Acta Mineralogica—Petrographica, Szeged, XXIII/2, 267—278, 1978

PALAEOZOIC AND PRECAMBRIAN FORMATIONS OF THE ALGYŐ, FERENCSZÁLLÁS AND KISKUNDOROZSMA AREAS

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ABSTRACT

In the central part of the Southern Great Plain (Szeged environment, between 1965 and 1977) about 150 hydrocarbon exploratory bores reached the metamorphic basement.

The stratigraphic identification of the crystalline formations with those of the neighbouring countries shows that the metamorphites of this area are also of Precambrian origin. The Precambrian formations of the Codru Mountains can be traced probably through the Pusztaföldvár area to the Algyő—Ferencszállás range (Biharia and Baia de Arieş series). The classification of the metamorphites of Kiskundorozsma is not clear yet. The formation and stratigraphic position of the rock seems to be similar to the Someş and Baia de Arieş series of the Bihor-autochton as well as to the Lower Crystalline Sequence of the Serbo—Macedonian Massif. The Paleozoic is represented by the incompletely verified Carboniferous metamorphite breccia (Szeged, Algyő) and by the pegmatite and granite porphyre dykes penetrating the metamorphites (Ferencszállás).

INTRODUCTION

In the Southern Great Plain the metamorphic and granitoid formations as basement were explored by the hydrocarbon bores thus these could be studied only in the past two decades. The identification of the main rock types seems to be solved. The rocks are characterized by the metamorphic belts of the BARROW-type facies series. To elucidate their genesis and position the study of SZEPESHÁZY K. [1973] entitled "Relations of the metamorphic formations of the Carpathians and of the Great Plain" was used which among others, reproduces the description of the Apuseni Mountains from the structural-geological point of view. The macroscopic identification was promoted by the correlation of SZEDERKÉNYI T., *i.e.* the correlation of the metamorphic and granitogenic rock samples of the Hegyes—Drócsa Mountains with the crystalline formations of the Szeged environment. When making the stratigraphic classification we tried to distinguish the pre-Riphean garnetiferous, staurolite-bearing paragneisses and biotitic mica-schists and the Riphean sericitic, chloritic, albitic, epidote-bearing chlorite-schists, amphibolites, porphyroids and crystalline limestones which are believed to be produced mostly by the products of igneous activity.

During the evaluation the petrographic determinations and publications of the geologists [JUHÁSZ, Á., CSONGRÁDI, B., SZALAY, Á. and SZEPESHÁZY, K.] of the Department of Geological Data Processing of the National Oil and Gas Industrial

Trust as well as of its legal successor, *i.e.* of the National Oil and Gas Industrial Laboratory, were used.

In this study, in addition to the demonstration of the deep-geological conditions, the geological conclusions which can be drawn from the results and investigations carried out till now, are tried to be summarized, further an attempt is made to insert the metamorphic formations of the Szeged environment in the marginal Carpathian geological unit.

It is to be noted, however, that in spite of the large amount of data this latter can be done only with numerous restrictions. The uncleared correlation problems occurring within the crystalline rocks of the Apuseni Mountains and of the Southern Carpathians, the unsolved relation of the Serbo—Macedonian and Pannonian Massifs as well as the petrographic and tectonic elaboration of the crystalline basement of the Great Plain being insufficient to make correlations, all these considerably restrict the correlation works. Nevertheless, it is believed that on the basis of the up-to-date interpretation of the available mass of data the first rather hypothetic statements can be concluded which may serve as a basis for a later more detailed correlation work.

PROTEROZOIC

83 boreholes reached the crystalline basement (between 2450 m and 3150 m) in more than 500 ones drilled at Algyő. Numerous varieties of the diaphtorized rocks were known from these boreholes. The new investigations do not verify the triple arrangement of the series determined by VÖLGYI L. *et. al.* [1970] and others on the basis of rock types. Making denser the borehole network the more detailed analysis of the horizontal changes of the rocks proved to be possible. As a result of newer investigations a capricious occurrence and distribution of rock-types is demonstrated.

In the western and eastern side of the block range fault lines of NW—SE direction are found. The boreholes lying west of the fault line (e.g. No. 14 and 106) did not reach the surface of the submerged crystalline basement. These boreholes were stopped in the eroded coarse-clastic sequence of metamorphite material of the block range. The cover is formed by Lower Pannonian conglomerate, lime-marl and marl. In the western part Sarmatian and Lower Tortonian clastic sequences are also found [T. KOVÁCS, G., 1975]. Also in the western part, e.g. in the borehole No. 29 Middle Triassic dolomite was found.

