding volumes of Speleofórum 1994 to 1997 from where texts were extracted, adapted and translated by the editor.

Exploration of the Sloupský Corridor in the Amatérská Cave

Zdeněk Motyčka

1993

In 1993, Caving Clubs of 6-25 Pustý žleb and 6-17 Topas started their investigation of the Sloupský Corridor in the Amatérská Cave in the northern part of the Moravian Karst. A part of the areas has been newly documented. The revision of the whole main polygon has been speculated on. The contemporary research have at their disposal no exact map basis. The published plans are incomplete and so it is not clear, which parts of this longest cave system in the Czech Republic was known already before. There is mentioned the discovery of 320 m of new passages.

1994

The Sloupský corridor is huge and complex labyrinth of cave passages. The detailed survey started. On 1994, the polygon has 780 m with the discovery of several tens of meters of unsurveyed passages. Side passage of Appendix 60 m long was discovered. Surveyors are using opto-electronic theodolite Nikon and the map is processed on computer.

1995

The exploration of the Amatérská Cave continued in 1995 in the Sloupský Corridor, and in the Labyrinth of Milan Šlechta an on other sites. The activity in 1995 was influenced by higher stands of water. The survey of a passage near Splasklý člun and recently discovered Komůrka passage started, as well as the exploration of a window in the Žížalový Dome. The flood in June transported gravels and enabled to enter and to survey the passage at Nultý Sump described in 1982. Interesting features were observed during flood stages after heavy storms in June-July 1995.

Hydrology of the confluence of Sloupský and Bílá voda Creek in the New Amatérská Cave

Marek Audy

The Sloupský Creek can be seen last time in the Sloupský Corridor at 366 m a.s.l. During higher discharge, the underground ponor of Turbine is not able to consume all waters. The

water level in the Black Dome starts to increase to 373 m a.s.l. This level perfectly corresponds to the resurgence of the Sloupský Creek near flood confluence. High water-bearing capacity can be deducted in hypothetic spaces between Turbine and Labyrinth of M. Šlechta. The regime of water courses during floods and during normal state differs downstream. Both Sloupský Creek and Bílá voda Creeks appear and disappear several times. Each of creeks branches and confluences also several times.

Cave diving exploration of Šolímova mísa in the Amatérská Cave

Michal Piškula

This exploration started in 1972, when the first description of underwater part of this 15 m deep lake has been compiled. In 1984 north-west tributary has been dived to distance of 40 m. A narrow gallery with maximum of 9 m depth was explored. In 1993 D.Netušil of Brno Labyrint Club continued to distance over 100 m. On his way he found an underwater pit going into the depth of 24 m. The gallery goes deeper. The cross section in depth of 28 reached 3 by 2 m, and the gallery still goes, but has not been yet further explored.

Exploration of Chimneys in the Amatérská Cave

Exploration of chimneys in the New Amatérská Cave in 1993

Marek Audy

The exploration concentrates especially to Sloupský Corridor of the cave. There were explored following chimneys: Window at Homole (70 m), Chimney above Zero Lake (14 m with 30 m of narrow horizontal passages), Chimney before the First Lake (15 m), Chimney before Macaroni Dome (about 18 m), Chimneys in the Macaroni Dome, i.e. Bat Chimney (30 m, closed with collapse), Light Passage (steeply inclined passage choked by blocks), small chimneys about 10 m high, Snowy Chimney (15 m with 120 m of horizontal passages nicely decorated, total height of the system is 33 m), Chimney near Malá turbína (27 m), Fissure above the Lake (10 m). More the Chimney above U dvou velkých Dome was explored up to 20 m, where nicely decorated larger hall opens back to the Macošský Corridor.

Chimneys of the Bělovodský Corridor and Collapsed Dome in the New Amatérská Cave (1993)

Petr Němec, Petr Polák

First chimney explored in the Collapsed Dome was named Above bivouac and is 20 m high. The second exploration was to Osudový Chimney, about 30 m high with short horizontal gallery with speleothems. In the Krematorium another chimneys were explored, e.g. two chimney just at the termination of that cave part 17 and 22 m high, respectively. In the outflow passage there is chimney 14 m high of fissure character. In the Chodba Samoty Passage, there is Moa-moa chimney about 30 m high. In the Cathedral of J. Šlechta there existed window in the height of about 30 m. It was short, upward closing rapidly. The last chimney Above sinter plate was explored, too.

The successful prolongation in the Půlměsíční Chimney in U Homole Dome in the Amatérská Cave (1994)

Jan Vít

The U Homole Dome is developed on the confluence of two tributaries into the Punkva River. There, the chimney was climbed using the stick into the height of 40 m. Short horizontal narrow passage with small chimneys was discovered with complex continuation (see figures). Totally 150 m of inclined free galleries were discovered. They serve as vertical routes of water from the Macocha Plateau.

The unique upper level in the Nová Amatérská Cave (1994)

Marek Audy

At the beginning of 1994, we, together with Jan Sirotek, climbed the majority of chimneys in

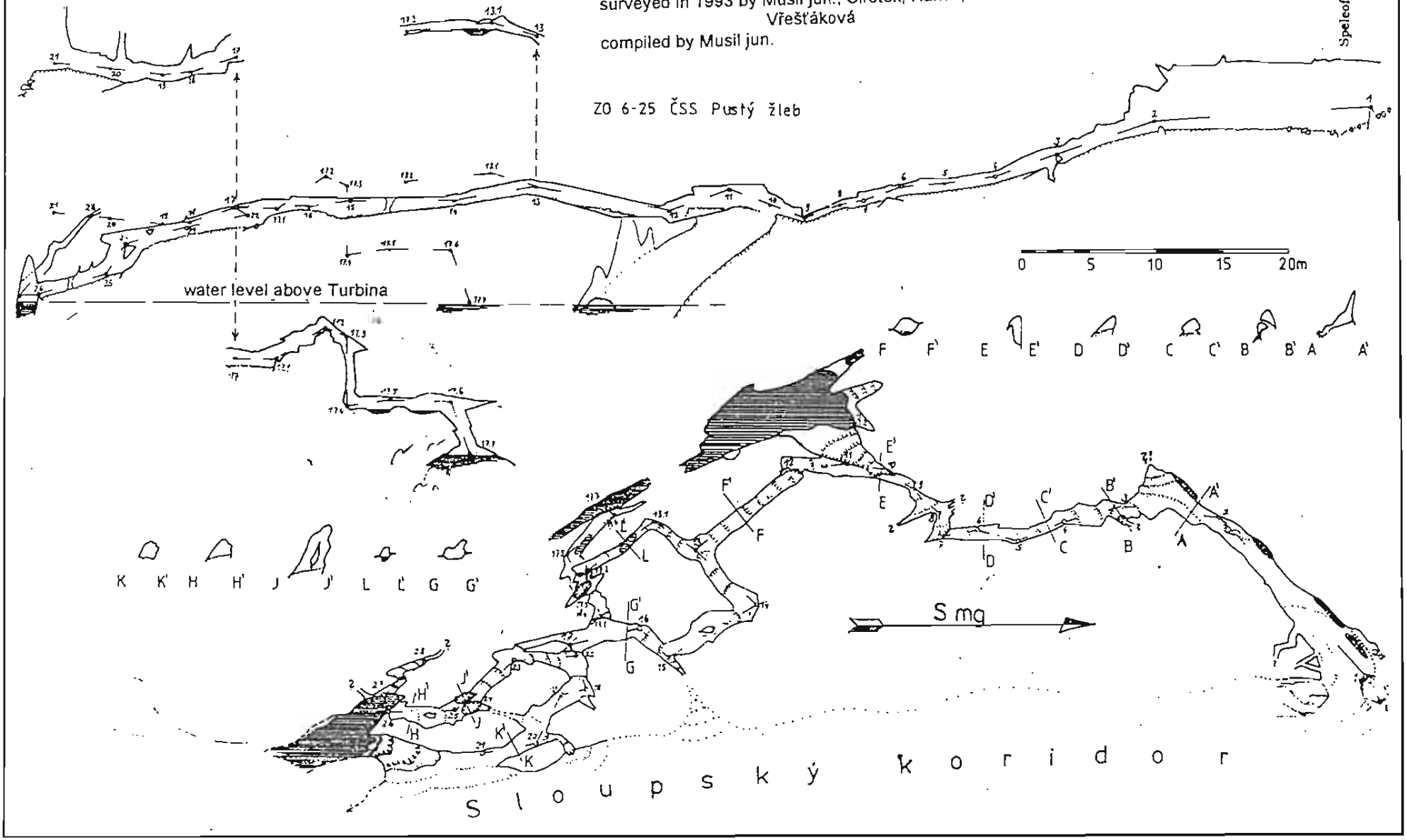
AMATÉRSKÁ CAVE
Sloupský Corridor - Žumpa

surveyed in 1993 by Musil jun., Sirotek, Rákos, Vřešťáková

compiled by Musil jun.

ZO 6-25 ČSS Pustý žleb

Speleofórum '94



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Exploration of Chimneys in the Amatérská Cave

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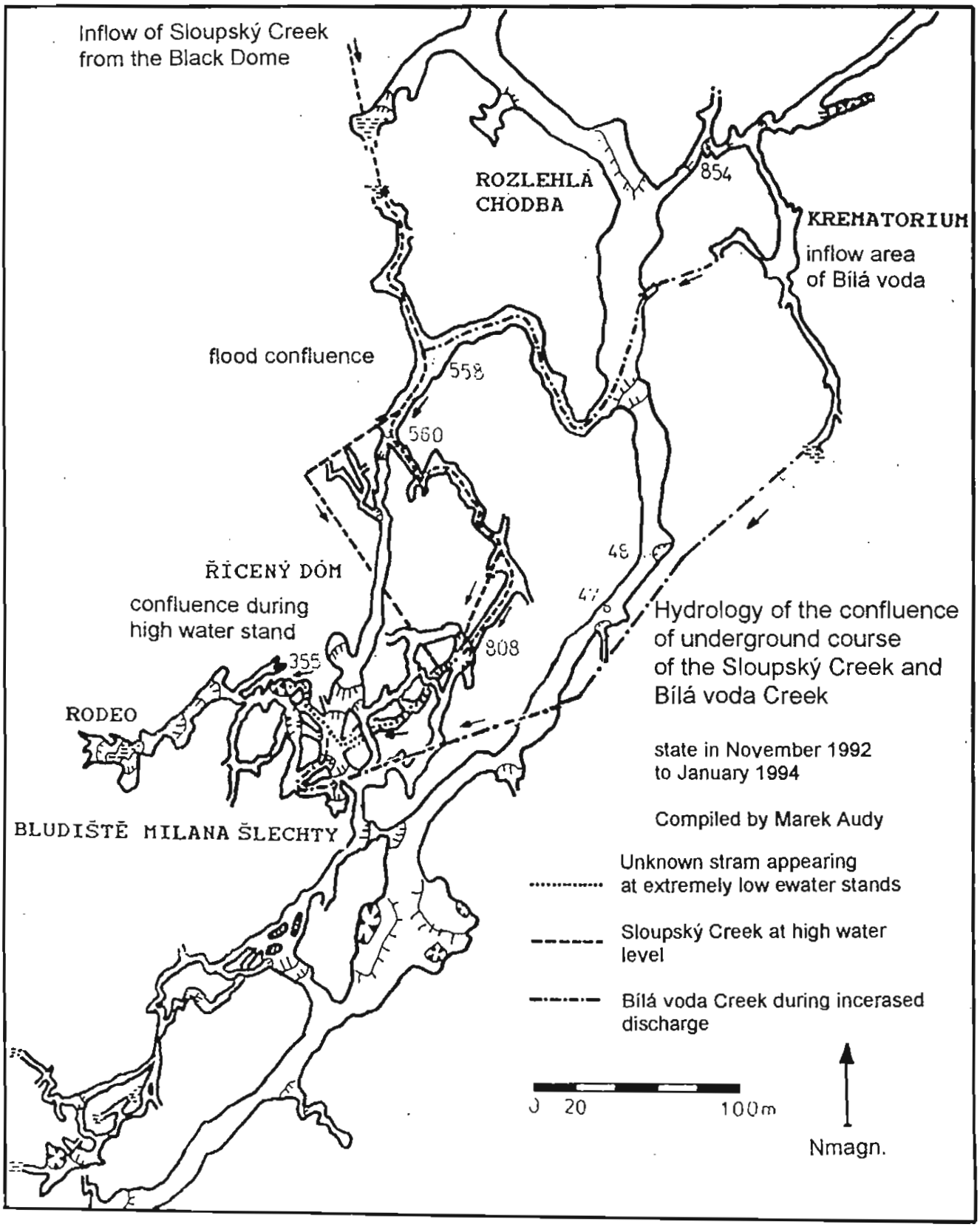
Inflow of Sloupský Creek
from the Black Dome
ROZLEHLÁ
CHODBA
854
KREMATORIUM
inflow area
of Bílá voda
flood confluence
558
560
ŘÍCENÝ DÓM
confluence during
high water stand
355
808
RODEO
BLUDIŠTĚ MILANA ŠLECHTY
Hydrology of the confluence
of underground course
of the Sloupský Creek and
Bílá voda Creek
state in November 1992
to January 1994
Compiled by Marek Audy
Unknown stram appearing
at extremely low ewater stands
Sloupský Creek at high water
level
Bílá voda Creek during incerased
discharge
0 20 100m
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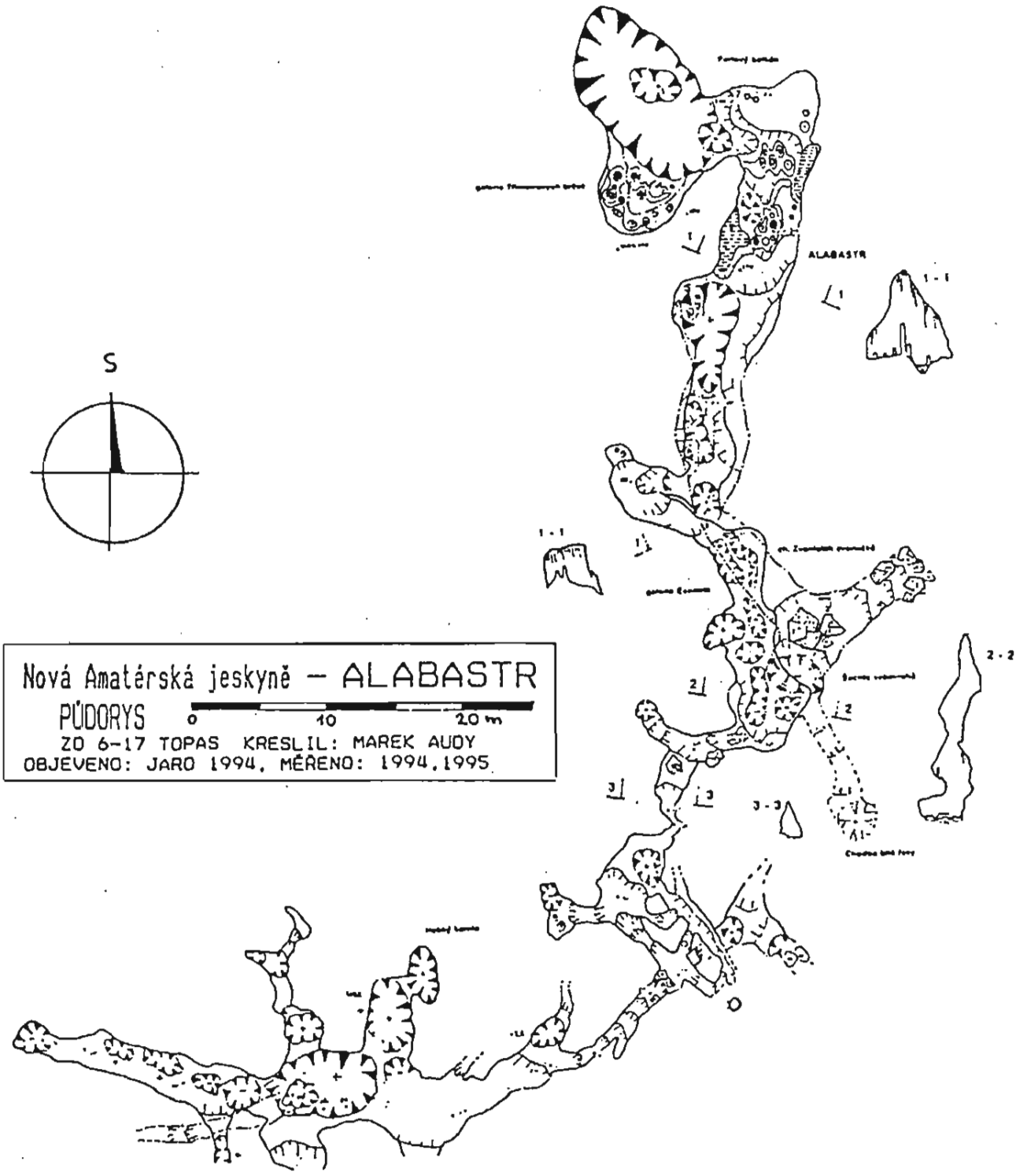
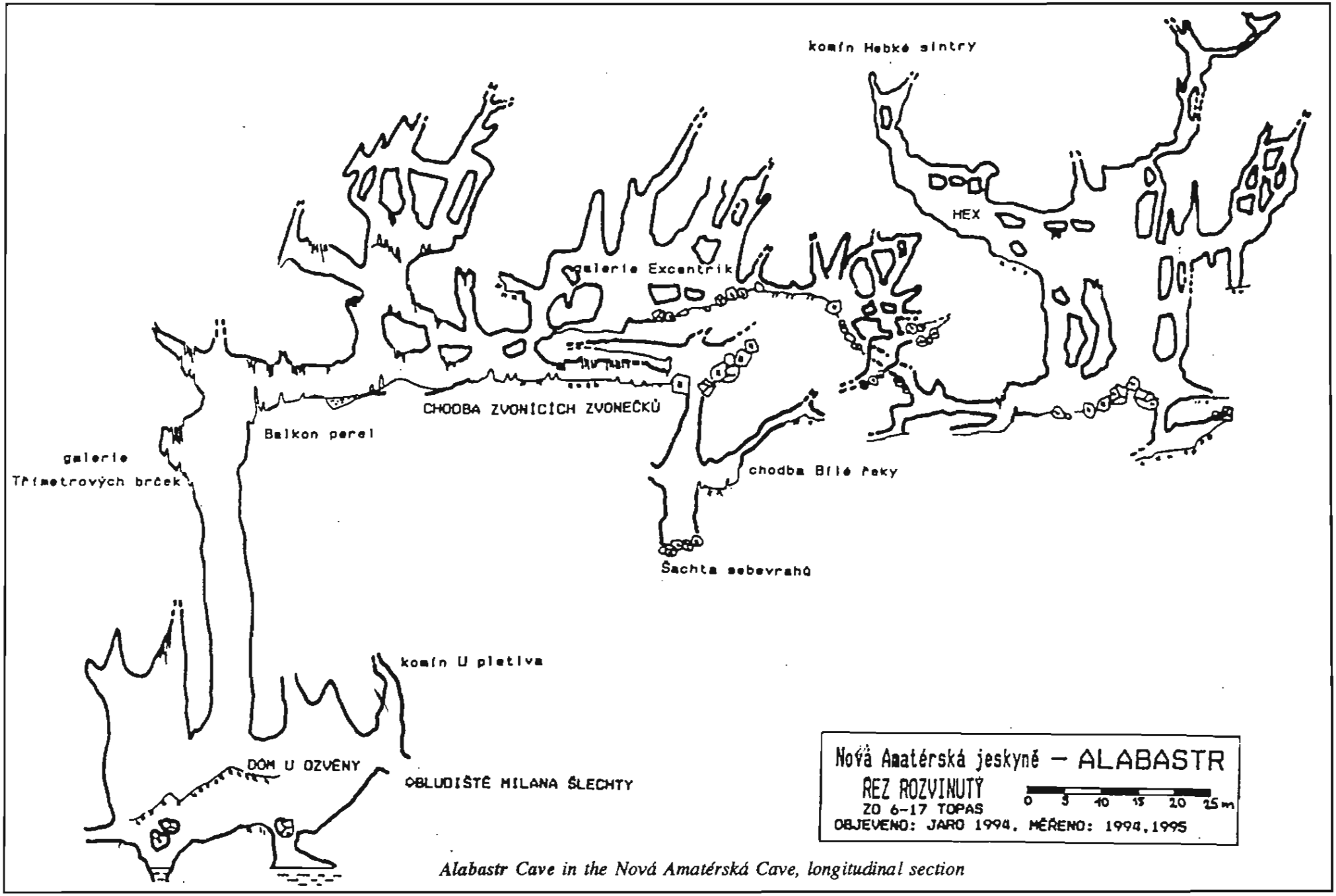


