PINO GUIDI - TULLIO TOMMASINI

SPELEOLOGICAL SURVEYS IN IRAN
YEARS 1976 - 1977

TRIESTE 1977

Commissione Grotte "Eugenio Boegan"
della Società Alpina delle Giulie - Sezione
di Trieste del Club Alpino Italiano

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I N D E X

I N T R O D U C T I O N

A) On collaboration

The comparative analysis of different carbonatic zones appears to be of extreme importance in the studies of different karstic phenomena. This is included in the tasks that, since many years, the "Commissione Grotte Eugenio Boegan" of the "Società Alpina delle Giulie", Trieste Section of the Italian Alpine Club (C.A.I.), has undertaken and which led it to develop its researches in almost all Italian karstic zones. The very frequent exchange of specialized publications with explorers of other Countries allowed, even though in an indirect way, to come to know karstic phenomenologies typical of other Regions, so far European ones mainly. Up today we nevertheless lack satisfactory information on how karstism has evolved in very vast areas of the world, of Asia in particular.

To make up for such a want of information, at least partially, the "Commissione Grotte Eugenio Boegan", after a series of preliminary studies, deemed it advisable to turn its attention to the karstic territories of Iran.

Several factors suggested such a choice:

a) - geographical factors. The vastness of the Nation and the particular geological conformation of its territory; its latitude, its altitude and its climate, which are remarkably different from the European ones;

b) - human factors. Good friendly relations tying Italy and Iran; the certainity to find, in a culturally advanced Nation

such as Iran, an immediate understanding of the problems related to karstic research, both at Government and at Scientific Institutions level. Last, the fact that some members of the "Commissione Grotte" went - and are still going - to Iran for study and business purposes.

As a matter of fact, a first, immediate response has been given by the "Iranian Department of the Environment". After a series of epistolary contacts in 1975, a rough program of cooperation was agreed upon in 1976 to be carried out in the territories comprised in the numerous Parks and Reserves under the administration of the same "Department".

It was decided that such researches would be carried out in cooperation by the "Commissione Grotte Eugenio Boegan" and the "Department of the Environment", each one for the part of its competence, and that the results would be filed at the Department's archives. Such a cooperation underwent a further development with the coming in Italy, as a guest of the "Commissione Grotte", of an executive of the "Department", mr. Mohammed Farjadi, who was thus able to observe the karstic zones near Trieste personally, focusing his attention most of all on the keeping and functioning of the Regional Caves Cadastre (a general file of the caves in the Region).

B) Zones and limits of interest(Cadastre-Folklore-Prehistory)

The aim of this research is not so much to find isolated deep karstic phenomena, abysses to be explored and studied apart from their geographical and morphological con-

text, as to fathom the speleologic potentiality of an enormous and ancient Country such as Iran, which is provided with doubtless resourches.

To reach this aim it was deemed advisable, in agreement with the "Department", to start the explorations in the Parks and Reserves under the Department's protection, being favoured by the possibility to use the logistic bases existing there (Rangers'Barraks, Guest Hauses, Guides,etc.). This way of proceeding would have allowed a deep knowledge of the geographical environment of the Parks, giving the opportunity to lay the foundations for a Cadastre of the Caves (general file of caves) which - being devided Region by Region - would have permitted to keep data of all caves existing in Iran.

As a matter of fact, although the immediate interest is directed to the physical environment of the Parks, in a future perspective a widening of the research to all Iranian karstic zones may be foreseen, in order to furnish the Authorities with an instrument apt to define, with great precision, the consistency of the speleologic patrimony that could be exploited at the tourist level (caves equipped for visits by tourists), scientific (archeological,paleontological, biological, phisical etc) level, economic level (exploiting of phosphatic deposits, guano, alabaster deposits and underground waters), medical level (thermal caves, caves used for the cure of asthmatic diseases etc.) and, last but not least, military level (building of shelters and deposits). In this way it can also be explained why caves outside the borders of the Parks have been examined during the research campaigns of 1976-1977.

The research carried out is not only limited , therefore, to pure exploration and cartography of the caves under examination, but also tries to gather, for each of them, all information about folklore (legends and customs connected with the caves), about possible prehistoric settlements, etc., without of course omitting the study of the terrain into which they open.

To rationalize future research it was deemed necessary to classify known natural caves in an internationally used system of abbreviations and numbers, according to the region in which the caves occur. For Iran, after an agreement with the Department's executive appointed for the cooperation, the following abbreviations have been proposed:

Azarbaijan Est ..... Ae
Azarbaijan West .... Aw
Baluchestan ..... Bn
Busher ..... Br
Chahar Mal - e
Bakhtiari ..... Cm
Central Province ... Cp
Esfahan ..... En
Fars ..... Fs
Gilan ..... Gn
Hamadan ..... Hn
Ilam ..... Im
Kermanshahan ..... Ke
Khuzestan ..... Kh
Khorasan ..... Kn
Kohkiluyeh ..... Kl
Kordestan ..... Ko
Kerman ..... Kr
Luristan ..... Ln
Mazandaran ..... Mn
Semnan ..... Sn
Saheli ..... Si
Yazd ..... Yd
Zanjan ..... Zn

C) 1976 - 1977 Surveys

Up to now, two research campaigns have been carried out: one in 1976 (April-May), during which two members of the "Commissione Grotte" briefly visited the Mohammad Reza Shah National Park (three caves were surveyed - see "Report of the 1976 Speleological Survey to Iran") and one in 1977 (May 22 - June 4) in which three men of the "Commissione Grotte" and one expert of the "Department" took part. During the second survey four Parks were visited in a rather short time (Jahan Nema Protected Region - Mohammed Reza Shah National Park - Khosh Yeilagh Wildlife Refuge - Parvar Protected Area), and 26 caves in all were explored and cartographed.

At the end of the 1977 survey, a first report was drafted ("Preliminary Report on the Second Speleological Survey in Iran - Tehran 4.6.1977") and handed to the Department Management.

REPORT ON THE SURVEYS

A) Jahan Nema Protected Region

It comprises 30.650 hectars of mountains and hills covered with forests and steppe and partly formed by carbonatic rocks. The climatic influence of the Caspian Sea causes plentiful rainfalls, with abundance of running waters in the form of springs, torrents and rivers. Such an abundance of water might have given origin to interesting phenomena, in both superficial and underground systems: the lack of a detailed geological map of the area did not allow, however, to choose the most interesting zone to be directly surveyed beforehand.

In the two days's presence in the area, it has been only possible to examine the part of the valley in which the Zeyarat torrent runs: this valley was covered for about three kms from Zeyarat village up to the point where it bifurcates, taking the name of Tub Band valley on the orographic left and of Ab Shar valley on the right, as well as the part (less than 1 km) of the Giuldareh valley, which runs on the orographic right of the Zeyarat torrent, just after the village.

The territory seems to have undergone a rather intense alluvial activity; this fact is confirmed by the great terracing which can be seen along the Zeyarat torrent which, right in front of the village, has excavated its present bed by digging into a bank of conglomerates more than 30 mts thick. The conglomerates are cemented by a calcitic substance

JAHAN NEMA PROTECTED REGION - THE BANK OF CONGLOMERATES IN FRONT OF ZEYARAT

mixed with extremely fine-grained yellowish clay which makes them rather unstable and crumbly.

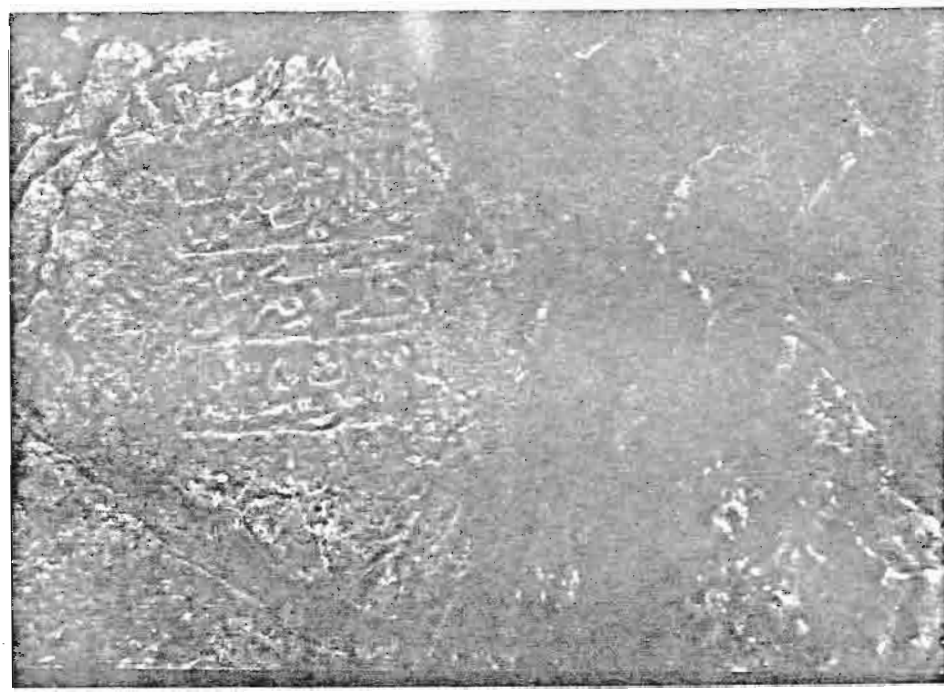
Thermal water springs at the foot of the conglomerate sequence, at the torrent bank level; three mouths of the spring were noted. The ruins of a public bath witness that time ago the spring was used by the Zeyarat inhabitants; such a circumstance is confirmed by a memorial stone ingraved in the rock and indicating a date.