The detailed introduction of the crystalline rocks of Algyő is reasoned by the unique formation of metamorphites in the Southern Great Plain. Areal distribution of the characteristic rock types is shown in *Fig. 1.*

In the southern part, in the neighbourhood of parametamorphites light-grey, slightly schistose *porphyroids* of porphyroblastic texture were found in the boreholes Deszk-1, Deszk-1/a, Algyő-30, 54 and 56. These were generated by acid igneous products on the effect of regional metamorphism. Sill-like rock bodies can be assumed since below the porphyroid feldspar-bearing mica-schist in the borehole No. 54 and mica-quartzite in the borehole Deszk-1 were found. According to the studies of SZEPESHÁZY K. [1974] the fine quartz-feldspar grains and muscovite lamellae surround the orthoclase and plagioclase plates of more than 1 to 2 mm as well as the microcline crystals and albite grains. The recrystallization of the original feldspar content in form of microcline and albite was produced by the metasomatism accompanying the polymetamorphism. Accordingly, this is not re-melting or granitization as assumed by VÖLGYI L. *et al.* [1970] and SZALAY Á. [1977] but rather

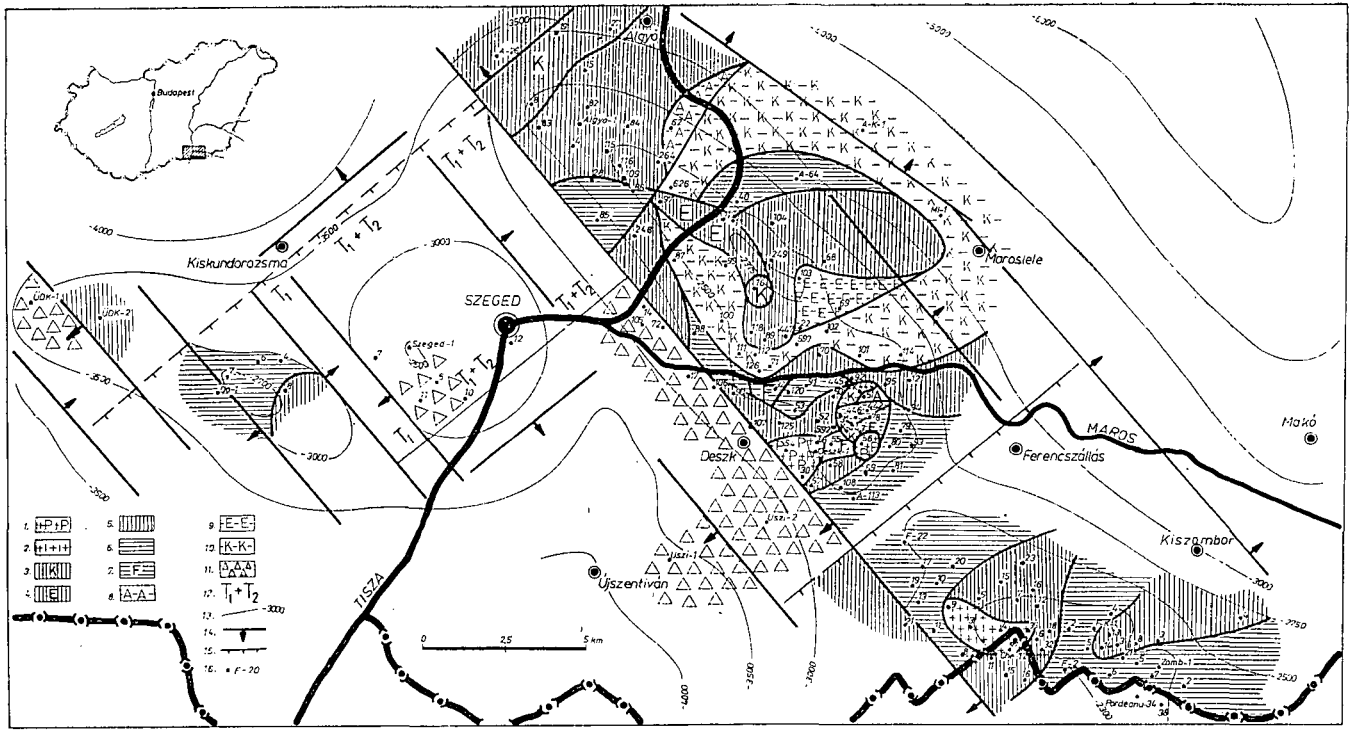

Fig. 1. Deep-geological and structural map of the central part of the Southern Great Plain. Constructed by T. Kovács, G. [1978]. — Legend: *1* — porphyroid, *2* — granite porphyre and pegmatite veins, *3* — chlorite gneiss, *4* — actinolite-epidote gneiss, *5* — muscovite-biotite gneiss, *6* — muscovite-biotite mica-schist, *7* — phyllite, *8* — amphibole-schist, *9* — epidote schist, *10* — chlorite-schist, *11* — metamorphite breccia, *12* — Lower and Middle Triassic formations, *13* — contour lines of the surface of the basement, *14* — fault line, *15* — overthrust line, *16* — sign and number of boreholes.

a retrograde process subsequent to metamorphism. The porphyroid is a subvolcanic intrusion. It represents the youngest member of the metamorphic sequence but its formation precedes by all means the metamorphism.

In the northernmost part of the Algyő Block light greyish-green slightly schistose *chlorite-gneiss* suffered retrograde metamorphism was found (boreholes No. 8., 19., 26. and 27). These rocks might be formed from terrigenous sediments of greywacke type. The old potash feldspar is represented by microcline and orthoclase. The plagioclase content is very high. Most of the feldspars is sericitized. Among phyllosilicates chlorite is predominant, but biotite can also be found. The young albite also appears. The chlorite-gneiss of the borehole No. 16 can be assigned to this group, which, on the basis of the investigations of K. SZEPESHÁZY [1974] is fine-grained and in the groundmass consisting of quartz, feldspar and muscovite crystals quartz knots and acid plagioclase crystals are found. Biotite is completely chloritized.

