

THE GEMOLOGICAL RESOURCES IN HUNEDOARA DISTRICT AND IMPORTANCE IN THE ART OF THE ROMAN CIVILIZATION

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REZUMAT

Pe baza prospecţiunilor gemologice efectuate de autor şi cercetărilor sporadice efectuate de numeroşi amatori, sunt prezentate şi localizate principalele iviri de pietre de podoabe, precum şi numeroasele varietăţi sub care ele apar în cadrul judeţului Hunedoara. Prin potenţialul său gemologic, judeţul Hunedoara se înscrie, graţie rezervelor sale, pe primul loc în ţară. Aceste resurse bogate desigur că nu au trecut neobservate nici în trecutul istoric din timpul ocupaţiei romane a Daciei. Mineralele şi chiar rocile cu calităţi de gemme au fost utilizate de romani la confecţionarea unor obiecte de cult sau de podoabă, cum ar fi: intaliile, amuletele, pietrele de inel şi, mai rar, camee. O mică parte din aceste obiecte de artă din domeniul glipticeii, găsite în aşezările romane din judeţ, au ajuns în diferite muzee arheologice din ţară (Cluj, Alba Iulia, Bucureşti) şi implicit ele se află şi în Muzeul Civilizaţiei Dacice şi Romane din Deva.

INTRODUCTION. This work tries for the first time to perform a correlation between the present gemological resources in the district and how much were they known and used in the Roman epoch. It was a series of administrative, military and civilian Roman centres in the district. Some of gems found in the area have been described in the literature. Except the main administrative centre, the capital of Roman Dacia (Ulpia Traiana Sarmizegetusa), other Roman settlements, such as the camp from Micia

(Vețel), the therms from Germisara (Geoagiu-Băi – Aqua calide), Ad aquas (Călan), the camp from Cingău, rustic cottages at Cinciș, Deva, and the Roman gold mines from Brad, Baia de Criș, Băița, are also known on the actual territory of the district. The archaeological researches on these Roman sites started in the XVIIIth century and continued up to nowadays. The research lead to the discovery – nearly the many sites of different nature – of cultured and artefacts in the gliptic domain (intails and cameo). The most of these gems got in the possession of some private persons and in the museums from Wien and Budapest. However, a small amount of them are displayed in the museums of Cluj, Alba Iulia, București and Deva. In the Museum of Cluj there are also deposited 41 gems (39 intails and 2 cameo), found in the Roman camp of Micia (Vețel in present). I had the opportunity to study them in 1980 for finding that much of the local gemological resources were known and used in the Roman epoch. Since then, our knowledge in the gemological and archaeological domains has evolved and now we can bring new explanations in these domains. Unfortunately, we haven't had the opportunity to study from this point of view the gems from the museums of Deva and Alba Iulia.

GEMOLOGICAL RESOURCES IN THE HUNEDOARA DISTRICT

Minerals and rocks with gemological qualities are generated by the three principal types of rocks which made up the terrestrial crust: metamorphic, magmatic and sedimentary. From these, the magmatic domain oneself brings about roughly 99% from the global production of gems minerals.

The geology of the Hunedoara district which has an area of 7617 kmp, consist of about 47% sedimentary deposits, 30% metamorphic rocks, and 23% magmatic rocks (intrusive and extrusive).

– The sedimentary domain is represented in district by Jurassic, Cretaceous, Paleogene and Neogene formations. They occur in the Metaliferi, Bihorului and Zarandului Mountains, Mureș' passage, covering a surface of about 3579.52 kmp.

– The metamorphic domain is well represented in the Sebeș, Retezat and Poiana Ruscă Mountains, in the crystalline island of Rapolt, amounting to a surface of about 2284.80 kmp.

– The magmatic domain is well developed in the Retezat Mountains (granites), Metaliferi Mountains (ophiolites, banatites and Neogene eruptions), covering a surface of about 1752.68 kmp.

From the district there are known till in present over 202 occurrences of minerals and rocks with gemological qualities. Through the great frequency of these occurrences, the Hunedoara district is on the first place in the Romanian gemologic potential (considered as being of 100% and appreciated for each from the 39 districts partly), with a percentage of 12.80 (fig.1).

I. THE SEDIMENTARY DOMAIN (47% = 3579.52 kmp)

Even almost one half from the district surface represents the sedimentary domain, it is a weak producer of quality gemological minerals.

