



No.2

2000



*Basalt structures of Panska Skala, The Czech Republic.
Photo: V. Makarikhin*



ProGEO 2000 Field trip

Geoconservation, in its broader sense, is as practical as it is a theoretical matter. An important facet of the many ProGEO gatherings is a demonstration of the geoconservation status in the country hosting the meeting.

This year, added to the rewarding Prague scientific sessions, a group of some 30 people had the opportunity to study the very advanced state of protection and maintenance in the Czech Republic under the guidance of a.o.

Drs. Jiří Kříž, Ivo Chlupáč and Pavel Havlíček.

The excursion programme in the Bohemian Massif included three themes, the Barrandien of the Prague Basin, the Cretaceous Basin in northern Czechia, and the Pleistocene–Holocene history and karst development of Moravia, Southern Czechia.

During the first two days, the importance of the French-Czech scientist Joachim Barrande in the understanding of the Palaeozoic of the Prague Basin was nicely demonstrated. His work published in 1852, *Système Silurien du Centre de la Bohême*, is still the framework of Cambrian to Devonian stratigraphy and palaeontology in the Basin. The general esteem of the palaeontologist at that time



The monument marking the Silurian/Devonian boundary (occurring in the slope in the background) at Klonek. Photo: L. Karis



The Hřensko–Pravčická Brána Rock Bridge. Photo: L. Karis

from all parts of society is well-known and Geology marked its by the Barrande's Monument at Skryje, erected in 1969. The nearby Luh section of the Middle Cambrian was also a nice place for a picnic lunch.

The Lower Palaeozoic of the Prague Basin is dominated by non-carbonate rocks, carbonates dominate the Devonian. Cambrian is onlapping folded Proterozoic sediments and close to Skryje at the Berounka River, Middle Cambrian conglomerates, greywackes and fossiliferous shales are found below Upper Cambrian volcanics. In younger strata, fossiliferous section in the Telychian (L. Sil.) and the global stratotype of the Silurian/Devonian boundary at Klonek and the Lower Devonian limestone sequence were demonstrated. Spectacular exposures of Middle Silurian volcanics at Butovice (Nová Ves volcano) were studied. In the volcanic setting, basalts as well as several generations of pyroclastic flows can be seen in contact to fossiliferous Middle Silurian shales. Not far from the volcano, Upper Silurian, rather thin limestones, rich in cephalopods are found.

Požáry Quarry, the global stratotype of the Ludlow/Přidolí boundary was a very special locality, where exciting geology paired with relaxing barbecue.

The excursion spent the third day in the Bohemian Cretaceous Basin. Close to the German border, magnificent highlands of Cretaceous sandstone cover large areas and most of the day the party walked a tourist path to the Hřensko–Pravčická Brána Rock Bridge, a magnificent, almost 20 m high, monument of nature in a frame of beautifully cross-bedded sandstone, locally with honeycomb weathering. In late afternoon, different aspects of the Cainozoic volcanism was demonstrated, ending in the impressive intrusion of Panská Skála with its fan-shaped jointed columns of basalt.

The fourth day brought the party to Moravia in the southern part of the country, where Pleistocene and Holocene stratigraphy in Mid-European loess development was demonstrated at the Dolní Věstonice Section. The sequence covered some 35 000 years, including the level of the Early Palaeolithic Pavlovian settlements of hunters c. 28 000 years BP. A fascinating museum with finds from the excavations and some reconstruction of the daily life, artefacts and burials was visited in the town.

The last day in the vicinity of Brno demonstrated the extensively eroded Devonian limestone sequence of Macocha Formation near Blansko. The Macocha Abyss was observed from above and below, a difference of some 140 m. Paths brought the party down to the lowermost level, previously seen from a platform at the top. Later, a tour through the touristic Punkva Caves demonstrated the grandness of the cave systems, as did the Kůlna Cave with its magnificent sequence from the Riss Glacial onwards.

As a *grand finale* of the field-trip and of the scientific part



*Dr. Ivo Chlupáč demonstrates the geology of the Bohemian Massif.
Photo: L. Karis*

of the ProGEO 2000 meeting, there was a reception at the Antropos Museum, Brno, including high spirits, fascinating displays, plenty of food and wine, and an excellent performance of folk music and dance, an evening to remember.