In the central part of the block range, *i.e.* in the boreholes No. 11., 97. and 117 green-coloured *actinolite-epidote-gneisses* are found, derived from terrigenous sediments and basic pyroclastite on retrograde effects. According to Á. SZALAY [1969] the main constituents of the rock are: quartz, plagioclase, potash feldspar, epidote, actinolite, green-amphibole, calcite and muscovite. Chloritization and albitization can also be observed.

The *gneisses* of sedimentary origin (psammitic, partly tuffic) are of general extension. The mineral composition of the greyish-green fine- or medium-grained rocks of different schistosity is usual, *i.e.* these consist of quartz, plagioclase, muscovite and biotite. The staurolite, zircon and epidote are less frequent. The subsequent transformation has, however, changed this picture. Chloritization, sericitization and albitization is not only due to the diaphtoresis but also to the metasomatic effect. According to the investigations of SZALAY, Á. [1977] the rock hardly contains primary potash feldspar and the primary oligoclase is often sericitized. Two kinds of gneisses were developed.

The greenish-grey sometimes garnetiferous *muscovite-biotite-gneiss* is found in the northern part (in the boreholes No. 4., 15., 82., 83., 84., 109., 115., 116. and 264.). Its feldspar crystals are partly zoisitized or albitized. Epidote strips also occur. The remnants of the older potash feldspar are represented by the small amount of microcline and orthoclase. The borehole No. 109. represents the transition between the biotite-gneiss and biotite-mica-schist (borehole No. 86.). The transitions occur also vertically, e.g. in the borehole No. 15. the gneiss transits into muscovite-biotite mica-schist. In the southern part the two-mica-gneisses occur in four localities. The gneisses of the boreholes No. 94., 95 and 121. are characterized by the appearance of garnet. Staurolite, zircon and apatite were found in the boreholes No. 57. and 58. In the boreholes No. 68., 90. and 125. the rock is schistose and stratified. The sericitic orthoclase, muscovite and chloritized biotite alternate with quartz strips. Magnetite and epidote occur as accessory minerals.

In the central and southern part of the area *biotite-gneisses* of spot-like occurrence were found. The feldspars of the greenish-grey gneisses are sericitized (in the boreholes No. 50., 52., 55. and 248.). The biotite is partly chloritized. The potash feldspar is represented mostly by orthoclase. Garnet, zoisite and magnetite occur also in this type of rocks. The boreholes No. 70. and 92. are characterized by low quartz and high plagioclase contents, while in those No. 248. and 447. the high biotite content is characteristic. The formation of albite can be observed in the borehole No. 104.