– From this domain the sole agates (sometime fosiliferous) and jaspes deposits placed in the Paleogene lacustre continental sedimentary deposits and which is partly situated at the boundary of the Techereu locality (the Scaului, Dumbrăviței valleys and in the Lazuri and Fătăciune sites). The source of these gems are the Fața Băii conglomerates, and the overlying Valea Almașului gravels which occur on rather extended areas. Some galets of these conglomerates (locally named „bebee") may contain agates with very intense venatures and colourations, and polichromatic and monochromatic jaspes, containing sometimes fossils. We must apartly remark that at Techereu may occur numerous agates generated by magmatic rocks (related to banatites – geoda or filonian agates, or to ophiolites – filonian agates). Unlike these, the bebee's agates always occur as very well ruled galets.

– The silicified woods occur as a rule in sedimentary formations of various ages, being usually reworked (because of their high hardness) in the alluvial deposits of the area. Black silicified woods occur in the Bodii's brook, being reworked from the Cretaceous deposits. A higher concentration of silicified (opalized) woods in situ occur in the Panonian deposits on the territory of Prăvăleni locality, where, on Tarniței valley and on Hoarna Tarniței summit trees trunks substituted by yellowish coloured opals occur, within volcano-sedimentary formations. Trunks and fragments of silicified woods – sometime transformed into monochrome (white – bluish) agates, rarely polichromatic, occur in the volcano-sedimentary formations from the zone situated north of Mureș, in the area between the localities Sârbi (to

east) and Burujuc (to west). Similar silicified woods appear in the same formations situated south of Mureş in the localities Dobra – Lăpuşul de Jos – Fintoag and Tisa.

- Fossiliferous limnical silicolites (lacustrine) occur in Panonian deposits in many more areas, the most important being the occurrence from the Sanatorium of Brad. There occur opals and more particularly red and yellow jaspers including fresh-water fossils. Grey silicolites with many bog fossilized plants occur at Vaşa de Jos – Băi (in the Gruiu site and possible in other areas also).

- The presence of the amber in Cretaceous deposits from Curechiu has been recorded still in the last century in the Valea Cărelor in the place named Troiţa. Also in the last century, at Petroşeni, the presence of a black amber variety, named Bielzit, was noted. Amber traces are also known from the Badenian deposits from Răchitova (The Basin of Haţeg).

- Red radiolarites are noted from Cretaceous deposits of Curechiu but they occur also in other areas with Cretaceous deposits.

- Polichrome mosaicated and pastelated jaspers occur in the Cretaceous deposits of Valea Bodii from Techereu.

- Some siliceous accidents of Mandelstein type may occur in the Jurassic deposits of Vălişoara, from Brad.

- The travertines from Geoagiu and Bămpotoc may offer materials for ornamental plaques.

- Even some well preserved Badenian fossils from Lăpuşul de Jos and Buituri may present extremely aesthetic aspects which make them utilizable for ornamental objects.

- Almost all the valleys deposits, which cross areas with jaspers, agates, opals, silicified woods, limnical silicolites, and radiolarites contain fragments from these varieties.

II. METAMORPHIC DOMAIN (30% = 2284,80 kmp)

This domain is well developed in the southern part of the district, in the Retezat, Poiana Ruscă and Cibin Mountains, and the resources are rather limited from gemological point of view. A little bit of a crystalline occur to the north of Mureş, making up the crystalline island of Rapolt.

From the minerals of gemological importance we mention the jaspers, the grey quartz, and the syderite from the iron mines barren gangue from Ghelar, Govăjdia and Teliuc.

Even in the frame of Sebeş – Lotru crystalline micashistes with garnets occur, garnets with gemological had not been pointed out till now qualities.

The bluish shade dystene which occurs in the dystenites from the Şureanu Mountains may also be found and reworked in Valea Jiului Transilvan and in Valea Streiului.

On the same valleys the occurrence of beryl, tourmaline, perhaps in gemiferous varieties, reworked from the pegmatites which occur on the superior waterways of these valleys, is not excluded.

The transparent, greenish sometimes quartz, the rock cristal variety (or quartz of alpine type) may be collected from abandoned quarry from Siglău (Uricani).

The last century reference material cites the presence of chrysoprase at Iscroni in the place named Piatra Zigata and Coasta lui Rus. In the frame of serpentinites from here it wouldn't be excluded the occurrence of the jade or nephrite too.