The rocks in the Zeyarat valley belong to a complex of limestones and dolomites, partially brecciated; some guide fossils let us date these carbonatic facies back to Oligocene-Miocene (Caenozoic Era). Generally, the carbonatites examined appear to be rather impure, rich in insoluble residuates. This helped to avoid the formation of a typical surface karstic countryside of pure limestone; on the crest , as watershed between the Zeyarat and Giuldareh valleys (brecciated limestone), some limited erosion furrows and other remarkable erosional features were noted.

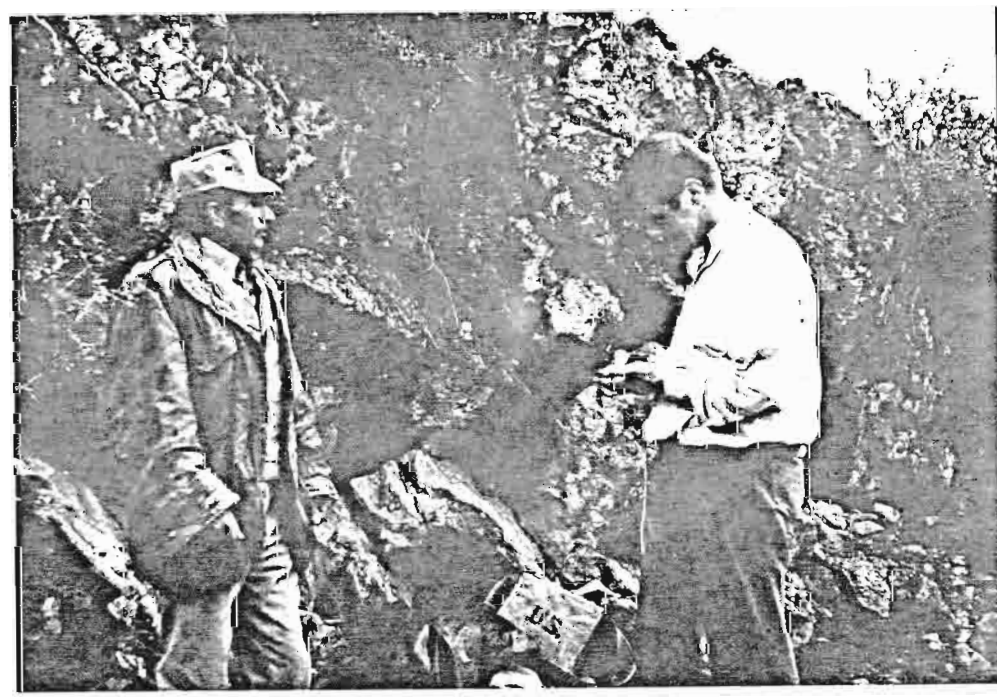
Somewhere the rocks, when anteropping in vertical cliffs, are pitted by round holes of small dimensions and by vertical funnels; this phenomenon does not cover, however, a very great extent. A large detrital cover has, on the contrary, concealed all possible surface karstic forms in the peneplained part of the area.

The presence of very fine clay, equal to the one present in the conglomerates and to be considered a residuate of the valley's rocks, can be noted everywhere in the ground and/or soil.

Underground karstic phenomena are present in an



JAHAN NEMA PROTECTED REGION - INGRAVED STONE NEAR THE TERMAL WATER-SPRING IN FRONT OF ZEYARAT



JAHAN NEMA PROTECTED REGION - LIMESTONE BANKS OUTCROPPING ON THE HILL IN FRONT OF ZEYARAT

equally modest way. The two small caves in the Giuldareh valley are to be considered among the "para-karstic" phenomena, while the small galleries on the left of Zeyarat torrent, even though typically karstic, belong to a very limited local phenomenon.

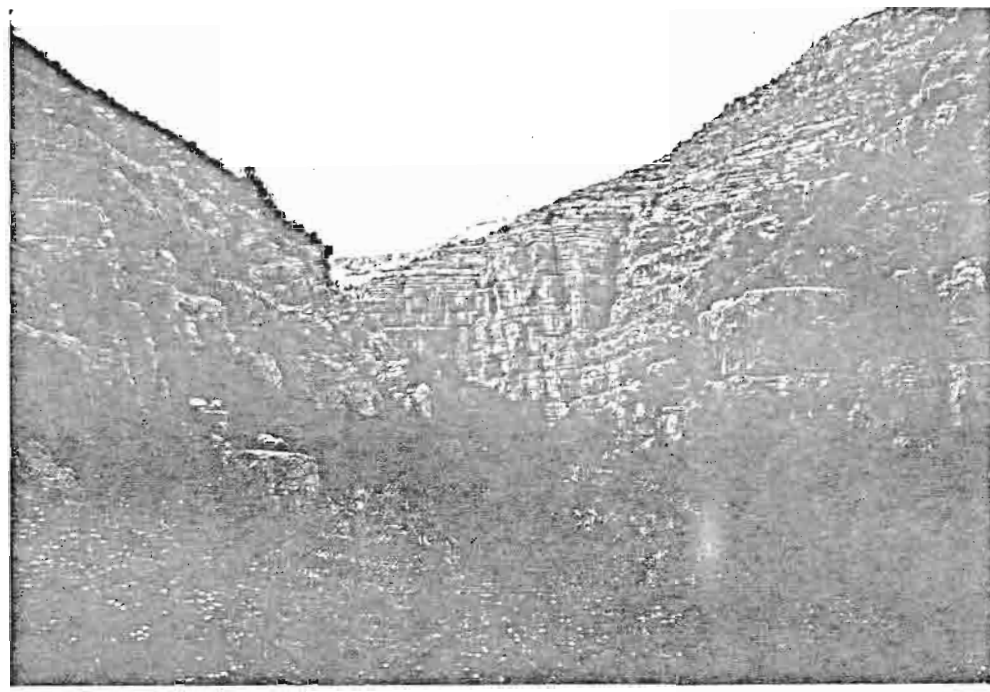
B)Mohammad Reza Shah National Park

It covers 125.895 hectares of mountains, hills and valleys where the vegetation varies from the forest to the steppe and the semi-desert. The main structure of the Park is represented by a mountainous hill-back, the extreme eastern part of the Albourz chain. It is made up of rocks of varying age and composition, among which the carbonatic facies predominate.

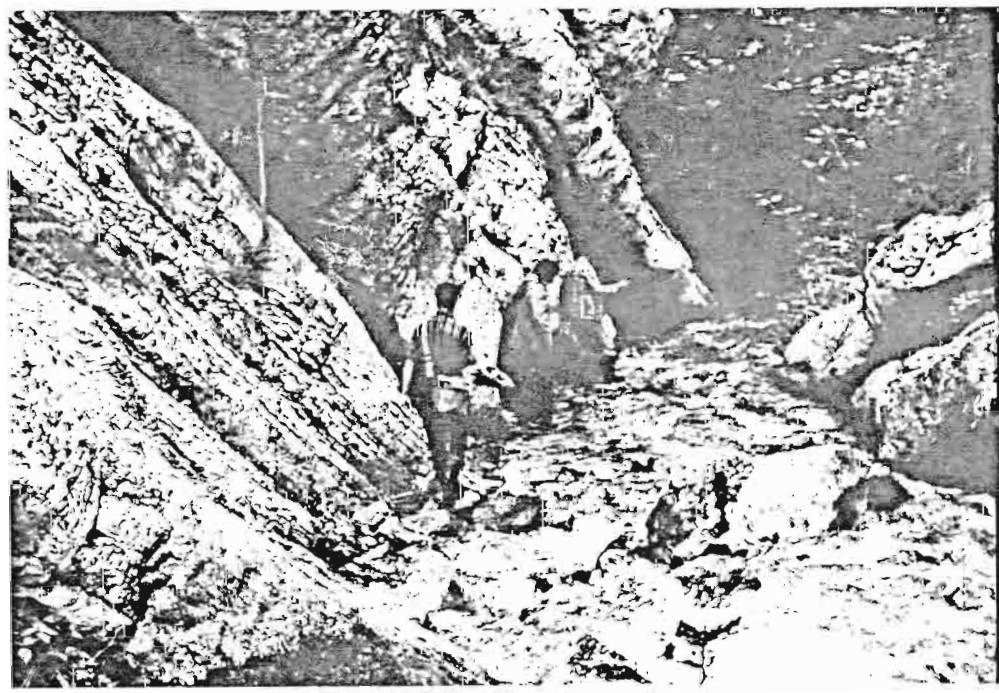
The two days spent on such a vast area were not sufficient to estimate the nature of the carbonatic rocks of the Park adequately; the more so, because of the lack of a geological map on which to base observations.