Alabastr Cave in the Nová Amatérská Cave, plan



Alabastr Cave in the Nová Amatérská Cave, longitudinal section

the southern part of the Bludiště Milana Šlechty. Ascending 45 m in one chimney in U ozvěny Dome, using the stick, we reached in two week-ends upper level of the cave - named Alabaster. The unique speleothem decoration consisting of spaghetti stalactites up to 215 cm long, egg--shaped cave pearls with diameter of 3 cm and helictitic and eccentric forms was discovered. The eccentric speleothems are up to 250 mm long with diameter of 2 mm. They are covering about 25 m^2 at the height of 10 m above the bottom of canyon. The Alabaster lies 90 m above the bottom of the U ozvěny Dome and consists of 500 m of galleries. This discovery was awarded as the most important discovery in the Czech Republic on Speleofórum'95.

Climbing in chimneys in the Eastern Branch of the Amatérská Cave (1995)

Marek Audy

At the beginning of 1995 we started the systematic exploration of chimneys in the Eastern Branch of the Amatérská Cave (Moravian Karst). Totally 6 chimneys were explored with heights from 12 to 38 m.

Chorálový Chimney (1996)

Petr Polák, Petr Němec

One of the 8 known chimneys was explored in the Zemní pyramidy Dome, the Macošský Corridor. Using the column, the height of 34 m was reached. At that place the chimney narrowed. The chimney ceiling was then reached by free climbing. Through the narrow passage we entered the side shaft. Ceilings of both chimney are blocked by large rock blocks.

Nad písečnou terasou Chimneys (1996)

Milan Bulva

Another explored chimney in the Zemní pyramidy Dome was situated at the beginning of the Labyrinth of M.Šlechta. It is 17 m high were fissure is opened. The fissure leads up to the height of 28 m, where an expressive passages occurs (45 m long, 1 to 3 m wide and 2 to 14 m high). Further exploration prolonged the site up to the height of 44 m in which another level occurs. It consists of 15 m long passage closed from both sides by collapses of large blocks.

Šikmý Chimney in the Krematorium (1996)

Jan Vít

The chimney is rather an oblique passage representing a side passage from the inflow corridor of the Krematorium. It consists of four parts separated by vertical steps. The floor is covered by clayey sediments. Speleothems are developed only at the third step.

Other explorations

The Větrná Shaft (Babice Plateau, Moravian Karst)

Zdenek Stloukal

The excavations started on June 1992 by cavers from Babice Caving Club. The progress was stopped by collapses in the lower part of the excavations. On June 1996 the excavations were renewed and on November, the Větrná Shaft was discovered. Narrow passage situated in the upper part of the shaft was explored. There, Malá Novohradská Shaft, 10 m deep, was discovered. A complicated system of passages and fissures is situated around its bottom. Exploration in that system led to the discovery of the Velká Novohradská Shaft with the bottom at -80 m under the surface of the Babice Plateau. This discovery was awarded as the most important discovery in the Czech Republic on Speleofórum'97.

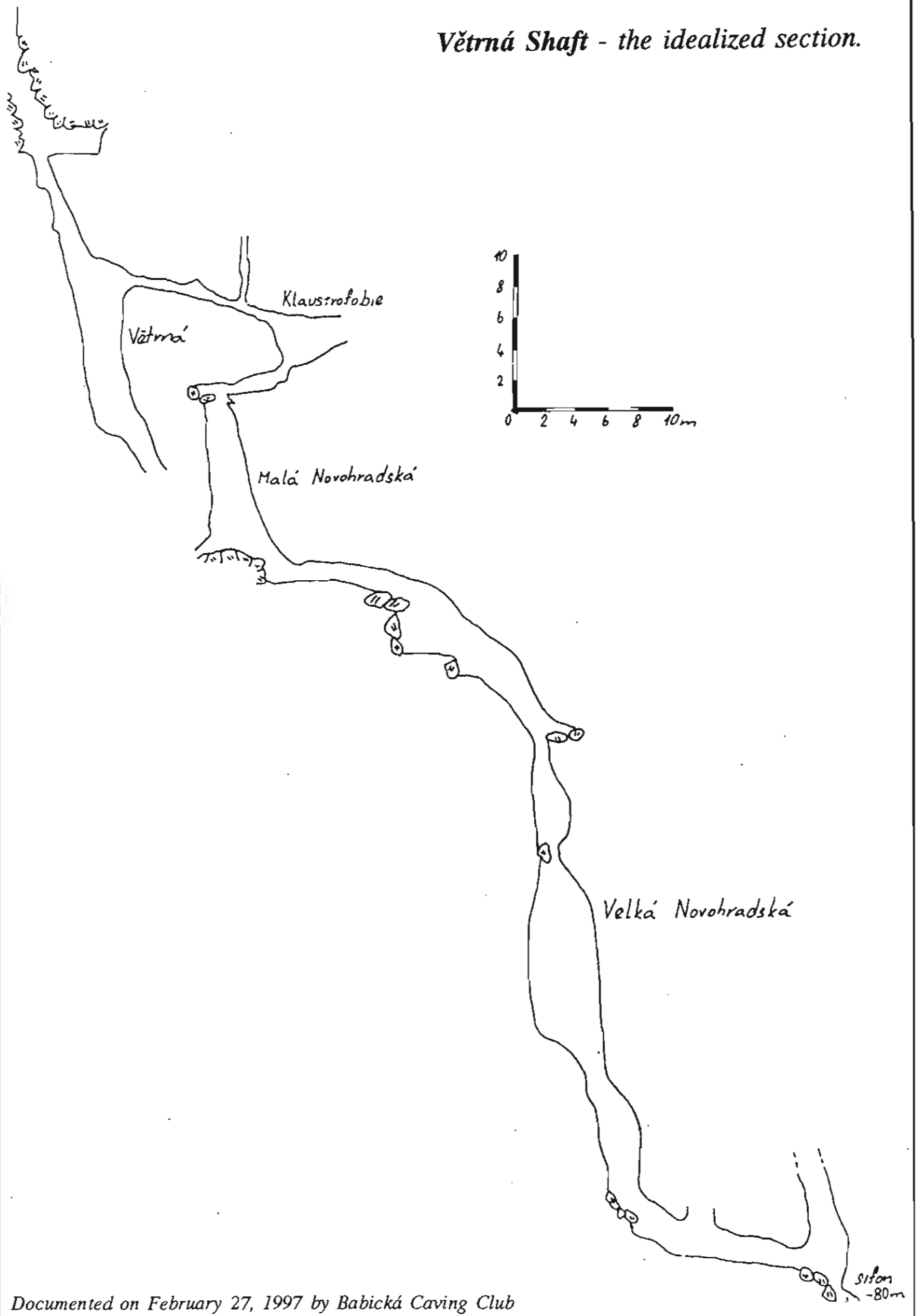
Deep Water Exploration of the Abyss of Hranice

Michal Piškula
Cave Diving Commission

Summary

Propast (Abyss of Hranice) is considered to the deepest water cave in the Czech Republic. It is located to the North-East from the town Hranice na Moravě. The Abyss is an open shaft, known since ever. The estimated depth has been

Větrná Shaft *- the idealized section.*



Documented on February 27, 1997 by Babická Caving Club

gradually increased. The deepest measurement talked about 260 m of the water depth, the deepest dive on trimix was to 155 m. Belgian sponsor - Carl von Basel - offered his technical equipment and financial support to explore the Abyss with R.O.V. (remote operated vehicle) in 1995. R.O.V. Hyball reached the depth of 205 m on September 19, 1995. Up to now, the deepest point that was clearly documented. The Abyss goes still deeper.

Participants:
General sponsor Carl von Basel and his crew from Belgium,
Czech Speleological Society: Cave Diving Commission,
Cave Diving Club of Hranický kras,
Caving Club of Aragonit,
Cave Diving Club of Labyrint,
Swiss Speleological Society: Bettina Rhine, Michael Mayberg,
Management of Tourist Cave of Zbrašovské aragonitové Caves

General information

The abyss is located in National Protected Area Hůrka. It is called simply Propast (i.e. the Abyss). To prevent confusion it sometimes referred as the Abyss of Hranice.

The Abyss belongs to important karst phenomena of the Czech Republic. It has developed in a bed of Devonian limestones, to South-West from Hranice na Moravě, close to the spa Teplice nad Bečvou. Its development is in close relation to the geothermal activities in this area. This are now demonstrated by thermal springs of warm, mineralized water with high contents of carbon dioxide. The Abyss itself is also filled with those mineral waters. The water temperature changes between 14 and 16,5°C, but some springs in depth are as warm as 20°C.

The Abyss has several primacies, which are not only speleological. From the historical point of view, it was the first karst phenomena that was presented on a geographical cart of our region. (Geographical cart by J.A. Komenský from the year 1627.) From the hydrological point of view it is the biggest "open" reservoir of the mineral water in the country. From the speleomorphological point of view it is up to know the deepest water filled cave in our region. There was accomplished the deepest cave dive in the Czech Republic (155 m in the year 1993). The water samples were commonly collected from the depth of 175 m. Mr. Pogoda measured the depth of 260 m with the help of a special designed sound in 1980. When we will add the depth of dry part of the Abyss a man reached depth of 224,5 m, with a sound total 329,5 has been reached from the upper edge of the Abyss.

Until 1995 all underwater explorations were carried out by cave divers using compressed air equipment. Only three dives were done with on mixtures. That is why the maximum explored depth was about 60 m below water surface. There were accomplished also some deeper air dives, but such experiments were too dangerous. That is why, the information about the cave morphology in deeper parts are rather incomplete.

Contemporary diving equipment, using special heli-ox or trimix mixtures makes it possible to go safely below 70 m. Explorations done directly by cave divers can bring many useful information about the Abyss. But this dives are extremely demanding. So it was quite welcomed to use the opportunity to make some exploration with the help of a R.O.V. - remote operated vehicle.

Short history of the explorations

Until 1955 the exploration was done by cave divers. With the improvement of their equipment they could reach deeper margins. However, the detailed exploration was limited by 70 m. Here are some important dates, how the depths has been verified:

Dives:
1961 - 6 m, Kostečka
1963 - 42 m Pogoda
1964 - 60 m Huvar, Šráček
1968 - 82 m Kocián, Gregor
1968 - 88 m Brenza, Hany
1981 - 110 m Benýšek, Travěnec (mixture)
1992 - 132 m Pauwels (trimix)
1993 - 155 m Pauwels (trimix)

Sounds:
1902 - 36 m, Šindel
1974 - 136 m, Pogoda
1974 - 175 m, Pogoda
1980 - 260 m, Pogoda (this depth has been measured only once)

The most extensive exploration in this area has been organised by GEOTEST company, on behalf of an order by Czechoslovak Sate Spas. Systematical research extended over one year period (from 1979 until 1980). Its result are presented in (KOLEKTIV). Cave diving and exploration activities in the Abyss were accomplished by cave divers of the Czech Speleological Society, members of the cave diving club Hranický kras from Olomouc. Those people explored the Abyss already before the establishment of the C.S.S. in the year 1979.

Exploration by C.S.S., Hranický kras club, went on afterwards as well. The topography till the depth of 60 m was precised. Benýšek and Travěnec reached 110 m mark here, using a mixture. This was an unique experiment in the country. The deepest dives in the Abyss were done on trimix (He, O_2, N_2) by Belgium cave diver Michael Pauwels (132 m in 1992, 155 m in 1993). This dives were supported by cave divers from Hranický kras (Olomouc) and Labyrint (Brno). This dives had more or less sporting character. The most important knowledge from this dives was, that the southeastern wall is not any more straight in this depth, but is overhanging, moving further to the South-East. This seemingly minor information brought up the question concerning behaving of the sounds. The depth 175 is being reached by sounds regularly. But only once, the depth over 200 m has been hit by a sound (after Pogoda). The answer could bring only a diver or a R.O.V. equipped with a telemetric system and a camera.

When planning deep explorations of the Abyss of Hranice, it is good to take in the consideration some results of theoretical studies and latest researches. In according to the water composition is the depth of water circulation between 0 and 700 meters (KOLEKTIV). This gives the theoretical depth of the Abyss. The analysis of the water samples collected in 1994 by Swiss cave divers, verified an older theory, that the gases dissolved in the water are of crustal not of mantel origin. There were analyzed He isotopes at Technical High School (ETH) in Zurich, Swiss, with the help of mass spectrometer (Rhinne, Mayberg).

Main objectives of the project

Several decades of the Abyss explorations brought answers to many questions, but on the other hand, it set up many new ones. Their solution is possible either with the help of HiTech diving equipment, using diving mixtures or to use an remote controlled diving device (R.O.V.), capable to reach extreme depth.

There were two principal question, that should be answered during explorations: *1. How does it look like the morphology of the Abyss under 175 m (sounds stop here regularly, with only one exception), and 2. The morphology of the northwestern wall in depth.*

Morphology of the parts explored before 1995

For easier understanding we will describe the morphology of the Abyss, as it was known before 1995. The Abyss developed on significant North-Western fault line. The surface of the lake is 69,5 m below the upper edge of the Abyss. There is a sheer slope in the southeastern side, other walls are vertical, or even overhanging. The water that files the lake is mineralized, with high contents of carbon dioxide. The southeastern slope continues underwater with almost unchanged inclination till the depths of 55 m. The inclination increases here and changes quite fast in a vertical wall. North west wall drops straight under the water surface until the depth of 5 m, but there it changes into overhang and goes almost parallel with opposite slope down to 44 m, to place called Zubatice, which ends after few meters with vertical wall. This vertical shaft ends in Rotunda, dry part beyond this 44 meters deep sump. There is a labyrinth of water filled as well dry passages in shallow depth on this side of the sump.

The main shaft, called Lift, drops down directly under Zubatice into, up to know, unknown depth. It is known, that SE wall is vertical and it was explored down to 89 m during air dives. Beginning from the 80 m any information on the NW wall were absent. Important information was, that the rope going down to 150 m does not touch the walls, and that in the depth of 155 the distance from the wall increases, i.e. the SE wall is overhanging in this part of the shaft.

Deep exploration

We got an offer to do the exploration of the Abyss with the help of remote controlled underwater vehicle HYBALL. Its maximal operational

depth should be 450 m. It was a result of a long term co-operation with Belgium cave divers. This offer was presented by Carl von Basel, who owns the necessary technical equipment. He also promised to cover financial costs of the whole project.

The exploration vessel HYBALL (product of Hydrovision, Aberdeen, Great Britain) is of quite small size: 53 by 65 by 56 cm, it weights 41 kg. It is equipped with a special video camera with very high resolution. It has its own lights. The camera can rotate in the centre of Hyball body. The vessel can move in any direction. Its underwater movement is controlled by a surface operator. He is connected with Hyball by a special power, as well as telemetric and control cable. He can follow the surrounding and behaving of R.O.V. on a screen. With respect to the extremely demanding cave conditions, an expert from Hydrovision was on the place of the operator (all was paid by general sponsor C. von Basel).

During the dive a video tape is recorded together with information on depth, orientation of the camera and direction of the movement of R.O.V. A successful dive could bring information about morphology of the cave in greater depth, especially, whether is it possible to go deeper then 175 m. A sonar device can be added to the R.O.V. The sonar readings make it possible to follow the profile of shaft far beyond the reach of the camera.

