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# Field investigation of the mythical “Gold Sands” of the ancient Colchis Kingdom and modern discussion on the Argonauts’ expedition

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*According to Greek mythology and historical sources the ancient Georgian Kingdom of Colchis was rich in gold and the natives mined this noble metal from the rivers, using special wooden vessels and sheepskins. The Argonauts were a small band of heroes in ancient Greek mythology who, accompanied Jason to Colchis in his quest to find the “Golden Fleece”. Modern geological research conducted by us in the Svaneti region (Greater Caucasus) has shown that this area is a province of the former Colchis Kingdom where it was possible to obtain abundant gold from the mountain rivers using the methods unique to this region. We think that the bedrock and placer gold contents of this region give grounds to believe that there was enough gold to describe Svaneti as the country rich of this noble metal”. After comparing the geological data, artifacts, myths and historical sources, we share the viewpoint of the Roman historian Apian Alexandrine (90-170 AD) and propose that the myth about the expedition of the Argonauts in quest of the “Golden Fleece” to the Colchis Kingdom was a real event and that the main purpose of that mission was to obtain gold and gold mining technology.*

## Introduction

The Argonauts were a small band of heroes in ancient Greek mythology (Mycenaean myth) who, in the years before the Trojan War, accompanied Jason to Colchis in his quest to find the “Golden Fleece”. Their name comes from their ship, the Argo, which was named after its builder, Argus.

Myth or reality? The myth of the Argonauts’ trip to the ancient kingdom of Colchis for gaining the “Golden Fleece” is one of the contentious issues of historical science. There are many contradictory legends and points of view or opinions about this mythical journey. This trip is described as a real story by Homer in his classic poems – the “Odyssey” (VIII-VII c. BC) and by Euripides in his play “Medea” (V c. BC). The Greek poet Apollonius of Rhodes in the III century BC dedicated a poem “The Argonautica” (Race, 2008) to this voyage. In this poem Apollonius of Rhodes gave a detailed description of the kingdom

of Colchis, the capital city – Aia (modern Kutaisi) and the Georgian tribes Khalibi, Tibarenni and Mosinici. Since then, one can hardly find any fields of European history and art where the theme of Jason and the Argonauts, the “Golden Fleece” and Medea the sorceress is not more or less reflected. It is believed that Aeetes reigned in his kingdom of Colchis at the time of Jason’s journey. Tales of Aeetes’s daughter Medea, the sorceress, were known abroad, and yet the fame of the rumored wealth of the country in gold, silver and iron is likely to have been the basic motive for the Argonauts expedition.

The mountain rivers of Colchis Svaneti carried coarse grained sands including particles of gold. These sands were washed through special wooden sluices with pierced holes and the fine sand fraction was carefully strained over and through sheepskins or fleeces lying under the sluices. This special system of gold recovery gave rise to the fable of the Golden Fleece, which according to legend, came from a country with abundant silver palaces and golden chambers of ancient kings. The legend of this fabulous wealth of the Kingdom of Colchis, and the fame of their rulers’ riches, is said to have excited the enterprising avarice of the Argonauts.

In the last century this question was again a topical issue so in 1984 the British scientist Tim Severin sailed a “Modern Argo” ship along the same route traveled by the legendary Jason on his “Argo” journey, more than three thousand years ago. Tim Severin and his crew of “New Argonauts” sailed from the city of Volosi in the Aegean Sea, into the Black Sea reaching the town Poti (Phasis) on the east coast. Tim Severin proved with this voyage that, thanks to the ancient Greek mariners superb marine art and great vessels, they could have easily reached the kingdom of Colchis.

In order to form our own opinion, we decided to study the territory of the ancient Colchis kingdom geologically in order to find the areas where mining of gold from alluvial placers could be possible i.e. a place where the Argonauts could have extracted gold and come to know the ancient mining technologies of this particular region. For this purpose, our group has carried our research for more than 25 years in the western part of the Republic of Georgia around the regions of Abkhazia, Samegrelo, Imereti, Svaneti, Racha, Guria and Adjara. Our work has confirmed that Svaneti is a region, uniquely, where the locals still wash gold from alluvial placers through modern domestic, wooden vessels or pans with holes in the bottom and onto a sheepskin or fleece which collects the fine particulate gold.

In 2007 to 2010 we carried out research work in the Svaneti region using remote sensing for defining areas where ancient and modern placers of streams had been worked for their gold. The gold concentrations were studied both in alluvial placers as well as in the

bedrock areas drained by the streams. More than 1000 samples were collected and analyzed. The gold content and other trace metals in these samples were determined by using ICP and MS instrumentation in the “ACME LABS” laboratory (Vancouver, Canada). In addition to geological materials, we also gathered together a large collection of artifacts including the unique wooden vessels and the sheepskins still used today by local inhabitants for gold-washing.