According to our field-trip experience and an overall impression regarding geoconservation in the Czech republic, it is a country with a high level of awareness and an advanced state of protection for environments and geological features with exceptional

values. It is also evident that the work of Barrande's during the first half of the 19th century, as well as those of his followers, are important factors in bringing the level of geological science in the country to a very high level. The historical background as well as its geographic position motivates a special attention and responsibility, nationally and internationally.

Lars Karis



Dr. Jiří Kríž as guide on the excursion. Photo: L. Karis



The ProGEO web-address

This as a reminder of our a new web address. Here you can find among a lot of other things old issues of ProGEO NEWS

<http://www.sgu.se/hotell/progeo>

Lower Proterozoic in Mäntsälä, Finland

Introduction

The Mäntsälä region has four bedrock geosites registered by the geotope survey made by the Geological Survey of Finland and the Ministry of Environment of Finland (Kananoja & Grönholm 1993). Site 108 represent granite-gabbro association in the Soukkio Complex and sites 109-111 are located in metavolcanics, representing pyroclastics and lava structures (Kananoja & Grönholm 1993).

Recent fieldwork in the region revealed other interesting Precambrian bedrock sites. Some of these are located in private gardens and were exposed by local inhabitants. Some general aspects related to this phenomenon are briefly exposed here. The work was recently presented at the Annual Meeting of Finnish Geographers in Turku, Finland (Eerola 1999). A detailed description of the outcrops will be given by Eerola (in prep.).

Bedrock outcrops in private gardens and courtyards in Mäntsälä region

Garden and courtyard bedrock outcrops are found on volcanics, granitoids and gabbros, representing the main lithological units of the region (see Härme 1978, Kaitaro 1956) and reflecting the Svecofennian geology of southern Finland. The peculiar aspect of such outcrops is that

Location of the Mäntsälä region and area covered by the Hyvinkää-Mäntsälä Exploration Project. The Soukkio Complex is the central one of the mafic intrusions shown in the Mäntsälä region.

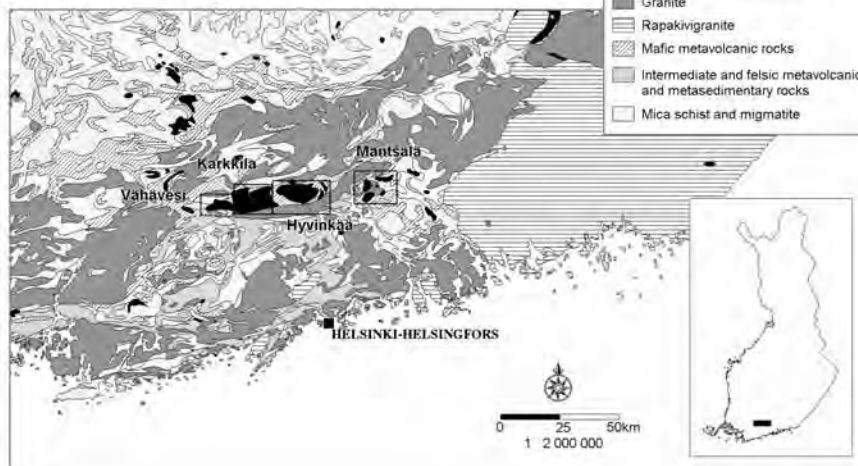


Fig. 1. One of the most spectacular bedrock outcrops exposed by local inhabitants in Soukkio, Mäntsälä. The granite outcrop shows mafic and felsic (hybrid) disrupted synplutonic dikes with K-feldspar xenocrysts, quartz ocelli and double enclaves. Photo by the author

local inhabitants have uncovered them from under several centimeters thick grass and lichen cover, common in polished rock surfaces in Finland. The inhabitants have also washed outcrops after exposure with pressured waterjets and brushes. This work have been carried out by women from 40 to 80 years.