To realize the whole project, it was necessary to get approval from the Ministry of Environment. It was important to make also agreement with farmers, to use part of their field near the Abyss to set a up a base camp and to make a temporary road across their fields for material transportation.

The goal of the whole project was to reach the deepest possible place in the Abyss. There was prepared 400 m long control cable.

Exploration

After short reconnaissance visit paid to the Abyss by Carl von Basel in Jun 1995, the preparation for the deep R.O.V. dive started in the beginning of September. Members of the Cave Diving Club of Aragonit, Mr. J. Zapletal and M. Štefan, prepared a place for the base. They organized basic pioneer works, installed two mobile power stations and put up huge military tent. Around it the later the base grew up.

September 16

Everything was complicated by the weather. Three days of heavy rains changed the field in muddy sump. It was very difficult to get all necessary material to the place Carl von Basel and his crew arrived. Only cars with four wheels driven could get to the place.

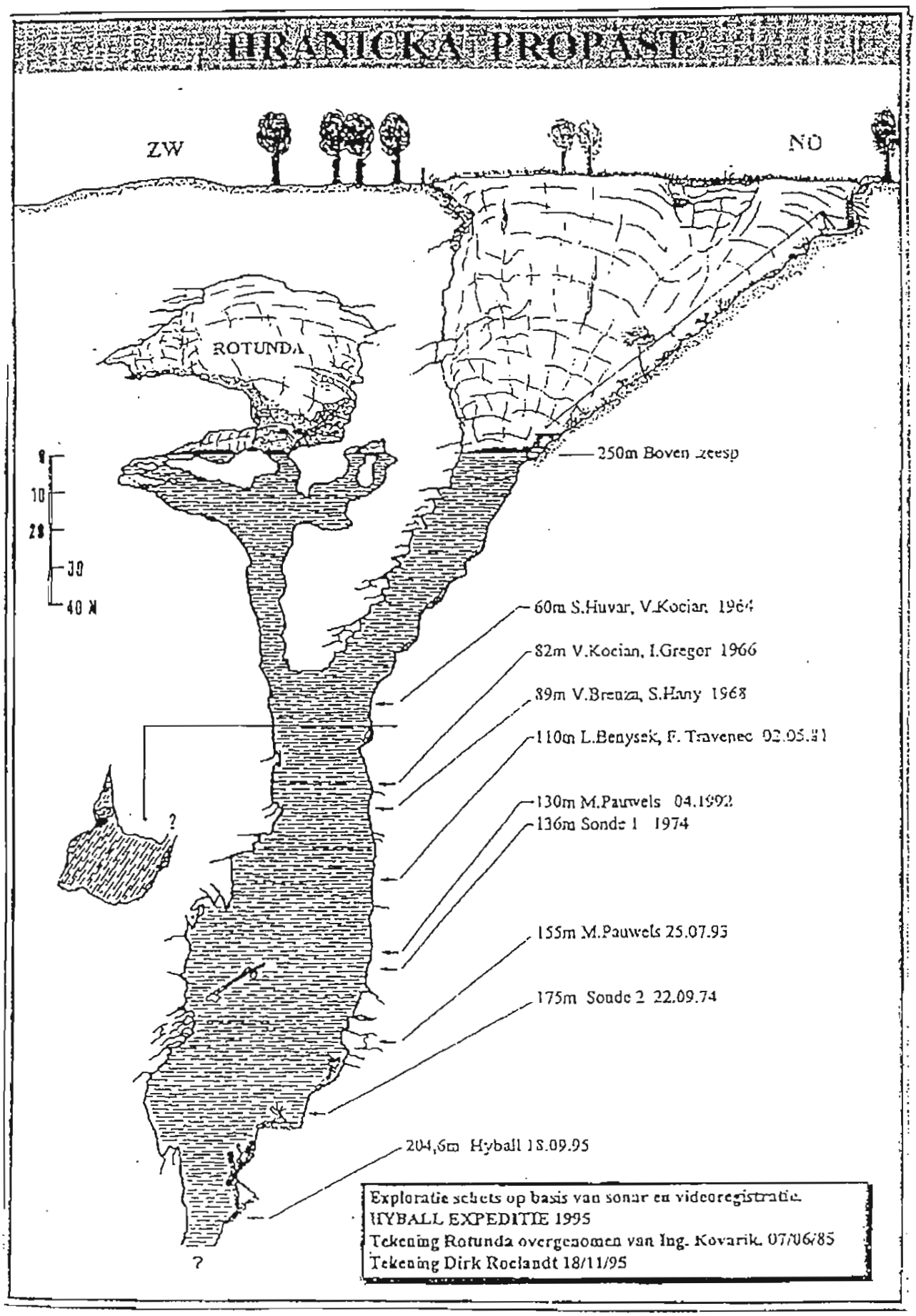
September 17

The preparations for the exploration dive were running the whole day, It was found out, during tests, that HYBALL is buoyaned for the see water. To improve the buoyancy, pieces of wood were attached to the body of R.O.V. The surface of the lake in shaft was cleaned from floating woods, trees and leaves. There were installed some nets, to prevent its movement.

September 18

The first dive started at 0:07 p.m. Only service staff was allowed to enter the Abyss. All others could follow the dive on big screens in a tent at the base. There were many important persons present there. As for example Mr. Novák, the director of the state Agency Nature and Landscape Conservation, former explorers of the Abyss (Mr. Svoboda, Prof. Panoš) and many others. R.O.V. reached at 0:40 p.m. gentle slope in the depth of 179,9 m. It was evident in this moment, that there reappeared bouncy problems. After several movements HYBALL reached 187 m. It was difficult to control R.O.V., which lost neutral buoyancy. The ascent must begun. R.O.V. was again on the surface at 1:30 p.m.

It was found out, that the water get into wood structure under big pressure, and it resulted into the loss of buoyancy. After short briefing M.Lukáš suggested to use small aluminum tanks as buoyancy compensators. After bringing them from Olomouc the second dive could start. The second dive started shortly after 4:00 p.m. This time R.O.V. did not follow the vertical guide line in the Lift, but it went NW, into bigger rooms. The sonar reading gave the cross-section dimension of 20 by 40 m. With increasing depth, the diameter of shaft decreased. In the depth of 190 m it got closer to the wall. There were clearly visible logs hanging between blocks. The control cable started to trap in them.



The section of the Abyss at Hranice according to sonar record with the evolution of depth measurements

The situation became critical when one of the logs get loose and felt into depth. It was also evident, that there are again buoyancy problems. The cable was more and more trapped by the branches. But the operator went further on. Depth of 200 was reached, but the progress was very slow. At the return point reached R.O.V. 204,6 m. The shaft went on still deeper. Because of increasing difficulties, the dive was aborted again. Hyball was trapped in divers guide lines during ascent in 130 m depth. It was possible to get it up till 55 m, where it stopped finally. This depth was already within operational depth of cave divers, so the recovery was left for the next day.

September 19

Trapped R.O.V. was recovered by cave divers from the guidelines in depth of 55 m. Some more video documents were recorded, analysis of the reached results was done. Originally planed trimix dive was cancelled.

September 20

Departure of Hyball operator, cleaning material from the shaft. Departure of most of Czech participants.

September 21

Cleaning the rest of base camp. Departure of Belgian crew..

Conclusion

The exploration, of unique type in our country, did not bring the answer how deep is the Abyss. It has confirmed previous sound measurements, that the depth exceeds 200 m. Thanks to the video camera brought R.O.V. video record of the Abyss down to depth of 200 m, which is combined with telemetric information. Attached sonar showed the huge dimensions of water filled rooms. Sonar readings are recorded on a video tape as well. Using this information made Belgium cave divers schematic drawing of deeper parts of the Abyss. The whole exploration could be done only thanks to the technical and financial support of general sponsor, Carl von Basel.

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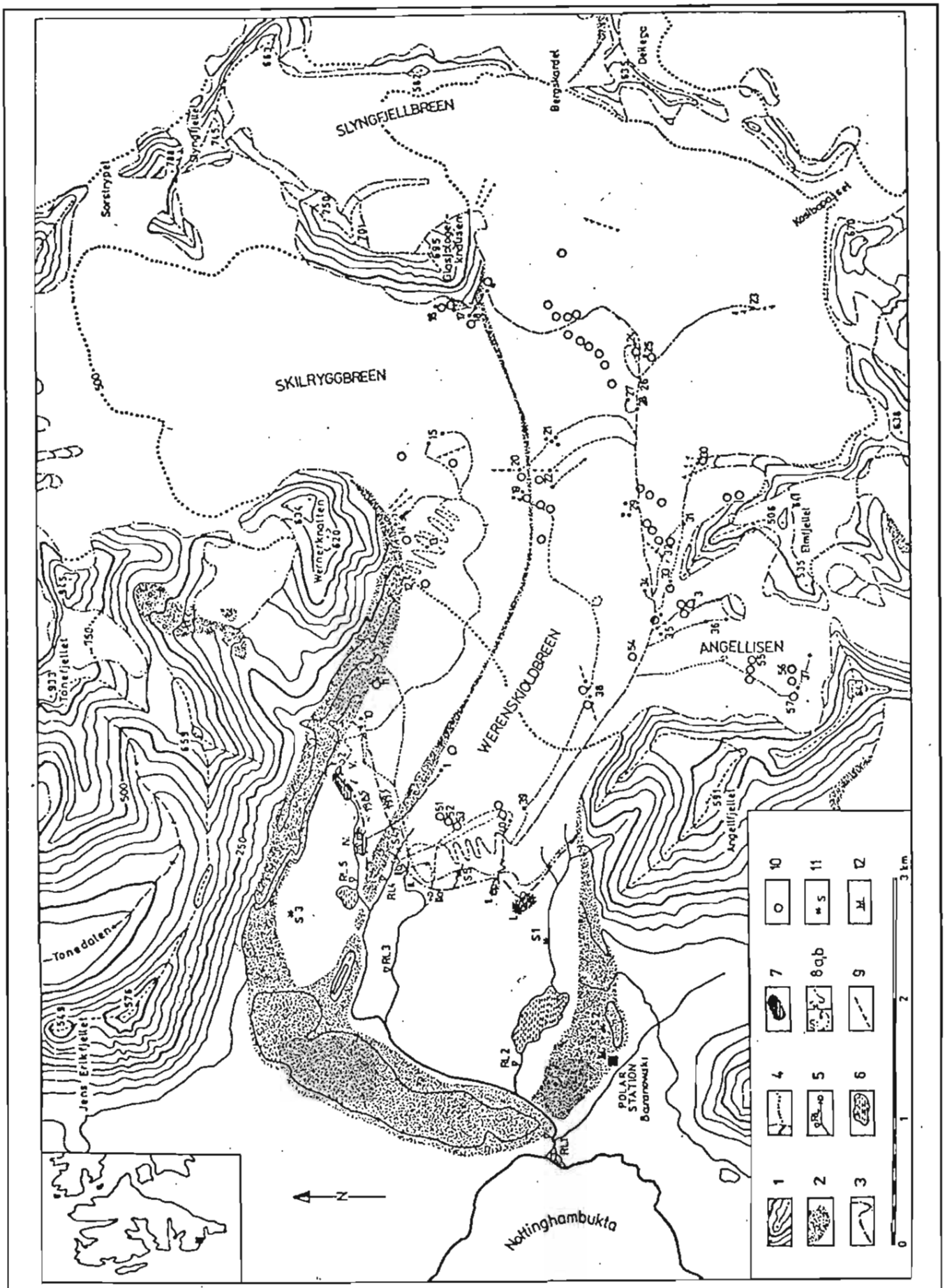
IV.

Important foreign activities

Glaciospeleological Expeditions to Spitsbergen

Regularly each two or three years, there is organized an expedition to southwestern Spitsbergen with the aim to study of subpolar glaciers in the Horsund Fjord region. Four expeditions were organized from 1986 to 1996 (1986, 1988, 1993, 1996). The first expedition was joint event with Silesian University in Sosnowiec, Poland. First Czech expedition was organized in 1988 and established regular scientific and monitoring program dealing with hydrological changes in Werenskiold, Hans a Torell Glaciers. Our project was incorporated into international research program concerning the global climatic changes.



Werenskiøld Glacier - the situation.

1. contours and summits, 2. moraines, 3. glacier front, 4. subglacial streams, 5. springs and location of discharge measurement, 6. lakes, 7. taryns, 8. ice shafts documented in 1988, 9. traced water courses, 10. ice shafts documented in 1993, 11. sampling points of waters, 12. meteorological station.

Since that time we have been observating selected portions of glacier rivers, spring at glacier front, documentation of internal hydrological systems in glaciers and evolution of glacier caves. The research is performed in close cooperation with Polish Academy of Sciences and several Polish universities.

Spitsbergen 1993

Josef Řehák sen., Josef Řehák jun.
(adapted and translated from Speleofórum'95)

Glaciospeleological expedition in 1993 consisted of two persons, author of the contribution, both members of the Czech Speleological Society. Material was transported do Polish port of Gdynia, form which the expedition travelled by car to Tromso in Norway. Air transport to Spitsbergen was followed by helicopter travel into the base. After some reparation we started the research stronger in one Polish specialist.

In five years, after our last visit here in 1988, a lot of changes occurred. Only on the *Werenskiøld Glacier*, we surveyed 45 deep shafts and two blind valleys. Main river springs, behaviour of water regime during rapid ice ablation and glacial caves were studied and observed. Based on results of summer regime hydrological observation, we compiled plan for the visit of caves and shafts. One of the most interesting, Lipertaven Shaft situated near the central moraine, in five years completely changed from 70 m deep aven into the cascade system of passages meandering into the glacier up to the depth of 40 m. In the case of other shafts, we tried to state their character, situation, catchment area and evolution conditions. There were distinguished shafts with (1) stable or only indistinctly changing position situated especially in main depressions on glacier, (2) shafts originated on cracks in glacier with rapid evolution and rapid destruction situated in the most active part of the glacier, (3) stable shafts draining water from glacier and from its surrounding situated in ice core of marginal moraines and continuing to side glacier caves with length of hundreds of metres. Kvisla Cave, known since 1986, is situated at the edge of ice core of moraine and glacier. Its length was about 600 m in 1986, but now there are only low spaces several tens of metres long. From the rest, only subglacial channels remained.

Similar research was performed also on *Torell, Raudfjellbreen and Skodebreen Glaciers.* During reconnaissance of Raudfjellbreen Glacier and its surroundings, ponor cave - Cascade Cave -was found in small side glacier carved in dark crystalline limestones. Glacier forms cave ceiling. River flows over numerous cascades down to 30 m into horizontal part terminated by a sump. The total length is 130 m and the depths is 50 m. Its position is close to Crystal Cave found in 1988 with rich sublimation ice speleothems.

Isfjellelva Cave is situated in the front of the Vestre Torell Glacier. It is composed of huge tunnel 20-30 m wide and 15 m high and represents the main resurgence of glacial waters. We surveyed 800 m of cave, further work was interrupted by water high-stand and large lakes.

We descended also into large Express Horn Cave on left side of the *Horn Glacier* at the end of the Hornsund Fjord, situated about 3 km from the glacier front. This is ponor cave draining side glacier in large depression. Huge ice opening follows to tunnel 25 m wide and 10 m high. The cave gently descends under the glacier for about 500 m with total depth of 58 m. The bottom is formed by ice plateaus with meandering stream.

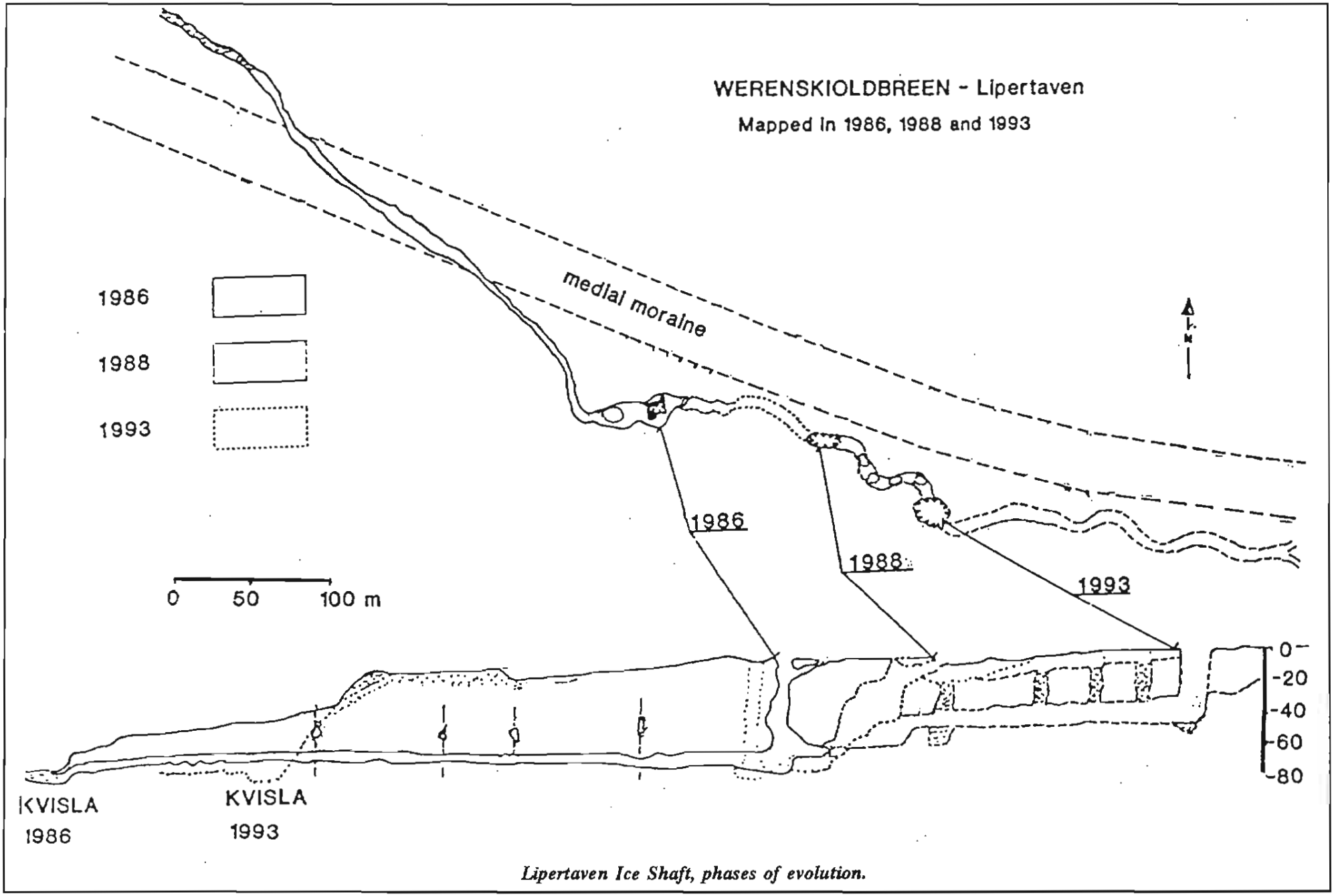
Fig.
Werenskiøld Glacier - the situation.
1. contours and summits, 2. moraines, 3. glacier front, 4. subglacial streams, 5. springs and location of discharge measurement, 6. lakes, 7. taryns, 8. ice shafts documented in 1988, 9. traced water courses, 10. ice shafts documented in 1993, 11. sampling points of waters, 12. meteorological station.

