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TECTONIC STRUCTURE OF MT. HYMITTOS

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Η ΤΕΚΤΟΝΙΚΗ ΔΟΜΗ ΤΟΥ ΥΜΗΤΤΟΥ



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TECTONIC STRUCTURE OF MT. HYMITTOS (ATTICA - GREECE)*

by
S. LEKKAS & S. LOZIOS**

I. INTRODUCTION

The tectonic structure of Mt. Hymittos, located just east of Athens, is still a matter of dispute; the main questions being "how many", "which", and "of what type" are the tectonic units forming Mt. Hymittos complex? LEPSIUS (1893) was the first to present a complete lithostratigraphic structure of the Attica metamorphics (mainly considering them as pre-alpine as well as alpine rocks) which is widely accepted now a days with only few minor alterations (Table 1). MARINOS & PETRASCHECK (1956), for the first time, suggest the existence of two main geotectonic units -one relative autochthonous and an allochthonous nappe- and prove with fossil fauna that all metamorphic rocks of South and Central Attica are Mesozoic in age (Table 1). MARIOLAKOS (1971, 1972) and MARIOLAKOS & PAPANIKOLAOU (1973) note that there is a need to revise Lepsius' lithostratigraphic structure .

KATSIKATSOS (1977b,c) accepts in general the view point of MARINOS & PETRASCHECK (1956) and argues that the autochthonous ("Attica Unit") and the allochthonous ("Eohellenic Nappe") belong to the "Internal Hellenides" (Table 1). The same author also recognised a third metamorphic unit belonging to the "Internal Hellenides", named "Almyropotamos Unit", cropping out at NE Attica and Southern Evia. Later on Katsikatsos et al (1986) and Katsikatsos (1990) modified their previous view-point (following Dubois' & Bignot's, 1979 discovery of Nummulites bearing hard ground in the transition beds to the flysch of "Almyropotamos Unit"), suggesting that the relative autochthonous "Attica" and "Almyropotamos" units are equivalent and homologous to the non-metamorphic "Tripolis Unit" (which belongs to the "External Hellenides") and that the allochthonous nappe corresponds to the "blue schist nappes", known at Southern Evia and Cyclades ("Neohellenic Nappe"). Thus, he concludes that the whole structure forms a large-scale tectonic window, similar to the "Olympos-Ossa" and the "Krania-Elassona" tectonic windows recognised at Thessaly.

CLEMENT (1983) identified five units within the Attica metamorphic rocks: "Hymittos", "Penteli" and "Ekali" without clarifying their geotectonic position, "Marathon" with some distinct characteristics of "Internal Hellenides", and "Avlona-Kotroni" which is comparable to the Parnitha non-metamorphic rocks ("Internal Hellenides" - see also KATSIKATSOS 1977a and CLEMENT & KATSIKATSOS 1982). Finally, LOZIOS (1993) suggests the existence of a relative autochthonous unit ("NE Attica

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Unit") and an allochthonous nappe ("Agios Georgios Unit") in NE Attica. "NE Attica Unit" is characterised by a continuous stratigraphic column from Triassic up to Eocene (including a meta-volcanosedimentary sequence at the base followed by a thick sequence of marble and the flysch at the top) homologous to the "Almyropotamos Unit" at Southern Evia and the "Olympos - Ossa Unit" at Thessaly. The "Agios Georgios Unit" is homologous either to the south Evia - Cyclades - Ampelakia blue schist nappe or the allochthonous south Attica nappe.

This paper attempts to give a new model of the tectonic structure at Mt. Hymittos focusing on the "relative autochthonous system" as described by MARINOS & PETRACHECK (1956). The following descriptions are based on detailed field mapping and litho-stratigraphic correlation. (Table 1 & Figs 1 & 2)

II. THE "VARI - KIROU PIRA UNIT"

This is the lower-most, relative autochthonous unit of Mt. Hymittos and corresponds to the lower members of the lithostratigraphic column given by LEPSIUS (1893) (horizons of "Vari Schist" and "Pirnari Dolomite") and also to a part of "Upper Marble" horizon (Table 1). Stratigraphy is very complicated due to the macrostructure which is characterised by large (extending over a few km) isoclinal recumbent folds, assumed by repetitions of the same stratigraphic horizons. Lack of identifiable fossils complicates the situation further and leaves the possibility of reverse stratigraphy open. The lithostratigraphic sequence of "Vari - Kirou Pira Unit", from base to top, is the following (Figs 1&2):

A monotonous formation of calc- and mica-schist (homologous to the "Vari Schist" of LEPSIUS, 1893) is the base of the sequence and crops out mainly at southern Hymittos and especially at the region of Vari and Kremastos Lagos. At the upper part of the formation a thin (5-10 m) marble horizon intercalates the schists and is repeated due to isoclinal folds.

Grey to black, thin-bedded, impure and dolomitic marbles and cipolines follow in normal stratigraphic contact (Fig. 3). They correspond to a part of LEPSIUS' (1893) "Pirnari Dolomite". This formation crops out essentially at southern and western Mt. Hymittos (Vari and Pirnari regions), in contrast to the area of Kirou Pira at northern Hymittos where only limited outcrops are present. The thickness of this formation is very difficult to determine due to isoclinal folding.

The contact between the calc- mica- schists and the dolomitic marbles and cipolines is a normal stratigraphic characterised by transitional beds, made of alternations of thin horizons of both lithologies (from a few centimetres to a few tens of centimetres thick), within a zone several metres thick (Fig. 2). Small detachments between the various lithologies (schist/marble), result in small-scale tectonic contacts (e.g. at Kremastos Lagos region), marked by cataclasite. It is remarkable that transitional beds of the same rock types are observed at both sides of these tectonic contacts.