Art and geology

The local people saw beauty in rocks, their structures and textures and wished to expose them to be integrant parts of their gardens, completed by flower arrangements and rock installations, forming very aesthetic units. There is a clear perception of art in rocks (cf. Pestrong 1994), approaching the concept of environmental art. The most aesthetic elements of rocks seem to be related to their heterogeneities (e.g. colors, enclaves, folds, layering, lineations, dykes and glacial boulders).

Geological information offered by outcrops

Outcrops reveals important processes and features, such as the occurrence of mingling and mixing of contrastant magmas in the Soukkio Complex (Eerola 1999, 2000), previously thought as representing granitization of gabbro by K-metasomatism (e.g. Site 108, Härme 1978), as well as the layered nature of the Mäntsälä gabbroic association. Some key outcrops, located in private gardens and courtyards, with spectacular exposures made by local people, permitted a proposal of the Soukkio Complex as an MASLI-type intrusion (Mafic-Silicic Layered Intrusions, Wiebe 1993) by Eerola (2000).



*Fig. 2. Outcrop of mafic volcanic rock in the Repomäki, Mäntsälä, exposed by local inhabitants
Photo by the author.*

Relationship and attitudes of local people toward geology and geologists

The act of exposure, management and conservation seems to reveal a special and intimate relationship of the local people with the local geology.

Generally inhabitants do not have knowledge of rocks or

geological phenomena which they represent. They are usually seemingly satisfied and honoured by geologist's interest in their work. Fear for destruction of their environment by mineral exploration has been shown, however. They also do not wish any official form of conservation for these outcrops, resistance due to the fear of the EU's Natura 2000 Programme which probably will restrict the right for land use in certain regions of Finland.



Use in education

Many of these outcrops are among the region's most representative. Outcrops are used as excursion stops during geologists' visits. Regarding the use of such sites for educational purposes there is a problem of privacy, which should not be violated. Groups of students or general public should be limited in number, and it is recommendable to ask permission to visit the sites. Application of interpretative principles is not

*Fig. 3. Outcrop of the Fig. 1 with flower arrangements.
Photo by the author.*

recommended for those sites. Such principles could be implemented on those outcrops with status of geosites or with some other special importance.

The role of local people in geological conservation

The local community participation is important in geological conservation and education (O'Halloran et al. 1994), especially in inhabited millieu (Bennett et al. 1996). In the present case, the local inhabitants are the best preservers of the mentioned outcrops. Exposing and maintaining bedrock outcrops by inhabitants is a great contribution to geoscientists who study a determined area (Eerola 1999).

References

Bennett, M.R., Doyle, P., Larwood, G. & Prosser, C.D. (eds.) 1996 *Geology on your doorstep. The role of urban geology in earth heritage conservation*. London, Geological Society, 261 p.
 O'Halloran, D., Green, C., Harley, M., Stanley, M. & Knill, J. (eds.) 1994 *Geological and landscape conservation*. Oxford, The Geological Society of London, 529 p.

Eerola, T. 1999 *Gabbros, gardens and grandmothers - Exposure, management and conservation of Lower Proterozoic bedrock outcrops by local inhabitants in Mäntsälä, Finland*. Maantieteiden päivät, Turku, 16.-17.11.-99, Esitelmien ja postereiden lyhennelmät, s. 6-7.
 Eerola, T. 2000 *Prospecting and research on Paleoproterozoic mafic-ultramafic intrusions in Mäntsälä 1997-1999 - Final report* (in Finnish). Unpublished report, Hyvinkää-Mäntsälä Exploration Project, Department of Geology, Institute of Geology, University of Helsinki, 43 p. + annexes.
 Härme, M. 1978 *Precambrian rocks of the Kerava and Riihimäki map-sheet areas* (in Finnish, with English summary). Suomen geologinen kartta 1: 100 000, kallioperäkartan selitykset 2043 kerava, 2044 Riihimäki. Geoginen tutkimuslaitos, Espoo, 51 s.
 Kaitaro, S. 1956 *Geological map of Precambrian rocks, Sheet 2044, Riihimäki*, Geological Map of Finland 1:100 000.
 Kananoja, T. & Grönholm, S. 1993 *Educational and protectional bedrock sites of Uusimaa Province* (in Finnish). Ympäristöministeriön aluiedenkäytön osaston tutkimusraportti 3, 248 s.
 Pestrong, R. 1994 *Geosciences and the arts*. *Journal of Geological Education* 2 (3): 249-257.
 Wiebe, R.A. 1993 *Basaltic injections into floored silicic magma chambers*. *EOS, Transactions, American Geophysical Union* 74, 1-3.