We have studied and analyzed our modern assay data and our geological and geophysical data, along with modern archaeological work by others. As a result of these combined studies in relation to the myths and legends, we feel we can offer a modern answer to the long standing questions around the Argonaut’s trip and the social phenomena of the “Golden Fleece”. Described below are the results of our recent research and our interpretations of this classical story, which has fascinated countless generations since ancient times.

## Colchis Kingdom

The eastern Black Sea region in antiquity was home to the well-developed Bronze Age Colchian culture. This culture emerged towards the Middle Bronze Age. In at least some parts of Colchis, the process of urbanization seems to have been well advanced by the end of the second millennium BC, centuries before any Greek settlement of the Black Sea coastline (Fig. 1). The Colchian Late Bronze Age (XV-VIII century BC) saw the development of significant skill in the smelting and casting of metals that began long before this skill was mastered in Europe. Sophisticated farming implements were made, and fertile, well-watered lowlands and a mild climate promoted the growth of progressive agricultural techniques (Braund, 1994).

Colchis was inhabited by a number of related but distinct tribes whose settlements lay along the shore of the Black Sea. The Kartvelian tribes differed so completely in language and appearance from the surrounding Indo-European nations that the ancients provided various “wild” theories to account for the differences (Urushadze, 1964). For example, Herodotus states that the Colchians, with the Egyptians and the Ethiopians, were the first to practice circumcision, a custom which he claims that the Colchians inherited from remnants of the army of Pharaoh Sesostri III (1878-1841 BC). Herodotus thus



Figure 1. Political map of the Eastern Black Sea region in VI-II c. B.C. Adapted after D. Braund (1994).

erroneously regarded the Colchians as Egyptians (Herodotus, The History).

Ancient Colchis and Iberia (see Fig.1) have been regarded as one of the world’s important places for the early mining and processing of precious metals. Many archeologists and other scientists consider the area occupied by the Georgian tribes of the Khaldes, Tubales and Mosnikes, as the homeland of metallurgy (Richardson, 1934; Forbs, 1950; Wainwright, 1936). H. Richardson (1934) believed that iron mining and steel making technology was discovered in the XIV century BC by a Georgian tribe the Khaldes, who lived in the Halyse River Canyon. It is interesting, that the French scholar R. Dussaud (1930) relates the Greek term “chalkos”, which is designation of copper, to the Cholchis tribe, the Khaldi. He thinks that the root of the word “khal” comes from the word “khaldi”, and the suffix “kos” in Greek language is an ending denoting the origin. In addition, excavated Early Bronze Age burial mounds in the region show that nonferrous and ferrous metallurgy was very well developed, and that noble metal mining also took place at that time in history (Courcier et al., 2008).

Gold products that can be tied to the ancient Colchis culture in western Georgia do not exist or have not yet been found. The earliest gold implements known are those from the V century BC, and these were found mainly from excavations in Vani (Fig. 2). The high level of artistry exhibited by these artifacts suggests that utilization of this precious metal in the Colchis culture started much earlier than V century BC. However, in eastern Georgia (Iberia) unique gold objects are depicted dated back to the 2<sup>nd</sup> millennium BC, and belong to the world’s masterpieces (Fig. 3) and show that gold mining and artistic uses were at a very high level very early in the history of the old Georgian kingdoms.



Figure 2. Golden bracelets V century BC from Vani, Colchis.



Figure 3. Unique golden lion sculpture (3X5 cm). Beginning of 2<sup>nd</sup> millennium BC from Tsnori, Iberia.

## Svaneti region

Svaneti (Suania in ancient sources) is a historic province of the ancient Georgian Kingdom of Colchis and was, and is inhabited by the Svans, a geographic subgroup of the Georgians. It is situated on the southern slopes of the central Greater Caucasus Range, near the Black Sea (50 km). Its rivers flow into the Black Sea (see Fig. 1). The region occupies the Enguri, the Kodori and the Tskhenistskali river catchments (7500 km<sup>2</sup>). Svaneti is the highest inhabited region in the Greater Caucasus Range, and the village of Ushguli (Fig. 4) is the highest settlement in Europe (2200 m).

The Enguri River valley, which, due to its geographic location is called the Upper Svaneti, is the historical center of the province where the cultural heritage of Svaneti is best preserved. The Upper Svaneti (Mestia district) is known for its architectural treasures and picturesque landscapes. The famous Svanetian towers built in IX-XII centuries make the region's villages more attractive (Fig. 5).