The one- and two-mica-schists of sedimentary origin and of low feldspar con-

tent are found in the central and southern part of the area. Similarly to the gneisses these can be also characterized by multi-generation mineral assemblages. The main mineral constituents are the quartz, muscovite, biotite and plagioclase. Garnet, epidote, staurolite, chlorite and calcite are the accessory minerals. The transition among the mica-schists, basic metamorphites and gneisses is gradual.

The boreholes No. 28., 31., 442., 443. and 445 explored greenish-grey *muscovite-biotite-mica-schist.* Chloritization and sericitization are of different measure. In the southernmost part of the Algyő area (boreholes No. 59., 79., 80., 81., 93., 108. and 113.) only *biotite-mica-schists* are found. In the borehole No. 59. staurolite can also be determined. In the southern and eastern part of the area (boreholes No. 40., 64. and 120) chloritic, garnetiferous *muscovite-mica-schist* was found. The sericitic, chloritic, garnetiferous *biotite-mica-schist* is known from the boreholes 53., 85. and 91. In the borehole No. 86 the biotite/chlorite ratio is less than 50 per cent, thus it is qualified as *chlorite-biotite-schist.* Chloritic, biotitic, feldspar-bearing *mica-quartzite* was found in the boreholes No. 88. and Deszk-1.

In the southern areas (boreholes No. 32., 55. and 78.) greyish-green schistose *phyllites* were found. These consist only of sericite and quartz. In the borehole No. 78. small quantity of chlorite and amphibole also occurs; these accompany the mica-schists. The same assemblage is found under biotite-gneiss in the borehole No. 55.

In the central part of the Algyő block the *green chlorite-schist, epidote-schist* and *amphibole-schist* are found in wide areal extension. These might form from basic initial igneous products, lavas and tuffs. This is expressed not only by the random extension but the relations of their settlingtoo. These are situated in mica-schists and gneisses, e.g. in the borehole No. 62 the amphibole-schist is overlain by mica-schist, in the borehole No. 99. the chlorite-schist is underlain by gneiss while in the borehole No. 626 the sequence is gneiss, mica-schist, chlorite-schist.

The *chlorite-schists* have largest extension. These can be found in the boreholes No. 71., 87., 99., 100., 101., 102., 111., 112., 114., 126., 443., 444. and 626. The rocks found in the boreholes Maroslele-L and Algyő-East-1 are believed to be the same rocks. The main constituents of chlorite-schists are quartz. chlorite and albite. Chlorite is predominant. The rock contains locally small quantities of feldspar, muscovite, epidote and calcite and is of fine-grained schistose structure.

Epidote-schists were discovered by the boreholes No. 22., 69. and 103. According to the investigations of SZEPESHÁZY, K. [1974] these rocks are fine-grained and moderately schistose. Most of the rock consists of quartz grains, epidote and chlorite crystals. The feldspars also occur and consist predominantly of plagioclase. Orthoclase, magnetite and apatite can also be determined.

Amphibole-schists occur in the boreholes No. 51. and 62. This rock is dark-green, fine-crystallized, compact and slightly schistose. It consists mostly of green amphibole and subordinately of plagioclase. Quartz, garnet, tremolite and epidote are the accessory minerals.

Regarding the parent rocks of Algyő metamorphites they formed a single depositional cycle from the pelites up to the psammites inclusive. There are irregular settling-structures in this sedimentary complex due to the lava flows and tuffs originated from initial magmatism produced some transitional rock-types, too. This sedimentary complex were penetrated by sill-like porphyroid bodies being youngest rocks prior to the metamorphism The formation of rocks took probably place in the Late Precambrian. Due to the subsequent diaphtoresis and metasomatic effect the metamorphites have undergone large-scale transformation. In harmony with the BARROW-type facies sequences the staurolite-almandine subfacies of the almandine-

amphibolite facies as well as all the three subfacies of the greenschist facies can be determined. The metamorphites consist mostly of the rocks being characteristic of the greenschist facies. The middle subfacies is predominant (quartz-albite-epidote-biotite) and most of the gneisses, mica-schists and epidote-schists can be assigned also to this group.

The formation of the metamorphites seems to be similar to that of the Baikalian Biharia Sequence of the Codru Mountains. The substance of metamorphites was provided here also by basic and acid initial igneous products as well as by terrgineous sediments.