Toni Eerola

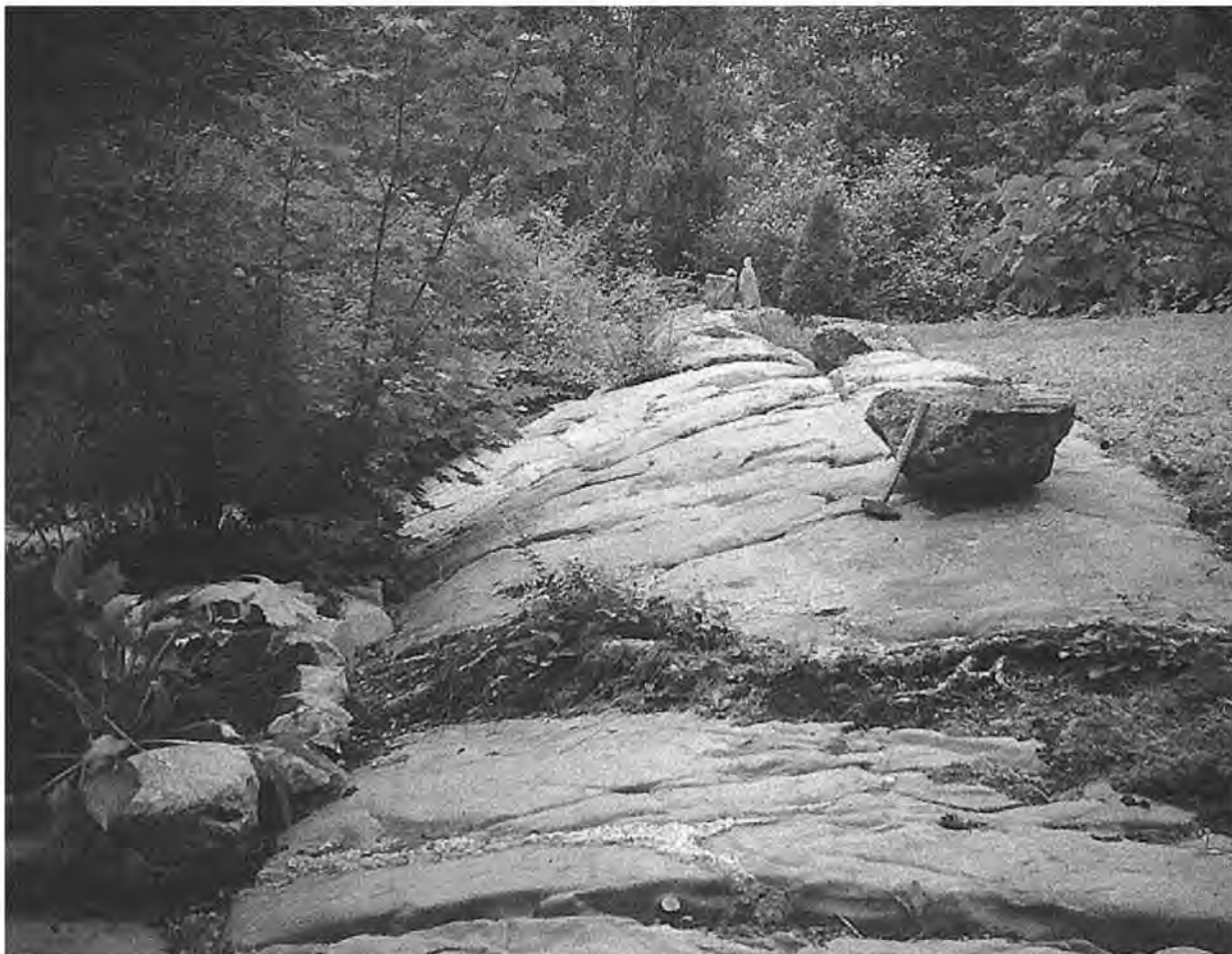


Fig. 4. Fine grained gabbro with felsic amphiboid layers (front). Note the rock installation (back) and a glacial boulder (hammer). Photo by the author.



