

It is only this chapter that justifies the latter half (Geothermal Energy) of the title of the book. The description of the rock sequence at Larderello, as given by the author that the basement, a chaotic thrust complex of clay, limestone, and other material is faulted (p. 181, line 14) may not be the final word. As such, the author's concept of a basement is not in consonance with the generally accepted definition. At Larderello, the quartzites and slates of Palaeozoic to Upper Triassic age, underlying the limestones and dolomites form the basement.

The book, thus brings together all the required information on geysers and describes the practical uses of Geothermal Energy. It meets the purpose of a reference book for those having interest in this field.

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GEOTECTONICS By V. V. Belousov, 1980. Mir Publishers Moscow and Springer-Verlag, Berlin-Heidelberg-New York, 330 pages. 134 figures Price \$ 28.40

This is the English translation of Belousov's 1976 revised Russian edition. In this the author has endeavoured to follow the syllabus of the Soviet University course on geotectonics. The author although is convinced that ideas based on firmly established facts have lasting scientific values, views geotectonics as a generalising branch of geology forming an interpretive link between surface structures and the Earth's deep interior which is of a hypothetical character. The book has to be studied in this background. Belousov is well-known for his ideas on vertical tectonics and his opposition to large scale horizontal displacement envisaged by the plate tectonic theory.

The book is divided into three main parts. The first part deals with the tectonics of continents; the second with the tectonics of oceans and the third with the Earth's internal structure, composition and deep processes.

The oscillatory movements of the present and the past and their role in sediment accumulation are well documented. These studies have great relevance in understanding evolution of sedimentary basins, sediment thickness and facies development with a natural fall-out on the assessment of hydrocarbon potential.

The description of deep faults is full of information. The author has attempted reinterpretation of famous deep faults like San Andreas fault in California, the Great Glen fault of the Scottish Highlands, besides describing those in the Caucasus. The deep faults are categorised on the basis of displacements whether it is vertical or horizontal. The deep vertical faults with vertical displacement are designated as *slashes* with examples from Central Asia, the Carpathians and the Caucasus. The deep faults with predominant horizontal component of displacement are the trans-current faults which have an alternation of zones of compression and stretching. The author connects many overthrust structures with vertical faults changing upward into gently sloping, horizontal or even reversely dipping overthrusts. Though such structures may be common in the Tien Shan, it is difficult to interpret all overthrust structures observed in the Alps and the Himalaya as connected with deep vertical faults. The development of rift valleys by tectonic movements along deep normal faults is of considerable interest.

The Chapters on block folding, injection folding and folding on general crumpling are based on kinematic classification of folds which are related to differences in the nature of the movements of crustal material that lead directly to the formation of folds of one type or another. In all these movements the vertical component is given great importance. Many ideas contained regarding the development of folds and

nappes have relevance in our studies on the evolution of the Himalayan folded belts. But horizontal compression has played a great role in the development of folded nappes in the Himalaya, a view not favoured by Belousov.

It may come as a surprise to many followers of Belousov in India, that he recognises thrusts which, according to him, are the main type of fracture displacement in a dynamic condition of horizontal compression. The details of evolution of thrusts may vary depending on the type of mountain belt.

The Chapter on patterns of evolution of continents is conventional with an emphasis on endogenous regimes. 'Each regime has a definite form, scale and sequence of tectonic movements and magmatic and metamorphic processes and operates in some one area during a period of geological time'.

Part II deals with Tectonics of Oceans with a description of relief, sediments and rocks of the ocean floor, followed by a discussion on the tectonics of the ocean floor. Belousov, though opposed to the concept of single continuous Gondwana continent makes allowance for bridges between continents in the form of archipelagos. He explains the similarity of formations developed in different continents as due to similarity in physiographical conditions. He opines that links between separate parts of Gondwanaland were broken in the Middle Jurassic and the oceans acquired their present outlines during the Cretaceous. He visualises the existence of a large marine basin as far back as the Palaeozoic, in the area of the Pacific ocean with no evidence for the past existence of large sectors of land. These ideas are opposed to the concept of single continent, its break-up and subsequent drift. He believes in tectonic nappe having slid down the slopes in the form of Helvetian-type nappe. He brings in the process of oscillatory movements in a geosyncline to explain the tectonic history of the Western Mediterranean to end of Middle Miocene.

The third part discusses the Earth's internal structure, composition and deep processes operating in it. Belousov considers that the idea of migration of magnetic poles is not based on reliable information.

Belousov also points out many contradictions in the 'New Global Tectonics'. He questions whether it is legitimate to draw conclusions on patterns of developments in the Earth's tectonosphere based on data from the ocean floor. There is no denying the fact that though oceans occupy more space, geological information we have about the oceans is in no way comparable to that over the continents. He stresses the fact that the continents are the only sources of information to trace the ancient history of the tectonosphere. The young history of the oceans makes it obligatory that the data obtained from oceans should be interpreted in the light of facts gathered from a study of the geology of the continent and not the other way. His stress on the continental geology as the basis for understanding facts emanating from oceans needs greater appreciation. The recent preoccupation of geologists with plate tectonic models to the total disregard of continental geology is proving a menace. Systematic geological survey of continents which ultimately holds the key to many unsolved problems is being sadly neglected. Belousov should not therefore be dismissed as a die hard fixist. There is need for a proper integration of continental and oceanic geology for arriving at a harmonious solution to many unsolved problems that are facing us. Belousov's 'Geotectonics' needs to be read widely if only to maintain a balance between the two different schools of thought without aligning oneself with any particular school. The book is a welcome addition to the study of geotectonics.