A thick formation of Cretaceous limestone, through ly devoid of surface karstic phenomena, was noted near the Tanghe Gol Rangers' Base, in the southern area of the Park; it is dug by a few small torrents which flow into the main valley by means of very pictoresque water-falls. One of these small torrents was followed for a considerable part of its course in the limestone terrain, and no loss of water was observed during its flow. The bed of such a torrent appears abundantly encrusted with a veil of reddish calcitic material, and this fact demonstrates a remarkable hardness of the water.

MOHAMMED REZA SHAH NATIONAL PARK -
WATERFALL NEAR THE TANGHE GOL RANGERS'
BASE



MOHAMMED REZA SHAH NATIONAL PARK - THE ZORE GENDAN VALLEY



MOHAMMED REZA SHAH NATIONAL PARK - DESCENDING THE TORRENT IN THE ZORE GENDAN VALLEY

MOHAMMED REZA SHAH NATIONAL PARK - THE LEDGE ON WHICH THE GHAR-E DO DARE ZORE GENDAN OPENS

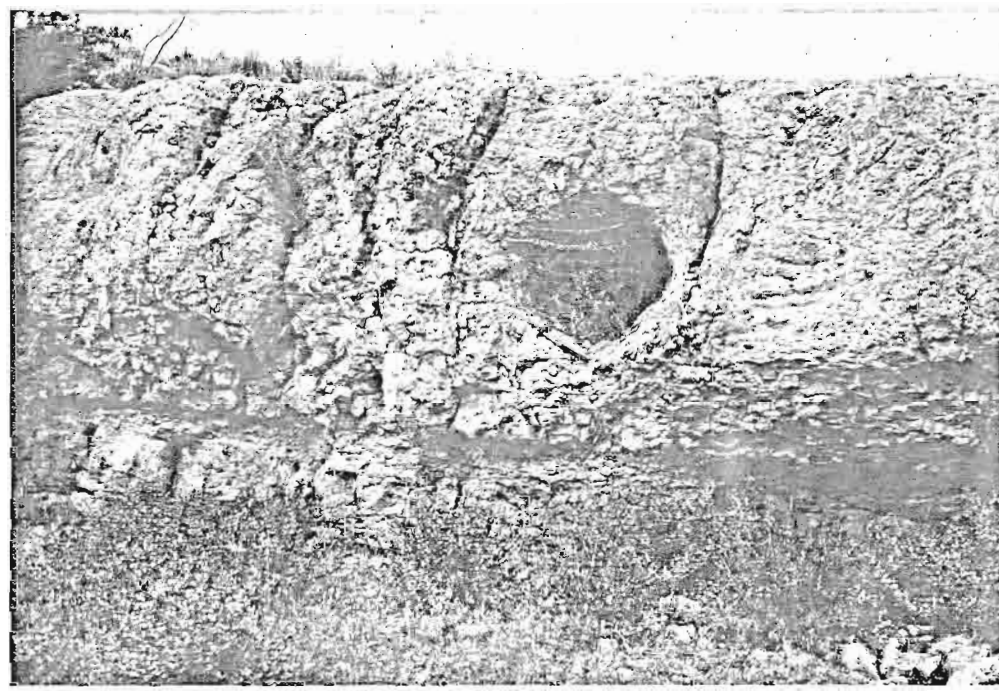
MOHAMMED REZA SHAH NATIONAL PARK - A ROCK-SHELTER IN THE LIMESTONE LAYERS IN THE ZORE GENDAN VALLEY

The river course looks like a karstic gorge only close to the water-fall.

In the vicinity of the village of Kastan, at the north-eastern boundary of the Park, the Zore Gendan valley , formed in carbonatic rocks (dolomitic limestones ?), was surveyed along the water-rich torrent up to a karstic spring with very clear water. In that area, too, the surface karstic phenomena are missing, and the only real cave which was found (Ghar-e Do Dare Zore Gendan) appears atypical in its genesis. However, the rocks, which are rather impure and deeply ochra-coloured, are intensely fractured.

Along the track leading to the village of Kastan, beyond the Park border, a karstic zone worth of a deeper investigation was noted: some rather pure limestone outcrops are present, and some "closed valleys" and signs of "dolina" development with red soil (terra rossa) were noticed along with some brooks which suggest the presence of water-springs.

The banks of sandstone outcropping at Sohl-e Gard, in the central area of the Park, appear to have outstanding speleologic interest. This is a series of hard layers, each about 50 cms thick, intercalated with more markedly arenaceous layers, which are totally broken at the surface. The banks gave origin to a series of caves of limited size but worth of accurate study since they are placed in the sandstones. In the outcrops the banks are now presenting small grooves and small corrosion basins. In the neighbourhood of the caves a flat-bottomed dolina was found, the only one observed during the 1977 survey. Only the North side of the dolina presents a rocky vertical cliff, in which a dissolution



MOHAMMED REZA SHAH NATIONAL PARK - THE DISSOLUTION HOLE IN THE "DOLINA" BY SOHL-E GARD

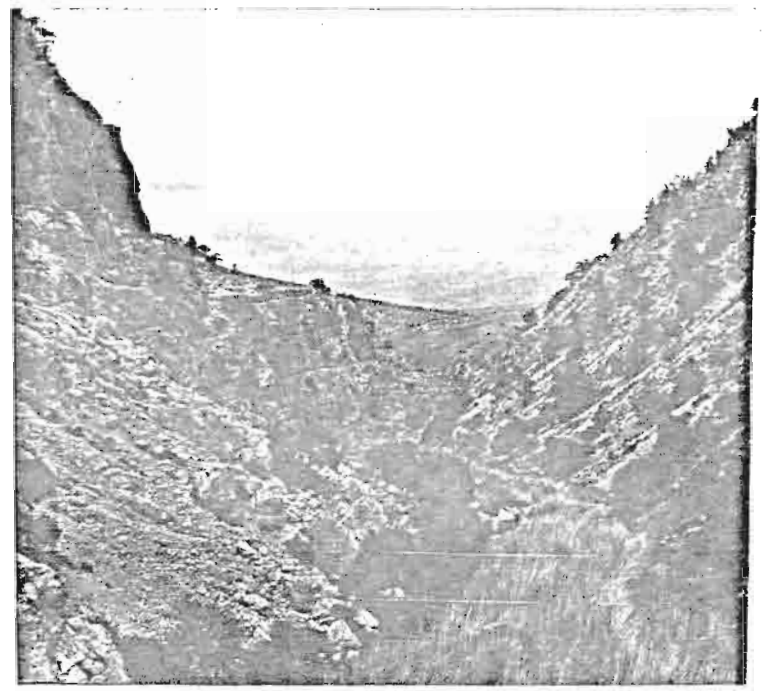
hole, almost 1 mt in diameter, is present.

Not far from Sohl-e Gard, the Dagar Manly valley, which was surveyed along about 1 km, appears to have been dug into a remarkable series of carbonatic banks (dolomitic limestones ?), which dip towards the river bed on the orographic right side, and away from it on the left side.

At the time of the survey the valley was dry; possibly a torrent flows in periods of heavy rainfalls only. The stratification looks rather thick (from 1 to several mts) and the rock is an impure and ochra-coloured limestone. The right orographic side is less interesting, as far as karstism is concerned, as it is covered by debris where some cliffs with small caves and holes of little interest can be seen.The left orographic side, on the contrary, is made up of a vertical cliff some 30 mts high, in the midst of which there is a wide and comfortable ledge. The valley is aligned along a system of fractures with a ENE-WNW orientation; very neat vertical joints, normal to the valley axis, can be noted (SSE-NNW). Where these joints cross the bedding planes, some very marked holes, which testify a water running level, can be seen; in some cases these holes reach remarkable dimensions (Cave I in the Dagar Manly valley). At the far borders of the valley the outcrops show some very small grooves.