Pothole in urban environment

A conservation story from Oslo, Norway

An early morning last autumn a report in the local radio of Oslo woke us up. A decision by the local authorities was launched to secure, at least temporarily, a pot-hole in a private garden in the southern part of Oslo. As active workers in nature conservation on different levels of nature management in the 1980's and 90's the geotope was indeed known to us, with a small amount of bad conscience. This is the story of a geoconservation case where central authorities were unable or unwilling to do

the job, but where local enthusiasts did not give up, and now they hopefully and steadily move towards victory.

It has something to learn us about the importance of local initiatives, the limitations of bureaucratic institutional conservation schemes, nature evaluation criteria and the local responsibility to secure local geodiversity.

The geotope

The first description of the pot-hole was published by Brøgger & Reusch in 1874. These two (later nestors, then students in Norwegian geology) was in 1873 participants on a field trip with their professor Th. Kjerulf along the main faultline coast of the Oslo fiord. Here they discovered 19 potholes within a very small area near the coastline. These were all destroyed when a railroad was constructed in the area.

During this fieldtrip Brøgger remembered a hiding place he had used as a child on his grandfathers property in the area. This way the pothole at Bekkelaget was found. It was dug out the following winter revealing an impressive depth of 13 meters compared with the rather modest width of 2,5 meters. Based on the investigation Brøgger and Reusch wrote an article that for long was regarded as a classical description of potholes. Reusch, known for his many nice geological sketches, illustrated the article with a sketch from the dig (fig.1).

However, the pothole was not registered in the country plan for areas and sites of conservation value (Jøsang 1979, Erikstad 1984), nor was it included in the review of important Quarternary localities in the Oslo and Akershus counties (Sørbel & Strandvik 1987, Erikstad 1994b).

How to protect a pothole in a garden

Later this pothole was more or less forgotten. A local historian, Egil Schelderup, rediscovered the pothole in 1973 in a back garden between new houses under a concrete wall. It was filled with rubbish and closed.

Egil Schelderup has later worked hard to protect the pothole. He has even paid to empty it for rubbish (fig. 2). He has had good support from the local welfare organisation (Selskapet til Bekkelagets vel). The area has been cleaned and a nice iron work fence has been erected to protect people