Fig.
Lipertaven Ice Shaft, phases of evolution.

Spitsbergen 1996

Josef Řehák sen., Josef Řehák jun., Lenka Marková
(adapted and translated from Speleofórum'97)

Glaciospeleological expedition in 1996 consisted of three members - Josef Řehák sen., Josef Řehák jun., and Lenka Marková. They are all employees of the SPELEO-Řehák Company and



Lipertaven Ice Shaft, phases of evolution.

members of the Czech Speleological Society, Caving Club Bozkov. The duration of expedition was expected for six months with the possibility of winter stay. The activity was approved by the governor of Spitsbergen, Ministry of Foreign Affairs of Norway, Polish Academy of Sciences and Nordpolar Institute. Transport was divided into two parts. First, containers with 750 kg of food and technical material was send by boat in May directly to Hornsund Fjord. Personnel and the rest of material was transported by car to Tromso and further by boat. The expedition started on June 26, 1996 by departure from Horská Kamenice in north Bohemia. After little complication and with some delay we reached our region. Nevertheless, without food and material as the boat with it was still in Longyearbyen. Fortunately our old reserves in rusty tins save our lives. Only on July 30, our container was delivered to us, in spite of two attempts when we saw our boat on the see. We made some reconstructions of our base, especially on roof. We distributed material into distant destinations and we equipped our camp below Raud Mount at the Torell Glacier.

Werenskiøld Glacier and its drainage systems

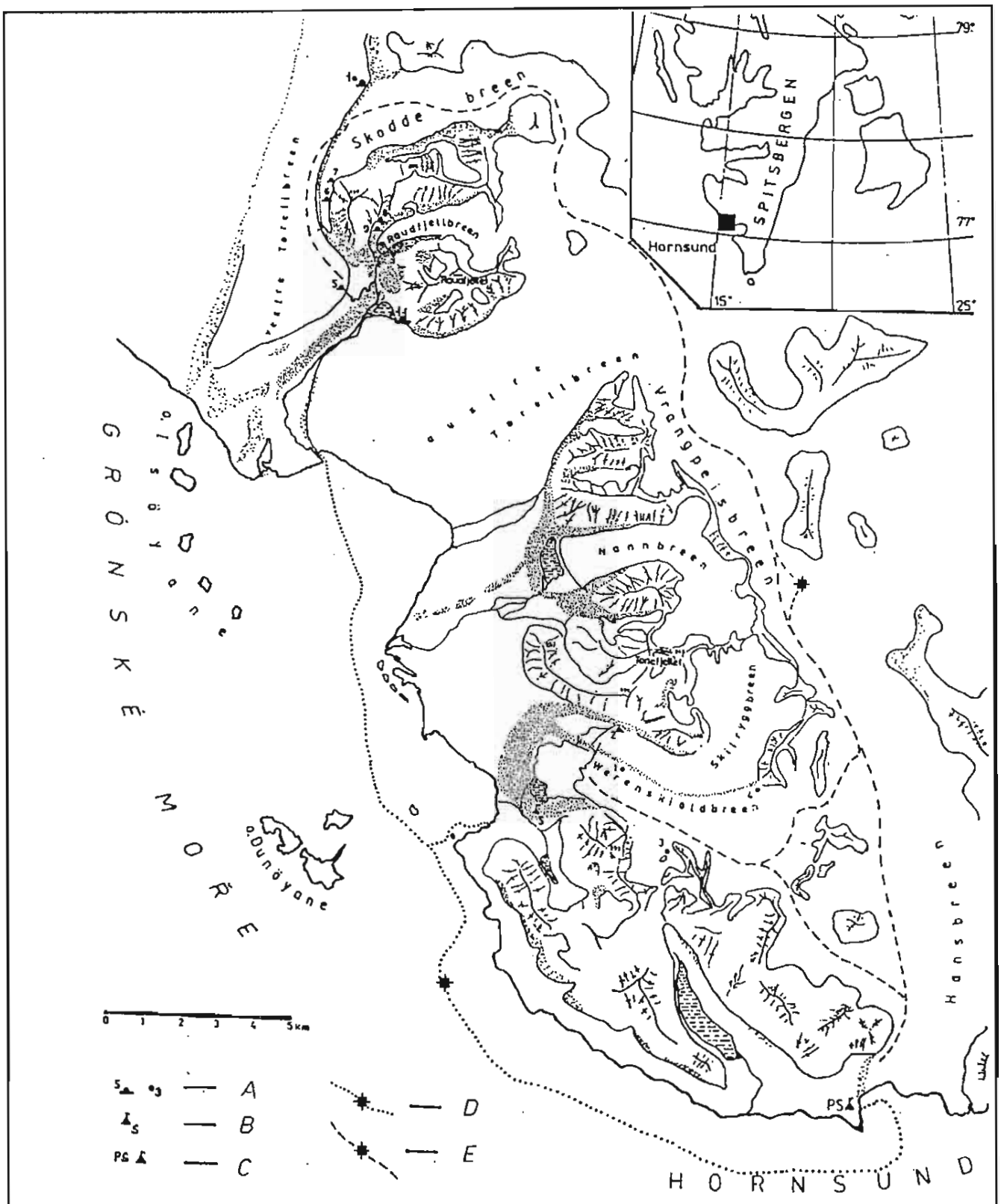
Werenskiøld Glacier represents subpolar type of glacier with war basis, which means that it is not frozen up to its bottom. Its contact with rocky basement has 0 to 1°C. The glacier is composed from three glacier tongues originating above 500 m a.s.l., i.e. Skilrygg Glacier on the right side, Slyngfjell Glacier in the centre, and Angellisen Glacier on the left side. The total length of glacier reaches 8 km, the width is 2,5 km, and average ice thickness is 100 m, maximum thickness reaches 225 m. Totally 28 km^2 is glaciated. The glacier is closed in individual valley surrounded by mountain ridge with summits at 700 m a.s.l. From the hydrological point of view, the area represent close catchment area drained by only river since 1963 which interrupted 100 m high front moraine, i.e. are ideal for the monitoring of drainage and hydrological anomalies.

During past expeditions we entered the glacier and we documented some of glacier caves and channels which were classified into individual types of drainage systems. Totally three drainage systems are known now, i.e. marginal, central and inglacial systems.

Marginal drainage system occurs in the northern part of the glacier with already described Kvisla Cave, about 1 km long. At the present time, only several tens of metres long fragment remained in the form of terminal channels. Rest was destroyed in past 10 years by rapid retreat of glacier front. This influenced also the surface glacier morphology and change the inclination, which influenced the direction of surface drainage and discharges decreased in the Kvisla Cave. In 1986 Kvisla River was the largest stream under glacier front, but presently it is only small brook.

Central system recently represents the main drainage under glacier leading ablation waters from glacier surface up to the glacier front through deep ice shafts and by the system of horizontal channels along glacier basement. Caves and channels are of phreatic type here with circular sections leading water loading with clastic material under pressure. Such waters appear on the surface in the form of pulsating geysers with cyclicity in days to weeks depending on water discharge and water load. The start of activity is represented by strong eruption taking out accumulated clastic material forming gravel conical forms with central hollow. In the period of silence, only turbid water outflows and coarser clastic material is deposited within channels. Each summer period, there are formed new springs following main phreatic channel in the direction of retreating glacier front. The new morphology is formed in foreland, so-called sandr, formed by a layer of glaciofluvial material from 1 to 20 m thick having variable morphology (cones, ridges, depression fill on died ice, ...). Documentation of such spring this season, it allowed to us to enter already abandoned phreatic glacial channel and to survey it. The channel yielded water to one of springs which was observed in 1988.

Inglacial drainage system in which ablation waters are drained by supraglacial channels into the glacier, but waters do not reach glacier bottom. They are drained by horizontal caves and channels in pure ice up to the glacier front. There, waters outflow under the pressure. Caves are characteristic by pure tunnels with numerous waterfalls, cascades and lakes. This system can be easily recognized ate the glacier front as



Sketch of southwestern Spitsbergen, *the surroundings of Horsund Fjord with marked main sites and routes of our expedition. Sites in which accidents occurred are expressed.*

A - ice caves and shafts, B - Baranowski Polar Station, C - main Polish Polar Station, D - routes of our boat on the see with expressed place of the accident.

1 - Lipertaven Ice Shaft, 2 - Kvisla Ice Shaft, 3 - ice shaft at the slope of the Eimfjellet Mt. deep 135 m, 4 - ice shaft at the slope of the Glasiologerknausen Mt. deep 100 m, 5 - Isfjellelva Ice Shaft in the Western Torell Glacier, 6 and 7 - ponor ice caves at the slope of the Kraken Mt., 8 and 9 - caves in ice cores of site moraines of the Raudfjellbren Glacier, 10 - ice shaft at the slope of the Tangard Mt. on the Western Torell Glacier, 11 - ice caves carved by warm water discharging from thermal springs in the Eastern Torell Glacier at the slope of the Raud Mt.

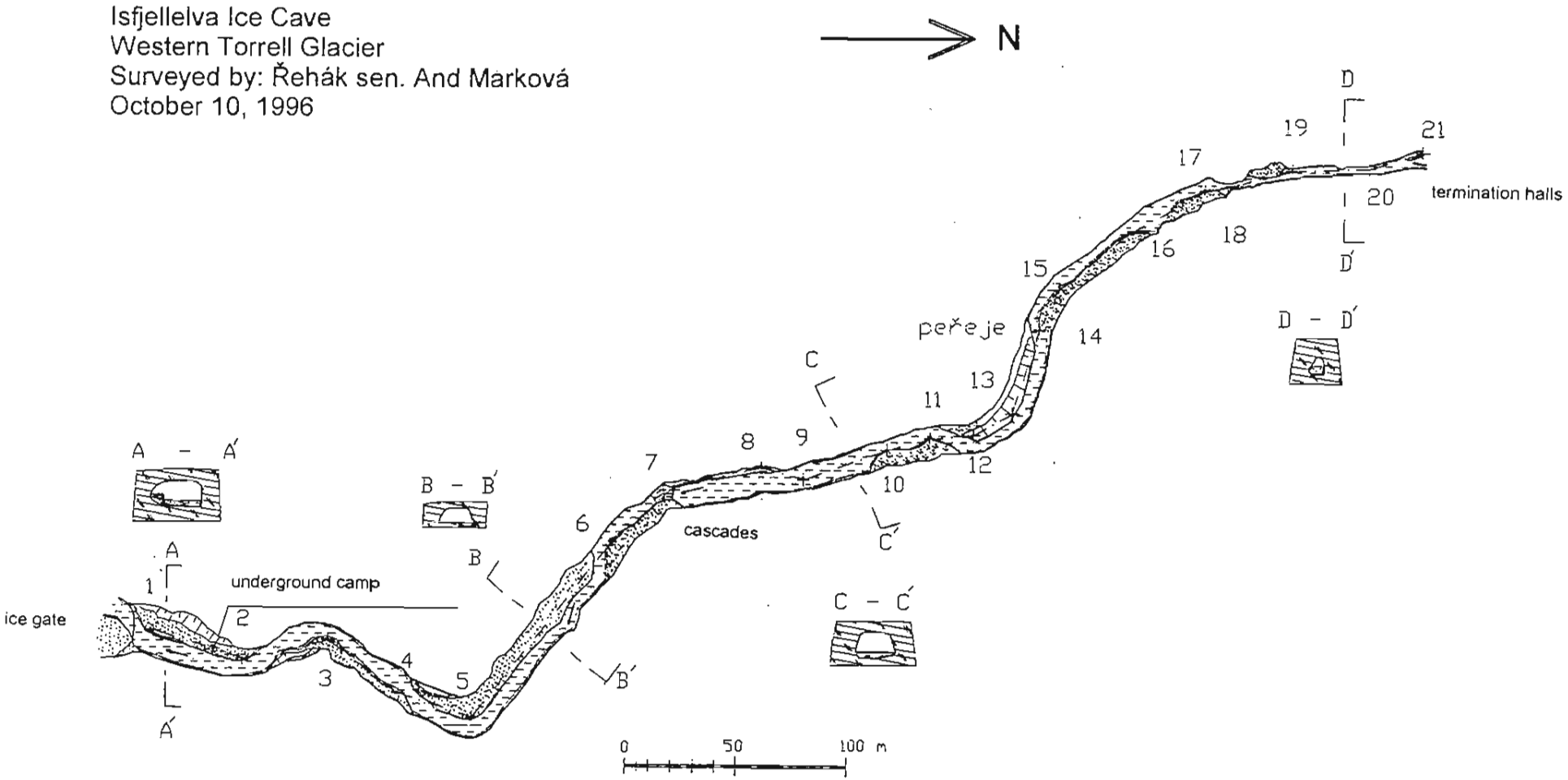
outflowing water is pure without any load. Chemically, waters are close to distilled water with transmissivity of 8 -10 $\mu S.cm^{-2}$. We are observing such system since 1986. At that time it was 74 m deep and followed into horizontal system about 500 m long. At the present time, we are able to describe the evolution of the whole system in continuous deepening of surface channels, their covering by firn bridges which are termically eroded by ablation waters. The important role is played also by firn snow. It is transported into the depth of the system where it forms porous plug influencing internal water courses and dynamics. The presented documentation deals with the central drainage system of the Werenskiřld Glacier known as Lipertaven. It collects our 10 years long knowledge.

According to complex and our measurements and observations, the retreat of glacier fronts in Spitsbergen accelerates. In sixties it reached about 25 m per year, in last years represents about 50 to 75 m per year in the Wereskiold Glacier. Since 1936 the glacier has retreated in 2,5 km, its northern part in 3 km. This process heavily influenced the glacier geometry. Lower - ablation - part is smaller and with greater inclination than upper part - accumulation - what can break the equilibrium causing the sudden movement of glacier (surge). This can be indicated by the change of glacial drainage which diminishes and dammed water help to more rapid movement of ice. Also the surface is modified, some parts are upwelling. All those indices were observed on the Werenskiold Glacier. Also marginal drainage decreasing. Above it at the equilibrium limit surface channels of ablation waters were directed to another place by upwelling ice. The central drainage system brings water with low load. Clastic material is deposited within the glacier. All data indicate, that surge will occur in several years here. If all preparation and surge period is documented, an unique set of data is obtained. For example, Russian glaciologists observed Froitdtyov Glacier in Belsund Fjord for 25 years. After they finish the observation, sudden surge occurred, but not observed.

Western and Eastern Torell Glacier

Observations of the Torell Glacier are directed to compare individual drainage systems and individual forms of glacier karst. The glacier is composed of several glacier tongues initiating at 900 m a.s.l. in central Spitsbergen at Amundsenien Plateau and terminating by 40 to 50 m high cliff in the sea. Central moraine is situated between the Eastern and Western tongues which terminates at slope of Raudfjellet Mount (1 014 m a.s.l.). Limestone southern slopes of this mount interested us a lot and we established the first field camp here in 1988. The camp is accessible by foot, about 40 km crossing glacier or by boat (10 km) when the see is calm or by snow scooter through several glaciers (60 km).

Retreating glaciers disclosed slopes of Raud Mount with several caves in marbles and dolostones. Caves were formed by thermal springs which outflow now in some 100 m lower position at toe of slope. Waters are 7 to 12°C warm even when permafrost here is up to 300 m thick. The electric conductivity reaches up to 900 $\mu S.cm^{-2}$. Waters contain dominantly Cl^- - HCO_3^- - Na^+ - K^+. Their genesis is still unknown. Waters are loaded by light grey clayey material, which deposited originates ring around the spring and finally forms conical form several metres high. Water appears at its summit and flows under the glacier. In the past we entered several small caves formed by warm water. Only this season it was allowed to us to enter into huge halls and tunnels. In one of them we constructed the camp. We found halls with plan 30 by 20 m and with height of 10 m formed by heat from warm waters. Individual halls were interconnected by accessible tunnels with glaciofluvial fill at sides. In halls, lakes of warm water with the depth of 30 to 80 cm occur. It was pleasant as our legs were warmed. Waters outflowed by tunnel into the glacier centre. We followed those routes up to 50-100 m with declination of 6 m. Here, collecting channel occurs taking water also from other parallel channels and passages. Totally four parallel systems were documented ending in this collecting channel with low ceiling. On the surface, there are depression and according to the morphology, there must exist maybe more extensive rooms. Depressions in ice surface are filled by snow, so rooms are protected from collapse. Channels are leading below retreating glacier front. The course of channel formed by warm water is distinct also after glacier retreat as warm water flows through glaciofluvial sediments and vegetation (mosses,


Isfjellelva Ice Cave
Western Torrell Glacier
Surveyed by: Řehák sen. And Marková
October 10, 1996
N
A - A´
B - B´
C - C´
D - D´
ice gate
underground camp
cascades
peřeje
termination halls
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
0
50
100 m

...) are evergreen and water does not freeze. Green oasis in frozen tundra!