The theme of the Argonauts and the "Golden Fleece" is reflected in Svan mythology. In excavations around the villages of Svaneti, archeologists have found numerous bronze sculptures that represent a stylized form of a sheep's head. It seems such sculptures were



Figure 4. Part of Village Ushguli and upper reaches of the Enguri river.

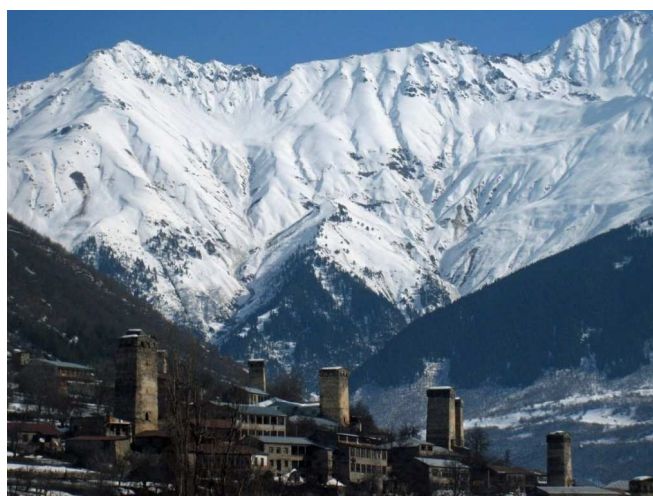


Figure 5. Mestia town – the administration center of the Upper Svaneti with Greater Caucasus Main Range on the background.

being created under the influence of the "Golden Fleece" legend. In addition, many places of mining are met in the Svaneti - where the level of metallurgical skills of the 2<sup>nd</sup> and 1<sup>st</sup> millennium BC and AD (Gambashidze et al., 2010), are demonstrated by military and agricultural tools and numerous decorative objects of gold and bronze that have been found. A variety of numismatic artifacts have also been discovered there, including Alexander the Great gold coins indicating that particular region had close contacts with the outside i.e. Greek world.

Data on Svaneti's natural resources are met in the works of the ancient Greek and Roman scientists. Greek historian Strabo (44 BC - 23 AD) who wrote about Svaneti and its natives: "In mountain rivers of this country there is a lot of gold, mined by these barbarians using the perforated vessels and sheepskin" (Strabo, book-XII). The Roman naturalist Pliny the Elder (23- 79 AD) in his book "The Natural History" wrote: "in Colchis who on finding a tract of virgin earth, in the country of the Suani, extracted from it a large amount of gold and silver" (Pliny the Elder, vol. 6). It is interesting that the ancient Roman historian Appian of Alexandria (95 AD - 165 AD) in his XII book (History of Mitridate wars) writes: "many rivers carry invisible "gold sand" from the Caucasian mountains and residents put thick sheepskins into the springs and then collect precipitated gold". In his opinion the main purpose of the Argonauts mission was to obtain the sheepskin technique of gold mining, and that the "Golden Fleece" of Aetes represented a sheepskin with captured gold.

According to historical sources of the 18<sup>th</sup> and 19<sup>th</sup> centuries, gold was mined from alluvial placers in Svaneti at that time. It should be noted that the mining engineer V. Goliev found a native gold nugget in a quartz matrix, which weighed 365g, at the Svanetian village of Iely in 1861. Similar discoveries occurred many times in Svaneti and that caused great interest among geologists and adventure seekers in this area. Recent geological studies of Svaneti also show that high contents of gold are present here today and that the gold concentration in the river gravels of this region are sufficient to give reason for creating the legends and descriptions of this region as "a country rich of gold".

## Brief Geology of the Greater Caucasus and Svaneti Region

The Greater Caucasus represents a Phanerozoic orogenic unit formed along the Euro-Asian north continental margin, in a NW-SE direction, between the Black and Caspian seas. Currently, it is an expression of continental collision between the Arabian and Eurasian lithospheric plates. Three major orogenic units are distinguished in the Caucasian structure: 1) the Greater and 2) the Lesser Caucasian mobile belts and 3) the inner Caucasian microplate (Okrostsvaridze and Tormay, 2013). According to modern concepts of tectonic zoning the Caucasian orogen (Gamkrelidze, 1997) is built up of three large terranes: the Greater Caucasian, the Black Sea-Central Transcaucasian and the Beiburt-Sevanian. (Fig. 6).