Black lydiens may occur, reworked in the rivers deposits whose origins are the metamorphite.

Large gallets occur in Valea Streiului (between 20 and 50 cm in diameter) of white-yellowish metasilicolites which may proceed from the Retezat Mountains and which may be used both in gemology and in technique (mortars and laboratory pistils).

From the rocks of gemological or ornamental interest we mentioned the black serpentines with white veins which occur in Valea Dobrii in Dealul Gruivului and the greenish serpentinites from the Iscroni, Livadia, Petrila, Jieţ, and Sibişel areas.

The talc which may be used for make up some art articles, is found in diverse varieties at Cerişor, Lelese, and in others areas of Poiana Ruscă Mountains.

The marble occurs in the old Roman quarry from Valea Bistrei in the Lunca Cernei de Jos, de Sus areas, and to the west of Sarmisegetuza at Gura Bordului.

The occurrence of some varieties of aventurinic quartzites in the deposits of valleys which cross the metamorphic rocks wouldn't be excluded.

The strongly folded green shales which occur in the immediate neighbouring of Deva city (to west) constitute a good ornamental stone.

III. THE MAGMATIC DOMAIN (23% = CCA 1151,68 kmp)

Various intrusive and extrusive bodies occur in situ or both in the metamorphic and in sedimentary domain. According to the age of the ore depositions, the following regions are distinguished:

- The Proterozoic Region includes the granites of The Retezat Mountains and which are sterile from gemological point of view until present.

- The Ophiolitic Region is well developed in The Metaliferi Mountains and is characterized from petrographic point of view through varieties of gabbros, peridotites, spilites, orthophires, anamesites, dolerites, andesites, dacites, and riolites. Ophiolites occur as a continuous strip, which between Valea Balșei to the East and Valea Cerbiei to the West. They had been deposited in three stages unfolded in Jurassic and Cretacic.

- The Banatitic (Laramic) Region included granites, graniorites, diorites, andesites, dacites and riolites bodies deposited in Late Cretaceous – Paleogene. They occur preeminently on the west side of the district. More recent, the bodies and the agglomerates on the north and the south sides of Mureș, associated till recently to the Neogene magmatism, are considered as belonging also to the banatites, on the basis of their absolute age (59 mil years).

- the Neogene Regions is well developed in the Săcărâmb – Brad – București – Vălișoara, Caraci – Zarand areas, and include andesite, dacite, and riolite bodies occurred in Badenian – Sarmatian, rich in gold – silver deposits.

We present the main gemiferous regions in the district as it follows:

1. THE OPHIOLITIC REGION. This region constitutes one of the most important generating gemological minerals areas, especially of chrysochalcite quartz type (chalcidies, agates, jaspers). All the valleys which cross the ophiolitic area, beginning with Valea Balșei (Geoagiuului) to the east and continuing up to Valea Cerbiei to the West, rework in their deposits different varieties of mono and polychrome chalcidies, polychrome agates and varied coloured jaspers, released by alteration, disintegration phenomena from ophiolites.

At Techereu village, on Valea Mărgelușelor occur black augite crystals, perfect crystallized and utilisable for gemology. Greenish and glossy augite crystals also occur at Valea Jipii (Poienița) and Poiana. In the ophiolites, placed in the northern part of Brad, in the Ribița area, coloured jaspers and

radiolarites particularly occur. Unlike of Alba district (Răchiș) where on limited areas, in the more acid terms of ophiolites, great concentrations in chalcedony and agates may appear, the ophiolites in Hunedoara district contain only sporadic and disparate occurrences.

2. THE BANATITIC (LARAMIC) REGION. In this region on the one hand granite bodies which cross the ophiolitic plate, i.e. those from Vața de Sus – Tătărești de Criș – Căzănești and those from Cerbia – Almaș Săliște, occur. Garnets and vesuviane occurrences utilizable for gemology are related to the skarn area of the body from Vața de Sus.

