SUMMARY

Land subsurface structure and development of former Kvėdarna rural district */KVEDARNA*

By Zigmas Malinauskas
Geology and Geography Institute

The territory of Kvėdarna *Valsčius* (pre-war rural district) is well researched from the geological point of view because even 67 boreholes had been drilled in a little area. Besides, various other geological works had been carried out. At present its subsurface is investigated to more than 2 km depths.

According to the geological structure, the territory is localized at the western border of the East European platform, i. e. Šilalė branch of the Rietavas trough of the Baltic syneclise. A part of the upper crust is made up of crystalline basement rocks covered by 1,982–2,062 m thick sedimentary rocks.

The crystalline basement lies here at the depths from 1,785 to 2,061.58 m. It is formed of metamorphic and magmic rocks that had formed in the lower Proterozoic 2–1.5 billion years ago. A part of them formed in the depth of 23 km. From 2 to 1.8 billion years ago the *Valsčius* territory was a part of the ocean arc archipelago. In the end of the period the orogenesis began and the mountain height could reach 10 km then. From 1.5 to 0.5 billion years their erosion was going on and the depth rocks reached the surface. About 0.5 billion years ago, in the end of the Lower Cambrian, the earth crust began sinking again and the Baltic syneclise began forming.

The sedimentary cover of rocks above the crystalline basement is formed of the Palaeozoic, the Mezozoic and the Cenozoic rocks with great intervals between them. The rock formation is attributed to the Caledonian, the Hercynian and the Alpine tectonic epochs and tiers.

The Caledonian structural tier joins the Middle and the Upper Cambrian terrigenous formations, the Ordovician and the Silurian carbonates and the Lower Devonian terrigenous sediments formed in the marine basins of various depth 520–390 million years ago. The tectonic tier thickness reaches 903–1,234 m.

The Hercynian structural tier joins the terrigenous and calcareous sediments of the rest Devonian formed between 390–256 million years, mostly under marine and lagoon conditions. The total tectonic tier thickness is 637–982 m less than the Caledonian one.

The Alpine structural tier includes the saliferous and terrigenous sediments of the Upper Permian, the Lower Triassic, the Upper Jurassic and the Cretaceous formed under lagoon and marine conditions between 256–240, 159–144, 100–80 million years. The total tectonic tier thickness reaches 103–267 m.

The different structural tier thicknesses show that the earth crust was sinking most intensively and most constantly at the beginning of the Caledonian and the Hercynian. Later the territory became a dry land and short sinking intervals not once were changed by rising ones in the Alpine epoch. Since 80 million years the territory

became a flat plain. The last tectonic complex is covered by 100–150 m thick glacial Quaternary formations. They are thicker in the eastern and central parts. The Quaternary rocks lying at the surface are of very much mixed com-position. A greater part of the *Valsčius* area is covered by till and glaciofluvial sediments.

The relief type or genesis, as well as the relief form allow to single out 6 geomorphological micro-regions that belong to the West Žemaitija plateau and the Middle Žemaitija hills. They were formed by the last glaciation Baltic depression glacier in the Jurassic upper reaches, the Nemunas River lower reaches and the West Žemaitija ice lobes. The meridian direction stripy hills are most often associated with marginal formations of the retreating glacier lobes and tongues, whereas the lowlands show the depressions in which the glacier lay a bit longer. Individual crests are spread around them as well.

Two industrial peat-bogs, four gravel deposits, some well-fields of fresh, mineral and saline water, some resources of geothermal energy and promising oil structures are known in the Kvėdarna *Valsčius* territory.