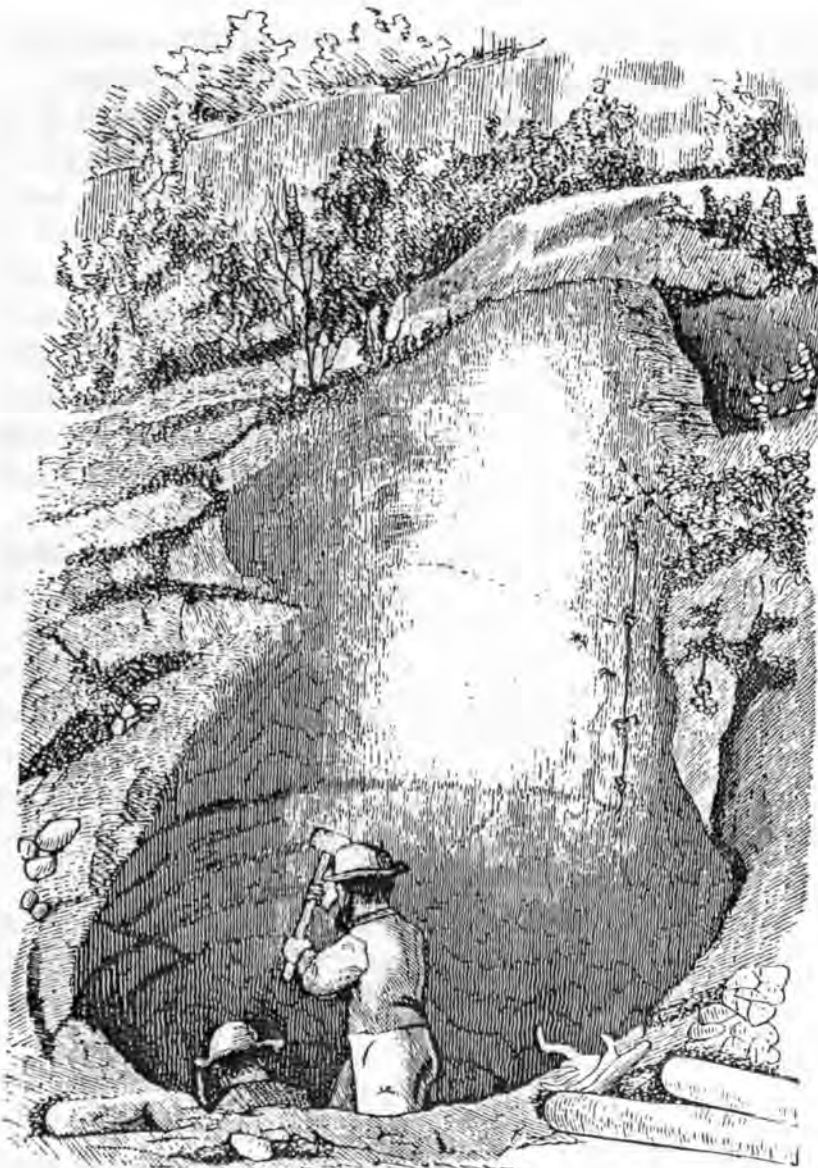


Fig. 1. Digging out the pothole in 1873. Illustration from Brøgger & Reusch 1874.

Aftenposten Mandag 26. april 1993

Report

Newspaper report from the works in 1993 giving credit to local initiatives. Aftenposten 26.4 1993, Oslo

Jettegryten utgravd etter 20 år

Etter 20 års arbeid ble den sagnomsuste jettegryten på Nedre Bekkelaget «åpnet» i går — ferdig utgravd.

BIBI PLAUTE VANCE
(tekst og foto)

Jeg måtte få saken ut av verden, og må kanskje finne en etterfølger som kan følge opp, sier Nordstrands fidsjel og lokalhistoriker, Egil Schjelderup (82). I 1973 gjenopplaget han den store jettegryten rett ovenfor Mosseveien, og begynte i mars samme år et 20 år langt prosjekt: Å grave ut den 13 meter dype gryten på 2,5 meter i diameter. Alt slags rusk og rask, haveavfall, armatur og rør, sykler, to kokosnøtter, en hestesko, og bekvart slam er gjennom årenes løpt blitt heist opp i bøtter og spann. Schjelderup har betalt hele prosjektet av egen lomme, og tilsammen har det kostet ham rundt 100 000 kroner.

10 000 år

Jettegryten, som naturkrefte gravde ut for rundt 10 000 år siden, ble første gang oppdaget og utgravd av de kjente geologer Waldemar Christoffer Brøgger og Hans Henrik Reusch (for 120 år siden. Da Schjel-

derup gjenopplaget den, var den fylt til randen og murt igjen med et sementlokk.

Schjelderup mottok velfortjent takk av Geologisk museums førstekonservator, Johannes Dons. Han håper jettegryten nå blir bevart og området tilgjengelig for almenheten med trapp opp fra Mosseveien.

Blomstertakk fikk Schjelderup av rektor ved Nedre Bekkelaget skole, Liv Dietrichs. Og Aker historielags Reidar Brevik viste sin taknemlighet med å ta stigen fatt. Klatret samtlige 13 meter til bunns og opp igjen til det vakre smijernsgjerdet rundt gryten. Også det har Schjelderup bekostet. Oslo kommune har anbefalt bevaring, og fredningsforslag er fremmet, men det offentlige har ennå ikke spandert fem are.

Det var de kjente geologer W. C. P. Jørgen og H. H. Reusch som oppdaget jettegryten på Bekkelaget 1873. Det gikk med 150 dagsverk til utgravingen, og de to herrer akrover en 48 siders avhandling om Bekkelagets gryte, omtalt i vitenskapelige artikler i både England og Tyskland.