The Greater Caucasus terrane is the northernmost unit of the Caucasus orogen and can be traced for more than 1200 km along the southern margin of the Eurasian continent. It is currently a polycyclic, folded-nappe formation, in which two major structural stages are distinguished: (1) a Pre-Alpine crystalline basement and (2) an Alpine volcanic-sedimentary cover. The crystalline basement complex is mainly formed by Precambrian and Paleozoic crystalline schists,

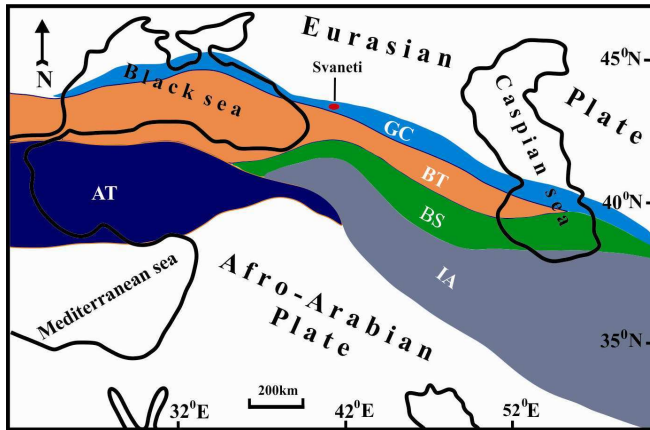


Figure 6. Tectonic zoning of the Caucasus orogen and adjacent area on the basis of the terrane analysis adapted after I. Gamkrelidze (1997). Terranes: GC- Greater Caucasian, BT- Black Sea-Central Transcaucasian, BS-Beiburt-Sevanian, IA-Iran-Afganian, AT –Anatolian.

amphibolites, gneisses, migmatites and granitoids (Okrostsvaridze and Tormay, 2011).

Svaneti is located in the southern part of the most uplifted central segment of the Greater Caucasus fold system. It includes the outcropping Paleozoic crystalline basement of the Main Range and of the Southern Slope zone overlain by Lower Jurassic sedimentary, Middle Jurassic volcanic-sedimentary and Lower Cretaceous carbonaceous formations. The Main Range zone in the Svaneti region is represented by Middle-Upper Paleozoic amphibolites, crystalline schists, migmatites intruded by gabbros, quartz diorites, granodiorites and granites. The Southern Slope zone in the Svaneti area is represented by the Upper Paleozoic-Triassic thick volcanic-sedimentary deposits of so-called Dizi series, which forms two lens-shaped “windows” within the Jurassic sedimentary cover. During Middle Jurassic magmatic activation in this area numerous igneous bodies of various sizes and compositions were intruded into this volcano-sedimentary sequence.

## Metallogenic Description of Svaneti Region

In spite of the relatively small area occupied by the Svaneti region, numerous examples of significant metallic mineralization of various genetic types occur here (Fig. 7). They are connected in time and space with the spatially associated magmatic rocks as well as with the sedimentary formations which are the host rocks to the intrusives. Starting with Soviet times, since 1934, near the village of Jvari alluvial mining of gold placers along the Enguri River were worked and operations lasted until 1957. After 30 years gold sampling was renewed in this same area (Geleishvili, 1988). This more modern work showed that within what was a geologically insignificant time interval these placers were replenished to levels that were again of commercial importance. It was natural that after the modern successful exploration of these placers that attention turned to uncovering gold-bearing structures in the bedrock of the Svaneti region.

## Bedrock Gold Occurrences

During the 1960's-1970's in the Svaneti region, gold prospecting in the sedimentary cover rocks was started but the results were insignificant. Several ore occurrences were found, but they did not contain a quantity of gold that would appear to have been sufficient to account for replenishment of gold placers, over such a small interval of time. However since the 1990's gold prospecting in the Variscan crystalline basement began and Sakeni goldfield was discovered, that is now considered to be the main source area for the gold placers (Okrostsvaridze, 1992; Kvciani et al., 1997; Okrostsvaridze and Bluashvili, 2000; Okrostsvaridze and Bluashvili, 2009).

Presently, four gold-bearing bedrock occurrences are known in the Sakeni goldfield (Fig. 8). These include: Kakrinachkuri (1), Hokrila (2), Memuli (3), and Achapara(4) gold-bearing zones. They are located along the northern border of the Sakeni granodiorite intrusive of Upper Paleozoic age, the emplacement of which was controlled by the Alibeg thrust zone - the main structure of the region. The mineralized zones are formed in the deformed and greisenized rocks of a Middle Paleozoic granite-migmatite thrust complex and include quartz veins, pods, and stockworks. Gold occurs with quartz-scheelite, quartz-pyrite-arsenopyrite, and quartz-stibnite assemblages. The highest gold concentrations (30-80 g/t Au) are found with a