The latter formation progressively pass (through a zone of few metres thick characterised of alternations of both lithologies) to white massive dolomite, cropping out at central Hymittos (Halidou, Sesi and Stefania regions). However, a smaller outcrop at northern Hymittos (Kirou Pira hill east of the University campus) is also observed exhibiting the same lithologic and tectonic characteristics (Figs 1&4). LEPSIUS (1893) and all subsequent authors consider this small outcrop as part of the "Upper Marble" with regards to its stratigraphic position, as this dolomite seems to

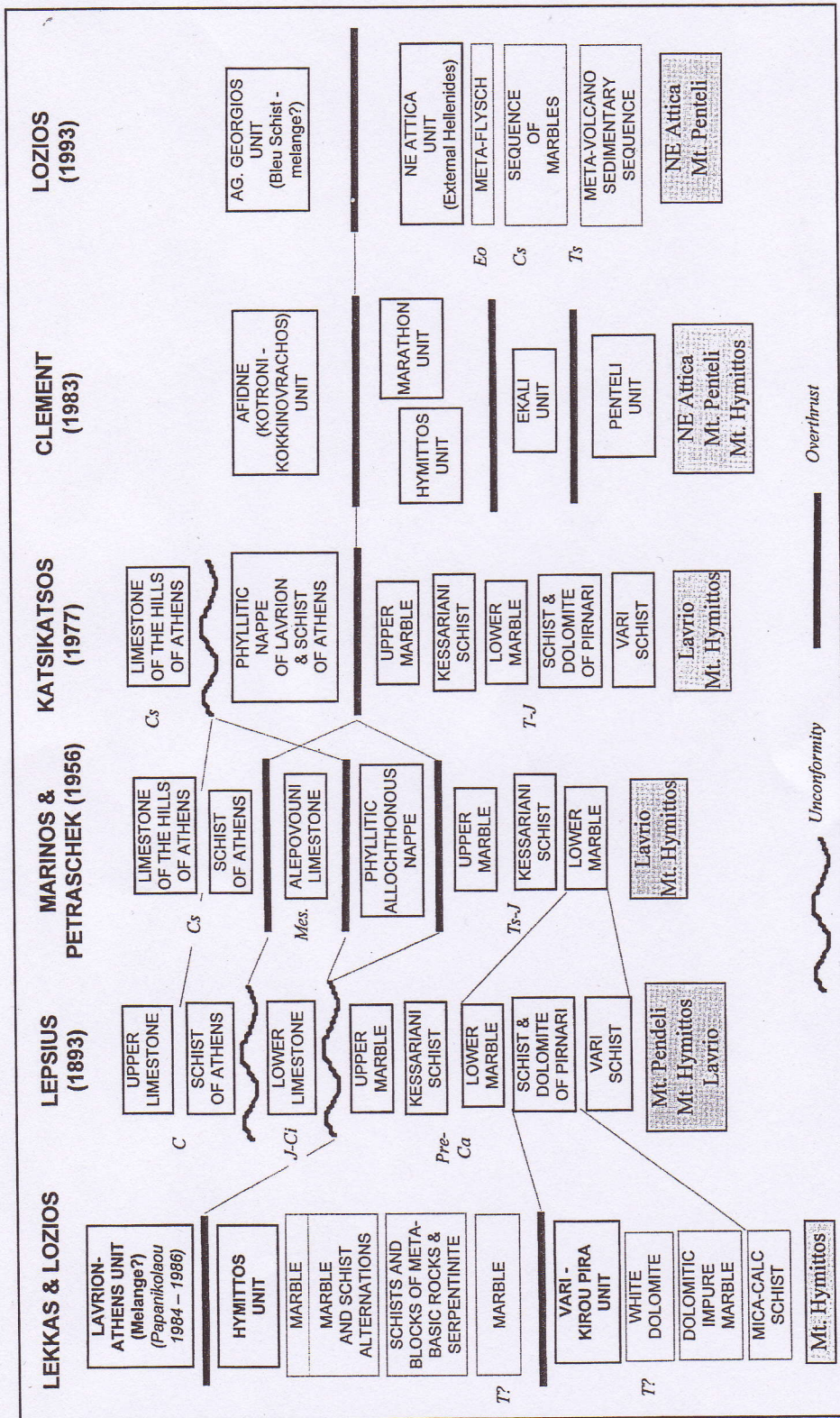


Table 1. Correlation between the lithostratigraphic columns of the tectonic units of Mt. Hymittos and Attica, given by this paper (LEKKAS & LOZIOS) and the previous authors.