The southern continuation of the Algyő area is the Ferencszállás (F), Ferencszállás-East (FK) and Kiszombor (Zomb) uplifted block. 60 boreholes were drilled in this area (between 2250 and 2600 m), 55 of them reached the basement, while in 20 of them no core samples were drilled. The borehole Zomb-4. reached the crystalline basement in a depth of 2804 m. The cover consists of Lower Pannonian conglomerate and lime-marl. The metamorphic rocks showing strip-like arrangement consist of mica-schists and gneisses *(Fig. 1)*. The horizontal change is accompanied by a vertical one, e.g. in the borehole FK-1. in the mica-schist there is a gneiss intercalation while in the borehole Zomb-4. the gneiss transits into mica-schist. Chloritization can be nearly always observed. The folded, schistose and fractured occurrence is generally characteristic of the metamorphites. This fractured structure makes possible the metamorphites to be hydrocarbon reservoirs. In the southern part of the Ferencszállás area and in the neighbouring Rumanian areas the gneisses are penetrated by granite pegmatite and granite porphyre veins.

The schists of Ferencszállás consist of greenish-grey *garnetiferous muscovite-biotite-mica-schists. Muscovite-mica-schist* (F—8), *biotite-mica-schist* (F—17) and *muscovitic-mica-quartzite* (F.10) also occur. These mica-schists contain considerable quantity of plagioclase. In certain boreholes zoisite and staurolite can also be determined. In the areas Ferencszállás-East and Kiszombor also the garnetiferous muscovite-biotite-mica-schist developed.

The grey *garnetiferous muscovite-biotite-gneiss* is found in a restricted area. Feldspars are represented mostly by plagioclase and to a smaller extent by microcline and albite; apatite can also be determined. The *muscovite-gneiss* was explored in the boreholes F—5. and F—12.

The metamorphites of the Ferencszállás and Kiszombor areas are continued in the neighbouring Rumanian areas. The boreholes at Cherestur and Pordenau indicate the same petrographic sequence.

The polymetamorphic rocks of Ferencszállás and Kiszombor are believed to be older than those of the Algyő area. The metamorphites formed from pelitic and psammitic sediments are assigned to the staurolite-almandine subfacies of the amphibolite facies. The rocks can be correlated with the pre-Riphean Someş—Arada series and can be identified with those of the Baia de Arieş series found in the Codru-Mountains. The idealized rock-columns of Algyő and Ferencszállás are shown in *Fig. 2.*

At Szeged, under the clastic Carboniferous two of 19 boreholes reached the crystalline basement *(Fig. 1)*. In the borehole No. 5 (between 2971 and 3027 m) two core samples explored the greenish-grey garnetiferous feldspar-bearing *biotite-gneiss,* the *chlorite-gneiss* and the *chlorite-biotite-gneiss.* Muscovite is hardly or not found. In certain strips the biotite is completely chloritized. Part of the feldspars is sericitized. The borehole No. 7. explored grey garnetiferous *chlorite-biotite-gneiss*

between 3022 and 3136.5 m. In addition to the plagioclase orthoclase and epidote can also be identified.

Between Szeged and Algyő the borehole Újszentiván-2 (Uszi-2) also explored the metamorphites between 3379 and 3450 m. Here grey and greyish-green garneti-