Isfjellelva Glacier Cave in the front of the Western Torell

Since 1986, the evolution and front retreat of one of the greatest glacier cave in Spitsbergen has been observed. We named it according to name of outflowing Isfjellelva River. The cave was formed along the central drainage system draining probably the main part of the Western Torell Glacier and according to our last observations also Skodde, Profil and Hogste Glaciers. The maximum discharge in ablation season reached 98 $m^3.s^{-1}$. This huge river terminates on the northwestern part of the glacier in the sea. The exploration of the cave is difficult. Only at the beginning of winter there is possible to enter the cave. Huge glacial entrance is opened and water discharge decreases only to 2 $m^3.s^{-1}$ which represents regular winter value. On September 16, our penetration was stopped after 400 m by rapid stream. At the entrance we documented water cut naledye cascades and pools which close the cave during winter. Spring floods cut the plug by the pressure. The cave was penetrated on October 15, nevertheless is was necessary to walk through deep water or to use rubber boat on deep lakes. Two days have to be enough time for the documentation. The cave entrance retreated in 200 m since 1993. It was interesting that the total length of cave does not changed, it was prolonged backwards where sump lakes occur. The cave length is probably influenced by temperature. We explored cave up to 1 km into the glacier where the cave forms huge and wide tunnels with low ceiling completely flooded by water. Totally 750 m of cave was surveyed with passages 30 to 40 m wide and 15 m high, with active stream flowing over numerous cascades, lakes and waterfalls. To take photos in such halls is problematic owing to high degree of light absorption by ice.

The control of other documented glacier caves under Raud Mout was performed, too. Cascade and Crystal Caves remained closed to us owing to changed drainage conditions and directions of channels. Entrances were closed by snow and ice. Several huge glacier shafts were located during our journey on glaciers, which we were not able to explore.

Our program was not only full of successes, but also full of problems. The most serious was the injury of Josef Řehák jun. caused by problems with engine on boat. Serious injury of one arm was the result.

Our expedition finished on November 3, 1996 when we left Spitsbergen and sea covered by ice. We arrived to Horská Kamenice on November 21, 1996. Our program was fulfilled completely..

Expeditions to New Zealand

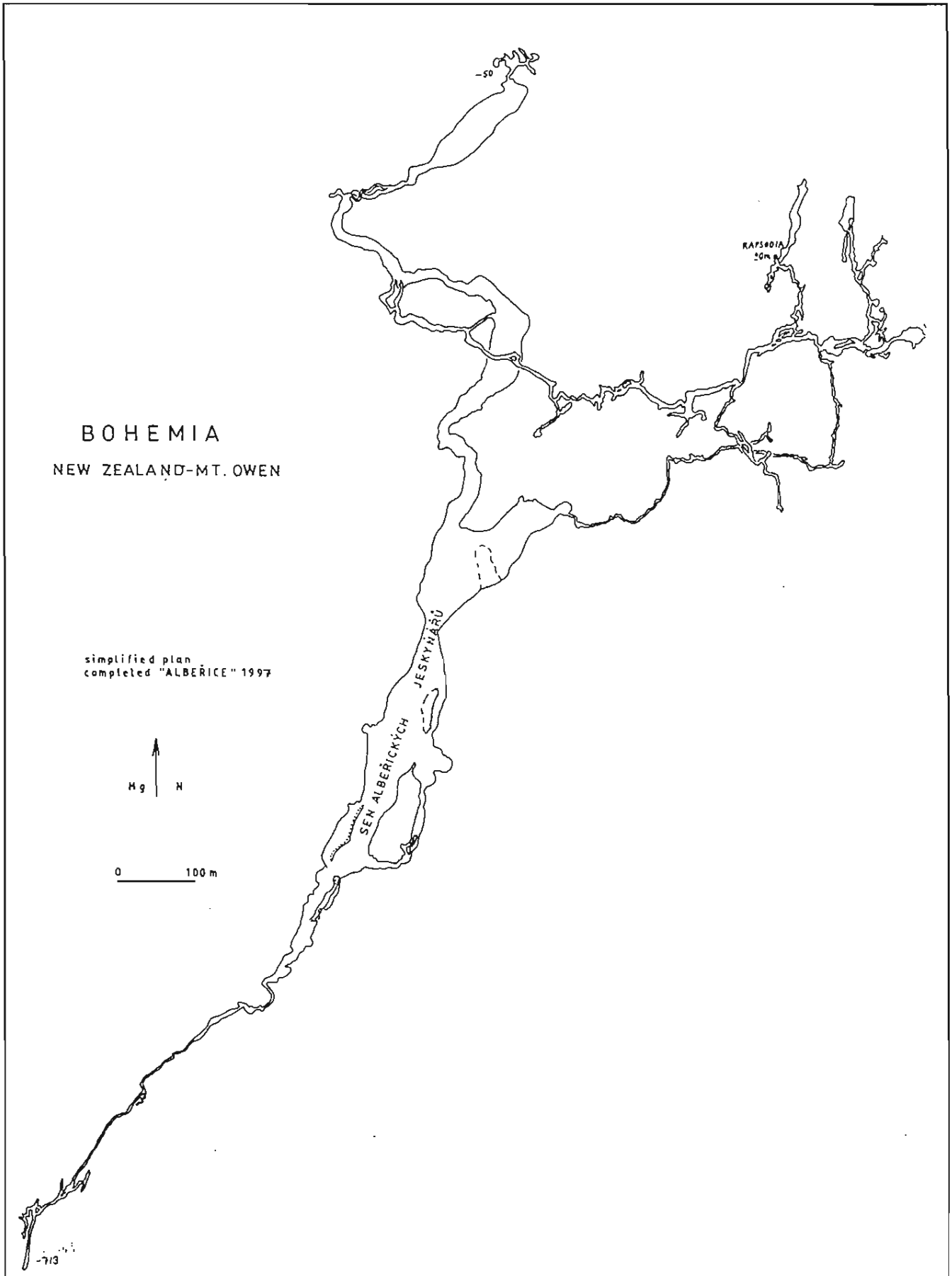
Three speleological expedition have been organized by the Albeřice Caving Club of the Czech Speleological Society since 1990, i.e. in 1990, 1994 and 1997. Expeditions are traditionally directed to karst region of Owen (northwestern Nelson), Southern Island, New Zealand, where important discoveries were made in 1990, i.e. about 7 km long Bohemia Cave. Expedition Owen 90 was described in volume: Czech Speleological Society 1989-1993 and Speleofórum'91.

Expedition Owen'94

Radko Tásler

(adapted and translated from Speleofórum'95)

The eight men strong expedition was organized with the aim to continue in the study of the Bohemia Cave discovered in 1990. Question marks on its map were erased by local cavers, nevertheless their survey was not sufficiently precisely given in maps. The descended 150 m deep reaching terminal sump in 1991. We concentrated our exploration to cave prolongation especially in upward directed part of the cave. In a great chimney with falling water we ascend to +68 m and we prolonged the total cave depth to 663 m. Under the chimney we reached place blocked by collapse and with stream bifurcation. The terminal sump was not penetrated, we discovered only several phreatic channels terminating by another sumps. Documenting main gallery we explored several side passages which are genetically important. We followed upstream also Highway Passage, where waterfall stopped us. The most interesting discovery was represented by the hall named - Dream of Albeřice Cavers Dome. Huge tunnel-shaped passages



The Bohemia Cave system - map

passes to meandering canyon carved completely in phyllites with carbonate ceiling. We discovered also, that prevailing part of all giant halls is entrenched in phyllites, not in carbonates., up to the depth of 20 m (e.g. in Chris' Passage). Carbonate ceiling is slightly modified only by collapse of roof limestone plates but not by karstification. At openings of inaccessible menders, small domes are carved directly in phyllites. Totally 811 m of new passages were discovered and surveyed. The total length of the cave is nearly 8 km.

Surface exploration above the Bohemia Cave brought nearly any important discovery. We found several shafts up to 100 m deep, nevertheless upper entrance to Bohemia Cave was not found. No documentation was made as all were already visited (most probably) by New Zealand cavers. We documented only Rapsody Cave representing by huge passage with three shaft entrances. The cave terminates in narrow meanders without connection with the Bohemia Cave.

Expedition Owen'97

Radko Tásler

The nine men strong expedition of the Czech Speleological Society organised an expedition on February 15 to April 9, 1997. The exploration followed previous Czech expeditions held in 1990 and 1994, and New Zealand expedition from 1993. The main aim of activities were focused on the continuation of the exploration of the Bohemia Cave, on the study of genesis of giant halls there, on geochemistry of groundwater, on collections of cave insects, on the final compilation of documentation, and on the study of unique aragonite speleothems. The second main task was in a practical speleological exploration of Rapsody Cave and surface exploration over Rapsody and Bohemia Caves. As the analytical, petrological and morphological data and other information are under processing, we can mention here only the course of the exploration and some of practical speleological results.

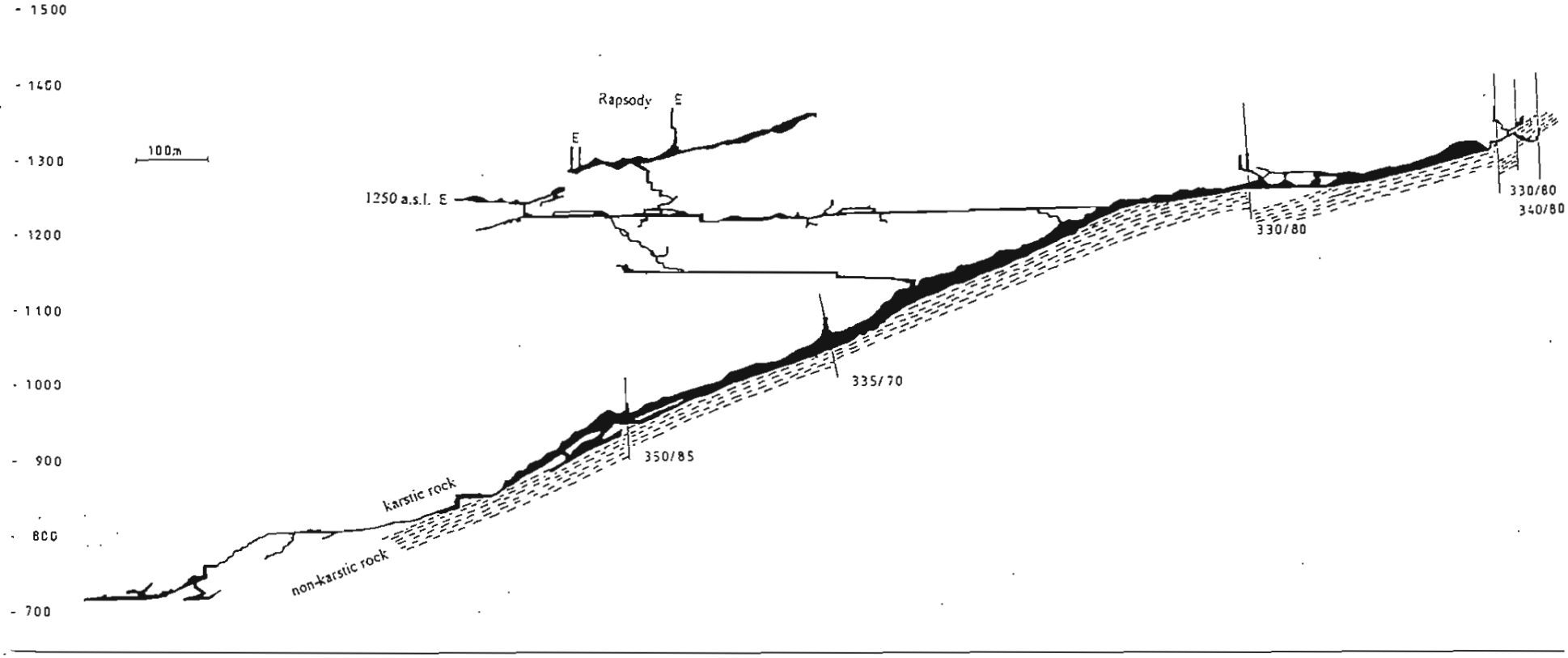
The entrance to *Bohemia Cave* is situated at 1 250 m a.s.l. The total length of whole system after the connection with Rapsody Cave is over 10 km and the depth is 713 m. The middle level of the Bohemia Cave is developed in metamorphosed carbonate rocks of Upper Ordovician (Arthur Marble) representing the alternation of massive marbles and bedded carbonates with abundant silicification. Partly rejuvenated phreatic tubes follow into the "main" part of the system with the largest cave hall of the Southern Hemisphere - The Dream of Albeřice Cavers - 810 by 110 m. This main, huge cave part is flown through by active stream. It is developed along the contact of carbonate rocks and underlying non karstic rocks.

The exploration was concentrated especially to the find of inflow passages also developed along lithological contact. Several hundreds of metres of new spaces were discovered, nevertheless they are genetically connected with the main hall and they are separated only by collapsed roof blocks. The inflow routes were not discovered. The practical exploration was proved also by unchanged chemical composition of active stream, which excluded the possibility of more important inflows below blocks. Unique aragonite speleothems occur in newly discovered passages identical with speleothems in the largest hall of the Bohemia Cave.

The largest spaces of the cave are carved especially in non karstic rock (probably metamorphosed claystones, siltstones, volcaniclastics). The carbonate roof was modified by block collapses without traces of karstic modelation. In many cases, the entrenchment into underlying rocks reaches 15 m. The roof is built by inclined and non karstified base of carbonates. The shape of meandering passages in non karstic rocks are morphologically identical with similar passages in carbonate rocks.

Speleothems in large halls are formed dominantly by pure aragonite forming various eccentric forms, and by hydromagnesite. Stalactites, spaghetti stalactites and huge stalagmites are less common. Stalagmites are coarsely recrystallized.

The fissuration and destruction of stalagmites allow to study gravitational movement of block collapses with simultaneous subsidence of the whole roof of the space. In spite that results of tectonic observations are under processing, we can conclude that Recent movement of carbonates over non karstic fundament occur as the evidence of carbonate nappe thrusted over non karstic sequences.



Longitudinal section of the Bohemian and Rapsody Caves

Unfortunately we were not able to solve the hydrographic situation of cave in the northernmost and highest parts of huge halls even when we applied tracer experiment. There exist several inflows with high yield coming from high chimney and one block collapse. The chemical composition of inflows is identical with chemical composition of main stream in extensive spaces. The outflow of those small streams is opposite than the known cave continuation is directed. Trying to solve this situation we discovered another chimney-like room making deepest disorder in our theories. The room was developed partially in non karstic rocks. We used spits up to the height of 15 m reaching upper contact with non karstic rocks (probably metamorphosed volcaniclastics). The chimney continued into the unknown height.

All kinds of speleothems and rock types were sampled for further study. The tectonics was studied in huge halls with the special respect to the contact of carbonates with non karstic rocks. As cave wall was weathered, the climbing up to contact and sampling represented a serious problem.

Traps to catch cave insects were installed on selected places. Insets from water streams were collected, too. Several individuals were sampled as well as skeletal parts of one beetle.

All activities were documented by cameras. Video was taken from large hall at the end of the expedition.

The entrance to *Rapsody Cave* is situated just above the upper limit of forest, above the Bohemia Cave. It was discovered by New Zealand cavers in 1993. It represents extensive tunnel-shaped passage, originally phreatic tube similar to passages in the middle level of Bohemia Cave. Nevertheless, the present character of the cave is changed by collapses of roof blocks. The original morphology is distinct only in places. Several chimneys continue upwards. Three of them represent the connection with the surface and form the entrance shafts. Some of chimneys follow to shafts under the level of main passage terminating in scree with clayey loam or in narrow meanders. The interconnection with Bohemia Cave was unsuccessful both during expedition of local cavers and during our expedition in 1994. During our last expedition we performed detailed surface survey of both entrances and some of important pints on highly karstified southern slope above both entrances.

After those preparation operations, we selected one of non accessible meanders in the Rapsody Cave and we started its enlargement. After three days our progress was 60 m and we entered inclined canyon-like passage terminating in collapse built of roof blocks. During survey, we discovered side phreatic channel filled with clay and gravel. The channel was of the same character as passages in Emmenthaler in the Bohemia Cave. When survey was laid to the plan, it was clear that to interconnect both caves, only several metres is missing. The gravel was excavated from narrow passage and the connection to one of windows in the Emmenthaler was free. Here other cavers were waiting and they supported the rope to cavers in Rapsody Cave. The physical connection of both caves was made by the tyrolean traverse over the shaft.

The measurement of cave winds was performed during our operations in both caves. During this experiment, one known place in the Bohemia Cave was visited. This place was selected as one possibility for interconnection. Those spaces were surveyed in 1990, nevertheless the orientation here was problematic, which led to the discovery of extensive new cave spaces. They were named - the Northern Pole. Except of non typical speleothems for the Bohemia Cave (classical stalactites, etc.), one cave spider was observed. The highest part of newly discovered spaces are situated close to the surface as evidenced by the finding of grasshopper.

The surface was explored, too. The most important discovery was represented by the find of shaft-like cave - *Colonnel's Mistake* (-160 m) - with entrance situated highly above the Rapsody Cave below the main mountain ridge. The cave is developed in carbonate rocks with numerous positively weathered argillitized non carbonate rocks. The descent was hard owing to highly weathered rock. Up to 10 cm long spits were used! At the end of explored cave, there is 62 m deep shaft collecting water. The active stream outflows from its bottom by narrow channel into another shaft. Here we finished our exploration owing to the lack of ropes and the real danger of channel flood during rain. The general cave direction is not towards the Bohemia Cave, but towards the Bulmer Lake. The

lower part of the cave is situated below chimneys in the northernmost part of the Bohemia Cave which are situated close to Colonnel's Mistake Cave.