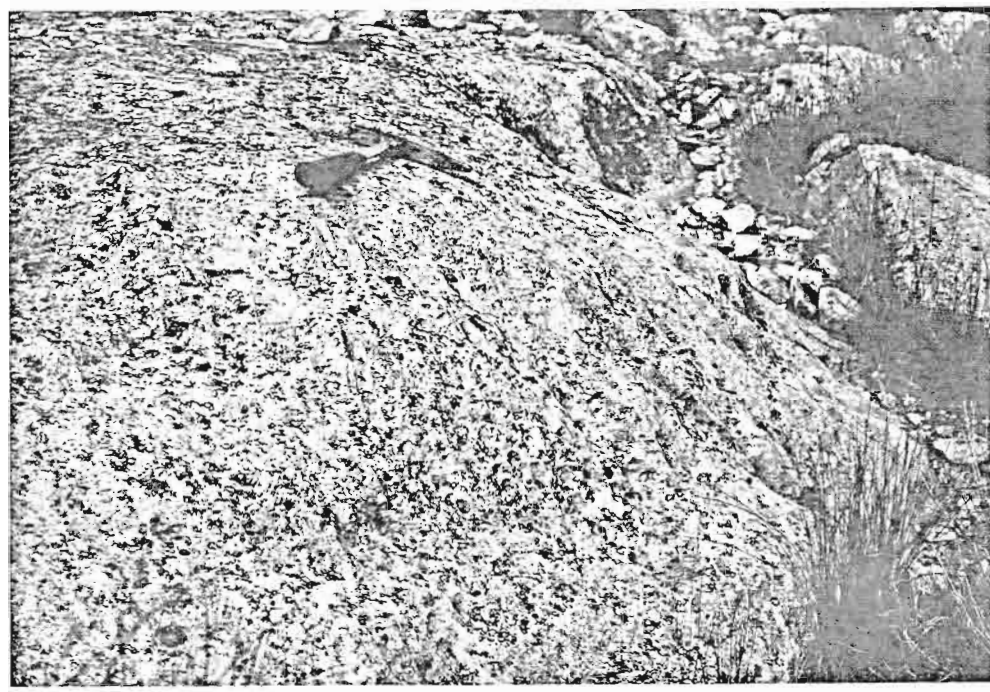
In several areas of the Park a number of small hills made of carbonatic rocks, intensely cariated by weather, with very small caves and dissolution holes with no apparent oreder were noted. This phenomenon can always be noted where impure outcrops with indistinct stratification are present.

As previously pointed out, the survey, made in



MOHAMMED REZA SHAH NATIONAL PARK - THE DAGAR MANLY VALLEY

MOHAMMED REZA SHAH NATIONAL PARK - THE LEFT OROGRAPHIC FLANK OF THE DAGAR MANLY VALLEY



MOHAMMED REZA SHAH NATIONAL PARK - CORROSION GROOVES ON THE LIMESTONE OUTCROPPING ON THE BORDERS OF THE DAGAR MANLY VALLEY

different areas of the Park, situated at remarkable distance from one another, were not sufficient to allow a reliable estimate of the karstic phenomena extent. On the grounds of the few observations made, and with due reservations for further verification, the Park may be divided, from a speleological point of view, in four different areas:

1) - Western area: It is the part of the Park which is more affected by the warm and humid influx of the Caspian sea and is therefore covered with forests. From close inspection of the available map, it seems to be the part with the most complex hydrography and clearly the strong run off might have given origin to karstic phenomena, even grat ones.

2) - Eastern area, Southern side: It is the most arid part of the Park and it is comprised between its southern border and the drainage divide. The valleys appear largely filled with alluvial sediments; "cariated outcrops" can be found rather frequently. Springs are not numerous, also because of the layers attitude (the whole area of the Park seems to be built in a monoclinalic structure, dipping roughly towards the North). Only an accurate survey might give further useful information.

3) - Central highlands of the Oriental part: They are a series of valleys, small and big ones, on the north side of the main drainage divide, which originated in limestone and sandstone terrain, extensively covered by alluvial sediments. Some flat-bottomed closed valleys were noted, where the alluvium and/or the impermeability of the rocks favoured the collection of waters flowing from small springs which, therefore, are to be found at rather high altitudes. Some of these valleys are inhabited by shepherds and their flocks and herds. There also

are a series of "concatenated" valleys, typical of the mountainous karstic countryside.

This part of the Park should be intensely studied because of its hydrology (springs and sinks) and because of the possibility to locate some points of more marked water collection which could lead to the discovery of deep caves.

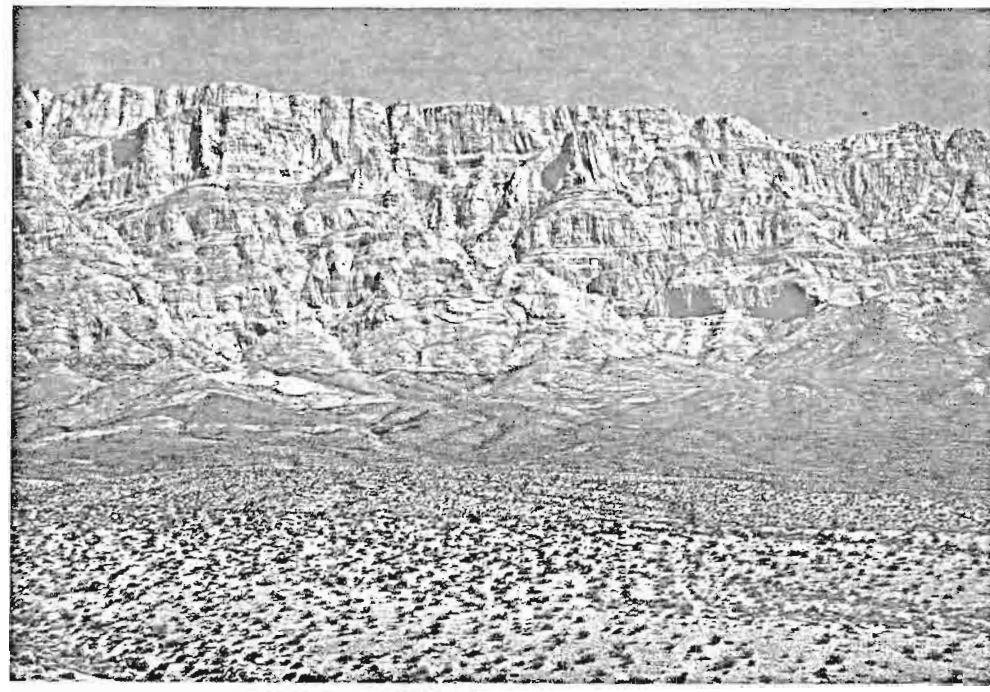
4 - Oriental part, Western side: It is, perhaps, the most interesting part from the speleologic point of view, as it is rich with water-springs in carbonatic rocks. These waters are due to rains and capillary humidity and made their way underground in the upper part of the Park. Therefore it would be rewarding to try to locate the connections and the channel ways of such waters. Some springs might even turn out to be apt to exploration for a longer stretch than has been done so far.

Due to the vasteness and complexity of the territory, an accurate study of the Park would take a long period of work in the area.

C) Khosh Yeilagh Wildlife Refuge

It is formed by 166.880 hectares of mountains, hills and highlands, which are semi-desert in the South, with steppe in the centre, and forests in the North.