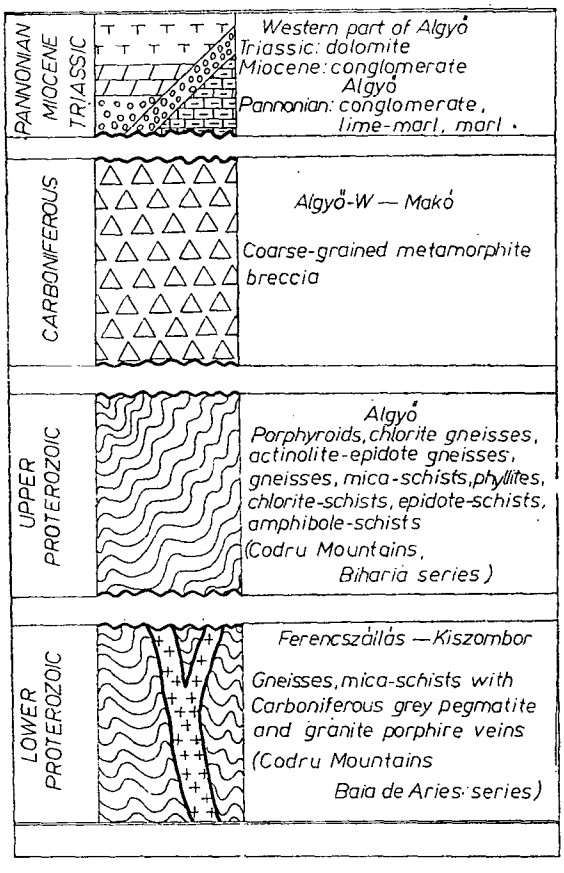

Fig. 2. Idealized rock-column of the Algyő—Ferencszállás area.

ferous chloritic *biotite-gneiss* was found. The quantity of muscovite is negligible, that of the orthoclase seems to be considerable. Talc formation can also be observed. Cordierite and staurolite occur as accessory minerals. SZALAY, Á. [1977] belives erroneously the crystalline basement of Újszentiván to be mica-schist.

In the boreholes of the Kiskundorozsma area the vertical picture of the metamorphic formations of the Southern Great Plain can be outlined since the upper part of the crystalline basement was explored in a thickness of 100 to 370 metres. Nine boreholes were drilled in this area and five of them reached the crystalline basement *(Fig. 1)*. The overlying strata are Lower Tortonian basal conglomerates. In the upper part of the basement grey and greyish-green mica-schist, in the lower

part greyish-green gneiss are found. This sequence is interrupted by green amphibolite, amphibolite-schist and white quartz strata, further dark-grey dolomite and white marble strips are found in irregular position. The metamorphites of sedimentary origin are represented by *garnetiferous feldspar-bearing muscovite-biotite-mica-schist, biotite-mica-schist* and *muscovite-biotite-gneiss.*

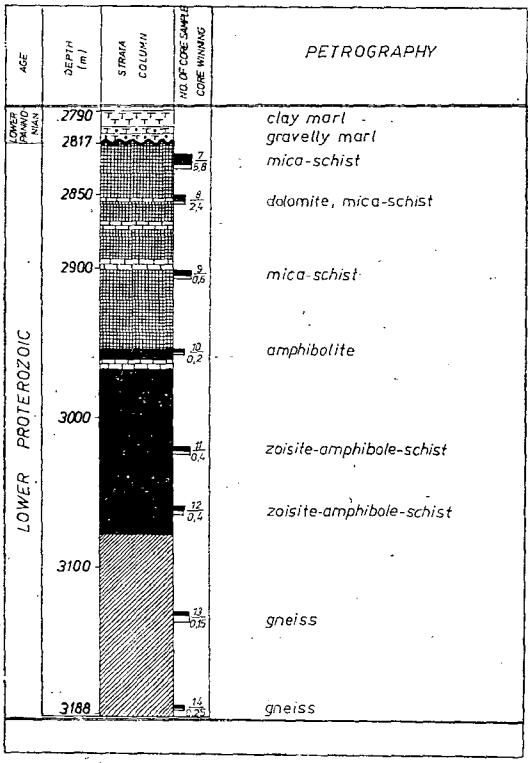

Fig. 3. Stratigraphy of the borehole Kiskundorozsma—7.

The borehole Do-1. explored mica-schist in the deepest tectonic position (between 3462 and 3480 m; separated by a fault from the other boreholes) and this rock contains zoisite, epidote and albite of new generation. In the mica-schist of the borehole No. 4 (3060—3101 m) white *crystalline limestone (marble)* is found. In the borehole No. 6. (3070 to 3147 m) *marble* is intercalated in the mica-schist and mica-quartzite strata, in the lowermost part greyish-green fine-grained *amphibolite* is found. The old metamorphites are explored in greatest thickness by the borehole No. 7. (2817—3188 m). Eight core samples were taken. Here the sequence consists of gneiss in the lower part (110 m), amphibolite and amphibole-schist (120 m) in the middle part and mica-schist of highest tectonic position. Crystalline dolomite strips occur between 2870 and 3000 m. On the basis of well logging their exact positions are 2852—2854 m, 2872—2875 m, 2889—2901 m and 2962—2967 m