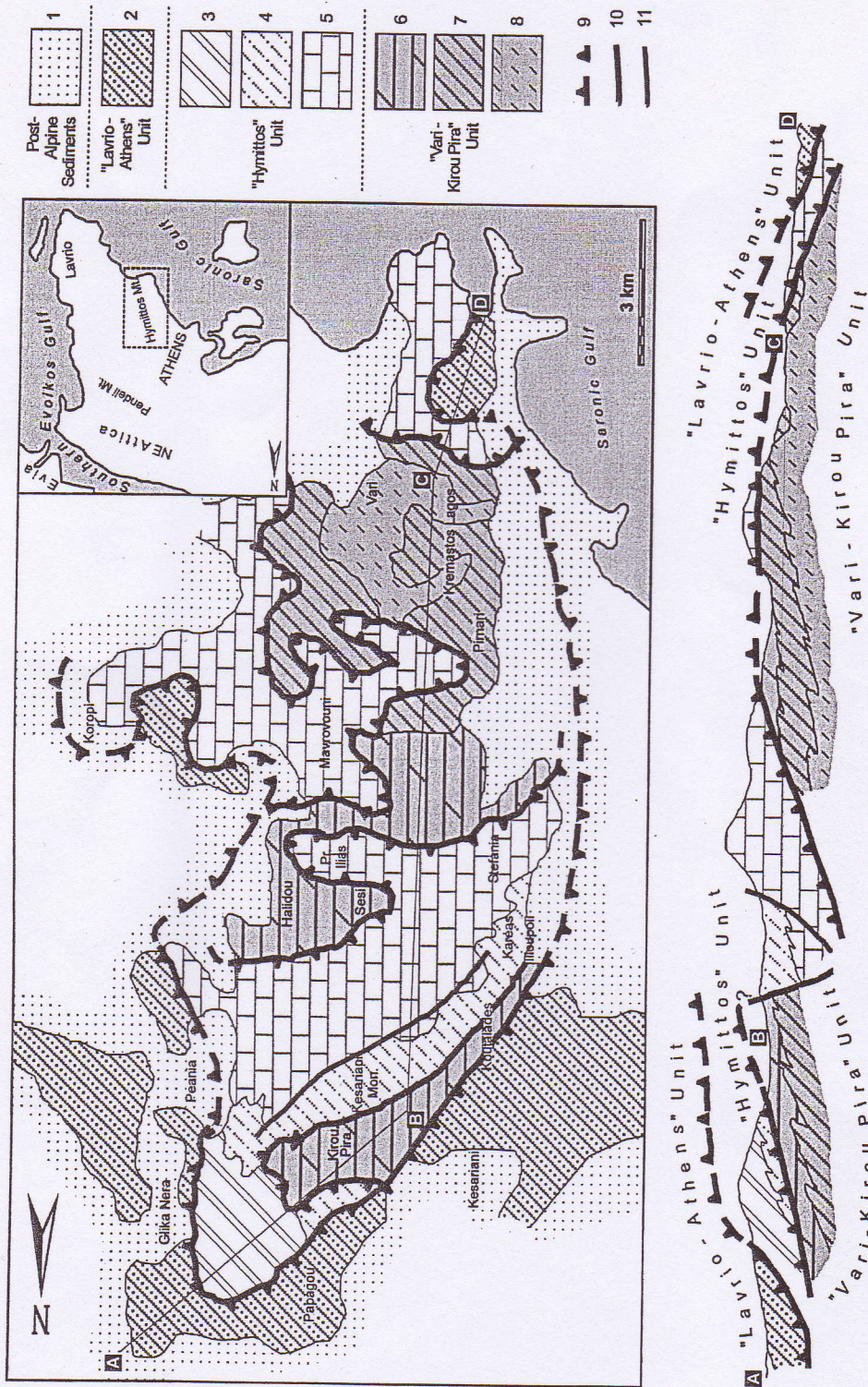


Fig. 1. Simplified geological map of Mt. Hymittos. 1: post-alpine sediments, 2. "Lavrio-Athens" Unit, 3, 4 & 5. "Hymittos" Unit (3: marble and alternations of marble and schist, 4. "Kessariani Schist", 5. "Lower Marble"), 6, 7, 8. "Vari-Kirou Pira" Unit (6. white massive dolomite, 7. impure dolomitic marble, 8. "Vari Schist"), 9. overthrust or detachment, 10. tectonic contact, 11. fault. Note: In the cross section the bedding (or the schistosity) is shown by the black folded lines and not by the lines of the fill patterns.

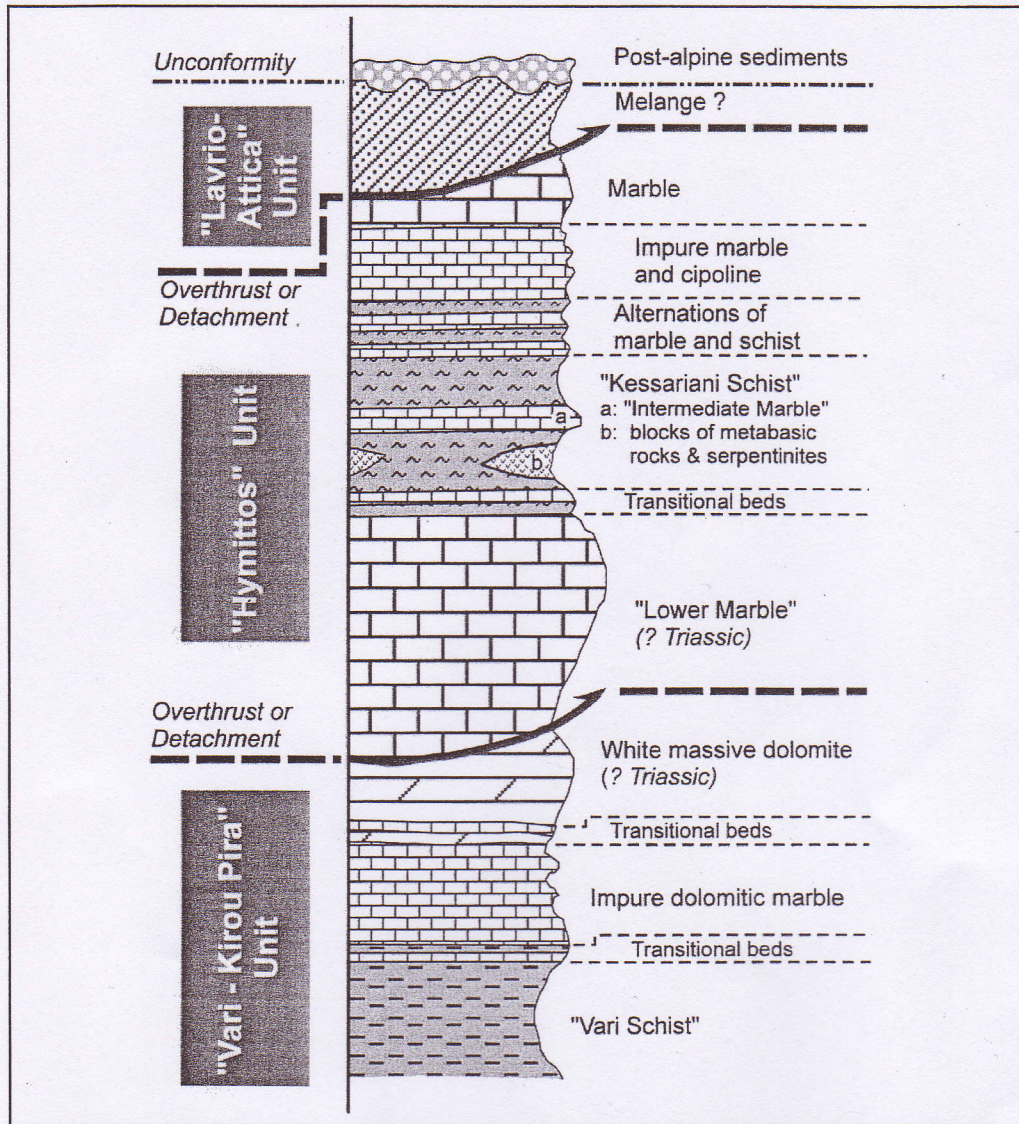


Fig. 2. Schematic stratigraphic column of the tectonic units of Mt. Hymittos.



Fig. 3. Impure dolomitic marbles of "Vari-Kirou Pira" Unit.