Up to the bottom of the World, Jean Bernard 1995

Jiří Kyselák

The deepest cave of the World - Jean Bernard - represents really a dream of each caver. We often speak about the underground Mount Everest Our decision to realise the descend through the highest entrance C 37 down to the first sump at - 1 466 m and back appeared some in the October of 1994 drinking beer in the restaurant in the Rudice village. The decision was not accidental. Caver who met here had discussed this possibility many times in the past. The dominating person was A. Nejezchleb who attended Czech expedition into this chasm in 1984, although through the entrance B 21. When the higher entrance C 37 was connected to the system shortly after this expedition, the thought of a new expedition did not allow him to sleep, more when the total depth and especially the difficulty of the descent increased. Thank to this initiative, two expeditions visited the region in 1993-1994 to locate the entrance C 37 and which unsuccessfully tried to traverse between C 37 and V 4.

The cave itself and the region are known enough that there is no sense to repeatedly write on them. Therefore, we will focus on the course of the expedition day by day.

February 2

After four months of preparations, collection of material and sponsors, we started. Totally twelve cavers. Eight of them travelling in motorhome and rest of four cavers using car Škoda. After the last hectic night before the start, all are sleepy. The crew of personal car fell into deep sleep immediately after the star, the driver only 20 kms after finishing only small piece from totally 1 200 kms. This resulted in totally crushed car. Fortunately, by the chance, wife of one of us travelled around. Their car was confiscated and we can follow.

February 6

We arriving Samoens. A part of expedition staff started immediately with the transport up to Refuge de Folly at 1 558 m a.s.l. The cottage will host us for next month. Another part of cavers arranged necessary formalities. In a shop we are taking 1 800 m of 8 mm static BEAL rope carefully prepared by the producer. Without results we tried to lower the daily rate in the Folly cottage, as 25 FRF is close to the price of hotel room and it represents the highest sum in the expedition budget! We are contacting local cavers, of course, represented by Mr. P.Gaboriau, who knows English fortunately. Owing to the thick snow cover in mountains, he is not giving us a lot of optimism and he does not believe that we will succeed to find the entrance C 37. The entrance V 4 should be without any problems, according to him. Numerous times we remind those words!

February 6 to 9

Without any results we are trying to find entrance V 4. Only shallow depression in a snowy plain occurs at places where overhanging wall and entrance should appear. Three shaft were dug successively with the diameter of 2 m and depth from 4 to 8 m. No results! Finally in a state of total desperation using virgule we are locating entrance V 6. The pessimism prevails among the staff, resulting from experience with entrance V 4 nobody believed in finding of entrance C 37. More, the weather is continuously unfavourable, snow falls without an interruption. First couple who started up to entrance C 37 returned shortly. The quantity of fresh snow is inaccessible!

February 10 to 11

Snow finish to fall for a short time. Six persons start to built provisional camp at upper entrance (2 318 m a.s.l.) and to find entrance C 37. Four men strong group starts to equip the cave from entrance V 6 up to Cascade Jean Dupont. The group at the upper entrance has incredible luck. The first sound dug opened entrance C 37! The route into the depth of cave is free and optimism prevailed.

February 12

Bad weather again, heavy snow falls. Four cavers descended into the cave to instal old bivouac (-500 m from V 4).

February 13
The group returned from bivouac at -500 m.

February 14
Three men strong group left for equipment of a part of the cave from the upper entrance C 37 down. The ascent took a half of day, the way led through deep snow and tents at the entrance are buried in the snow. Therefore, the descent started only at evening. The group returned from -100 m in early morning. Three men strong group transported material through entrance V 6 up to the upper bivouac built in the front of the first half-sump and it continued up to Riviere aux Excentriques.

February 15
Four men strong group left for entrance C 37 to continue to equip the cave. The way is covered again. Tents at C 37 had to be completely dug out of snow.

February 16
Very bad weather, storm, rainy at Folly, snow falling in higher positions, avalanches can be heard around. Two cavers passes entrance V 6, continued through the whole Riviere de la Gadoue up to the shaft upwards in the direction of upper entrances. Four cavers walk to upper entrance afternoon. The way must be beaten again. Tents at entrance C 37 must be dug out of snow. After tents are free, low amount of sleeping bags is discovered. Two cavers returned back in the night, therefore.

February 17
Three cavers descended from Folly refuge into Samoens to help to transport material of film group. We are occurring 11 days within the massif and any of teams had started the descent through the whole system. Bad weather again.

February 18
Four men strong group, supported by film staff, walks up to entrance V 6 to take the film in Cascade Jean Dupont. From V 6, they observed a couple spending the night without sleep by continuous removal of fresh snow falling over their tent. When the group passed over difficult portion, members heard a great noise. Both cavers at the tent are endangered by great avalange falling by extremely rapid velocity. Both had a great luck, when attacked only by a periphery of avalanche. Nevertheless, the snow penetrated through all layers of dresses up to their bodies.

February 19
The film group returned at sunrise from entrance V 6. Sun is shining, blue sky, the first nice day after two weeks of continuous snowfall. The same group started immediately up to the upper entrance C 37 with the only aim - pass through C 37 up to upper bivouac.

February 20 to 21
After twenty hours of crawling through narrows, looking for a proper way, four men reached the upper bivouac. After 17 hours long rest they continue the descent. Their sleep interrupted the film team taking pictures from V 6 up to the half-sump. The first group reached the old bivouac at -1 000 m following equipped way by ropes. For all members of the group this depth represents personal record, as all reached for the first time in their lifes this magic limit.

They equip another shafts from Puits de la Gourance, and on February 21 at 10:30 p.m. they reached the first sump at -1 446 m. They returned back to bivouac at -1 000 m and after 77 hours in underground they ascended the entrance V 6 at the next day.

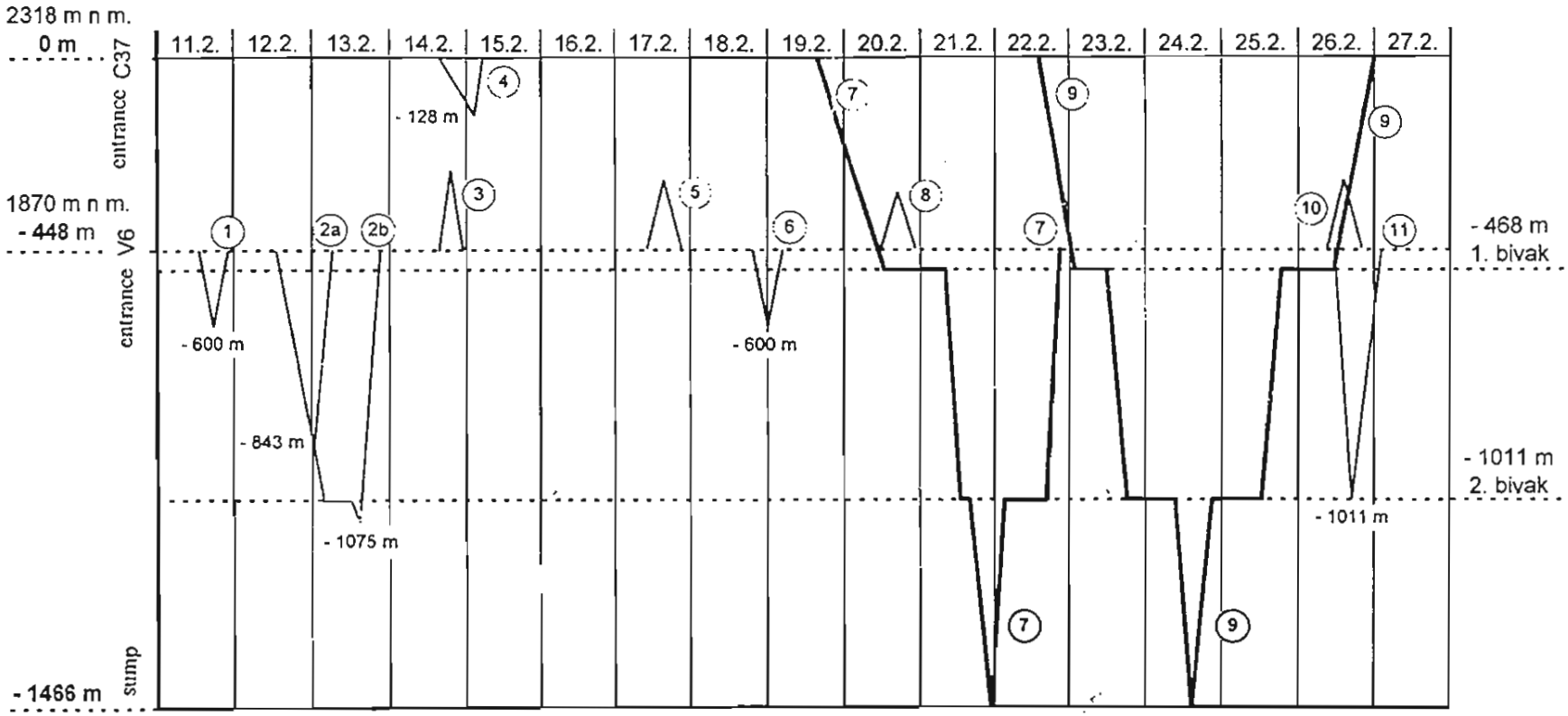
February 22 to 27
Several hours morning, the weather is favourable, in spite of appearing new atmospheric front. Without having any information on the progress of the first group, another four cavers started climbing up to the upper entrance with the only possibility to reach the very bottom and to return through entrance C 37, as the material has to be recover from Riviere de la Gadoue up to entrance C37. They have to finish camp at the upper entrance and they must transport all down to Folly refuge. It is clear that crawling through narrows below C 37 is not a dream and aim of any further descent. The second group need 105 hours to climb the whole system. It returned in midnight of February 26/27. Better said, we are digging through several metres thick snow cover which fell through 5 days we spent under the surface. Snow fully covered entrance C 37. Very unpleasant surprise waits for us on the surface, heavy snowfall covered completely tents so they are invisible even after we moved tents to small high where we expected any further problems. Fortunately, we found the end of skying pole

Speleologická záchranná služba ČSS

Caving expedition to the deepest shaft of the World
Gouffre Jen - Bernard - France

Česká speleologická společnost

UP TO THE BOTTOM OF THE WORLD 1995



TIME TABLE OF DESCENDS

1 - Bělehrádek, Motyčka, Blažek, Uher
2a - Nejezchleb, Musil, Svoboda, Šebela
2b - Kyselák, Kuchař
3 - Kuchař, Kyselák, Uher
4 - Motyčka, Blažek, Štos
5 - Kyselák, Nejezchleb, Uher
6 - Kyselák, Kuklová, Motyčka, Blažek, Sliva+2
7 - **Musil, Šebela, Kuchař, Bělehrádek**
8 - Kyselák, Nejezchleb, Uher, Kuklová, Sliva+2
9 - **Blažek, Kyselák, Motyčka, Štos**
10 - Nejezchleb, Musil
11 - Šebela, Kuchař, Bělehrádek

protruding 5 cm from the snow. After several hours of digging we entered frosty sleeping bags with very pleasant feeling, that only descent down is waiting us.

February 27

Camp at C 37 finished at the morning. We collected large rucksacks and walked slowly to Folly through fresh snow so thick that smaller of us are disappearing in it. At Folly we met other cavers who finished both bivouacs in the cave and transported material back to Folly completely exhausted. Here, only consumption of huge reserves of food waits for us. After initial limited food, there started unlimited consumption orgy, because what is not eaten, must be transported down.

The expedition was finished by violent party in a small pub in Samoens, which will not be ever forgotten by its owner. On March 2, we left the region for home.

The expedition enriched us in several points, first we shifted the Czech depth record, second we discovered that the team composed of cavers from several caving clubs operating in the Moravian Karst proved their competence, and third that the expedition was not the last one.

Participants: Věroslav "Majkl" Běléhrádek, Radek "Rad'as" Blažek, Lubomír "Pacho" Kuchař, Jiří Kyselák, Zdeněk "Zdenál" Motyčka, František "Franci" Musil, Alois "Lojza" Nejezchleb, "Honza" Svoboda, Roman "Romec" Šebela, Oldřich "Pavouk" Štos, Luboš Uher, more driver Jan "Pšenka" Boleslav, Alexandra "Saša" Štosová and film staff Jirka Čalkovský, Pavel Otevřel, and Viktor Sliva.

Taurus 95

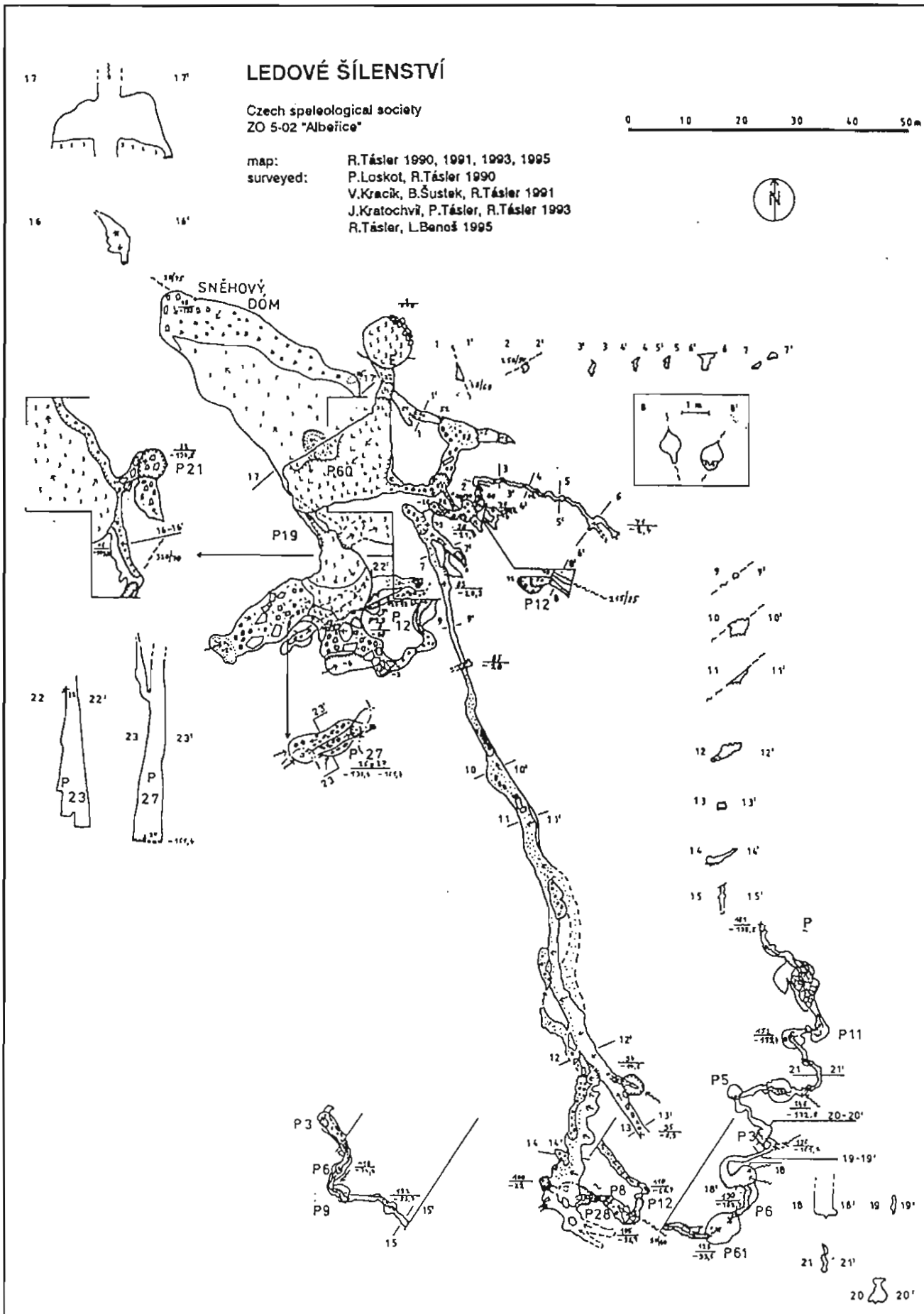
Ondřej Jäger

The exploration and documentation of karst area on the right bank of Manavgatu River in Turkish Western Taurus Mountains continued on September to October 1995. The expedition was organized by the Geospeleos Caving Club from Prague. The area was visited several times since 1989 (see proceeding volumes of Speleofórum'90, 91 and 93)

During the first part of the expedition we were concentrated to resurgence cave of Altin Beşik, in which the survey of passages behind the first sump had to be interrupted in 1992. According to previous experience, we are using more rubber boat for the acceleration in material transport through first b2,5 km of cave with seven large lakes. The first sump is100 m long and 17 m deep. Two kilometres behind the first sump we constructed the camp for three persons. Further mapping contributed to the precision of our maps from 1992. We started to map caves which had to be abandoned in 1992. Huge up to 30 m wide and 12 m high passage gently descends up to the lake. Big chimney opens above the lake. In front of lake, the passage curves into giant meanders. We follow our exploration below two big and very high chimneys. About 300 m behind the lake the passage is completely closed by water of the second sump later named Nesvik on the memory of cave diver Míra Nešvera. Nevertheless, we discovered new 650 m of passages from about 40 km long hidden system connecting Kembos Polje on the north with Altin Beşik resurgence in the Manavgat Valley. The connection was proved by tracing test.

The second part of the expedition started from the surface. The basic camp is erected about 5 km from Altin Beşik Cave near road from Ormanlar and Ibradi villages. We are occurring about 450 to 500 m above Nesvik sump. The detailed surface prospection started on about 1,5 km^2 with the result of 21 surveyed shafts with depths mostly from 15 to 30 m. The deepest one is -75 m. At about 350 to 400 m above the Altin Beşik Cave system, i.e. at 850 to 900 m a.s.l. we are proving the existence of fossil cave level which parts we found already in 1992. This year, several larger remains were discovered. The most extensive being 80 m wide hall with collapsed roof and rests of rich speleothems, even stalagmites 6 m high in the state of partial decomposition.