(Fig. 3). The material of the borehole No. 8. shows the greatest variety of rocks. In addition to the gneiss, quartzites, amphibolites and marbles play also predominant role. The particular petrographic sequence is seen in *Fig. 4,* while the idelized rock-column of the Szeged—Kiskundorozsma is demonstrated in *Fig. 5,*

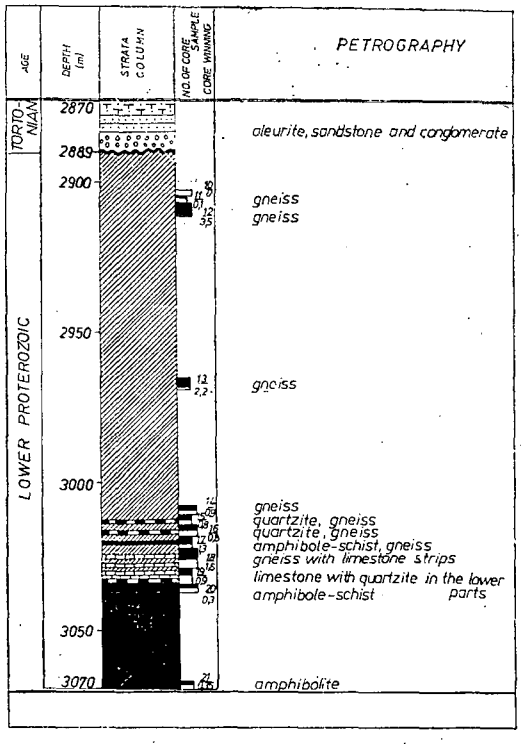

Fig. 4. Stratigraphy of the borehole Kiskundorozsma—8.

The borehole Üllés-Southeast-2 drilled west of the Kiskundorozsma area explored grey, greenish-grey garnetiferous sericitic chlorite-biotite-gneiss and muscovite-biotite-mica-schist under the Tortonian conglomerate, between 3180 and 3274 metres.

When summing up it can be stated that the material of the metamorphites of this area were terrigenous pelitic, psammitic and carbonate sediments as well as basic initial igneous products, *i.e.* mostly tuffs. The degree of metamorphism reached the staurolite subfacies of the almandine-amphibolite facies.

The stratigraphic correlation with the Rumanian and Yugoslav complexes seems to be unsolved just because of the great distance and of the missing data. The rocks are assigned to the oldest metamorphites and show some similarities with the pre-Baikalian Somes, and Baia de Aries series of the Biharia-sequence as well as with the crystalline rocks of the Serbo-Macedonian Massif.

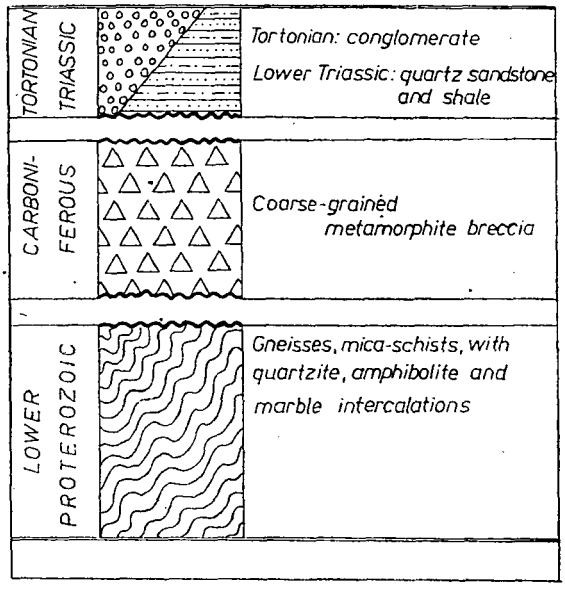

Fig. 5. Idealized rock-column of the Szeged—Kiskundorozsma area.

PALEOZOIC

The anchi-metamorphic breccias of probable Carboniferous age are believed to be younger formations and are found from Üllés to Makó. Essentially, this formation derives from the terrestrial erosion of the old metamorphites and was formed in situ. The metamorphite breccias were firstly explored by the boreholes of Szeged.

Here the grey, greenish-grey *metamorphite breccia* is underlying the Triassic shale and quartz sandstone (Tortonian conglomerate in the southern part) which was explored by 11 boreholes *(Fig. 1)*. This was totally penetrated only in the boreholes No. 5. and 7. Its thickness amounts to 268 m (2703—2971 m) in the borehole No. 5. In the coarse clastic breccia (max. 10 to 15 cm) sericitic, locally kaolinic mica-schist, gneiss, mica-quartzite, chlorite-schist and talc-schist were found. The sequence cemented by metamorphite clastics is folded and contains laminated bright sliding surfaces. In the borehole No. 7. black shale intercalation was also found the palynological investigation of which proved to be resultless.