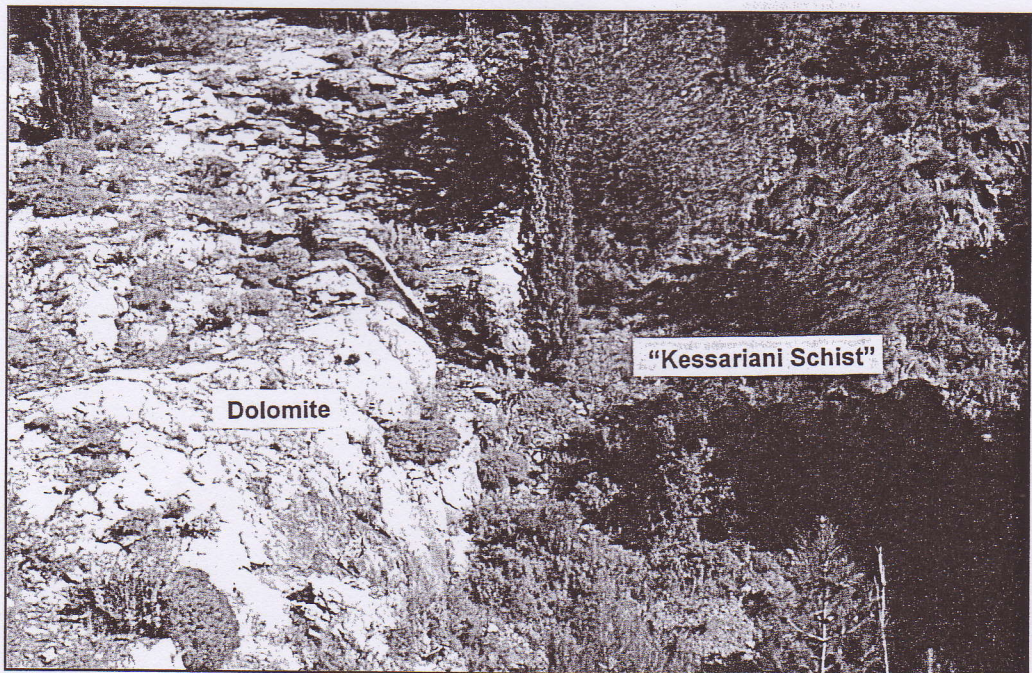


Fig. 4. The massive white dolomite of "Vari-Kirou Pira" Unit below the "Kessariani Schist" of "Hymittos" Unit through an almost vertical tectonic contact.

overlie normally the "Kessariani Schist" (see also "Hymittos Unit"). In stead, our investigation revealed that Kirou Pira dolomite is by no means at the same stratigraphic level with the horizon termed "Upper Marble" by Lepsius, since it lies every where tectonically below "Kessariani Schist" and other formations of "Hymittos Unit".

Bearing in mind the tectonic position of "Kirou Pira" dolomite, and the remarkable macroscopic and microscopic similarities between this dolomite and the dolomite of central Hymittos, it can be suggested that they are in fact outcrops of the same formation. Clear marks of corals are found at the southern slopes of Kirou Pira hill in the cutting of the road leading through Kessariani Monastery to Hymittos top. Unfortunately, it was not possible to identify them even though earlier researchers (RENZ 1910, NEGRIS 1915 & 1919, and SINDOWSKI 1949) assigned a Triassic age. Notably, marks of corals were also found by LEPSIUS (1893) in the "Pirnari Dolomite".

III. THE "HYMITTOS UNIT"

The "Hymittos Unit" is tectonically overlying the "Vari - Kirou Pira Unit" and corresponds to the horizons named by LEPSIUS (1893) as "Lower Marble", "Kessariani Schist" and "Upper Marble" (Table 1). The formations composing the "Hymittos Unit" are described bellow in litho-stratigraphic order as shown in figures 1 and 2. Note that the possibility of totally reversed stratigraphy remains, as with the "Vari - Kirou Pira Unit", due to intense folding and lack of age determinations.

The older formation comprises white, light blue or grey, massive or thick bedded marble. Several outcrops are found at central and northern Hymittos (from Koropi City to Kessariani Monastery) where as they limited towards the south (Vari Bay). This marble correspond to the horizon named "Lower Marble" by Lepsius. According to sparse fossil fauna (BITTNER 1880, BUCKING 1881, STEINMANN 1890) the age of the marble is Triassic at least in part.

A continuous sequence of various types of schists is overlying the "Lower Marble", through a transitional zone of a few metres thick. It corresponds to "Kessariani Schist" of LEPSIUS (1893), and crops out exclusively at northern Hymittos in an elongated zone of NE-SW direction (Fig. 1). In contrast to the "Vari Schist", "Kessariani Schist", from the petrologic point of view, is represented by a variety of lithological types such as mica-, calc-, epidote- chlorite- and actinolite- schists, alternating with quartzites, cipolines and thin marble horizons (from a few cm to several metres thick). The more important horizons are Known as "Intermediate Marble" (Fig. 2). Blocks (varying in size) of meta-basic and ultrabasic rocks (serpentinites) crop out in the form of tectonic wedges or lenses in some localities within "Kessariani Schist" (Fig. 2).

The transition from the "Lower Marble" to the "Kessariani Schist" is normal, as it can be observed at the old quarries at Kareas region (Fig. 5), at Ilioupoli City and at the north eastern area of Mt. Hymittos, between Glika Nera and Peania. Within a several metre thick transitional zone, white marbles pass progressively to cipolines, impure marbles, marble/schist alternations and finally at the schist sequence. In some places (like at Kareas quarries), imbricate structures between "Lower Marble" and "Kessariani Schist", accompanied by mylonites and mylonitic structures, can be observed.

This is interpreted as a local phenomenon due either to thrusts parallel to the reverse limb of the large scale isoclinal recumbent folds or to secondary detachment faults. The northern boundary of the contact between the "Kessariani Schist" and the "Lower Marble" is linear, representing a normal listric fault, striking NE and dipping