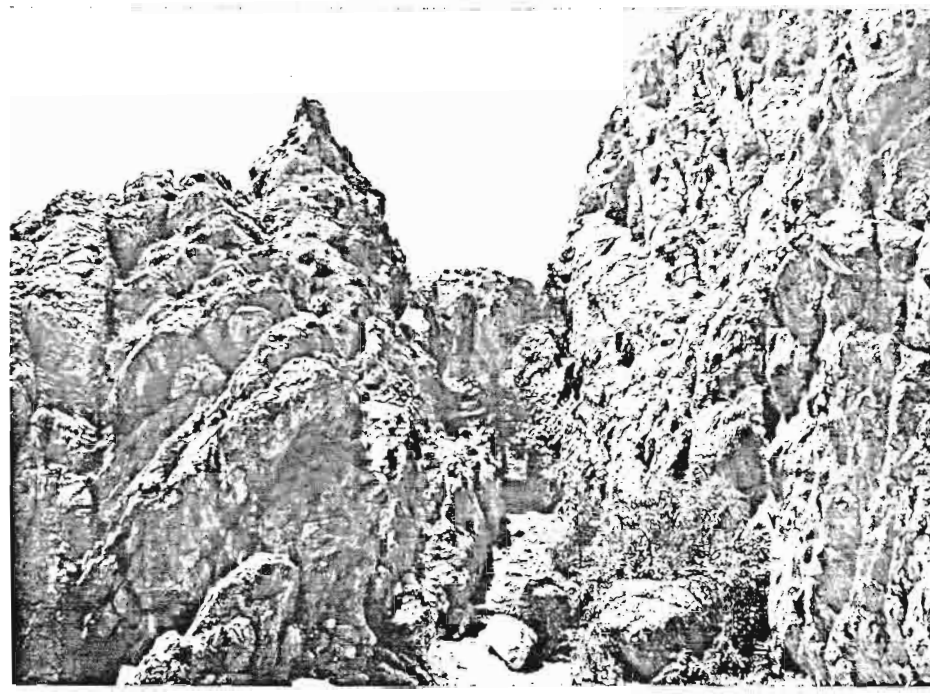
The northernmost part of the Park seems to be made, for its major part, of sandstone and marly rocks, so that it leaves very little space to karstic phenomena. Even the cave by Til Abad village, the only example we were able to find in this area, has little to do with the typical



KHOSH YEILAGH WILDLIFE REFUGE - THE RYSO CHAIN

KHOSH YEILAGH WILDLIFE REFUGE - ON THE KAFAR GALEH

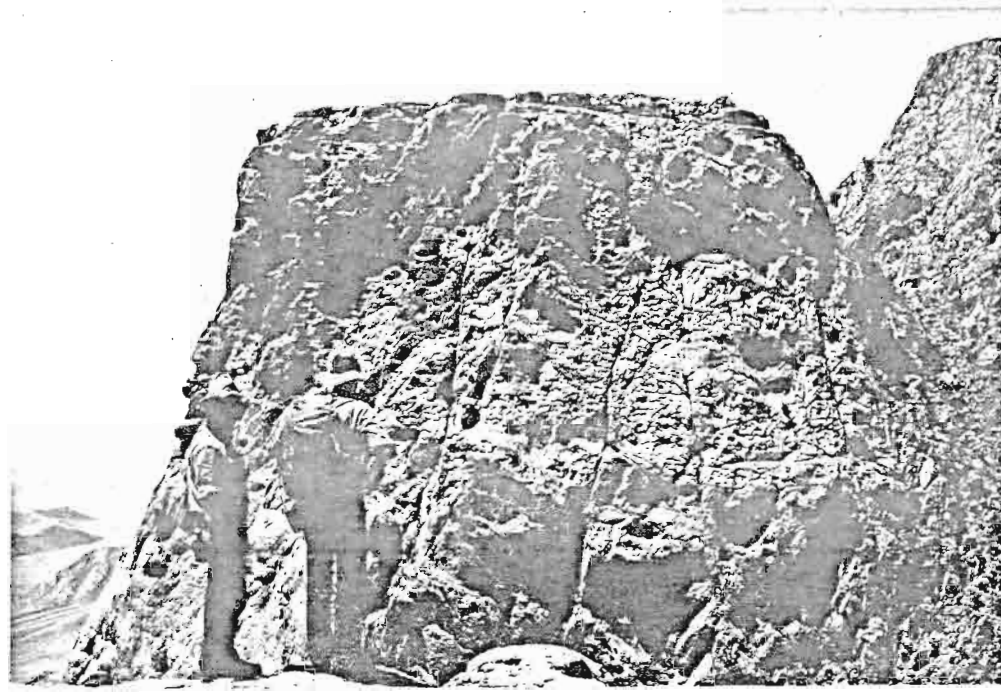
KHOSH YEILAGH WILDLIFE REFUGE - CANYON ON THE KAFAR GALEH



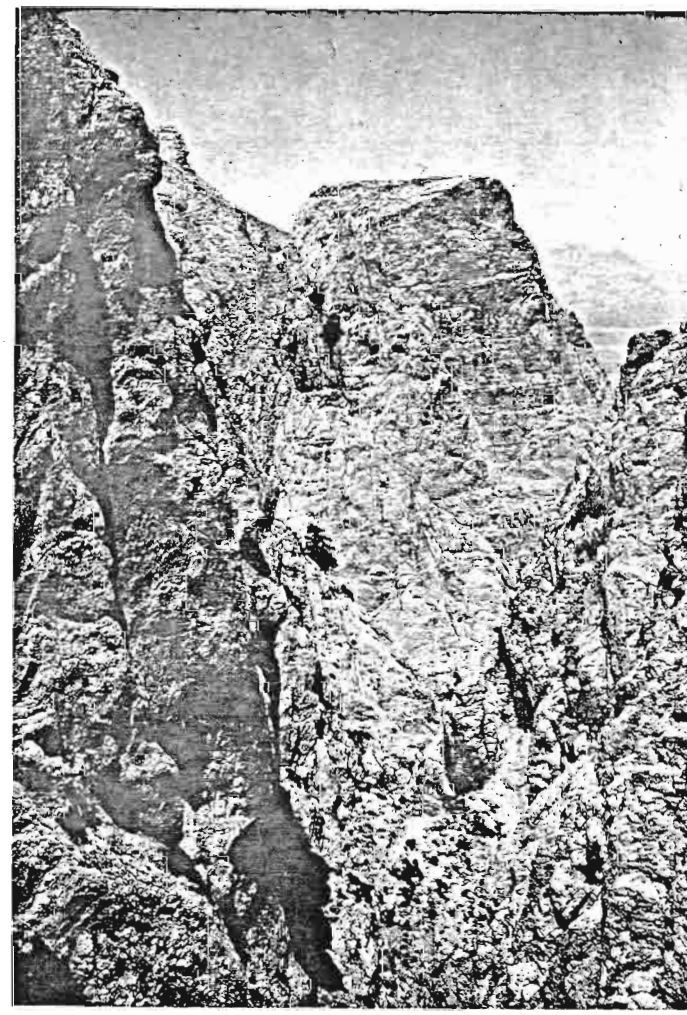
KHOSH YEILAGH WILDLIFE REFUGE - THE E-W ORIENTED FAULT ON THE KAFAR GALEH

KHOSH YEILAGH WILDLIFE REFUGE - E-W ORIENTED
FAULTS ON THE KAFAR GALEH MOUNT

KHOSH YEILAGH WILDLIFE REFUGE - VIEW FROM THE KAFAR GALEH



KHOSH YEILAGH WILDLIFE REFUGE - THE KAFAR GALEH FROM EAST



KHOSH YEILAGH WILDLIFE REFUGE - THE KAFAR GALEH FROM WEST

genesis of a karstic cave, being due to the enlargement of the interface between two limestone layers.

The central and southern part of the Park consists of a series of mountain ranges made of carbonatic rocks, broken by wide alluvial valleys. The only one of these ranges which has been visited (on the South-eastern side only) is the Kafar Galeh, 15 kms to ENE from the Rangers' base of Beh Chesmeh. The rock, horizontally stratified, is deeply marked by two sets of faults normal to each other, N-S and E-W: this fact gave origin to a characteristic series of isolated rock-towers. No appreciable karstic form were noted at the surface, while, on the contrary, several karstic cavities were found, all of them set along the main fractures, together with a water-spring at a rather high elevation on the mountain.