Dengang lå jettegryten på eiendommen «Labro Chausseen», senere fikk den adresse Mosseveien. I dag er området rundt gryten fredet med egen tomt, som eies av Fokua Bank.



13 METER DYP: Aker Historielags Reidar Brevik tok stigen fatt ned i den 13 meter dype jettegryten på Nedre Bekkelaget.

lowing years nothing happened.

In October 1998 they renewed their application and addressed different state- and community authorities to take action to protect the pothole.

The Department of Environment at the County governor wrote to the Directorate for nature management and suggested a temporary protection by the nature conservation act, until the question of permanent protection was settled.

Various departments as the city inspectorate of ancient monuments and historic buildings, the city authorities for environment and health as well as the University of Oslo, strongly supported protection.

Too much support has not arrived from the central authorities, but in 1999, the Oslo community council agreed with their planning- an building office to prohibit building on the ground until a final land use regulation could be established as, a part of a district regulation (hopefully in 2001).

What to be learned

From this unfinished tale, yet without a permanent happy ending, we can learn at least four important lessons:

from falling into the hole.

It is generally a high area pressure in this part of Oslo, and it is a real danger that the geotope will be destroyed. It has therefore been an effort to make central authorities aware of the geotope and launch a formal protection. This has not been easy, and it is here we indeed has something to learn from the story.

In 1986 the property where the pothole is situated, was taken in arrest by creditors due to private economical circumstances. This increased the danger for the ground to be sold for building purposes. Since then the local welfare organisation has worked to protect the site.

In October 1992 they addressed the County governor for a permanent protection of the pothole according to the nature conservation act (Erikstad 1994a). However the county governor passed the question on to the Oslo city government, and supposed that the community could buy the ground, and erect a nature monument. The fol-

- About the bureaucracy: It is slow and difficult to penetrate when you first have missed your aim, even if you are reasonable up to date and within the system. Moreover as decision-makers, they always "do know best" in the sense that it is fairly useless to ignore signals regarding change in policies and practice. Then new approaches must be tested to adapt to the situation.
- About evaluation criteria: During the last decades it has been a shift in evaluation criteria from small single objects as trees, erratics and potholes towards larger systems as forests, ice marginal deposit systems and landscapes. It is easy to forget that high natural value also can be found in the details. Probably this is what has happened here. It is clear for us that this small geotope is important of the following reasons: In this part of the country it is not many of them left. It is representative in shape and location. It is situated near universities and schools and have a high educational value. It is classic in Norwegian ge-



The fence erected around the pot-hole protecting people falling into the pothole

ology and represent a clear link to early stages in Norwegian Quarternary research. These arguments match important criteria (Erikstad 1994b) and should not be underestimated.

- About the local responsibility: Natural values are found everywhere. It is important to take responsibility to secure natural values on every level in society. That means that local authorities should take an independent responsibility in conservation of local biodiversity as well as geodiversity. This will make the distinction between national interests and local interests of less importance. It is up to the politicians and the authorities to decide where the responsibility lies. The important part is the results. If a case should be solved locally, the will and possibilities of the local authorities must be developed. The newest development give credit to local authorities in their will to solve this case. We must hope that their possibilities are present, and that this will result in permanent protection of the site.
- About the local initiative: It can not be underestimated. If the pothole at Bekkelaget really will be protected, the credit goes to local forces as the local welfare organisation and Egil Schelderup. The cooperation with local people and organisations are not too well developed in Norwegian geoconservation. Here lies a major possibility for improvement.

References

Brøgger, W.C. & Reusch, H.H. 1874. Jættegryter ved Kristiania. Fra Videnskapens Verden. København 1874. English translation in Quarterly Journal of Geological Society of London, 1874. German translation: Zeitschrift d. Deutschen geologischen Gesellschaft, 1874.