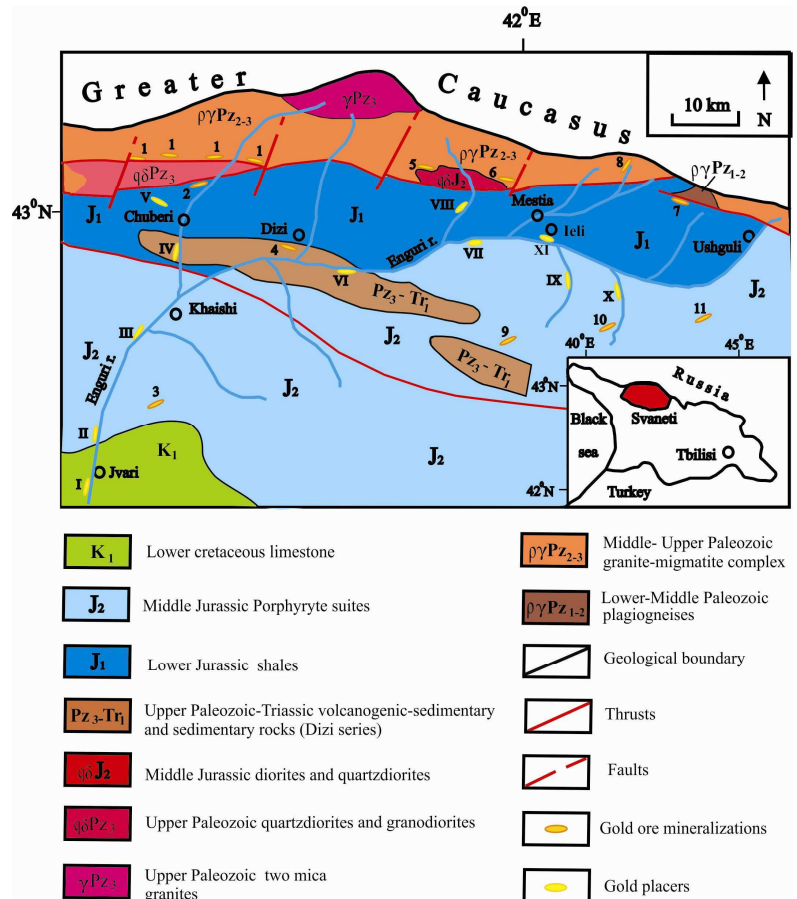
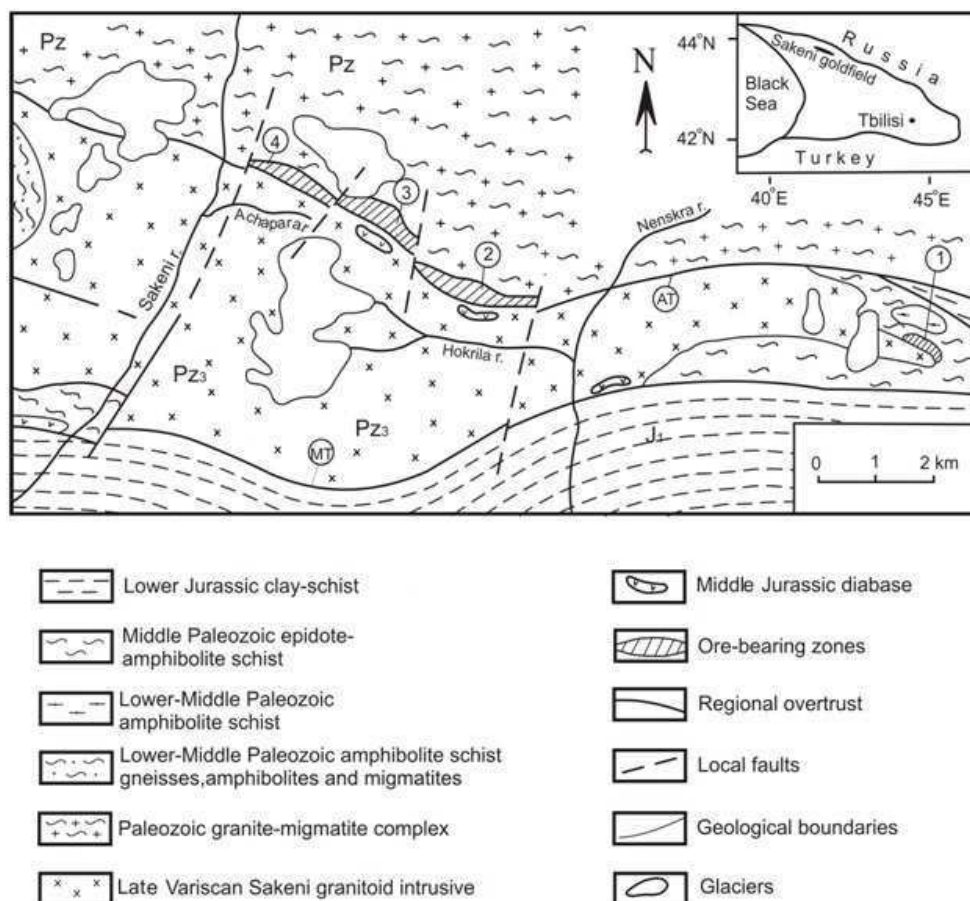