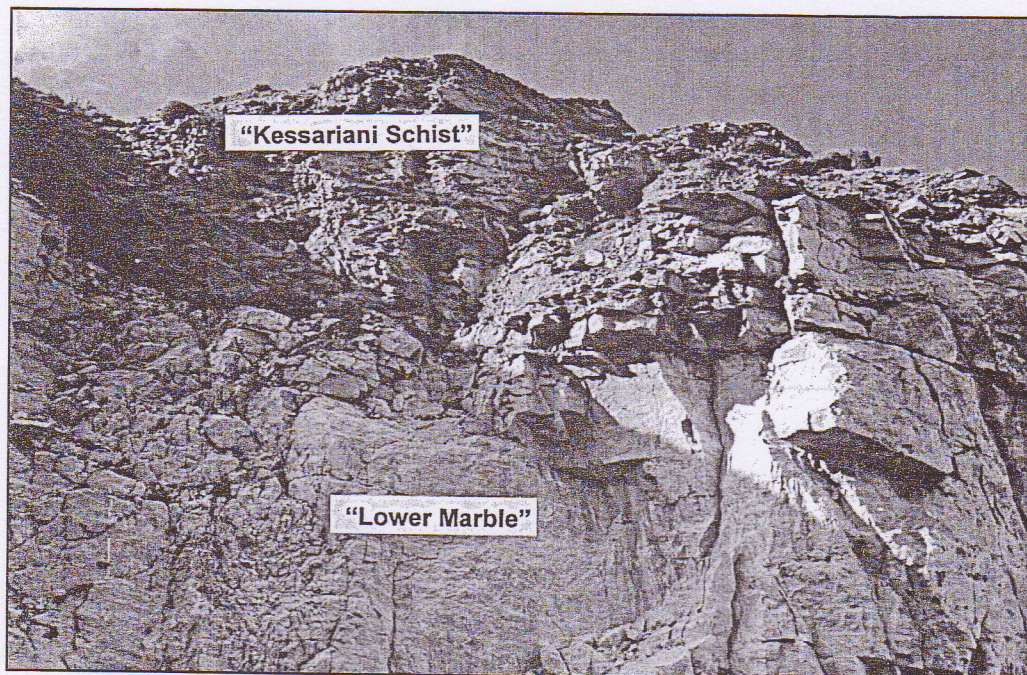


Fig. 5. The transition between "Lower Marble" and "Kessariani Schist" ("Hymittos" Unit) at Kareas region.

towards NW. The "Kessariani Schist" belongs to the hanging wall and "Lower Marble" to the footwall. The fault zone is characterised by intense morphological slopes and it is covered by scree and fallen blocks of the "Lower Marble" which crops out at the highest peaks forming the crest of Mt. Hymittos.

At northern-most Mt. Hymittos, through a typical transitional zone, occurs over the "Kessariani Schist", another formation found, corresponding partially to the horizon of the "Upper Marble" of LEPSIUS (1893), (Table 1 and Figs 1 & 2). This formation consists of successive alternations of blue or white marbles, impure marbles, cipolines and calc-mica schists (Fig. 6). The thickness of every individual horizon varies from 1 to a few tens of metres. Even though field work revealed that most of the alternations are due to isoclinal recumbent macro-folds, the primary thickness of the formation, which presents a transitional character, seems to be very large. This is in contrast with the contact between the "Lower Marble" and the "Kessariani Schist" where the thickness of the transitional beds is only a few metres. Towards its top the formation is passing to a calcareous sequence, represented by blue, grey or white marbles, as it can be observed at the area of Agios Ioannis Kinigos Monastery.

The different nature of the transitional beds between the "Lower Marble" and the "Kessariani Schist" on the one hand, and the "Kessariani Schist" and the overlying calcareous formation on the other, together with the macroscopic differences between the marble sequences underlying and overlying the "Kessariani Schist", reveal that they represent different stratigraphic formations.



Fig. 6. The upper calcareous formation of "Hymittos" Unit which is characterized by alternations between impure marbles and schists.

IV. THE CONTACT BETWEEN "VARI - KIROU PIRA" AND "HYMITTOS" UNITS

Most researchers (LEPSIUS 1893, MARINOS & PETRASCHECK 1956, KATSIKATSOS 1977a, b, c, 1990, Clement 1983) accept that the contact between the "Vari - Kirou Pira" and the "Hymittos" units is a normal one and suggest that schist and dolomite, outcropping at Vari and Pirnari areas, represent the lower formations of the relative autochthonous "Hymittos Unit". MARIOLAKOS and LEKKAS (1974) accept the previous view point, even though they describe (west of Koropi City) a tectonic contact (a local character upthrust) between the overlying marble and the underlying dolomite. The results of field work, which are presented herein directly challenge this view point.

At central and southern Mt. Hymittos one can observe the "Lower Marble" of "Hymittos Unit" overlying tectonically the formations and the characteristic horizons of the "Vari - Kirou Pira Unit" (Figs. 1&7). More specifically, the marble is either overlying the white massive dolomite or the impure dolomitic marble and cipoline (both known as "Pirnari Dolomite" by LEPSIUS 1893) and rarely overlying the "Vari Schist". Cataclastic rocks often develop along this contact, within a zone up to a few metres wide. They are represented by reddish tectonic breccia (with marble and rarely dolomite clasts), cataclasite and cargneule which mark the marble and dolomite adjacent to the contact.

The tectonic contact between "Hymittos" and "Vari - Kirou Pira" units is very easily recognised at the field since erosion of the underlying dolomite has produced a distinct morphological cliff in the overlying marble. The macro-structure (km-scale) of the

