4. Tortonian marine marl (immediate hanger);
5. Tortonian fresh-water ligniteous formation;
6. Tortonian *Leytha* limestone (immediate bottom).

Beside this, in a few drillings, Helvetian clayey, sandy formations of reduced importance were found.

On Fig. 8, a correlation well-log profile is represented across the holes Hi – 88, Hi – 89/a, Hi – 43, Hi – 105 and Hi – 91 (Hidas north).

The figure clearly shows that the enumerated formations can be separated only complexly. The figure put into words:

1. Pleistocene cannot be distinguished from Pannonian, but Pleisto – Pannonian (as a whole) can be separated from Sarmatian both on the curve of the spontaneous potential, and on that of specific resistivity;

2. the Sarmation – Tortonian boundary can be similarly appointed;

3. Tortonian marine (hanger) sand from marl, the marl from fresh-water (ligniteous) complex, the latter from the (bottom) limestone can be distinguished chiefly by specific resistivity. Fresh-water and saltwater products differ in the gamma-gamma logs; lignite seams can be identified similarly upon gamma-gamma logs.

3 THE RESULTS OF THE GEOPHYSICAL EXPLORATION

31 THE GRAVITY BOUGUER ANOMALY MAP

On certain parts of the region, the HAOC was first to carry out torsion balance measurements as early as in 1935. The same company performed a Boucher gravity meter survey in 1942; both surveys were made for oil. A considerable part of the region is not suitable for torsion balance investigations because of the rough topography. The Boucher gravity meter is of reduced sensitivity; therefore when the systematic prospecting of the minerals of the region came into the foreground after World War II, the region as a whole must have been regarded as almost entirely unexplored.

Reambulation started in 1950 – 51 by the Geophysical Institute with an up to date Heiland gravity meter, continued later with a Noergaard instrument. The program rolled on in 1955, 1956, 1958 and was finished in 1963. At present, the gravity coverage of the region is 100%.

The number of stations on the region is abt. 6600. This corresponds to an average net-density of 1,3 stations/km^2. On the basin parts of the region, this density seems to be proper. On the outcrops, however, – where the net is somewhat looser because of the rough terrain – a new interpretation method will perhaps support a densification, although just the difficulties of the interpretation of such pattern (outcrop) did not give reason to any densification so far.

In the calculations the following corrections were applied according to the routine: 1. the normal correction for the latitude; 2. the combined Bouguer – Faye correction; 3. the terrain correction; 4. the cartographic correction; and the magnetic correction depending on the azimuth of the instrument. In the Bouguer correction, uniformly a $\sigma = 2{,}00$ g/cm³ value was used; this was explained in chapter 22.

The Bouguer anomaly map obtained as a result of the mentioned calculations is shown on Fig. 9.

The geological aim of gravity meter measurements, in our country, is to give a rough qualitative delineation of the relief of the floor of the young Tertiary basin; which means a rough picture of the most conspicuous structural pattern. Thus, gravimetry can support planning of further, more expensive depth-measuring methods (geoelectric, seismic). The major part of our country is of basin character. When interpreting the Bouguer anomaly map of our region, one must distinguish between actual basin-areas, and basement-outcrop areas (i. e. between Pannonian hilly country and the proper Mecsek and Villány mountains).

The outcrop is, in our case, a positive morphological element: a mountain. Therefore Bouguer anomaly here – beside the density anomaly – inseparably contains those "apparent" anomalies too, which are caused by the surface topography. The deep structure of the outcrop remains in darkness. Nothing else than the known large-scale structural pattern is reflected in the map, indicated even in topography (such is e. g. the separating tectonical line between the western and eastern Mecsek). No doubt, the outcrop requires a quite special interpretation. Such investigations are in progress.

