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DISCUSSION

UDK 553.06(048)=20

**Comments on the publication by Ernest Faninger & Ivo Štručl
Plutonic Emplacement in the Eastern Karavanke Alps**

GEOLOGIJA Volume 21, Part 1, 81—87 (1978), Ljubljana

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In the *Geologija* 21, vol. 1, pp. 81—87 has appeared the article "Plutonic emplacement in the eastern Karavanke Alps" written by E. Faninger and I. Štručl. I would like to comment the last paragraph concerning the conclusion and statement that the determined age of granite discussed in the article is Paleozoic and cannot be ascribed any association with the lead-zinc deposits at Mežica. The age determinations indicate whether the uppermost Paleozoic or the lower Triassic age. Not repeating various published data dealing with the accuracy of the age determination the article shows that the postmagmatic thermal activity has been active during middle Triassic or at least during a part of it. Persist just on the onesided explanation is professionally unacceptable, as about Mežica and similar other deposits in Eastern Alps no uniform opinion exists concerning their generation and emplacement. According to the last knowledge from similar deposits in the world such mineralizations may be formed only whenever a heat flow is added to the areas of ore deposition, because otherwise such deposits would be formed everywhere and not only at the limited spots. However, this matter is not in line with the article and needs no further remarks.

UDK 553.06(076.2)

**Replay to the comments of Boris Bercè on the publication
by Ernest Faninger & Ivo Štručl****Plutonic Emplacement in the Eastern Karavanke Alps**

GEOLOGIJA Volume 21, Part 1, 81—87 (1978), Ljubljana

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To the remark by B. Bercè regarding our paper "Plutonic Emplacement in the Eastern Karavanke Alps" (*Geologija*, 1978, vol. 21, p. 81—87, Ljubljana) we can give the following explanation.

First of all we would like to emphasize that the age of intrusives of the granitic belt of the Eisenkappel emplacement in the Karavanke Alps was determined by radiometric dating as being between 216 and 244 million years, which places with a high probability the granite into the Upper Permian. Here the question arises whether this plutonism can be related to the origin of lead-zinc deposits in the Karavanke Alps and in other regions of the Eastern Alps, or not. We doubt in the reality of such relationship from following reasons.

1. In the Karavanke Alps no evidence of post-plutonic thermal activity can be found. Alteration of host rocks of the Middle and Upper Triassic lead-zinc deposits as represented e.g. by recrystallization, dolomitization, brecciation, metasomatism etc., which were attributed to hydrothermal activity previously by almost everyone, at present, however, only by very few geologists, can be explained without difficulty by sedimentological, diagenetic and post-diagenetic processes. This view is supported also by investigations of the isotopic composition of sulphur (M. Drovenik and others, 1970, V. A. Grinenko and others, 1974) which is biogenic. Besides, also certain genetic relationships exist between the origin of the deposit, paleogeography and sedimentary environments.

2. Evidence of contact metamorphism has been found up to now only in rocks of the Magdalensberg series. In the rocks altered by contact metamorphism no enrichments of sulphide minerals can be detected.

3. Finally, also the lead isotope ratios in galena from different Eastern Alpine lead-zinc deposits must not be overlooked. The model age of lead from these deposits (∞) amounts to between 300 and 350 million years. Considering the relatively high 207 Pb/204 Pb ratios V. Köppl (1977, unpublished report) attributed to this lead a crustal origin.

B. Berce reproaches us in his discussion that our explanations are one-sided and therefore professionally unacceptable. Actually, we only stated that the lead-zinc deposits could hardly be genetically related to the Karavanke plutons due to the considerable age difference, without however going into further detail. We could direct a similar reproach to his address too. Let us quote the following paragraph of his text: "...such mineralizations may be formed only whenever a heat flow is added to the areas of ore deposition, because otherwise such deposits would be formed everywhere and not only at the limited spots". Unfortunately, this statement is not exact. Although we attribute to these lead-zinc deposits a syn-sedimentary origin, the process is not as simple as to be explained in a single sentence, because the deposition and especially the concentration of both metals depends on quite a few different factors. Therefore the statement by B. Berce that deposits "...would be formed everywhere..." does not suit the circumstances.

References

- Drovenik, M., Leskovšek, H., Pezdič, J. in Štruel, I. 1970, Izotopska sestava žvepla v sulfidih nekaterih jugoslovanskih nahajališč. Rudarsko-metalurški zbornik, št. 2—3, Ljubljana.
- Grinenko, V. A., Zairi, N. M., Šadlun, T. N. 1974, Poligennaja priroda globuljarnyh sulfidov v stratiformnyh mestoroždenijah. Geologija rudnyh mestoroždenij, XIV-1, 66—77 Moskva.