Also of the banatitic area, on the other hand, the andesites, dacites, and riolites extrusions and the agglomerates associated to them newly occur, well developed to the north and south of Mureș. To the north of Mureș they are ordered in the south side of the ophiolitic and of the Mesozoic deposits areas. They start on Lunga – Brănișca to the east and they continue up to Valea Zamului to the west. The banatites from the Hunedoara district areas constitute the main minerals with gemological qualities generating formation. From those areas, numerous varieties of coloured chalcedony (white, carneol, sarder, heliotrope, saphirine, plasma, Mokka chalcedony etc.) and agates (monochrome, polichrome, mossformes, rubanate, tubular etc.) and yellow, red, brown, green, breciformes jaspers. Also in these areas monochrome and polichrome silicified (agatized) woods occur, too.

Among the chalcedonies and of the agates, the weak transparent rather translucide white varieties are usually prevalent. Samples with varied veins, slightly visible can be picked from the gravels in the valleys east from Valea Lungă to the west on the brooks from Bacea, Cuies, Ulieș, Gurasada, Runcșor, Brădățel, Câmpuri de Sus, Câmpuri Surduc, Tătărești, Burjuc, and Zam.

South of Mures they can be picked beginning with Valea Dobrei in the east and from the brooks which cross Abucea, Lăpugiu de Jos, de Sus, Panc – Săliște localities. The area continue to the west of Valea Mare with the brooks which cross Fintoag, Lasau, Tisa localities up to Pojoga to the west. As a rule, the gem minerals are not found in situ in these areas and they do not form rich concentrations in strictly localized perimeters.

Unlike of these areas, at Techereu large, concentrations of agates occur on strictly localized perimeters, such as the right side of Pârâul Bodii, where in one slope, gravels, many filonian or of geod agates are found. This deposit of agates is known from centuries, and they were been processed

at Vienna and Budapesta. They are in connection with the banatite bodies which occur on the higher course of the valley.

3. THE NEOGENE REGION. Also the gold – silver ores with natural gold from Brad – Săcărâmb area and from the adjacent areas are particularly in connection with this region. Opals and the fossiliferous polichrome jaspers from Brad are in indirect connection (as origin) with the volcanics of this region, even they are localized in sedimentary deposits. Sporadic quartz, opale, and jaspers occurrence are know also from the mining galleries in the area and may be collected from the sterile of the mines or from the rock occurrences appearing in the area. Opals occurrences such as those from Ociu, Ocișor, Vața de Jos, and Basarabasa are in connection with the agglomerates and the volcanics from the Zarandului area. In the same ares, chalcedony and jaspers seldom occur.

In conclusion, one can assert with certainty that the Hunedoara district's area owns an important gemologic potential which, throught their great variety and the multitude of the occurrence areas, places it on the first position in the country. Here has been put the basis of the first gemological and technical manufactured workshop belonging to the state or to the private persons which partly account of these resources.

We concluded that some of these resources were known and used until the pre-historic stages (palaeolithic and neolithic) and that they were used, manufacturing of some gems during the Roman occupation of Dacia (106-271).

GEMOLOGY AND ARCHAEOLOGY

We shall try in the following section to estimate how much the Romans in the localities from Hunedoara district knew a part of these gemological resources and the size in which they had been used in the manufacturing of some artefacts of gliptic domain. The comparison and the correlation with the Roman gems were done on the basis of a rich collected and manufactured gemological material from the numerous examined occurrences in the Apuseni Mountains (between Gilău and Zam) and particularly in the frame of the Hunedoara district.

Starting from these premises, I studies in 1980 a part of the Roman gems preserved in The Museum of History of Transylvania in Cluj, using a stereoscopic binocular microscope. 57 gems of which 41 proceed from

the Roman camp of Micia (the Vețel locality in present) have been studied, and on which I have compared with the corresponding mineralogical varieties of my private gems collection, consisting of collected materials in the Apuseni Mountains. The 41 gems of Micia are represented by 39 intalies and by two camees.

These 41 Roman gems of Micia are manufactured of the following mineral varieties:

- 21 gems (from which 20 intalies and one cameo) are manufactured from a red variety of chalcedony named carneol, with no identical correspondent in the gemological resources of the Apuseni Mountains. Unlike of carneol varieties in this country, those of the Roman gems present almost constantly some black tufites distributed in the form of some clouds or flakes which possibly would constitute either some specific elements or fusion inclusion. To be able to prove their origin, possibly Indian, we have required some gems manufactured of carneol from India. Unfortunately, the Indian carneoles do not resemble the carneol of the Roman gems, but they are similar to those from The Apuseni Mountains. The problem of these caneoic gems remains, in absence of others data, unsolved.