Departing, we visited the Kembos Polje and Büyük Düden ponor cave. This cave was firstly visited by us in the Taurus. It was the place of application of the tracer in seventies which appeared after 40 km in the Altin Beşik Cave. In 1989 we penetrated in the Büyük Düden Cave through two sumps prolonging the cave to present 300 m. The Altin Beşik Cave totals, with our 2,7 km long discoveries, about 5,2 km. Neverthe-



Ice Maddness Cave - the map

less about 35 km of hidden cave system is waiting for the discovery.

Šumnik'95 and '96

Radko Tásler

Albeřice Caving Club organized the expedition to Julian Alps, Krn region, Slovenia on August 20 to September 1, 1995. The aim was to continue the exploration of the Ice Madness Cave from 1993 (for previous explorations see the proceeding volume of Speleofórum'90, 91 and 94). Five cavers took part.

The exploration traditionally started by digging the snow up to the depth of 5,5 m. Entrance Ice Shaft (P 60 and P 16) changed. Large hollow originated by snow ablation in its bottom opened. It lead directly to the Snowy Dome. Here, snow changed, too, which allow to descent in 15 m below the lowest surveyed point of the Dome. In the eastern wall, the opening appeared. Huge shaft P 21 continued down terminating by fine scree. New parts of Snowy Dome has the depth of 135 m. It was discovered, that underground glacier does not terminating in the entrance shaft, but that fills its nearly completely and its tongue ablated only in the Snowy Dome at about -140 m. The origin of kettles and tunnels under the glacier, nicely preserved half of metre high drumlins were uncovered.

Other our activity concentrated into exploration in P 12 shaft interrupting the entrance meander into the Snowy Dome. After the descent into another shaft P 23 appeared in its wall another shaft P 27. A lot of water inflow the shaft especially from its western wall. Scree terminated our descent in -166 m where we finished our exploration in 1995.

In 1996, the exploration of the Ice Madness Cave finished. The cave is composed of two branches. The first, glaciated, terminates in -166 m. The second narrows into the inaccessible fissure in -255 m. The total length of the cave is 1 116 m.

New 500 m Deep Shaft in the Julian Alps in Slovenia

Roman Šebela

Following our previous expeditions in the Mt. Canin area directed dominantly to descents to deep caves, we started our own explorations in 1996.

July 13 to 21, 1996

Seven men strong expedition started with the aim to select new area for exploration. First day we are making trekking in the Mt. Canin massif locating the entrance into deepest vertical shaft of the World - Brezno pod Velbom (-541 m). Owing to the security problems with ablated blocks, we finished our decent in -100m.

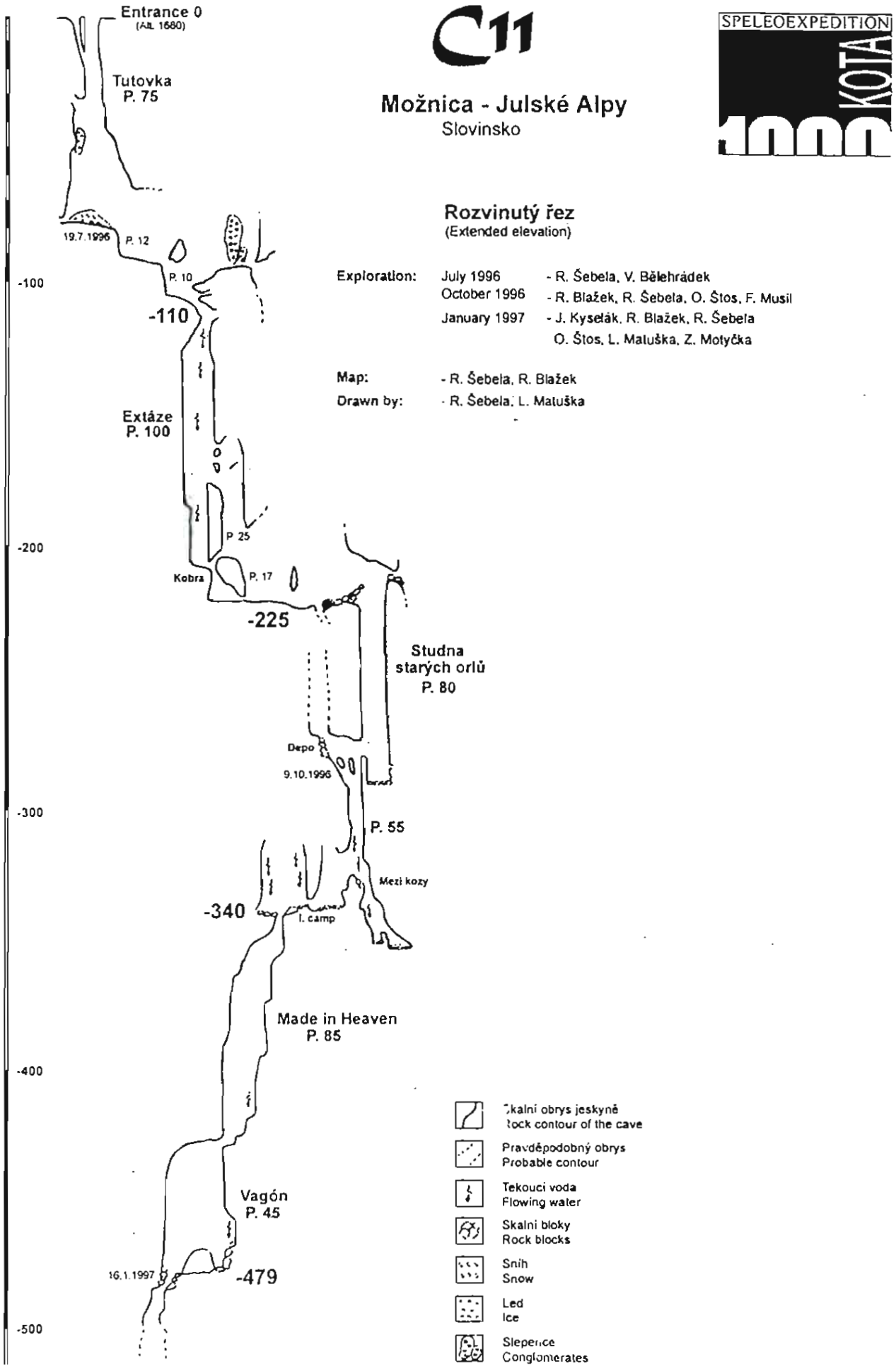
After the consultations with Slovenian and Italian cavers we are directed to Možnica Plateau. It lies on the Slovenian/Italian border on the slope of Large Snowy Mount (1 973 m a.s.l.) at 1 700 m a.s.l. The plateau is 4 km long and 500 m wide. It is formed by highly eroded limestone plates inclined in a terrace-shape into the south (10°). The relief is dissected by a series of deep north-south trending depressions transected by west-east trending tectonic trenches. Dense vegetation and rests of the World War I make the movement difficult. We located and documented 7 vertical caves with the depth not exceeding 40 m. Only one - C11 - was 80 m deep. We finished our summer exploration.

October 2 to 12, 1996

This time of year ensures the most stable weather, nevertheless this year situation was other. Five cavers transported material up to 2 200 m a.s.l. in a sunny weather. Other week was rainy weather, snow and fog. The whole activity was concentrated to penetration in C11. The entrance shaft is situated in one of west-east trending trenches. In -70 m there is opening large hall (10 by 20 m) with snow covered bottom (Tutovka). After two steps (P12 and P10) and passing through narrow meander we entered the roof of fascinating shaft 100 m deep with diameter 6 by 8 m leading us to Extasis terminating by narrow. Big window lead us into 2 to 3 m wide and several tens of metres high passages. Their crossings offer us several directions for exploration. We follow through 80 m deep shaft of Old Eagles. The window above its bottom leads to another shaft. Nevertheless, the lack of material finished our exploration in -300 m.

January 11 to 19, 1997

The winter expedition was characterized by deep frosts and a lot of snow. The transport is


C11
SPELEOEXPEDITION
1000 KOTA
Možnica - Julské Alpy
Slovinsko
Rozvinutý řez
(Extended elevation)
Exploration: July 1996 - R. Šebela, V. Bělehrádek
October 1996 - R. Blažek, R. Šebela, O. Štos, F. Musil
January 1997 - J. Kyselák, R. Blažek, R. Šebela
O. Štos, L. Maluška, Z. Motyčka
Map: - R. Šebela, R. Blažek
Drawn by: - R. Šebela, L. Maluška
Entrance 0
(Alt. 1680)
Tutovka
P. 75
19.7.1996
P. 12
P. 10
-100
-110
Extáze
P. 100
P. 25
-200
Kobra
P. 17
-225
Studna
starých orlů
P. 80
Depo
9.10.1996
-300
P. 55
Mezi kozy
-340
I. camp
Made in Heaven
P. 85
-400
Vagón
P. 45
16.1.1997
-479
-500
Skalní obrys jeskyně
Rock contour of the cave
Pravděpodobný obrys
Probable contour
Tekoucí voda
Flowing water
Skalní bloky
Rock blocks
Sníh
Snow
Led
Ice
Slepence
Conglomerates

endangered by strong wind, 3 m of snow and by a danger of avalanches. The entrance to C11 was ablated. We installed new equipment in a cave and we are making some survey. Further exploration was full of surprises. After the descent into P55 (Mezi kozy) we follow into two huge halls where the first camp was erected. We continued through Made in Heaven Shaft (P85) and huge collapsed Wagon Shaft (P40) into roof of another shaft in -479 m.

February 28 to March 3, 1997

The new shaft (Šum svistu, P130) was descended. It is parallel with Extasis Shaft (P100) which is inaccessible during high water stands. The cave was deepened in 120 m into present total depth of 590 m. Exploration was finished owing to high water in the cave.

Dolný vrch

Members of Barrandian Caving Club, compiled by Jiřina Novotná

David Havlíček and Luděk Vlk introduced the Dolný vrch Plateau in the last volume of Czech Speleological Society 1989-1993 (pp. 38 to 39). Systematic prospection, exploration, documentation and detailed mapping has continued also in 1993 to 1997. The activity was focused especially to the evidence of karst phenomena and to compile surface location map. Measurements of carbon dioxide concentrations continued, too. 146 shafts and 27 small caves have been documented up to now.

In 1995, 44 m deep Natržená shaft was discovered. It contains rich decoration. In 1996, the Pňová Shaft 43 m deep was digged out with carbon dioxide concentration of 3% at its bottom. In 1997, the deepest shaft on the plateau - the Hlinoš Shaft (-105 m) - was discovered by Košice cavers.

V.

Summary of PhD Thesis on Karstology

New Researches in the Moravian Karst (Czech Republic)

Jan Vít

Introduction

There are many reasons why the karst areas are very important for palaeogeographical and palaeoclimatological studies. The main of them is the ability to preserve many of past development informations in karst cavities which could not form in the non-karstic regions. There are two main types of cavities. The first ones are those which had been formed by the vertical percolation and filled with sediments, often fossiliferous, in the course of time. The second ones are those connected with the zone of horizontal drainage, called cave levels which represent a stage in palaeogeographical development. Fluvial sediments are the most frequent, but they are usually without any fossils that could contribute to their stratigraphical assignment.

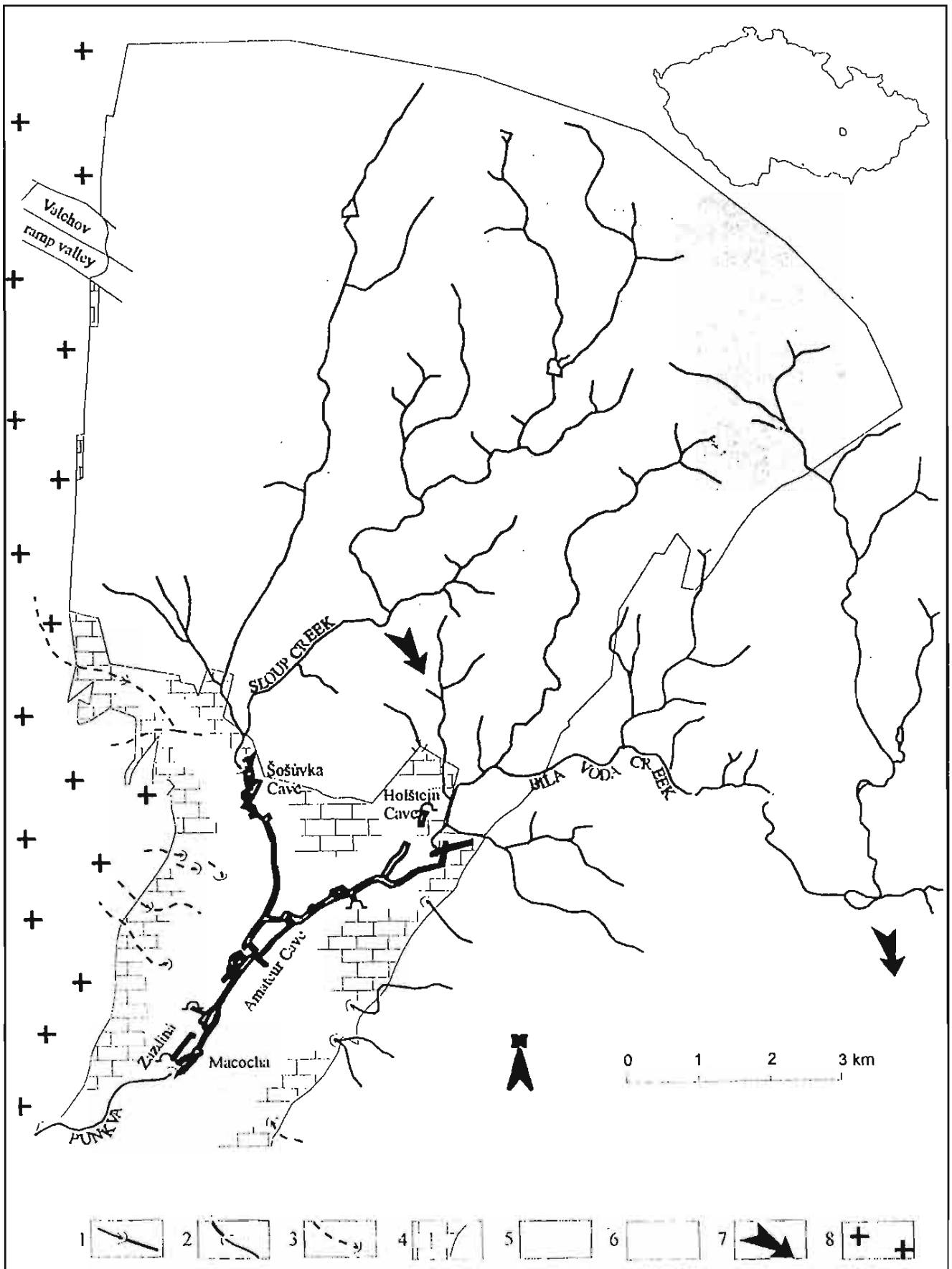
These results were in fact submitted in PhD Thesis: *Fluvial sediments of the northern part of the Moravian Karst*, on the Department of Geology and Palaeontology of the Faculty of Science, Masaryk University (Brno) in 1991.

The aim of this work was concentrated to solution of the palaeohydrographical and palaeogeographical development of the studied area.

Methods

Several methods have been used for the fixed aim of this work:

1) sedimentary analyses making possible to dis-



Schematic geological situation and drainage basin of the Punkva River. *1 - ponors; 2 - outflows; 3 - spasmodic streams; 4 - Devonian limestones; 5 - Protivanov Formation; 6 - Rozstání Formation; 7 - former direction of drainage; 8 - Brno Massif*

tinguish relative stratigraphical relationships at the studied profiles and graphical documentation (in the case of complicated profiles)
2) heavy minerals analyses
3) U- series dating of speleothems which are also present in some sequences of the fluvial sediments.
4) clay minerals analyses
5) taking into account cave passages positions and their morphology.

Heavy minerals analyses

Among of the main analytical methods were both qualitative and quantitative analyses of the translucent heavy mineral assemblages (THMA) of fluvial cave fillings (mainly gravelly and sandy). The fraction 0,25-0,063 mm have been used. Minerals of the garnet and epidote groups and alterites (altered minerals with insignificant optical properties) were analyzed as generally the most abundant in all assemblages. Hornblende and zircon have a very variable percentage. The other minerals like apatite, rutile, tourmaline, staurolite, kyanite are also present but usually in the amounts under 5%.

Three source areas have been distinguished thanks to heavy minerals earlier: Lower Carboniferous rocks of the Drahany Upland with prevalence of minerals of the garnet and epidote groups, Cretaceous sediments (on the central part of the Moravian Karst, Blansko and Valchov ramp valleys) where the main role in THMA beeing played by kyanite, tourmaline, rutile and staurolite and eolian sediments, the origin of which can be found in weathered crust of the Brno Massif (hornblende and epidote).

Thanks to the systematical regional study of distribution of the THMA some of the sources have been further subdivided. It has been proved that generally the older greywackes of the west Drahany Upland Culm (Brodek Member of the Protivanov Formation) are "epidote" rich and the younger ones (Rozstání Formation) are "garnet" rich in their THMA. The ratios of these minerals are also characteristic for each of the main northern tributaries of the Punkva River. The prevalence of epidote (1,5-2:1) is typical of the Sloup Creek and the prevalence of garnet (1,5-2:1) for Bílá voda Creek. (Drainage areas and geological situation see fig. 1).

The provenance of some sediments of the Holštejnská Cave have been interpreted due to their THMA as products of the drainage area of the Sloup Creek, although recently this cave is situated within the drainage area of the Bílá voda Creek. So there is an example of the stream piracy at the NE margin of the Moravian Karst in the hydrological past.