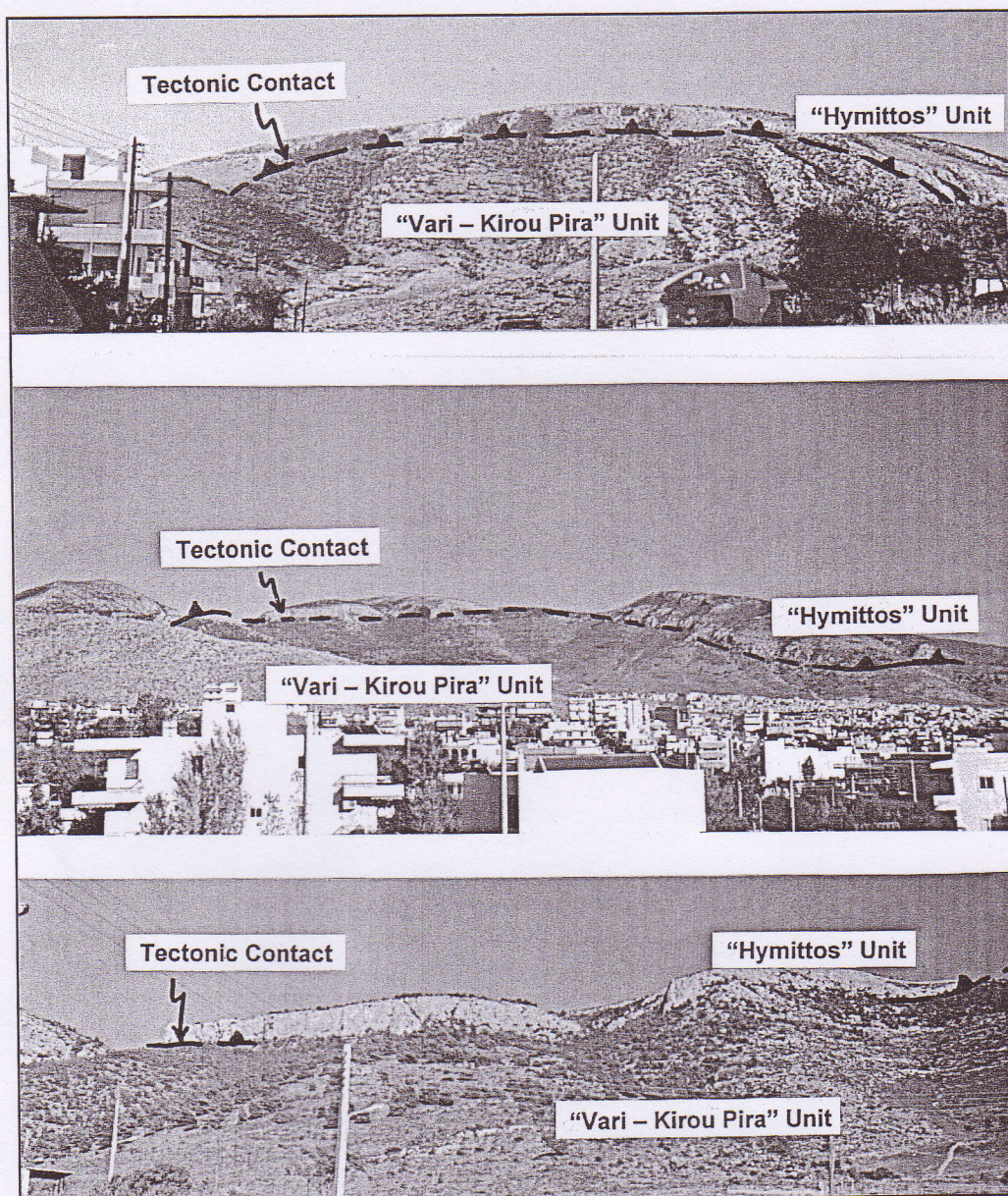
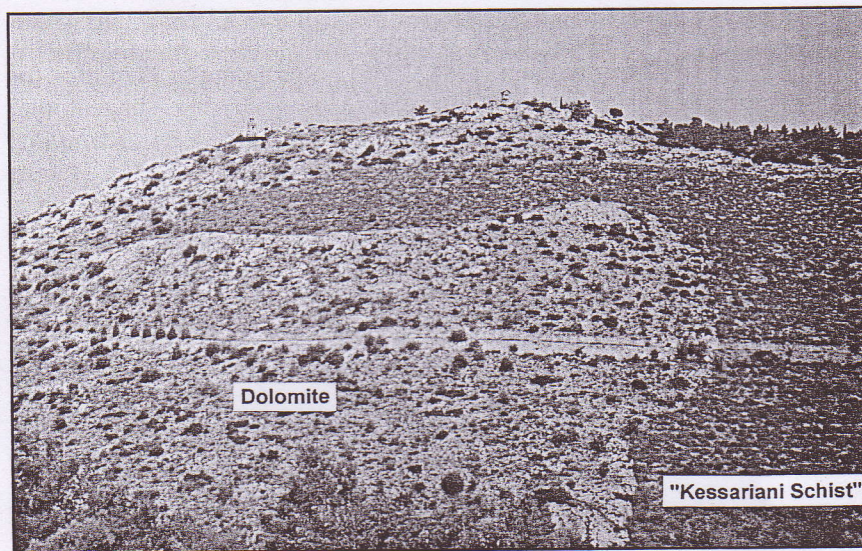


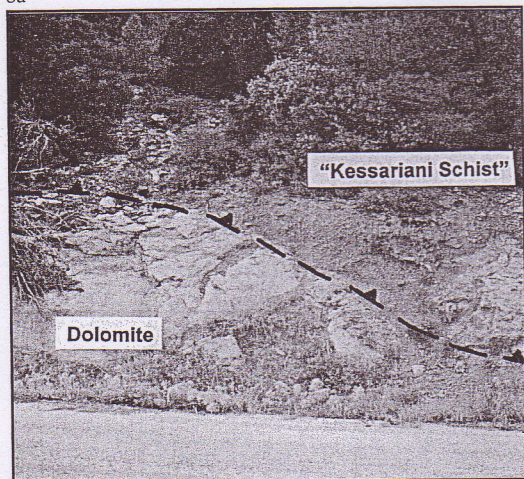
Fig. 7. The tectonic contact between "Vari-Kirou Pira" and "Hymittos" Units.

contact presents a very geometric character as it is deformed to a dome type conical macrofold (Fig. 7) dipping gently around a vertical axis situated at the lowest fringe of central Hymittos (between Profitis Ilias and Mavrovouni peaks). More precisely, the deformation pattern of the contact reveals the existence of two horizontal symmetry axes. The primary one is oriented to the E-W direction and makes the contact to dip towards north at the North and towards south at the South. The secondary axis is running N-S, along the morphological axis of Mt. Hymittos and makes the contact to dip towards east at the East and towards west at the West.

At northern Hymittos the contact is even more complex (Fig. 8) since the dolomite of "Vari - Kirou Pira Unit" is tectonically underlying both "Kessariani Schist" and the upper calcareous formation of "Hymittos Unit", through a nearly horizontal thrust (Fig. 8a) or an almost vertical tectonic contact striking NE-SW and dipping SE (Fig. 8b). This tectonic contact is very complicated since in some cases it seems to be deformed and folded (as at the southern slopes of Kirou Pira hill, Fig. 8). It is remarkable that during the detailed mapping (scale 1:5.000) at this area, neither a transition between schist and dolomite nor the dolomite overlying the schist, have been observed. More specifically,