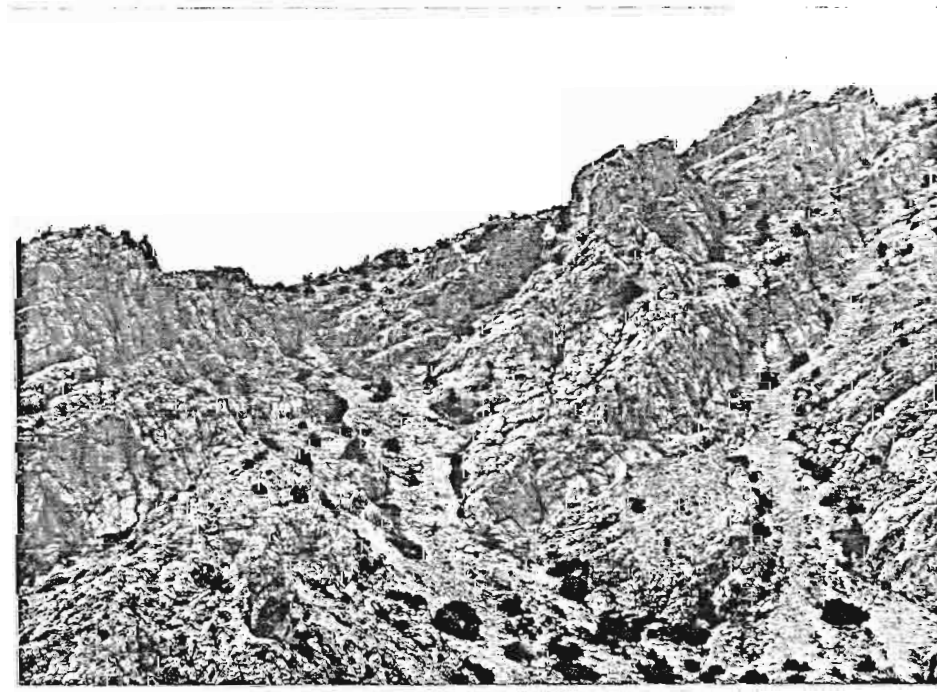
A better determination of the karstic phenomena in the area would be necessary, but previously it would be better to carry out an accurate survey of all the limestone mountains. This would take a rather long time, because of the difficulty to reach the base of the mountains by foot, since motorable tracks are lacking. Also, a lot of time would be required to climb cliffs, which often needs use of artificial aids (ropes, nails, etc.).

D) Parvar Protected Area

The Park is made of 59.840 hectares of mountains and hills, with steppes and forests; carbonatic rocks are widespread.

Also for this Protected Area, the lack of geologic

PARVAR PROTECTED AREA - DOLOMITIC LIMESTONES
IN THE KHARAB RAJEH VALLEY



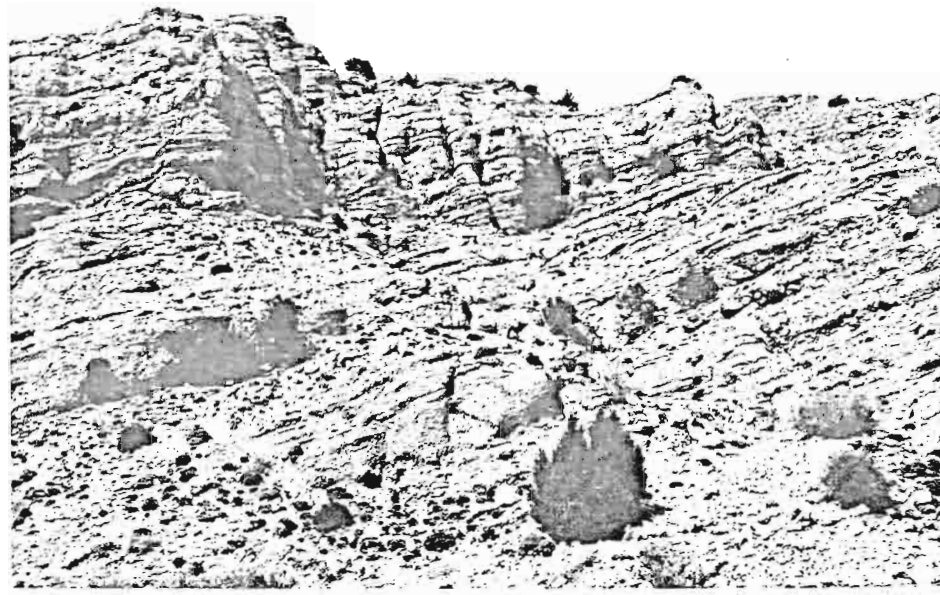
PARVAR PROTECTED AREA - RIGHT CLIFF ON THE SAR TANGHEH
VALLEY NEAR PARVAR

maps hindered the choice of the areas to be visited. Therefore it was necessary to rely on the local Rangers' knowledge of the area.

Kharab Rajeh valley, in the central-eastern part of the Park, has been visited. Here the only surface karstic phenomena were shown by a short crest of dolomitic limestone with pictoresque signs of erosion in the form of slender pinnacles, some of which are even 2 mt high.

More attention was given to the valley which from the Rangers' Station of Sar Tangheh leads to the village of Parvar. This valley opened in dolomitic rocks and is very pictoresque because of the occurrence of vertical cliffs and of a beautiful torrent running along it. The rocks are almost everywhere rich with decay features, which are rather common in dolomitic rocks; only in the extreme part of the valley, on the right cliff, before reaching the plain where the Parvar village is situated, numerous caves of various size were found. Very few traces of karstism are present on the terrain surface.

An area built by conglomerate banks in the western part of the Park turned out to be very interesting. It is a valley in a conglomerate bank (upper Tertiary ?) made of coarse limestone clastic fragments tied rather firmly by a calcitic cement, with signs of layering and very well marked vertical fractures, along which very interesting karstic forms are present: several small caves and a temporary spring on a small vertical cliff through a wide circular hole, and a pit, very deep in the past, according to our Guides, but nowadays limited to a few meters' funnel (7 - 8 mts) because of substantial infillings.



PARVAR PROTECTED AREA - THE CONGLOMERATE BANKS IN THE WESTERN PART OF THE AREA

PARVAR PROTECTED AREA - THE TEMPORARY SPRING IN THE CONGLOMERATE BANKS

E) Beyond the Parks boundaries

While the observations on karstism made within the Parks were cursory because of the lack of time and of geological maps, those made outside the Parks limits were even more hastened by necessity. On the other hand, as previously said, the purpose of these first surveys was to locate the possibilities for studies of karstism in a number of areas as high as possible, therefore neglecting a detailed examination of single areas, which might be carried out more profitably later on.

The two areas visited outside the Parks limits were the Rud-e-Sar-e Mojem valley, near the village of Tash Payn (Shahrud) and the area where the Ghar-e Darband cave is placed, near Sang Sar (Semnan).

The morphologies of the visited caves in the Rud-e-Sar-e Mojem valley are described elsewhere. A hill made of dolomitic limestones was seen near the caves; there the rock is very decayed and, in correspondence of a vertical cliff, many corrosion grooves were noted.

The carbonatic bank in which the Ghar-e Darband cave is placed is very impressing. This bank is so wide as to be worth of further researches. During the quick visit to this area no other karsic phenomenon was noted.

RUD-E-SAR-E MOJEM VALLEY (SHAHRUD) - CORROSION HOLE
ON DOLOMITIC LIMESTONE

C O N C L U S I O N S

A) Summing up of the field work

During the two surveys twentinine caves (mostly horizontal) were visited and classified, and then inserted in the Cadastre put at disposition of the "Department" (see enclosed dossiers), and grouped in three Regions in the following order:

Khorasan

1 Kn - Cave to the N of Kuh-e Ghorkhod, long. 56° 29' 51" lat. 37° 29' 55"

Mazanderan

1 Mn - Cave to the W of Dasht, long. 55° 55' 26" lat. 37° 18' 53";

2 Mn - Soli Gorbakh (Spring of Soli Gorbakh), long. 56° 21' 04" lat. 37° 26' 39";

3 Mn - Ab Shar (Waterfall's Spring), long.56° 35' 06" lat. 37° 25' 53", above sea level mts 1360;

4 Mn - First Small Cave by Sohl-e Gard, long. 56° 07' 52" lat. 37° 27' 18", a.s.l. mts 1100;

5 Mn - Second Small Cave by Sohl-e Gard, long. 56° 07' 45" lat. 37° 27' 23", a.s.l. mts 1105;

6 Mn - Small Cave in the Dagar Manly valley, long. 56° 08' 35" lat. 37° 25' 22", a.s.l. mts 1215;

7 Mn - Ghar-e Dagar Manly (Cave in the Water-mill valley), long. 56° 08' 31" lat. 37° 25' 22", a.s.l. mts 1220;

8 Mn - Ghar-e do Dare Zore Gendan (Two Entrances Cave in the Devils'valley), long. 56° 24' 21" lat. 37° 28'

33", a.s.l. mts 1290;

9 Mn - Small Cave in the Devils' valley, long.56° 24' 19" lat. 37° 28' 36", a.s.l. mts 1240;

10 Mn - First Small Cave in the Giuldareh Valley, long. 54° 28' 58" lat. 36° 42' 15", a.s.l. mts 1030;

11 Mn - Small Cave in front of Zeyarat, long. 54° 28' 47" lat. 36° 42' 23", a.s.l. mts 1020;

12 Mn - Second Small Cave in the Giuldareh Valley, long.54° 28' 54" lat. 36° 42' 30", a.s.l. mts 1000;

13 Mn - First Small Gallery on the left bank of the Zeyarat Torrent, long. 54° 27' 49" lat. 36° 41' 18", a.s.l. mts 1130;

