Abstract

ÉTUDE PÉTROGRAPHIQUE DES OPHIOLITES ET DES GRANITES DU FLYSCH DES GETS

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ABSTRACT

The first part of this study is dedicated to the detailed description of the various outcrops.

The following petrographical descriptions consist in two parts; one is concerning the igneous rocks in general: acidic (granites) and ophiolitic (diabases, gabbros and serpentines), the other is mainly devoted to xenoliths within the serpentines (the examination of the xenoliths has been particularly detailed).

The granites, associated or not to diabases, form scales of highly variable dimensions. These granites are to be attributed to the Hercynian cycle following several datations by the total lead method. Two varieties have to be considered: the first mainly albitic, the second one, with albite and orthoclase; in the former a sodic metasomatism may explain the disapearance of the orthoclase.

Ophiolites are represented by the three members of the trilogy: diabases-gabbros-serpentines.

By far diabases are the most abundant and they belong to various types. We have to mention diabases associated to the granites, diabases and diabasic formations related to the submarine volcanism, diabases more or less closely related to the serpentines and various diabasic breccias. We have to consider two mineralogical tendencies: first the obviously spilitic varieties (albite-chlorite, without or with hematite), secondly the amphibolic varieties and also a few varieties with pyroxene; these last two varieties, although having a spilitic tendency, may show plagioclase with some relictual calcic component.

Gabbros are poorly represented. They form either more or less individual masses, either elements of ophiolitic breccias, either xenoliths within the serpentines. They consist mainly in an amphibole bearing albitic variety, sometimes in a pyroxene variety. Some varieties with more calcic plagioclase have been observed.

The antigorite free serpentines are formed after a peridotite the original nature of which cannot be defined. Much more abundant than the gabbros, these serpentines appear under various aspects between a massive type and a totally sheared one; among these, an ophicalcite is very similar to the Appenine " Levanto ". Diabasic and rare gabbroic xenoliths are always present among the various types of serpentines. Some of these xenoliths are the " ophisphérites ", characterized by a specific concentric zonation.

By far the most interesting xenoliths, the " ophisphérites " present the problems both of their presence and of their successive transformations. These are attributed to two different episodes: during the first one the xenotiths could have been affected by a more or less important development of calcic silicates (clinozoisite mainly), whereas only during the second one develop the concentric more or less chloritized zones.

In the petrochemical section of this work, the results of the chemical analysis are accompanied by the Niggli parameters, by some results about trace-elements and by various diagrams.

Gabbros and diabases either related to the serpentines either as xenoliths were investigated through geochronometrical K/A method. Following these results, the majority of the dated ophiolites belongs to Jurassic age, but the ophiolitic activity continued up to the Upper Cretaceous.

The synthesis of the obtained results constitutes part of the conclusion of this work. We discuss, on one side, the relationship between igneous rocks and associated sediments, on the other side the paleogeographical initial realm of the igneous rocks of " les Gets ". We reached the conclusion that these rocks are scattered lenses either directly among flysch type sediments or in other sedimentary formations.

We present a discussion of the various opposed hypotheses concerning the initial paleogeographical realm of these rocks. It seems obvious now that the related sedimentary series belong to an allochtonous mass thrusted upon the " Nappe de la Brèche ". This mass along with its igneous components belongs to the extreme upper part of the prealpine body, at least in the studied area. For some writers (Trümpy) the initial paleogeographical realm of this unit is to be found northwest of the " Dent-Blanche " zone, but for other authors (G. and P. ELTER, C. STURANI and M. WEIDMANN) its origin might be related to the Canavese zone.