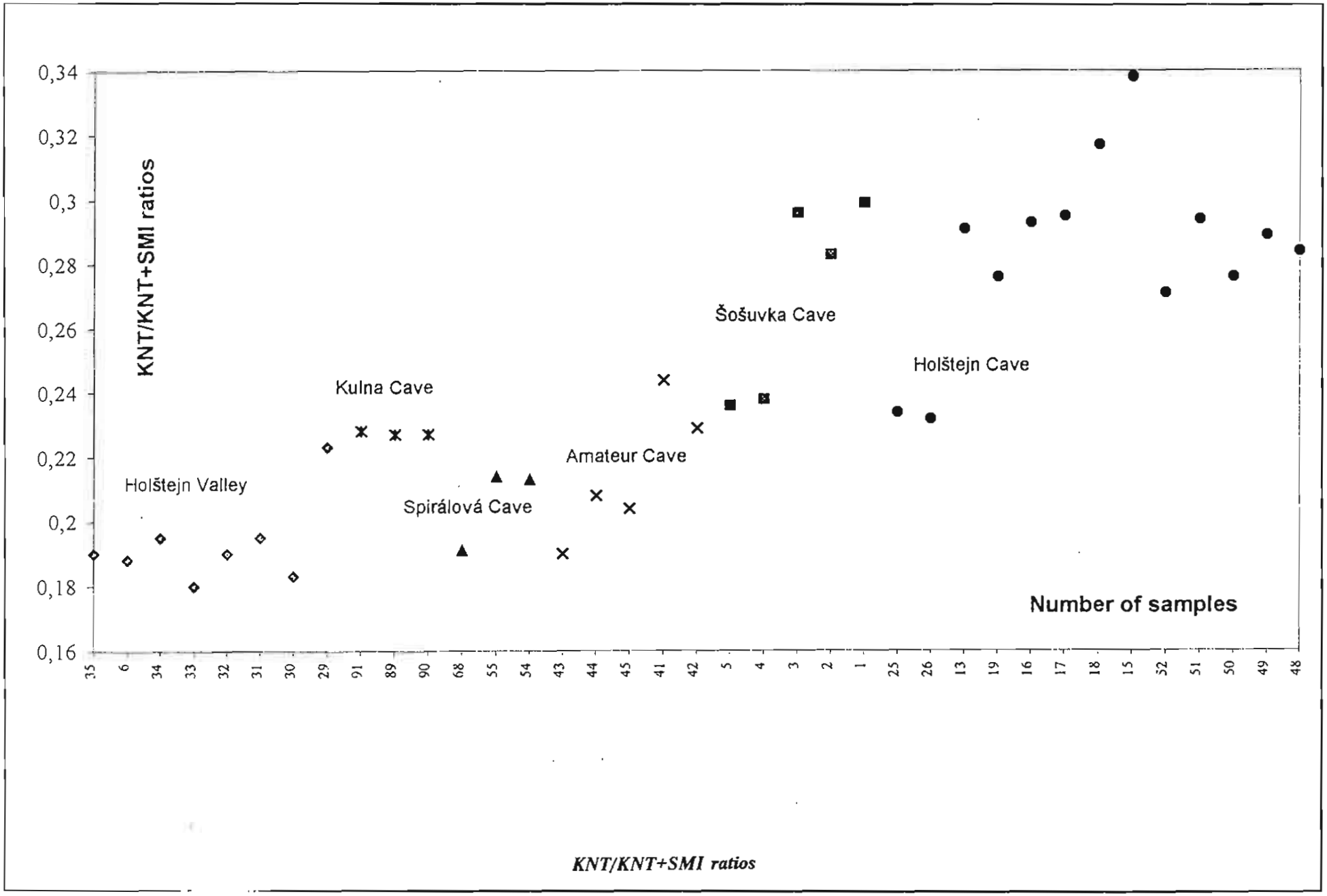
Another situation have been interpreted from the study of sediments of the Western Macocha Corridor in the Amatérská Cave. Equilibrium in amount of garnet and epidote was found in the lower part of this corridor filling (it seems to be typical of sediments of the Punkva River). Prevalent amount of garnet in THMA of the upper part sedimentation documents a situation when this drainage cave canal was used only by the Bílá voda Creek. There is a question, what about the Sloup Creek.

Very useful and important rule for the sampling of fluviatile sediments for the palaeohydrographical and provenance studies has been proved: The coarse grained sands and sandy gravels give the most reliable, because middle and fine - grained sand could be sometimes influenced by higher amounts of the hornblendes and epidotes of the redeposited eolian origin.

Quite different THMA have been found usually in sediments rich in grains and pebbles of quartz. In that case, staurolite, kyanite, tourmaline and rutile are the most frequent minerals of THMA. If the THMA of both Cretaceous and Ottnangian sediments are compared, the prevalence of staurolite in the sediments of Ottnangian is evident. That is why many of the sediments found in the caves could be compared with sediments of Ottnangian. There is the problem that any of such sediments in the caves (probably with one exception) are not in situ.

U-series dating

The greatest problem is the dating of the cave sediments. U- series dating was made on speleothems from Holštejnská and Amatérská Caves by Dr. H. Hercman (Poznan, Poland) in the laboratory of prof. S.E. Lauritzen in Bergen University (Norway). The existing results from Holštejnská Cave could be considered for preliminary results, but it seems to be sure that the oldest speleothem in corridor No. 14 is older than 300 ka. The results from the long stalagmite on the youngest fluvial accumulation have shown that Holocene age is without any doubts.


0,34
0,32
0,3
0,28
0,26
0,24
0,22
0,2
0,18
0,16
KNT/KNT+SMI ratios
Holštejn Valley
Kulna Cave
Spirálová Cave
Amateur Cave
Šošuvka Cave
Holštejn Cave
Number of samples
35 6 34 33 32 31 30 29 91 89 90 68 55 54 43 44 45 41 42 5 4 3 2 1 25 26 13 19 16 17 18 15 52 51 50 49 48
KNT/KNT+SMI ratios

Clay mineral analyses

The work also has shown that some possibilities for the relative stratification could be brought by the study of clay minerals. The studied samples were represented by undistinguished clay fraction of the clay-silty, sandy and gravelly sediments. The clay minerals were analyzed on the IR spectrometer Perkin - Elmer 783 and their amount was estimated by semiquantitative analysis. They were studied at six localities and it has been shown on several cave sedimentary profiles that the kaolinite amount increases towards the older Pleistocene sediments. The best demonstration of this conclusion can be seen on the profiles with longer stratigraphic hiatuses dividing the profile in two or more sedimentary cycles. The reason why the kaolinite amount increases towards the older sediments is most probably connected with its large presence in older interglacial weathering crusts which have been transported to the caves. The kaolinite / kaolinite + illit (+smectite) ratio (KNT / KNT + SMI) was used to improve the orientation of the results (see fig. 3).

There is an interesting and important conclusion probably following from the comparison of the KNT / KNT + SMI ratios between three groups of accumulations:

1. the youngest accumulation of the Holštejnská and Šošůvská Caves.
2. the lower part of the filling of the Western Macocha Corridor in the Amatérská Cave.
3. the fluvial sediments in the lowest part of the archaeological site in the entrance to the Kůlna Cave.

Sediments of the 1st and 2nd group are only a little bit older than those of the 3rd one which are archaeologically dated (R/W).

Next, the upper part of the filling in the Amatérská Cave could be parallelised with the upper part of the accumulation in the Holštejn Valley and in addition, both older accumulations of the Holštejnská and Šosůvská Caves could be also parallelised.

This method can be probably used in the Moravian Karst thanks to the geological fact that the drainage basins of the main creeks are situated on the monotonous Culm flysch formations and so a complicating influence of inherited clay minerals of the source rocks is very low.

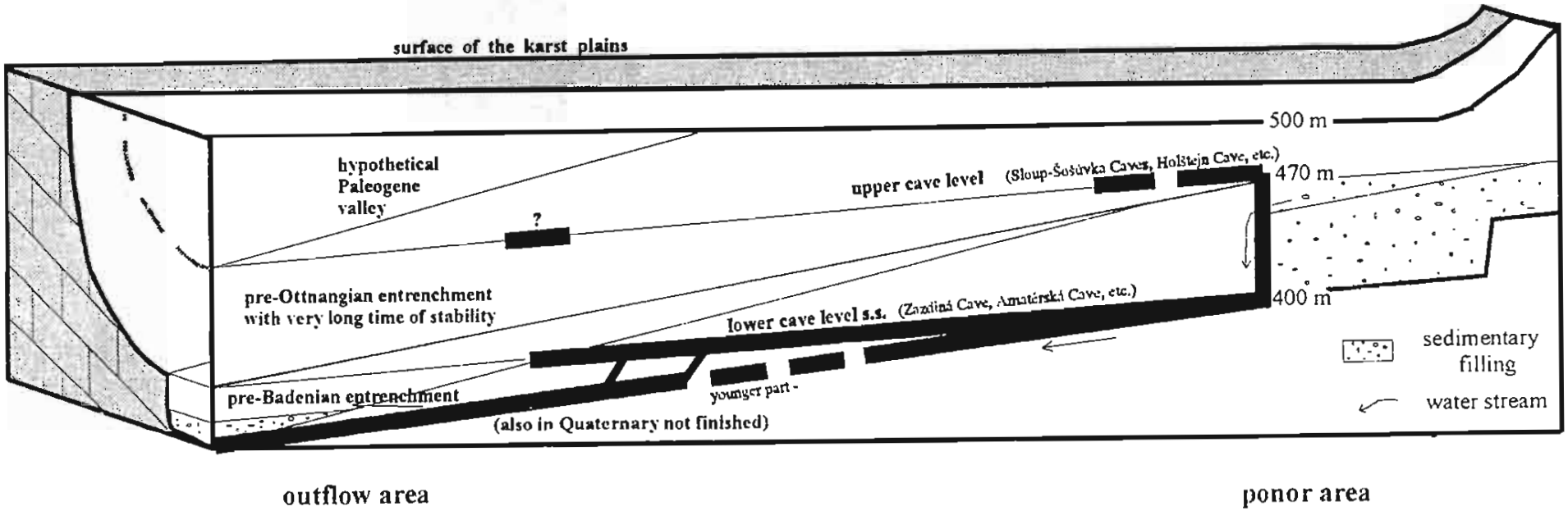
Age question of the cave systems formation

Both position of the main cave passages (cave levels) in all of three parts of the Moravian Karst and morphology of valley in surroundings have something to do with.

In the contradiction to other authors, I think that the *upper cave level* (Sloupsko-Šošůvské Caves, Kůlna Cave, Holštejnská Cave, etc.) is not connected with any of recent valleys, but I agree with idea of Paleogene age.

Two horizons can be observed in so called *lower cave level,* where the most of cave systems are formed. The development of its younger (lower) part is not finished yet. Both lower cave level s.s. and its younger part are connected with two phases of entrenchment (see fig 3). The relics of the Ottnangian (Kateřina, Řícmanice) and Badenian (Lažánky) sediments in old valleys corresponding positions make possible to consider the Lower Miocene age for the lower cave level s.s. (pre-Ottnangian) and partly for the lower part (pre-Badenian).

The other changes in cave passages development, connected both with the denudation of the Badenian sediments and with the Quaternary sedimentation and erosion, could be taken into account.



Three main stages of the cave levels development in the northern part of the Moravian Karst *(the lower cave level and its younger development are each other closer in the central and especially in the southern part of the Moravian Karst)*

VI.

Abstracts of papers presented on the 12th International Congress of Speleology in La Chaux-de-Fonds, Switzerland

The Reconstruction of Development of Semiblind Ponor Valleys in the Moravian Karst Based on Geophysical Surveying, Czech Republic

Jaroslav Kadlec

At the border between the Devonian limestones of Moravian Karst and the Lower Carboniferous non-karstic sediments, deep valleys originated during the Cenozoic. These valleys are filled mostly by fluvial sediments up to 60 m thick. In two semiblind valleys situated on the rim of the Moravian Karst a network of gravity profiles complemented by vertical electrical sounding measurements were conducted. The geophysical data allow to create 3-D diagrams of valleys without sedimentary fill. Based on the shape of the valleys and the fluvial sediments of different age preserved in surrounding caves, a reconstruction of the development of valleys and genesis of the cave systems in the Moravian Karst during the Cenozoic is possible.

Rekonstruktion der Entwicklund der halbblinden untergetauchten Täller im Mährischen Karst aufgrund von geophysikalischen Messungen, Tschechische Republik.

An der Grenze der Devonkalke des Mährischen Karstes und der Entwicklung des Unterkarbon entstanden im Känozoikum tiefe Täler gefüllt durch fluviale Sedimente, die eine Mächtigkeit von 60 m erreichen. In zwei halbblinden Tälern am Rande des Mährischen Karstes wurde eine Reihe gravimetrischer Profile vermessen, die noch durch Vertikale Elektrische Sonden ergänzt wurden. Die geophysikalischen Angaben gestatteten ein dreiräumliches Tal zu modellieren, wobei dieses Tal jegliche sedimentäre Füllung vermisst. Anhand der Talform sowie verschiden alter fluvialer Sedimente, die sich in der Höhlen in der Umgebung befinden, war es möglich die Entwicklund der Täler während des Känozoikums und die Entstehung der Höhlensysteme im Mährischen Karst zu rekonstruieren.

Shape of Fluvial Pebbles in Surface and Subsurface Streams from the Moravian Karst, Czech Republic

Jaroslav Kadlec

The Moravian Karst yields a good possibility to compare different degrees in reworking of pebbles transported by streams in surface and subsurface environments. Reworking of the clasts during fluvial transportation is expressed by the roundness and shape of the pebbles. The greywacke pebbles from two modern streams (both surface and subsurface parts) flowing through the cave systems of the Moravian Karst were measured. Changes in their shape and roundness of pebbles persuasively document the dependence of reworking of clasts of the fluvial sediments on different hydrodynamic conditions in surface and subsurface channels.

Die Form der fluvialen Gerölle in den Oberflächen- und unterirdischen Gewässern des Mährischen Karstes, Tschechische Republik

Das Gebiet des Mährischen Karstes stellt eine

einmalige Gelegenheit dar, die verschieden bearbeiteten Gerölle miteinander zu vergleichen. Sie wurden von oberflächigen-sowie und unterirdischen Gewässern transportiert. Die Bearbeitung der Gerölle im Laufe des fluvialen Transportes wird durch den Grad der Abrundung und die Form der Gerölle ausgedrückt. Es wurden Grauwacken-Gerölle von zwei Gewässern vermessen - von ihren oberflächigen sowie unterirdischen Teil, die beide durch das Höhlensystem des Mährischen Karstes verlaufen. Die Formveränderungen sowie die Abrundungen der Gerölle beweisen überzeugend die Abhängigkeit der klastischen Sedimente von den unterschiedlichen hydrodynamischen Bedingungen in der oberflächen in der oberflächen - und unterirdischen Talrinne.

Pseudokarst Process and Speleothems in Bohemia Caves on New Zealand

David Havlíček, Radko Tásler

In 1990 the Czech Expedition discovered the Bohemia Cave in Mt.Owen Area (northwestern Nelson, South Island). After following expeditions the cave is 8 km long and denivelation is 663 m. The cave is developed in Arthur Marble (Upper Ordovician) and big spaces mainly below the contact of marble and schists. The schists erosion reached great dimension, that majority of the big spaces was developed in non-karstic rocks. Rests of extensive karstification are rare in the ceiling and preserved exit of narrow tributaries from limestones are suddenly widen in shists under the contact of limestones. In the big hall are rich speleothems of eccentric shapes of aragonite with soft hydromagnezite in the end of aragonite needles.

VII.

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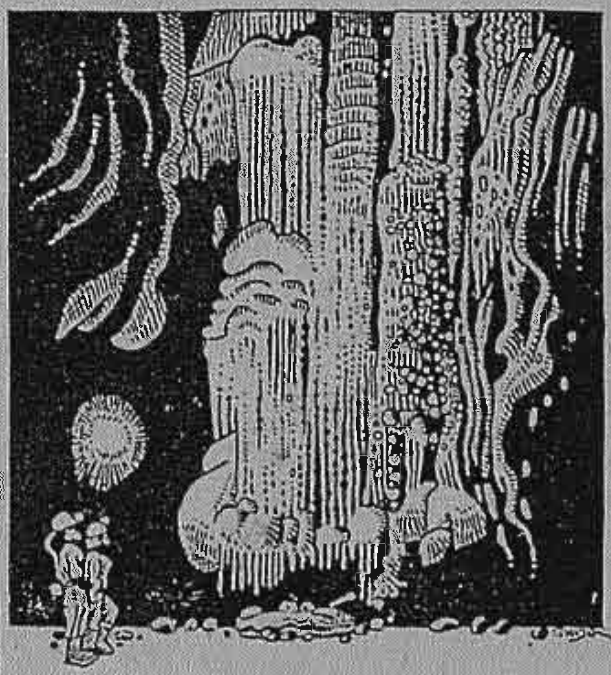

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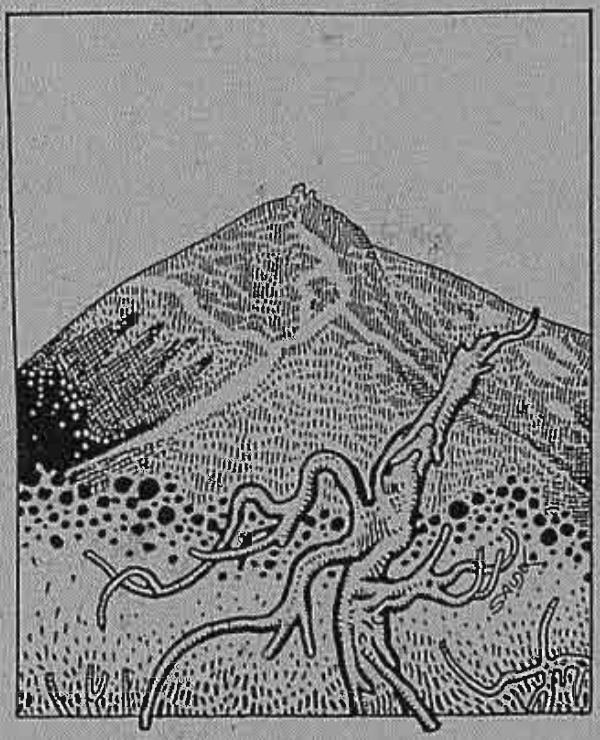

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