14 Mn - Second Small Gallery on the left bank of the Zeyarat Torrent, long. 54° 27' 49" lat. 36° 41' 49", a.s.l. mts 1130;

Semnan

1 Sn - Chah-e Kharab Rajeh (Well in the Destroyed Valley), long. 53° 34' 10" lat. 36° 02' 45", a.s.l. mts 2110;

2 Sn - Ghar-e Palanghe (First Leopard's Cave), long. 53° 29' 19" lat.35° 59' 33", a.s.l. mts 1835;

3 Sn - Ghar-e Palanghe (Second Leopard's Cave), long. 53° 29' 21" lat. 35° 59' 30", a.s.l. mts 1940;

4 Sn - Ghar-e Palanghe (Third Leopard's Cave), long. 53° 29' 25"lat. 35° 59' 32", a.s.l. mts. 1950;

5 Sn - First Cave to the SE of Parvar, long. 53° 29' 27" lat. 35° 59' 25", a.s.l. mts 2000;

6 Sn - Second Cave to the SE of Parvar, long. 53° 29' 22" lat. 35° 59' 22", a.s.l. mts 1850;

7 Sn - Ghar-e Dar Band, 1500 mts to the S of Sang-i Sar Village, a.s.l. mts 1910;

8 Sn - Cave by Til Abad, long. 55° 26' 48" lat. 36° 54' 16", a.s.l. mts 800;

9 Sn - Ghar-e Kabudi (Blue Cave), long. 55° 29' 08" lat. 36° 40' 38", a.s.l. mts. 1200;

10 Sn - Ghar-e Kafar Galeh (Cave of the Infidels' Castle), long. 55° 32' 00" lat. 36° 43' 35", a.s.l. mts.1780;

11 Sn - Cave on the Kafar Galeh Mountain, long. 55° 32' 32" lat. 36° 43' 02", a.s.l. mts 1680;

12 Sn - Ghar-e Sar Chesmeh Syah Dareh (Cave over the Spring in the Black Valley), 2950 mts to the S of Tash Payn Village, a.s.l. mts 2040;

13 Sn - Ghar-e Syah Dareh Mojen-o Tash (First Cave in the Black Valley by Mojen-o Tash), 3000 mts to the S of Tash Payn Village, a.s.l. mts 2000;

14 Sn - Ghar-e Syah Dareh Mojen-o Tash (Second Cave in the Black Valley by Mojen-o Tash), 3000 mts to the S of Tash Payn Village, a.s.l. mts 2000.

For completeness of information a list follows of the caves seen but not visited, or for which some information was obtained but which were not visited for lack of time.

Mazanderan

Deeve Chah. They are two pits, not very far from one another, very deep and situated South of the Jahan Nema Protected Region, some 60 kms North of Shahrud (Shahrud - Charbagh road).

Small gallery in the Dagar Manly valley, in front of cave 7 Mn.

Cavern West of the Service Station located between Dasht and Chaman Bid villages, at the foot of a big rock some 50 mts from the road leading to Mashhad, from where it is visible.

Chah-e Sardo Garm. It is found in the Mohammad Reza Shah National Park, in the neighbourhood of the village of Bidak, close to a track-road. Local people know it as a place which lets out a warm draft in the winter and a cold one in the summer.

Ghar-e Kamar Mashah, also situated in the Southern part of the Mohammad Reza Shah National Park. It is known to some inhabitants of the village of Dasht.

Chah-e Bagandil Kuh-e Neshin. It is located South of the Mohammad Reza Shah National Park, as the two previous caves. It begins with a little downward slope of 3-4 mts and then continues with galleries adorned with stalactites and stalagmites. It is known to the inhabitants of Dasht.

Khorasan

Horizontal cave in the mountain ridge NE of the Kuh-e Ghorkhood, which was explored for some hundred mts by dr. Herrington.

Semnan

Ghar-e Palanghe. In the Khosh Yeilagh Wildlife Refuge, located NE of the Kuh-e Kalandar Sar (35 kms NE of the Rangers Station of Beh-Chesmeh).

Ghar-e Ryso, in the Ryso mountains, 10 kms NE of Beh Chesmeh.

Ghar-e Sang-e Sourakh, located in the NE of the Khosh Yeilagh

Wildlife Refuge.

Cave I on the Kuh-e Kafar Galeh (Khosh Yeilagh Wildlife Refuge), about one hundred meters before the 11 Sn.

Cave II on the Kuh-e Kafar Galeh, near the previous cave. Both can be reached only by means of a difficult climb.

Small pit (6-8 mts) on the Kuh-e Kafar Galeh, on a ledge some 50 mts West of the 10 Sn.

Cave about 6-8 mts long in the small valley of Sar Tangheh (Parvar Protected Area), South of the group of visited caves.

Caves (two entrances) between the Cave III of the Leopard and Cave I South of Parvar.

No notice is given of numerous reports made in the Parvar Protected Area, as they seem to refer to rock-shelters only a few meters wide, and therefore not apt to be inserted in the Cadastre.

Besides the physical data of the caves, put in evidence in the Cadastre's files, we tried to pick up information on the prehistoric period and on the local folklore in every place.

Prehistoric period.

We did not find any paletnologic material of shure prehistoric origin. First of all it should be kept in mind that this was not the main purpose of the survey, anyway some pieces of fictile artifacts, undoubtedly non-contemporary, were found in various places, such as:

First station in the open by Zeyarat (hill-back East of the village), place known to the valley dwellers as seat of a very big town inhabited by a vanished people.

Second station in the open by Zeyarat (series of small caves in the conglomerate, north of the village; remnants of fine brown and coarse grey-black pottery.

First station by Sohl-e Gard.

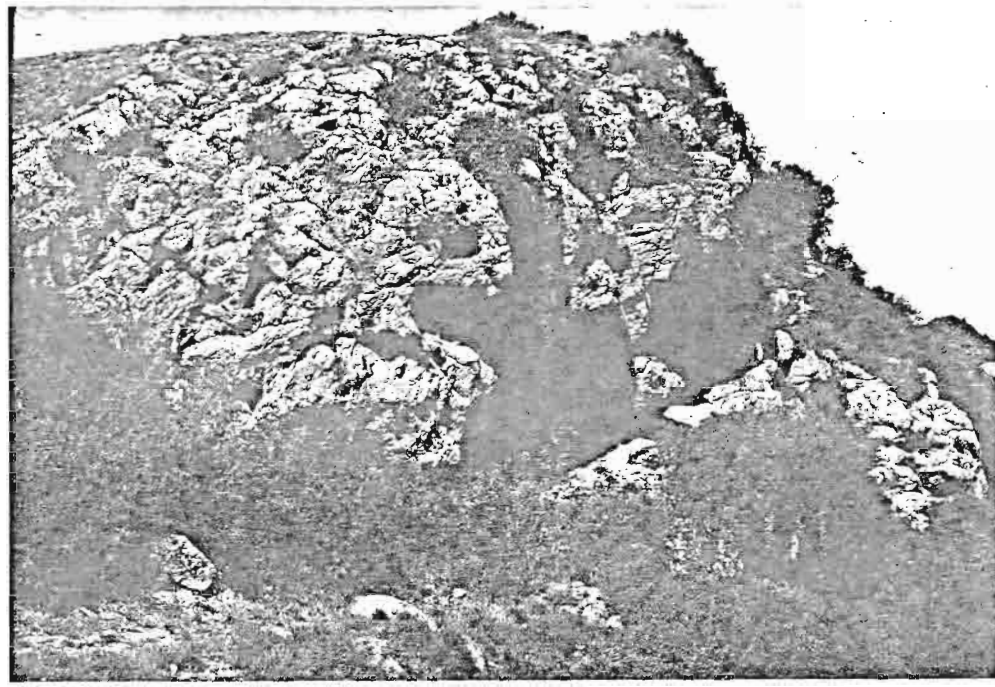
Second station by Sohl-e Gard. Not far from small caves 4 and 5 Mn; various pieces of coarse brown-coloured pottery.

Station in the open at Yahr-to Kelan, in the Mohammad Reza Shah National Park, some kms from Sohl-e Gard. Various pieces of pottery found near a water-spring and under some rock-shelters.

Ghar-e do Dare Zore Gendan. Remnants of various pottery found a few dms underground, inside the main entrance of the cave.

Kafar Galeh station in the open, near the rock-tower bearing this name (which, according to a legend, was inhabited several centuries ago). Several pieces of rather weathered pottery.

All the collected materials (atypical fragments of pottery and a couple of handles) are being studied by an expert of the University of Trieste, who will hopefully define their chronologic setting and possible importance. This might have a bearing on a further deepening of the researches. As soon as we obtain positive results, we will take care to inform the "Department".