- Dons, J.A. 1988. Jettegryten på Bekkelaget. Et natur- og kulturklenodium i fare. Byminner Nr. 4: 23-27.
- Erikstad, L. 1984. Registration and conservation of sites and areas with geological significance in Norway. Norsk geografisk Tidsskrift. Vol. 38: 199-204.
- Erikstad, L. 1994a. The legal framework of earth science conservation in Norway. Mém. Soc. géol. France, 1994, n.s., no 165: 21-25.
- Erikstad, L. 1994b. Quarternarygeology conservation in Norway, inventory program, criteria and results. Mém. Soc. géol. France, 1994, n.s., no 165: 213-215.
- Jøsang, O. 1979. Landoversikt over verneverdige naturtyper og forekomster innen geologi og geomorfologi. Ministry of Environment. Unpubl.
- Sørbel, L. & Strandvik, P.A. 1987. Kvartærgeologisk verneverdige områder i Oslo og Akershus fylker. Geogr. inst. Univ. i Oslo, Unpubl.

publ.

Lars Erikstad & Jon Markussen



Changes in treasury function

As a consequence of a decision made at the ProGEO 2000 Prague Meeting, Gunnel Ransed is replacing Alf Grube as the Treasurer of ProGEO. A certain number of weeks will be needed to make all formal arrangements and to open a new bank account for ProGEO. Until then, the registration of membership payments requires personal handling, and the Financial committee asks you to postpone this or next year's payment until further

notice. Gunnel and others will check the financial status of the Association as soon as Alf had the opportunity to settle the business in Germany. After that, as a reminder, an invoice will be sent to all registered members in October. New members will have to register with the Secretary (or the Treasurer) in order to get an invoice for membership payment, and, after payment, a membership card. In connection to the invoice procedure, the different rates for different nations will be decided. We will provide more information as soon as formalities are settled.

*For the Financial Committee,
Gunnel Ransed, Treasurer and Lars Karis*

Adresses

Toni Eerola

Department of Geology and
Mineralogy
University of Helsinki
P.O. Box 11
FIN-00014 Helsinki
Finland
E-mail: tonieve.eerola@kolumbus.fi

Vladimir Makarikhin
Inst. of Geology
11 Puskinskaya str.
185610 Petrozavodsk
Russia

Miljøvernavdelingen i Oslo og Akers-
hus
Boks 8111 Dep
0032 Oslo
Norway

Dr L. Karis
Geological Survey of Sweden
Box 670
S-75128 UPPSALA
Sweden

Gunnel Ransted
Geological Survey of Sweden
Box 670
S-75128 UPPSALA
Sweden

Lars Erikstad
NINA
Box 736 Sentrum
N-0105 Oslo
Norway

Jon Markussen

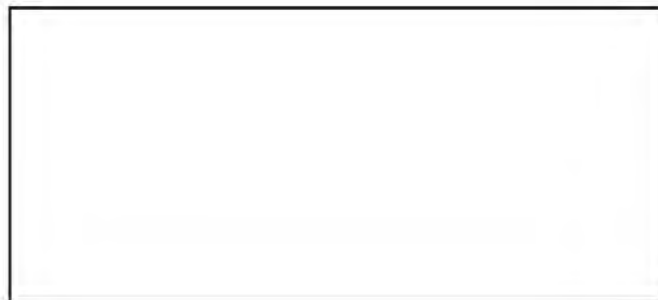
Deadline for contributions to next issue of ProGEO NEWS: 15.09.00

ProGEO: European Association for the Conservation of the Geological Heritage. **Treasurer:** Gunnel Ransted. **Membership subscription:** personal: 50 DM/yr., institutional: 300DM/yr. **President:** Dr. T. Todorov, Geological Institute og Bulgarian Academy of Sciences, George Borchov St. 24, Sofia 1113, Bulgaria. **Executive Secretary:** W.A.P. Wimbledon, Postgraduate Research Institute for Sedimentology University of Reading, Whiteknights, READING RG6 6AB, United Kingdom.

ProGEO NEWS - A ProGEO newsletter issued 4 times a year with information about ProGEO and its activities. **Editor:** Lars Erikstad, NINA, Box 736 Sentrum, N-0105 Oslo, Norway, Phone: + 47 23 35 51 08, Fax: +47 23 35 51 01, e-mail: lars.erikstad@ninaosl.ninaniku.no. Contributions preferred on diskette (Word- or ASCII-format) or by e-mail if possible.



A PRIORITAIRE
PAR AVION



NINA • NIKU
STIFTELSEN FOR NATURFORSKNING
OG KULTURMINNEFORSKNING