

From tectonical point of view, Europe may be divided into three distinctly separate regions:

1. Eastern Europe. It includes an extensive table-land, which belonging to the Eurasian mass, is only separated by the simple Uralian folds from the West Siberian table-land. This vast table-land extends from the Ural as far as the Carpathians, Poland and Finland and from the Arctic Ocean to the Black Sea. It forms one part of the crust, in which the oldest formations lie undisturbed, being superimposed conformably by thin beds of Palaeozoic and Mesozoic age. In some parts vast relics of eroded archaic mountain masses crop out, like for instance in Podolia. Such a large piece of the crust has no equal on our Earth, regarding its relatively undisturbed state. It was every time covered only by shallow sea till up to the Tertiary. The marine beds of the Kainozoic are to be found only in small extension on them. In the west it is bounded by the Carpathian folds, to the north of this by a line which can be drawn across Poland in a north-south direction. Beyond this line, towards the west, these beds are all disturbed, and broken. The western half of Poland and Western Germany are lying on the buried surface of broken block-mountains. The Eastern European table-land is already broken in Latvia, Lettland and Estonia. Finland is a huge archaic block, has no table-lands and differs therefore geographically entirely from the Eastern European table-land.

This table-land is not a plain but a low plateau, where the rivers cut in their deep valleys. The only exception are the Pripjet marshes where no river valleys are insected. This shows quite different features from the Great Hungarian Plain, all the more because it is covered by morains, transported by the Pleistocene ice-cover from Scandinavia.

2. Northwestern Europe.

It includes Great Britain, France, Germany and the Scandinavian Peninsula together with Finland. In this area relics of archaic masses and deeply eroded Palaeozoic folds occur. The eastern part of Norway, Sweden and Finland are built up by archaic and Palaeozoic masses, their surface carved out by the Pleistocene ice-sheet. In Sweden even the Cambrian rocks are lying completely undisturbed. The Bohemian Massif, as well as the Black Forest /Schwarzwald/ and the Vosges, also originate from the Palaeozoic. All the other lower mountains are relics of Palaeozoic age. They are called by the combined name of Altaides.

Three groups of mountain ranges may be distinguished: first of them are the Variscian mountains. They include in France the eastern half of the French Central Plateau, the Central German Highlands, the Saxonian Erz Gebirge and the Sudeten, as well as the Lysa Gora in Poland. The second is, the Armorican. To this belong the western half of the Central Plateau in France, the mountainous region of Brétagne, Southern England, Wales and Southern Ireland. Both have been folded after the Carboniferous, but the covering Permian lies undisturbed.

The third one is the oldest of the three: the Caledonian, folded up before the Carboniferous. Northern Ireland, Scotland, Western Norway, the Spitsbergen and the most northern part of Grönland belong to this group.

All these are not high mountains. The most elevated ones are the Sudeten /Schneekappe/ and the mountains of Norway.

Between the relics of these mountains, there are extensive flat basins such as the Parisian, English, Scottish and Irish Basins, the South German, Bohemian and Austrian Basins.

3. Southern Europe.

This contains the area of geologically young chains. They have been built up in the Mesozoic and especially in the Kainozoic, and they are even today in evolution, which fact is proved by the frequent earthquakes and volcanic activities. These young mountains are called Eurasian Ranges, as they are continued in the Asiatic mountains, ending towards the east in the Himalaya. The Atlas chains of Africa also belong to this group. These mountains bending towards the South of Spain, crossing the Strait of Gibraltar are continued towards the east in the Balearic Isles. Here they are called Betican Cordilleras.

The second range of this group starts with the Pyreneese and together with the mountains of Catalonia and Provence, they join the Alps. In the east the Alps are divided into two parts. Firstly, towards the northeast into the Carpathians, which surround the Hungarian Plain and are continued in the Balkan and Jaila /of the southern edge of the Krim/, as well as in the Caucasian Mountains. The second branch of the Alps extends towards the southeast. They are the Dinarides. Stretching along the western sides of the Balkan Peninsula they bend towards the east into Greece and are

continued in the Taurus Mountains of Asia Minor. The islands of Crete, Carpathos and Rhodes represent a part of this chain.

The Apennines branch off from the western end of the Alps and stretching along Italy and Sicily, they join the eastern end of the Atlas in North Africa.