Similar formation was explored by the borehole Üllés-SE-1. Here the Tortonian basal breccia is underlain by gneiss- and mica-quartzite-composed breccia from 3503 m down to the bottom (3703 m).

The new investigations proved that in the deeper part of the Algyő uplifted block subsided along faults the breccias of the eroded metamorphites were accumulated. In the western part, under the Tortonian strata such a kind of breccia was explored by the boreholes 14., 17., 72., 105., 106. and 107, without penetrating them. The breccia contains gneiss, mica-schist, mica-quartzite, phyllite and chlorite-schist. Farther, *i.e.* in the boreholes of Újszentiván the breccias underlying the

Lower Pannonian marls can also be found. The borehole No. 1 was stopped in the breccia consisting of mica-schist and mica-quartzite, the borehole No. 2 traversed the formation between 3298 and 3379 m and reached the Precambrian gneisses. In the southern part of the deep Neogene depression of Makó—Hódmezővásárhely the borehole Makó-2 explored grey, broken breccia-like slightly schistose gneiss and its clastics between 5010 and 5060 m underlying the Werfenian-Campilian dolomite-marl and schistose claystone. According to SZEPESHÁZY, K. [1973] these slightly metamorphized rocks formed from the fragmented old metamorphites, can be qualified as metapsephites on the basis of the Körösszegapáti and Füzesgyarmat analogies, and can be identified with the blastodetrites of Carboniferous age of the Paiuşeni Series of the Hegyes-Drócsa Mountains. As to our opinion, these breccias did not reach the degree of metamorphism characteristic of the metapsephites since they have no metamorphic structure. Their formation is assigned to the Carboniferous. This seems to be proved by the stratigraphic position of the breccia known recently in the Üllés area. In the borehole Üllés-15, between 2683 and 2767 m the breccia is overlain by Lower Triassic quartz sandstone, and underlain by Lower Paleozoic meta-conglomerate.

In the southern part of the Ferencszállás area, in the boreholes 3., 4., 91. and 35, as well as in the boreholes of Cherestur-12. and 107 *(Fig. 1)* grey, often compressed pegmatite and granite porphyre veins are known. The *pegmatite* is of porphyroblastic texture and contains microcline. Its mineral constituents are plagioclase (mostly oligoclase), microcline, quartz and muscovite. The *granite porphyry* (boreholes 3. and 4.) has porphyric texture, fine-grained and microclinic. Its mineral components are mostly potash feldspar (microcline and orthoclase), plagioclase (albite and oligoclase), quartz, muscovite and biotite. Albite occurs in lenticular forms.

These veins penetrating the metamorphites are believed to be the products of the second-step [Carboniferous] granitization. Similarly to the Mecsek Mountains [JANTSKY, B., 1974, SZEDERKÉNYI, T., 1974] the investigations of the Mezőhegyes—Battonya [T. KOVÁCS, G. — KURUCZ, B., 1978] show that the first Precambrian granitization was followed by a second Carboniferous anatexis, and vein formation. The metamorp hites of the southern part of the Pusztaföldvár area are penetrated also by Carboniferous aplite and graenit-porphyre veins. Just because of the fact mentioned above the statements of SZALAY, Á. [1977] cannot be accepted, *i.e.* "the light-grey granites of metasomatic formation are known in the narrow zone lying in direction of Kiszombor—Ferencszállás—Algyő—Szeged— Kiskundorozsma". As to our opinion the evidences of the metasomatic granite formation are missing. As it was mentioned earlier, the formation of the Algyő (Deszk) porphyroids is Precambrian, thus it cannot be contemporaneous with the granite veins of Ferencszállás. The lack of the migmatite zone is caused not by the metasomatic formation but rather by the vein-like development. It is illusory to assume a belt-like appearance of granite since neither in the Kiszombor nor in the Szeged—Kiskundorozsma area any kind of granite (nor igneous rocks) was found in the boreholes.

In the area investigated other formations which could be assigned to the Paleozoic cannot be found. Sedimentation started only in the Lower Triassic.

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Manuscript received, June 10, 1978

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