Figure 7. Schematic geological map of Svaneti region with gold ore mineralization and gold placers. Gold ore mineralization: 1- Sakeni ore fields; 2-Tetnashera; 3-Shkenari; 4-Lukhra; 5-Guli; 6- Kvishi; 7- Sgimazuki; 8-Tviberi; 9-Khalde; 10- Arshira; 11- Lasili; Gold placers: I- Jvari; II- Khudoni; III-Khaishi; IV- Chuberi; V-Kharami; VI- Lakhamura; VII- Latali; VIII-Becho; IX-Arshira; X-Lasili; XI-Iely.



**Figure 8. Geological map of the Sakeni goldfield and recognized gold occurrences. Au-bearing zones in bedrock: 1-Kakrinachkuri, 2-Hokrila, 3-Memuli, 4-Achaparar; Regional thrust: MT–Main thrust, AT–Alibeg thrust.**

quartz-pyrite-arsenopyrite association at the Hokrila occurrence.

As a result of our investigations, we have identified a genetic model for the Sakeni goldfield which is that syn-orogenic thermal events activated a fluid system that mobilized metals from the Sakeni intrusive complex. This fluid was focused along the Alibeg thrust fault, and mineralization was localized along and deposited below structural barriers within the thrust itself. We assume that the gold mineralization represents a post-magmatic, gold-quartz-low total sulfide hydrothermal event. This paragenesis is characteristic, worldwide, of many orogenic gold systems (Goldfarb et al., 2005). On a tentative estimation this ore field should contain 60-65 tons of gold (Okrostsvardize and Bluashvili, 2009). Given the large area of bedrock gold mineralization, and its relation to the headwaters of the primary river system in the region, we think that the Sakeni goldfield should be one of the main suppliers of alluvial gold of the Svaneti region. A brief description of the other gold ore-mineralization of the Svaneti region which also represent placer gold sources is given below.

The Kvishi polymetallic ore-mineralization is exposed on the right benches of the river Dolra, about 15km from the village Becho (Fig. 7; VIII). This ore field is connected with a zone of oxidized, silicified Lower Jurassic clay shales. In this zone a 1-1.5 m thick quartz vein is traced along 80m. The average gold content in the vein is 2.25 g/t, silver – 125 g/t, copper – 0.06 %, lead – 7.5 %, zinc – 4.8 % (Kviciani et al., 1997).

The Khalde gold-antimony ore-mineralization is exposed to the SE of the Khalde village, on the southern slopes of Mt. Tsrnari. The

mineralization is associated with the contact zone between Lower Jurassic clay shales and several diabase dykes. In the shales, parallel to the schistosity, a 6 m wide system of quartz veins is developed; this zone can be traced over a distance of 40 m. Analyses of samples from the vein show Sb contents of from 2.88 % to 37.8 %, gold from 0.4 g/t-5.3 g/t, and silver from 130-362 g/t (Kviciani et al., 1997).

The Tviberi ore mineralization was discovered in 1991 (Figs. 7, 8). The mineralization occurs within Lower Jurassic clay-shales, some 18 km N of the village Zhabeshi. Here, gold content reaches 0.8 -1.7 g/t. The size of outcropping mineralization and its grade (a thickness of 180 m and a strike extent of over 750 m) attracted great interest (Okrostsvardize, 2007).

The Lasili-Arshiri goldfield (Fig. 7; 10; 11) is situated in the Enguri River valley, 12 km northwards of the village Eli and is found within Lower Jurassic clay shales. Mineralization consists of gold-bearing quartz veins which appear to genetically belong to the mesothermal class of orogenic gold veins. Gold content in these quartz veins is highly variable ranging from a few grams to tens of grams per ton (Kviciani et al., 1997). On the territory adjacent

to this district, gold sand (placer) accumulations are widespread (Fig. 7: X). Nowadays, as well as in historic times, numerous objects used for a primitive type of mining have been found here.

