1 GEOPHYSICAL PROSPECTING

The field work of ELGI, in 1972, went on in much the same way and in the same regions as it did in the previous year.

The actual sites of the investigations shifted within the broader areas of geological interest but neither the task nor the methodology changed considerably as compared to those of 1971.

In the *Transdanubian Central Range* (Fig. 2) the only achievement worth mentioning was to solve the task of the reflection survey of shallow (200–400 m) bauxite deposits with digital field recorder SDT–2.

In the westernmost member of the volcanic series of the Northern Range, namely in the *Börzsöny Mts.* (Figs. 3–9) the ore prospecting has been continued as well, as in the *Eastern Mátra Mts.* (Figs. 10, 11). Apart from the necessary structural investigations, now the IP method comes by and by to importance as a direct approach in detecting sulphidic ore bodies. The most serious difficulty in these measurements is that in the sites mentioned non-metallic sulphides are apt to screen the possible ore bodies underneath, almost as a rule. Thus, all these prospectings contain a more or less methodological tint, the results of which are equally treated in the Hungarian text. Any result of international interest will be published in our other official periodical *Geophysical Transactions.*

Seismic reflection survey with purely *tectonic* aspect took place in two regions: in the foregrounds of the Transdanubian Central Range and in the foregrounds of the non-volcanic members of the Northern Range (Fig. 12). The reason and the methodology of these projects were described in *Annual Report 1971.* In order to help the reader to keep up with the development of our program it must be mentioned, that the second project is, in fact, a continuation of the deep-structural (part) investigations in the Mátra Mts., of previous year. It means that behind the tectonic aim always there lies hidden some economic, metallogenic aspect.

The large *civil engineeering* projects planned around *lake Balaton* require a systematic preliminary geological – *geophysical mapping* of the coastal strip, the future site of giant hotels. This work was carried out with geoelectric shallow sounding and dynamic-sounding in order to supply geological and

soil-mechanical information. (Some other civil-engineering works of less significance – e.g. bed rock investigation for railway tunnel site planning – were likewise carried out in 1972.)

The methodological character of the geoelectric–seismic *hydrocarbon prospecting in the Nyír* region, though in mind, has lost somewhat from its significance as compared to the geological side of the problem (Figs. 13–21). Hence, the reader will not find it in Chapter 2. Geoelectrically the emphasis was put on the magnetotelluric method, and the gravitationally, magnetically (thick volcanic beds in the overburden!) and geoelectrically guided seismic profiles were shot with twelvefold stacks, and our home-made digital field equipment started its career in this rough area. Data processing, since 1971, has been made in our "minicentre" and in the computer centre MINSK–32.

In *South-East Hungary* the *geoelectric measurements* have come to an end this year. As a final result a depth contour of horizon ρ_∞ identified as the basin-floor (Fig. 22) has been published based on telluric and DE measurements. An interesting feature of the area, made known primarily by these measurements, is the immense thickness of Neogene beds: sometimes exceeding 7000 m. Apart from the CH implications of a seven kilometre deep basin the phenomenon, tectonically, is almost unique. With regards to the nearby basin-floor outcrop of the Bihar Mts., this pattern means a buried block-mountain of Mount Everest size.

Beside the larger projects enumerated above, some complex investigations of smaller extent were carried out for ground *water* (Figs. 23–26) and deep water reservoirs. An interesting feature of tracing deep aquifers in the basin proper is that the geophysical methodology to be applied is very similar to that of CH prospecting. 1972 was the first year in which digital reflection measurements with the usual field arrangement were successfully applied in searching for deep hot water reservoirs in Pliocene beds.

For details the reader is referred to Reports available in our *Archives.*