MOHAMMED REZA SHAH NATIONAL PARK - CAVERNS IN THE YAHR-TO KELAN VALLEY NEAR SOHL-E GARD - PROBABLE PREHISTORIK HUMAN SETTLEMENT

Folklore.

The data related to the folklore of the Iranian caves are much richer than the prehistoric material. During the surveys it has been possible to pick up seven legends about the caves from the inhabitants of the karstic localities. It is too soon to make a comparative study or to draw any conclusion from the collected material (the research relates to a very little part, in percentage, of the karstic Iranian territories). It may be said, though, from this very moment, that the originality and freshness of the stories heard from the live voice of the shepherds and peasants witness the presence of a cospicuos cultural inheritance.

It would be worthwhile to deepen and extend the collection phase of the research, in order to come into possession of as much material as possible before the widened use of the modern mass-media (newspapers, magazines, TV and cinema) changes the present customs in an irretrievable way.

In a preliminary stage one can say that while some of the legends (the texts of which are given in the description of the single caves) imitate subjects known also in European karstic zones (as, for example, those on the treasures of Kafar Galeh and the Zeyarat cave), others deal with topics which are new or little dealt with (legend of the Golden Antelope, legend of the origin of the Karab Rajeh pit).

B) Work to be carried out in the visited zones

As clarified in the above paragraphs, the work carried out in the visited zones is far from being completed. It should be understood, in this respect, that areas intensely studied and explored for over 150 years, such as the Karst of Trieste, have still a lot to reveal to the speleologist. It was therefore thought advisable to point out, in general terms, what would be useful to do in order to have a clearer knowledge of the consistency of the karstic phenomena in the four Parks taken into consideration.

1) Jahan Nema Protected Region

The prosecution of the researches in the area would take two weeks, a four-wheel driving car, mules, a Guide, data on the rainfalls in the area and a detailed geological map.

Another work to be done is an accurate exploration of the Giuldareh valley walls, the completion of the survey in the southern zone of the Park (till the contact with the flysch rock formation) and the research in the limestone areas - almost all of which are situated in the higher part of the mountains - which should be found, according to local information, in this part of the Park.

The lack of roads does surely not render the future work any easier, so the technical and logistic support of the "Department" would be of the utmost importance for the speleologist.

2) Mohammad Reza Shah National Park

In the two days' actual work carried out in this Park, it was possible to visit two small parts of it only. Because of the geo-tectonic development of the area, for an intensive enquiry on superficial and underground karstism, a sound research is considered necessary; it should be divided according to different areas (that is, from the practical point of view, by means of more teams of researchers), extended in time (15-30 days), and preceded by an accurate collection of information. The researches might be centered: on the NE area of the Park (massif of Kuh-e Ghorkhod), where the presence of numerous karstic springs let us suppose that there is a well developed karstic underground system on the overlying highland; on the area south of the Gorgan-Mashhad road, about which a lot of information has already been collecte; on the part of the Park graviting towards the Caspian sea area. In this last zone the rains, which are more abundant than in the rest of the Park (as is shown also by the thick vegetation), might have favoured the development of an underground karstic phenomenon, complete in its components of swallow-hole, crossing-cave, water-spring.

Paletnologic researches would be suitable for the caves of this Park, considering its position astride the road linking the Caspian sea to Afghanistan and India.

3) Khosh Yeilagh Wildlife Refuge

This area, just like the Mohammad Reza Shah National Park, would also deserve a deeper examination. Besides the caves on the Kafar Galeh which have not been

visited (one pit and two caves), we had notice from the Rangers of three more caves at least.

Even though karstified areas are rather narrow and limited to some mountain ranges, their systematic exploration would require some weeks' work, at least, since they are placed along the main axis of the Park. Considering some facts (the presence of Kafar Galeh mountain), it would be advisable to direct any future work towards archeologic and paletnologic studies.

4) Parvar Protected Area

Of the four areas taken under examination, this one, along with the Mohammad Reza Shah National Park, might be considered the most interesting from the point of view of karstic phenomena. In fact, caves of notable speleologic interest (Chah-e Kharab Rajeh, Cave South of Parvar) are present here. The morphology and concretions reveal that the underground karstic phenomenon, in this Park, is in its advanced senile phase. This is the only case, except for some caves in the Mohammad Reza Shah National Park, where one is in front of a real form of karstism.

Future research might be directed both to the areas of the Park on which we had information but which we could not see because they are too far and not provided with roads, and to a better knowledge of areas inspected in the 1977 survey. (Destroyed valley, karstic valley to the SE of Parvar).

5) Outside the Parks

Five caves were visited outside the Parks borders. Leaving out the caves North of the Mohammad Reza Shah National Park (the Khorasan mountains deserve a deep and particular analysis), in a few days' campaign one could try to complete investigation on the underground water-system of Syah Dareh, of which only the final part is represented by the Ghar-e Sar Chesmeh. Furthermore, it would be advisable to spend some time in perfecting the knowledge on karstism in the hills by Sang-i Sar, since is not conceivable that a karstic phenomenon of such a consistency as that of the Ghar-e Dar Band be an isolated one.

C) Draft-program of future research

A future speleologic survey might give the best results if it is preceded by an accurate preparation on the place itself. Essential points of this preparation are:

1) The location of calcareous areas, which can be obtained both by examination of geological maps and by collection of information od data from various sources.

2) The collection of news and information on the presence of caves. This may be done both by means of bibliographic research, which is discussed in another part of the report, and with the gathering of direct information. In this regard two solutions are suggested: a) to send a circular letter requesting such information to all peripheric Administrative Authorities; b) to apply to the "Department" to pick such information through the Rangers.

The information needed is the following:

a) presence of pits and wells (chah)

b) presence of caves (ghar, bozorgh)

c) presence of water-springs (chesmeh)

d) presence of sinks (torrents which disappear, swallowed into the ground).

Once these data are collected, we shall be able to plan a wide-ranging research, along with the "Department", possibly giving priority to examination of karstic areas within the Natural Parks. The scrutiny of the above mentioned data might bring about the localization of particularly intresting karstic areas, worth of being constituted into Reserves or Protected Areas, similarly to what has already been done in some European Countries and America.

If it is not possible to collect preliminary information, we suggest to carry on further research in some other Park, the features of which let us suppose that some karstic phenomena are present (Fars - Zagros). In the meantime, we hope to have more precise data on the new areas to be studied (Khorasan, etc.).

In order to square up our knowledge on the various aspects of the Iranian karstic phenomenon correctly, a deep bibliographic research is essential; this is also necessary in order to assess what has been done so far by Iranian and foreign researchers. This research should be carried out along two main lines (Iranian and foreign publications), divided into several topics (archeology, prehistoric periods, biology, folklore, geomorphology, karstism, explorations, etc.). The first of these lines (Iranian publications) should be followed

by a Department's executive, because of the objective difficulties to be tackled (language, cost of the stying in Iran for at least six months for an appointee of ours, etc.). Such an executive would be charged with the analysis of any work of poetic, historic, local character, etc., in the search to a hint to caves. Such a job is already being carried out in Trieste, as far as the specialized international press is concerned, by members of the "Commissione Grotte Eugenio Boegan"; data from more than a hundred publications pertaining to Iranian caves have already been filed.

The data collected in this way, besides being the basis of a specialized note of bibliographic character, should be inserted in the Iranian Caves Cadastre, in order to allow every national or foreign scholar and every Government Body to have all the news at hand for each cave to be studied.

No scientific research, at any level, may be considered over or fulfilled until its results are published. Since speleology follows this rule too, it is our use to publish a more or less complete summary of the work done at the end of every research. Even though our researches in Iran are not to be considered closed, we intend to sintethize the results in one or two notes to be published on the 17th issue of the specialized magazine "Atti e Memorie".

Sinc the work will deal principally with geographical and geological aspects of Iran, at this point it would be advisable to have it accompanied by an ample summary in Farsi language and script, in order that it may be used there, also by those who do not know Italian. This is proposed according to numerous examples of similar procedures followed

by other scholars. Our "Commissione Grotte" should take care of spreading it in the speleologic milieux all over the world, within the framework of our mutual cooperation with other national and international Soceties and Research Institutions.

Furthermore we can foresee the need of publishing the already mentioned "Iranian Speleologic Bibliography", which has already been collected at least partially as far as European and American publications are concerned, and a very useful Farsi - English Speleologic Dictionary, similar to those already issued (Italian - English, English - French, German - Italian etc.) by care of various European University Institutes, under the auspices of the "Union Internationale de Spéléologie".

Trieste, December 1977