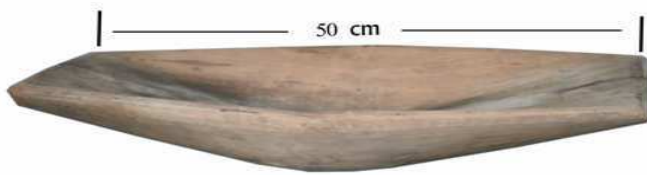
### Alluvial Gold Occurrences

Placer gold is widely distributed in almost all alluvial river systems draining important bedrock gold districts of the world. Mobilization and transportation of the erosional products of the weathering of these deposits are the source of alluvial gold. The coarsest gold flakes or grains (i.e. >0.5 mm) accumulate near the mineralization sources while the finer-grained gold particles are carried several kilometers from the source by flowing water. During transport and subsequent deposition the gold grains undergo significant changes in shape, size and chemical composition. As a result of dissolution and re-precipitation after deposition, the gold grains may increase in size but a “cleansing” of contained iron, copper, and other impurities takes place that leads to increasing fineness of the gold grains.

Svaneti placer gold is mainly found in alluvial sediments. Gold-bearing alluvial sands (gold sands) or gold placers in Svaneti are widespread and the scale of their distribution varies from a few to hundreds of meters. In Svaneti, among the various gold-bearing alluvial sands, the Jvari gold placer (Fig. 7; I) is distinguished by its considerable industrial scale. The Lasili and Arshiri gold fields (Fig. 7; IX; X) are similarly remarkable. Here gold mining goes far back into the historic past. The Latali gold fields (Fig. 7; VIII) are also

distinguished by their large scale. In the Svaneti region, besides the alluvial gold-bearing sands, gold accumulations are also found in so-called “bear’s kettles”, which are river cut depressions into the underlying bedrock stream bed, where specific, weight-induced accumulation of gold took place.

At present the Svans are mining gold from the mountain rivers as they did in ancient history, using sheepskins, and special wooden vessels (Fig. 9). It is rather interesting that this wooden vessel is unlike those used for gold-mining in any other region of the world, showing that it underwent independent evolution in this region alone. In general it is 50 cm long, 30 cm wide at its center and 10 cm wide at its ends; This oval-shaped, deep form is made from one piece from a large ash-tree branch or trunk. Due to its perfect forms and functional efficiency, it is quite clear that its manufacturing handicraft has a long history.

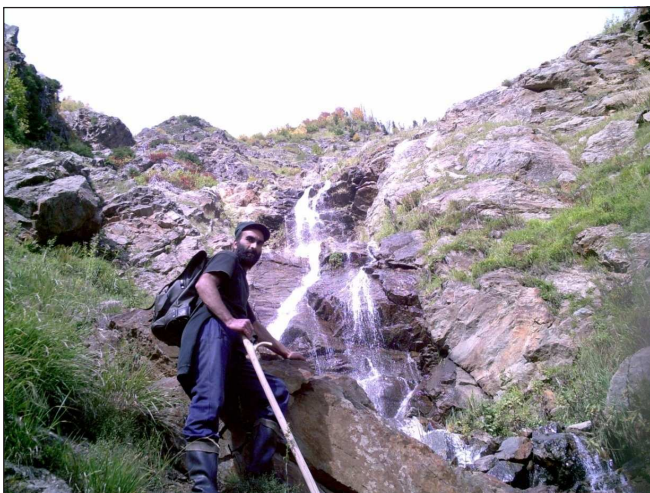


**Figure 9.** Wooden vessel of ash-tree from Svaneti (Sgurishi village).

Svaneti people are well aware of where and when gold should be washed. In addition to the wood vessels they use sheepskins, which they place in streambeds close to gold-containing quartz veins where these veins are washed (and eroded) by springs or creeks and streams. Figure 10 shows an area within the Alibeg thrust zone which is crossed by a young fault, in which quartz-arsenopyrite veins are developed at an intersection of several faults. At this location the concentration of gold is 30-80 g/t Au. Below this fault zone, which is washed by the river Quani, the gold is fixed in eroded placer gravels. These gravels are subsequently washed. Figure 11 depicts the gold grains washed from these gold-containing placers.

## Discussion

Our investigations of the Svaneti ore fields reveal that much of



**Figure 10.** Upper reaches Quani river and part of the Alibegi thrust zone. On the first background –the native Mamuka Narsavidze.