Between the Tertiary ranges there are very old rocks to be found. Such are the Spanish Meseta, the Italian Tirreno Massif, the Balkan Massif in the central part of the Peninsula, the Massif of Asia Minor or Anatolium between the Taurus and the Black Sea. Between the ranges and the old rocks, there are distinctly small separate basins to be found, which in the ancient times of history were suitable for the development of regular states. /Athenes, Sparta, Rome, Toscane./

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These three basically differently built up areas meet in the Hungarian Basin. This basin cannot be ranged to

Geological Map of Central Europe.

Due to the scale of the map, the occurring formations can be plotted out only in a strongly generalized manner. Only the old or most important formations are emphasized, the younger and less important ones to some extent, neglected. As the older rocks are usually harder and more resistant than the younger ones, they are morphologically more prominent. So, the darker colours in the map indicate higher mountainous regions.

Cristalline rocks, belonging to the oldest geological formations: in the depth solidified magmatic masses or later overcristallized /metamorphic/ or shistous deposits. Almost on all indicated places, granite, gneiss or micashist occur. Syenite, gabbro, peridotite and serpentine, and among the metamorphised sediments, phillites and marbles are of common occurrence, and are not separately indicated. The resting part of the old igneous such as: quartzporphyrites, phonolites, melaphir, diabase, amphibolites etc. are of more local importance and occurrence.

The Paleozoic formations and rocks belonging to the old age of geological history. The oldest of them, the Cambrian formation can be found only in Bohemia, Moravia and Podolia. In other places they are metamorphised and so changed into cristalline rocks. The beds of the Silurian and Devonian periods are known in the Alps, Southern Carpathians, in the Balkan Mountains and in Western Silesia. Carboniferous and Permian beds are more widespread in the blockmountains surrounding the Hungarian Plain and in Bosnia.

The Mesozoic, representing formations belonging to the middle age of geological history. In the table land of

any of the above areas, as it is surrounded by Eurasian chains, in his inner part relics of the Variscian system can be found in great extension. Such are the Szepes-Gömör and in broader sense the Bihar, Gyula, Radna and Bánság Mountains. The chain of the Carpathians crossed the eroded and down-worn Variscian chains. Therefore the cristalline region of the Carpathians falls to different pieces.

Indeed, the Hungarian Basin is situated in the confluence of three differently built-up European areas, and as such, deserves justly the name of "Central Europe", because it cannot be joined to any of the other large regions.

The parts of the three differently built-up areas, which make contacts with the Hungarian Basin can be counted, just due to their transient character, to Central Europe, but of course with completely arbitrary boundaries. /Map by Dr. Francis Szentes, text by Prof. Dr. Eugene Cholnoky./

Podolia and in the mapped parts of Italy the Triassic formations are lacking. Except the Russian table, where only beds of the upper Cretaceous are deposited, we find on other places complete Triassic-Jurassic-Cretaceous series developed. The Flysh formation deposited along the outer rim of the younger folded mountain chains, consisted of huge and thick masses of conglomerates, sandstones, shales and clays, shows especially great structural mobility, is therefore strongly folded and even pressed into covers. There is often great difficulty in the determination of the age of this formation, as fossil contents are mostly lacking. Flysh-hills are mostly flat and show broad forms. This formation appears on the northern rim of the Alps and especially of the Carpathians /"Carpathian sandstone"/, in the Balkans and in Croatia in regional extension.

Kainozoic deposits of the new age of geology or Tertiary /Eocene-Oligocene-Miocene-Pliocene/ and the Quaternary /Pleistocene-Holocene/ are the youngest. These more or less continuous sequence of beds are composed by marine, brackish, freshwater or terrestrial deposits. In the Quaternary, in the north and in the higher mountains, diluvial deposits were formed, while in the plains river terraces, loess, peatbogs and sanddunes originated. The youngest igneous rocks are indicated by a special colour. These are the volcanos of the Graz-basin, and the Little Alföld and on the inner rim of the Carpathians, in Bulgaria and Bohemia.

/Map and text by Dr. Francis Szentes, Chief geologist/

THE STRUCTURE OF CENTRAL EUROPE



Alluvial plains
and Tertiary hills

Alps

Carpathians
Flysch of the Alps
and Carpathians

Principal strike of beds
Inner Carpathian
Mountain Blocks

Main structure lines

Massif thresholds
Old mountain blocks
(massifs)