Nevertheless, the gravity exploration in the northern foreground of the Mecsek and between the Mecsek and Villány proved to be useful. Soon after beginning, a surprising great maximum of 35 mgals presented itself at Szalatnak. Later it was drilled and proved to be a covered block of the mountains, protruding northwestwardly. In the vicinity of Sásd and Bonyhád, the gravity pattern indicates a sudden deeping of the basin in northwestern and northeastern directions respectively. Later, seismic investigations determined the basement-depth and rendered qualitative gravity information to quantitative one (suppl. 2).

Proceeding southward upon the map, the Mecsek itself being an outcrop produces an abt. east-west streching large range of maxima, closed around. To the east, in the strike of the Fazekasboda – Mórágy granite range, a narrow strip of minimum was located by recent measurements. This coincides with the Mórágy – Fajsz range of positive magnetic anomalies. One may conclude to a sunken basic, metamorphic basement-strip. On the southern margin of the Mecsek, the thickening of the isogal-lines indicates a sudden – probably tectonical – deeping of the basin; indicating, at the same time, – roughly – the shoreline of the one time Neogene sea.

East of Pécs, the embayment of the isogals denotes a minimum. At its edge, near Ellend, a drilling in -1100 m could not penetrate Neogene.

The evenly rising trend of this minimum toward Himesháza – Bátaszék, however, does not hint to a material change of the floor. Although the South Baranya crystalline ridge, indeed, changes here to Villány type Mesozoic, still no essential density alteration is involved. The isogal pattern is in connection with the floor-relief.

There is, however, example also to gravity pattern shaped by the petrographical feature of the floor. The Ellend minimum (−2 mgal) continues as far as the northern foreground of the Villány mountains, even decreasing in value (−5 mgal); although the basin-floor along the same line arises from 1200−1300 m depth to as high as the sea-level. Thus, while minimum at Ellend means a deep basin, here – between Újpetre and Mohács – one can conclude to a basin-floor of lesser density, e. g. Permian sandstone (surely with a thin Lower Triassic cover). Permian indeed was drilled to the west from here, at Turony.

It is worth mentioning, that the tectonical depression of the Drava valley (determined by depth-measuring methods) is indicated on the gravity map by a gradual decrease of 10−15 mgals in the values.

The Görcsöny serpentine, i. e. the metamorphic basement-horst, including the serpentine, reveals itself as a maximum.

The strike of the Monyoród–Bár buried Mesozoic range is indicated by a decided trend of isogals.

North of Bátaszék, the range of positive anomalies which marks the elevated blocks of the South–Baranya crystalline ridge and of the Villány Mesozoic range, terminates in a minimum.

The Villány mountain itself is indicated by an east-west (roughly parallel with the topography) striking positive anomaly. Its fragmented and more or less sunken blocks – according to the gravity map – can be traced as far as Beremend.

Between Bátaszék and Dunaszekcső the axes of the anomalies make a turn of 90° compared to the average axis-direction of the region. This must be in connection with the fact, that the tectonical strips (see in Chapter 33) of the region, are crossed – precisely in this vicinity – by a tectonical zone.

Summed up: the Bouguer anomaly map indicates, rather well, the principal tectonical features, and provides useful information for further investigations. The interpretation of its details will set new tasks before the secondary gravity interpretation as well as other geophysical methods.

It does not seem necessary to thicken the net on the whole of the region. In order to solve local – so-called "micro" – problems, or according to the demands of the secondary interprotation, further – detailed – measurements may come into consideration.

For planning depth-measuring methods, the present reconnaissance map (prepared in the scale 1 : 100 000) seems to be sufficient.

32 ANOMALY MAP OF THE VERTICAL MAGNETIC INTENSITY (ΔZ MAP)

(suppl. 1 and fig. 11)

Upon certain parts of the region, the HAOC made ΔZ measurements of abt. 3 km station-spacing as early as in 1935.

The mentioned – 0,5 st/km^2, density – national reconnaissance network of the HSGI 'RE' (measured with Schmidt–Askania vertical magnetometers) had been commenced in 1951 and finished in 1961 – in the very region, in