**Figure 11.** Gold grains washed from alluvial placers of the River Quani.

the placer gold was exposed and mined in the historic past. At the same time however, the intensive present day erosional cycle, caused by the abundant contemporary precipitation as well as extensive glacial melting into the hydrological network and the rapid uplift of the Svaneti segment of the Greater Caucasus, promoted the rapid replenishment of gold into the present-day river placers. This concept of active enrichment of the stream gravels of this region is the geological support for the high demonstrated level of gold mining activity in the historical past as well today. Thus, our geological investigations of the Svaneti region, enables us to believe that there was enough reason for the creation of legend, which describes this region “as a country rich of gold”.

The results of the recent geological work as carried out by us in the Svaneti region, response to comments by Pliny the Elder and other ancient sources, proves in our opinion the assumption, that: “the country of the Suani”, is today’s modern Svaneti and not any other province of the ancient Colchis kingdom. In contrast, some researchers postulate that Pliny the Elder believed that the Argonauts traveled to modern Vani and not Svaneti, i.e. interpreting “the Suani” to mean Vani rather than Svaneti. However, as a result of archaeological excavations it can be shown that the ancient settlements of the Vani region reached their highest level of development in III BC and that the oldest archaeological material dates back to VIII-VI centuries BC i.e. younger than the earlier Colchis kingdom. As mentioned above, interesting artifacts, including high artistic quality gold objects (see Fig. 2) were found here. However the Argonauts trip cannot be linked to Vani district, because their adventure is a very old story that happened during the Trojan War, which proceeded, and was subsequently described by Homer in VIII century BC. In addition, as noted above, the myth of the Argonauts originated during the Mycenaean civilization, which, as is well known, developed during the early Bronze Age, about XVI century BC, and which was suddenly destroyed in XI century BC, together with the eastern Mediterranean civilization (Castleden, 2005). Thus, the Argonauts’ trip, if it was a real story, should have taken place prior to XI century BC. Colchis on the Black Sea coast was colonized by the Greeks from the ancient period starting in the VIII-VII centuries BC (Hammond, 1976). At that time, the Black Sea coastal cities of Colchis, Rhizos, Phasis, Pittyus, and including Vani, were developed (Lordkipanidze, 2000). We believe this completely precludes any kind relationship of the Argonauts to the ancient, but younger, historical period at Vani.

To conclude this discussion, we note that one of the arguments, according to which some scientists believe that the Argonauts trip to the kingdom of Colchis is a myth and not reality, is that there are no buildings, which prove the existence of a powerful Colchis kingdom during the XII-XI centuries BC. In our opinion, because the Caucasian region represents a young orogenic system, where many intensive natural disasters have taken place. We consider that such events could be a logical reason for the possible destruction of physical evidence of the culture of ancient Colchis. It is possible that similar geologic activity caused the sudden destruction of the ancient Mycenaean civilization in XI century BC. In particular, the eruption of the Santorini super volcano in the Eastern Mediterranean has been extensively discussed by scientists (Balter, 2006). Of course, we should also take account of numerous wars of conquest that the ancient kingdom of Colchis endured, any one of which would have brought about the destruction of its cultural heritage. Troy is a good example of such a case where the destruction was so complete that if it were not for Schliemann's obsession with excavations for the whereabouts of ancient Troy we would not have known anything about its physical existence even now, apart from the poem of Homer. Taking account of these points, and that the Argonaut's expedition took place far earlier than Trojan war, it is credible that edifices which confirm the strength of the ancient Colchis kingdom have been obliterated.

## Conclusions

This analysis of our geological research and this review has shown that the Svaneti region is rather rich in gold occurrences. These occurrences are found in the Paleozoic "crystalline basement complex" as well as in alpine intrusions and sedimentary cover.

From our modern geological research data we can come to the conclusion that the "gold sands" mentioned in ancient Greek mythology and in historical sources were a geological reality. Our work also shows that the gold content in the rivers sands of this region are sufficiently large to give grounds for the creation of legend, which describes Svaneti as the "country rich of this noble metal". When our geological research is coupled with the presence of modern implements and techniques that have ancient historical precedents for gold placer mining, we share the viewpoint of the Roman historian Apian Alexandrine (90-170 A.D.) who believed that the myth about expedition of the Argonauts and their quest for the "Golden Fleece" was based on reality. We contend that their trip to the Colchis Kingdom, was a real event, the main purpose of which was to obtain gold and gold mining technology from those who were working the rivers sands of the Colchis Kingdom.

The phenomenon of the "Golden Fleece" is likely, according to our research, to be connected with the sheepskin (fleece) technique of gold mining from the rivers; the final result of which was a gold impregnated sheepskin. It was the fanciful characterization of this actual process which led to the romantic concept of the "Golden Fleece" that has been known in the civilized world ever since Homer's time.

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