8a



8b

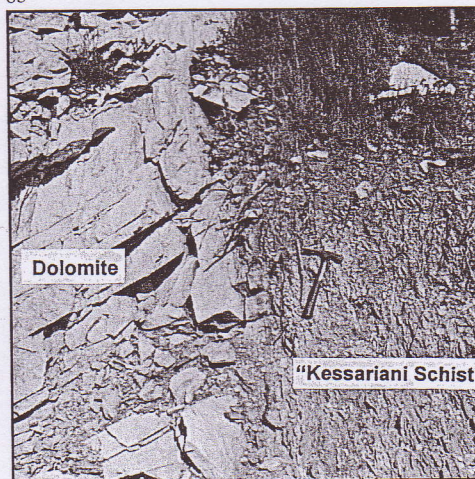


Fig. 8. The contact between the massive white dolomite of "Vari-Kirou Pira" Unit and the "Kessariani Schist" of "Hymittos" Unit is very complicated while in some places (Kirou Pira hill) it is deformed and folded. It is represented either by an almost horizontal overthrust or detachment (Fig. 8a) or by an almost vertical tectonic contact (Fig. 8b). In any case the schist overlies the dolomite.

at the northern slopes of Kessariani valley and westwards at the southern slopes of Koutalades hill, the contact between "Kessariani Schist" and dolomite is well visible. On the map this boundary is represented by a straight line and corresponds to an almost vertical tectonic contact or fault, striking NE-SW and dipping towards SE.

On the contrary, at the southern and north-eastern slopes of Kessariani valley and more to the north (east of Papagou Cemetery), both "Kessariani Schist" and the overlying formation of marble and schist alternations are sitting through an almost horizontal tectonic contact over the "Kirou Pira" dolomite (Fig. 8a). The result of this tectonic positioning is that "Kirou Pira" dolomite is outcropping -around the Kessariani Monastery region- in the form of tectonic windows below the "Kessariani Schist", from a few tens to a few hundreds of m² in size (Fig. 9).

The overall geotectonic scheme of Mt. Hymittos is integrated with the allochthonous "Lavrion-Athens Unit" (Papanikolaou, 1984, 1986) outcropping at Hymittos foot (Figs 1&2) towards the west (Athens basin) and the east (Mesogia basin). The tectonic contact which places this allochthonous unit over both "Hymittos" and "Vari - Kirou Pira" units is very well recognized in the field, especially at the NW edges of Mt. Hymittos, but there are also places where it is covered by younger, post-alpine formations. Protomylonite, mylonite, tectonic breccia, cataclasite, iron oxides and limonite are developed along the contact, forming a zone from 1 m to a few tens of meters thick.

Even though the study of the "Lavrion-Athens Unit" is outside the scope of this paper, all data from field observations seem to agree with PAPANIKOLAOU's (1985, 1986) view-point that the "Lavrion-Athens" allochthonon represents a tectonic melange including blocks of different origin, age and degree of metamorphism.

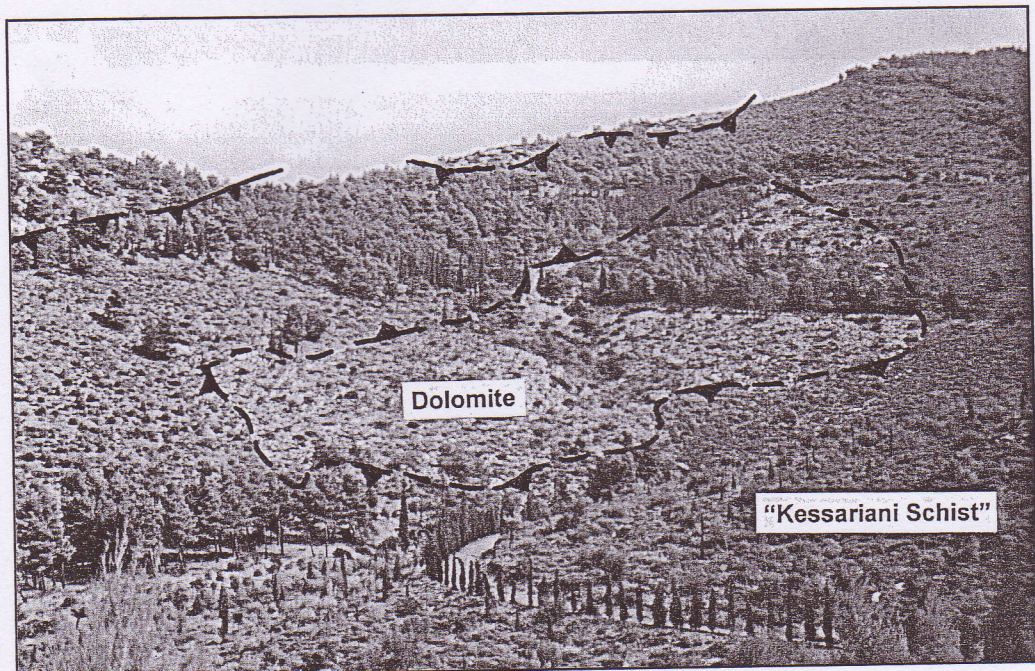


Fig. 9. Small tectonic windows of the white dolomite ("Vari-Kirou Pira" Unit) below "Kessariani Schist" ("Hymittos" Unit) at the major area of Kessariani Monastery).

DISCUSSION - CONCLUSIONS

The analysis described herein, emerges from a study still in progress, aiming to solidly establish Mt. Hymittos tectonic scheme. The tectonic macrostructure corresponds to a km-scale anticlinal macro-fold or dome (with a N-S main axis), which coincides with the present morphological image of Mt. Hymittos. At the core of this dome, the lower -and relative autochthonous- tectonic unit of "Vari - Kirou Pira" is situated over which the intermediate tectonic unit of "Hymittos" and the upper tectonic unit of "Lavrion-Athens" are thrust, extending at the perimeter of the dome around the foot of Mt. Hymittos (Figs 1&2).