- 3 gems are manufactured in carneolic agate;
- 3 gems are manufactured in monochromatic agates (white in different intensity, degrees/shades – 2 intalies and one cameo);
- 2 gems are manufactured in green jasper;
- 9 gems are manufactured in red jasper;
- 1 gem is manufactured in brown jasper;
- 1 gem manufactured in lapis-lazuli proceeding from Afganistan;
- 1 gem in blue glass.

In all: 41 gems.

Considering their structure, texture, and colour (at the binoculaire microscope) the material of the Roman gems with the raw materials and with the gems manufactured of autohtone materials, we concluded that the three following pieces are manufactured in chalcedony and white agates similar to those which appear in the agglomerates from Valea Mureșului.

- The intalie no. inv. 4641 (Micia) having represented a fantastic animal on it (gryll) is not manufactured in rock crystal (according to Țeposu L.) but in a translucide chalcedony with fine specific white inclusions which occurs frequently on Valea Mureșului.

- The intalie no. inv. 4622 (Micia – masculine nude) is not manufactured in lazurite but in a white agatiforme chalcedony which contains a little geode with crystall of quartz and which is identically to the similar autohton resources from Valea Muresului.

– The cameo no. inv. 4662 (Micia) having represented a woman's head on it, is manufactured in a matted-white chalcedony, similar to those of the banatites to the north and south of Mureş.

Two intalies are manufactured in carneolic autohtone agates:

– the intalie no. inv. 4635 (Micia – feminine bust) is manufactured in light colours up to white carneologic agate;

– the intalie no. inv. 4634 (Micia – emperor bust) is also manufactured in carneolic agate.

The following 12 roman gliptical pieces are manufactured in different jaspers (green, brown, red) varieties which can frequently be found in the agglomerates of Valea Mureşului.

– the intalie no. inv. 4623 (Micia – Isis) is manufactured in green autohtone jasper;

– the intalie no. inv. 4639 (Micia – Krater) is manufactured in a green jasper variety;

– the intalie no. inv. 4632 (Micia – Isis, awkwardly performed) is manufactured in a brown jasper, frquently found on Valea Muresului.

– the next nine intalies, no. inv. 4636 (Micia – Isis), no. inv. 4640 (Micia – eagle), no. inv. 4650 (Micia – Mercurius), no. inv. 4651 (Micia – Mercurius) no. inv. 4645 (Micia – Mars), no. inv. 4642 (Micia – gryll, fantastic animal), (Micia – Mars), no. inv. 4642 (Micia – gryll, fantastic animal), no. inv. 4633 (Micia – Nemesis), no. inv. 4747 (Micia – polip-fish), no. inv. 4744 (Micia – Ceres) are manufactured in different red jaspers varieties. We consider that all the pieces manufactured in varieties of jaspers of different colours procced from the neighbouring of the Roman camp of Micia.

In conclusion, from the 41 of Roman gems from Micia examined by us, 18 pieces seem to be manufactured in local gemological resources, respectively in chalcedonies and white or carneolic agates and in jaspers of different shades. In percentages, approximately 44% of gems had been manufactured in raw local materials.

We can also mention that one knows an intalie with Pan god represented on it and which has been found at the Roman settlement of Cinciş. We do not know the material on which the image has been incised.

Unfortunately, I haven't had the opportunity to see and examine the gems found in The Museum of Dacian and Roman Civilization in Deva, so that, at this moment, we can declare neither the topographic origin of the materials from which they are manufactured or of other gems from the

Hunedoara district found in other museums in the country or abroad, or even in some private collections.

The quarry of andesites from Brănișca (3 km) is the nearest area to Vețel (Micia) where white chalcedony occur. North of Mureș are situated Sârbi area (10 km) , Bacea, Cuieș, Ulieș, Gurasada (up to 11 km), Runcșor, Brădățel, Câmpuri de Sus, Câmpuri de Surduc (28 km), perimeters in which a great variety of chalcedony, agates, opals, and silicified woods appear.

South of Mures, close to Vețel gemological area are situated Dobra area (18 km), Iăpugiu (24 km), and Pojoga (36 km). The gemological resources are similar to the north of Mureș.

The fact that, even the administrative capital of the Roman Dacia was Ulpia Traiana Sarmiszegetusa, the literaure hasn't pointed out anything from this important site where the Roman archaeological gems would be abundant, remains an enigma.

In conclusion, we consider that the performing of some general gemological studies on the Roman gems found in the museal and private collections would be necessary, to determine more accurately the problem of the autohtone of foreign topographic origin of the raw materials used in their manufacturing, using in this direction as comparative materials the actual collections of gems manufactured of materials from Romania.

A more efficient co-operation among archaeologist, gemologists, and geologists would be necessary in future, to determine the topographic origin of the different geologic materials, used by our ancestors in different pre-historical and historical stages.

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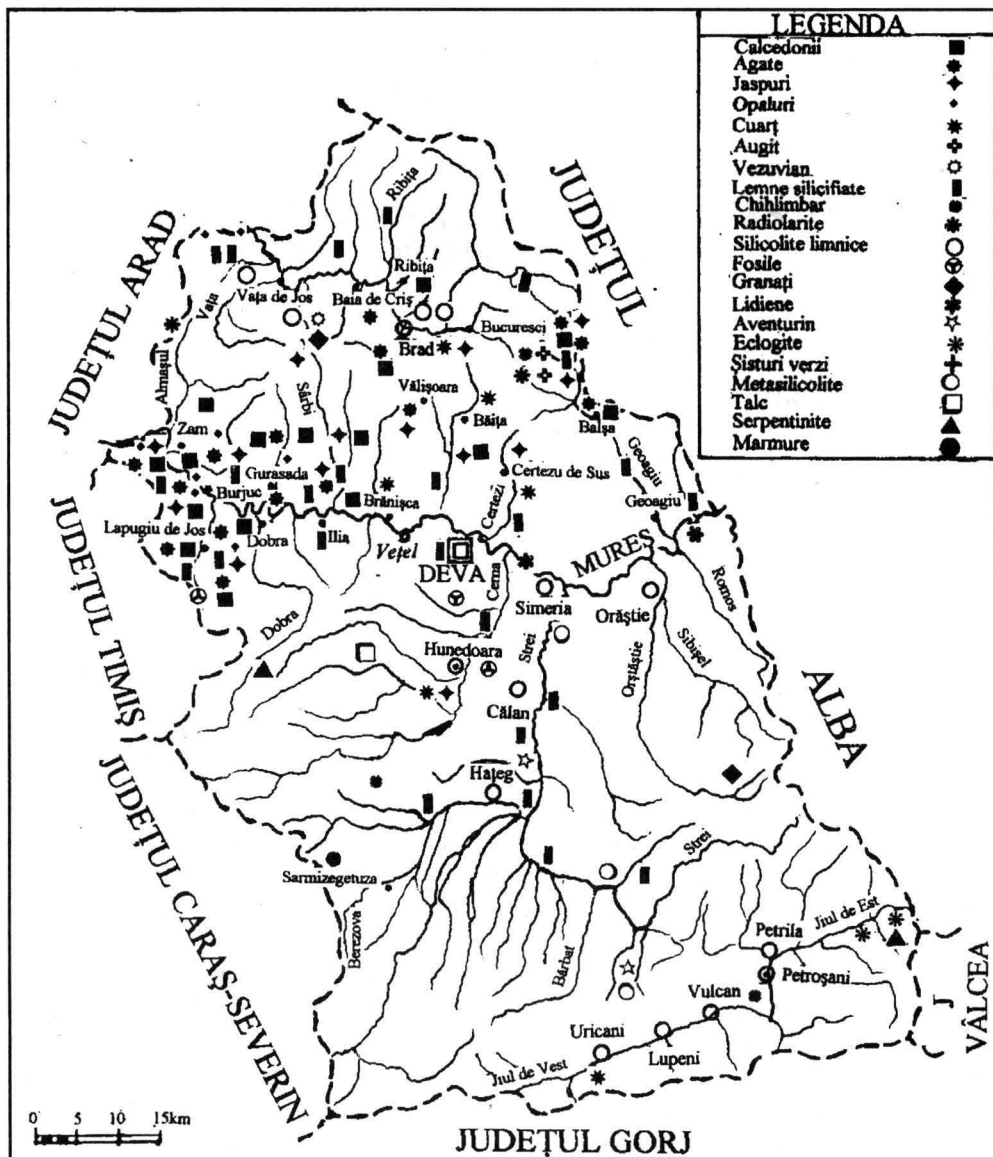


Fig. 1. – The gemological resources in Hunedoara District.