Up-to-date view-points about the structure of Mt. Hymittos, suggest that the formations of the "Vari - Kirou Pira Unit" belong to the "Hymittos Unit" and represent the lower stratigraphic horizons below the horizon of "Lower Marble". However, the field data which are presenting in this paper, reveal that the contact between these two units represent a major tectonic contact, very well recognised at the field. The question arising is whether this contact separates two different tectonic units -representing an important large-scale overthrust or detachment fault- or just bring in contact different horizons of the same tectonic unit -characterising a small-scale thrust or low angle fault. With regards to the nature of the contact between the "Vari - Kirou Pira" and the "Hymittos" units we can report the following:

- The tectonic contact crosses different horizons of the relative autochthonous "Vari - Kirou Pira Unit" (Fig. 1).
- Along the tectonic contact all the characteristic horizons of the "Hymittos Unit", overthrusting the "Vari - Kirou Pira Unit", can be observed (Fig. 1).
- The tectonic contact is easily recognised at the field and it is accompanied by cataclastic rocks and cagneule.
- In any case, passing from the formations of the lower "Vari - Kirou Pira Unit" (massive white dolomite or impure dolomitic marble) to the formations of the overlying "Hymittos Unit" (marble and schist) is very abrupt and it is characterised by absence of transitional beds.
- Lithologic facies are different between calcareous formations of the two units (dolomite for the lower "Vari - Kirou Pira Unit" and marble for the overlying "Hymittos Unit") as well as between meta-clastic formations (mainly calc- mica-schists for the lower unit in contrast with the overlying unit which is characterised by a variety of schists, including also meta-basic rocks and serpentinites).
- Some differences between the tectonic fabric of the two units (work in progress) and a slight but abrupt change in the geometry of the penetrative structures on both sides of the tectonic contact have been observed.

According to the above points we can infer that this major tectonic contact possibly separates two different tectonic units, and represents either an alpine overthrust or a detachment fault which is deformed in the form of a large-scale anticline or dome, in the core of which the lower and relative autochthonous tectonic unit is situated.

According to the lower "Vari - Kirou Pira Unit" the following observations can be made:

- Apart from the "Vari Schist" and the "Pirnari Dolomite" of Lepsius (1893) -which represent the lower most known horizons of Mt. Hymittos- this lower unit also includes a part of Lepsius "Upper Marble". This possibility concerns the "Kirou Pira" dolomite" (northern Mt. Hymittos) which belongs to the lower "Vari - Kirou Pira Unit" and not to the underlying "Hymittos Unit", for two reasons according to our opinion. The first one is that in any case "Kirou Pira" dolomite underlyie "Kessariani Schist" either by thrust or by fault, and thus can't be correlated with the "Upper Marble" which is always normally under "Kessariani Schist". The second is that lithological facies and other macroscopic features of "Kirou Pira" dolomite are similar to the white massive dolomite of "Vari - Kirou Pira Unit".
- Lack of stratigraphic data, detailed tectonic analysis and petrological study of "Vari - Kirou Pira Unit", makes its positioning to the geotectonic scheme of the Hellenides very difficult. However, if white massive dolomite and impure dolomitic marble (both known as "Pirnari Dolomite") are really of Triassic age and the stratigraphy presented is not reversed, the age of the "Vari Schist" will be Triassic or older. Thus "Vari Schist" could be related to "clastic Triassic" which represents the basal formation for the most tectonic units (metamorphosed or not) of the Hellenides. "Pirnari Dolomite" could be related to an underlying Triassic platform and the transitional beds. The placement of "Vari - Kirou Pira Unit" to the "Internal" or "External Hellenides" is impossible because horizons younger than Triassic have not yet been recognised.

With regards to "Hymittos Unit" the following problems must be discussed:

- Firstly, we must resolve the following question: Is the "Lower Marble" and the calcareous formation overlying "Kessariani Schist" two different horizons or the same one, repeated due to isoclinal, recumbent macro-folds? Even though such folds were found at the field there are macroscopic differences between these two outcrops. As described in previous, transition from the "Kessariani Schist" to the underlying "Lower Marble" is more rapid than it is towards its overlying formation which, in general, is more like a transitional sequence. Additionally "Lower Marble" is composed of white, massive to thickly bedded marble whereas, blue thinly bedded, impure marble dominates the other formation. Thus, it is most likely that these two formations represent different stratigraphic horizons, and that "Kessariani Schist" is in between.
- "Hymittos Unit" placement in the general geotectonic scheme of the Hellenides is also problematic due to lack of stratigraphic data and detailed tectonic and petrological analysis. However, a possible correlation can be described. Given that Triassic age, at least for a part of "Lower Marble", is valid and stratigraphy presented is not reversed, "Kessariani Schist", together with the blocks of meta-basic rocks and serpentinite (which possibly originate from an ophiolitic complex), can be correlated with a flyschoid formation of the type of "first flysch" or the so called "shales-sandstones-chert formation", usually of an Upper Jurassic - Lower Cretaceous age for the non metamorphosed Hellenides. Given that this correlation is valid, the formation overlying "Kessariani Schist" represents younger horizons of probable Upper Cretaceous age. From this point of view "Hymittos Unit" probably belongs to the "External Hellenides" and seems to be homologous with a tectonic unit of the type of "Western Thessaly - Beotia" (PAPANIKOLAOU, 1986).

The correlation of the two units identified here with other metamorphic units in Attica (MARINOS & PETRACHECK 1956, KATSIKATSOS 1977a,b,c, CLEMENT 1983 and LOZIOS 1993), and the tectonometamorphic evolution of Hymittos complex, are subject to research projects currently in progress.

ABSTRACT

The tectonic structure of Mt. Hymittos (located to the east of Athens), as well as the whole of Eastern Attica, still remains poorly defined, as far as the number and the type of the constituent tectonic units are concerned. The lowermost unit for Mt. Hymittos is "Vari - Kirou Pira Unit" and is represented by the following lithostratigraphic sequence: A basal formation of mica- and calc- schist passing on to a sequence of dolomitic and impure marble, followed by whitish massive dolomite. The overlying "Hymittos Unit" comprises from the bottom upwards: whitish and bluish marble, passing normally -in a few meters- to a complex sequence of mica- chlorite- epidote- actinolite- schist with marble intercalations, including blocks of mafic and ultramafic rocks. This sequence progressively passes into a thick transitional formation consisting of alternating mica- calc schist, marble and impure marble. The whole sequence ends with bluish and whitish marble. The structural scheme of Mt. Hymittos is completed with the uppermost unit of "Lavrio - Athens" which is not dealt with in this paper. At Central and Southern Mt. Hymittos the lower formation of marble of the "Hymittos Unit" overlying various stratigraphic formations of the "Vari - Kirou Pira Unit" through a tectonic contact characterised by a thick zone of cataclastic rocks. The geometry of the contact features a large scale upward warp, in the form of a dome or a very-open conic macrofold. On the other hand, at Northern Hymittos the formations of "Hymittos Unit" are tectonically adjusted, either by thrust or fault, upon the massive dolomite of "Vari - Kirou Pira Unit".

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