The Geology of Libya, IV–VII edited by M.J. Salem. 1992. Elsevier Science, Amsterdam, 551 pp. Price for set vols. IV–VII (1612 pp.) US$/565.50, Dfl. 990,–. ISBN 0-444-88844-6

The four last and heavy volumes of this collection, which show beautiful color photographs on their dust jackets, resulted from the Third Symposium on the Geology of Libya, held in Tripoli, in September 1987. They cover almost all the fields of Earth Sciences. Reading critically this complete monument is very tedious but also worthwhile because a wealth of all kinds of precise data is presented. Unfortunately the choice made by the editors of a strict disciplinary subdivision with no, or little, introduction of regional or thematic problems seems not to be the best way to cover the geology of such a large and heterogeneous (from a geological point of view) country. However, the whole work (four volumes divided into nine parts), although very uneven, is particularly interesting because of some synthetic papers which present state-of-the-art information and/or irreplaceable data bases. Besides this butter, the bread is sometimes hard to read with numerous papers that are only of local interest or insufficiently reviewed extended abstracts. One paper, in Arabic, defies any international readership.

In general, the editors, who are different for each volume, have made no effort at all to introduce the reader who genuinely wants to know the broad outline of Libyan geology. There is no general map nor introductory chapters for any part of the four volumes. The result is that the reader, who does not know the geological map of Africa, or Libya, by heart, cannot follow the continuous jumps between areas and/or eras. Sometimes also the identification of a problem is not easy: for example, in one paper one must wait for the second page to know that formation X is of Triassic age.

An exhaustive presentation of the 93 articles that constitute the four volumes is impossible. Thus, we will only give some short impressions for all the parts without reference to medium-grade (or lower) papers. The shortest paper is 6 pages long while the longest is 70 pages. There are 12 papers longer than 30 pages and 27 shorter than 10 pages but the quality/interest ratio is very uneven.

Volume IV edited by M.J. Salem, O.S. Hammuda and B.A. Eliagoubi. This volume, the thickest of the four, consists of two parts:

Part 8, Palaeontology and biostratigraphy. A wealth of data and reference material can be found in this which includes four major papers. The first two deal with various subjects: Ali O. Tebkali and Gordon D. Wood give extremely strong "preliminary results" derived from core samples on Silurian spores, acritarchs and chitinozoans; and D. Grignani, E. Lanzoni and H. Elatrash report an enormous amount of data on Palaeozoic and Mesozoic palynostratigraphy in the Al Kufrah Basin (with up to 437 fine photographs). The two other contributions are masterpieces of conodont biostratigraphy: Devonian conodonts, by Marcel Weyant and Dominique Massa; and the first reported Upper Ordovician conodonts of North Africa by Stig M. Bergström and Dominique Massa.

Part 8 also contains a number of even more specialized, but less voluminous, contributions: these are papers by Jindrich Hladil, Jirí Otava and Arnost Galle, on Oligocene scleractinian corals; Karl-Armin Tröger and Pavel Röhlich on Campanian–Maestrichtian inoceramids; Ahmed Ammar El-Waer on Miocene Ostracoda; and Martin Pickford on Neogene Anthracotheriidae, with an impressive review and revision of the entire family.

From a more general point of view, even the non-specialist readers will enjoy the helpful overview provided by Annie Lejal-Nicol on African (and worldwide) Devono-Carboniferous palaeofloras. Among the most valuable papers in part 8 we also noticed those by Milada Vavrdová on Devonian miospores and acritarchs; Magda Konzalová on Mesozoic palynomorphs; Khaled A.T. Sherif, on Miocene forams in Northwestern Libya; and Giulliano Piccoli, with a database of over 200 benthic Tethyan Tertiary molluscs, ranging from the Venetian Region to SW Japan.

Part 9, Stratigraphy. Adolf Seilacher's "Updated *Cruziana* Stratigraphy of Gondwanan Palaeozoic Sandstones", is the gem of part 9. Anyone concerned with Gondwana geology will also be inter-

ested in the, less highly readable paper by A. Grubic and co-workers, who summarize most of the important research conducted in the classical Phanerozoic series of Fazzân.

Part 9 also contains several papers more closely devoted to the Mediterranean realm. Among these, an outstanding contribution by B. Peybernès deals with the reconstruction of the South Neotethyan Margin in Jurassic times. We also like to mention two valient attempts to cover the wealth of recent offshore data: one by O.S. Hammuda, J.E. van Hinte and S. Nederbraght, on the Southern Tarâbulus Basin, and one by P. Duronio, A. Dakshe and E. Bellini on the offshore (and inland) Cyrenaica.

Volume V, edited by M.J. Salem and M.N. Belaid, also consists of two parts:

Part 10, Sedimentation and sedimentary petrology. This part contains a number of well-documented articles on Phanerozoic sediments. We particularly noticed one reference paper for all Gondwana "fans": the contribution by E.S.T. Pierobon on the Stratigraphy of the Murzuq Basin, SW Libya. Also in this part, the non-specialist will obtain very useful information on tempestite facies from the excellent and highly readable review by Joel Carneiro de Castro, Jorge Carlos Della Favera and Muftah El-Jadi.

Other interesting papers of part 10 deal with petroleum and offshore geology: the paper by A. Bernasconi, G. Poliani and A. Dakshe is a very important contribution to the understanding of the nummulitic facies and their reservoir capabilities. An extremely vast amount of offshore data is made available in the paper by A.M. Sbeta on the Eocene Rocks of the Tarabulus Basin of Western Libya. Of more local nature are two short interesting articles by Sulaiman A. Abushagur and David V. LeMone who document the Ghâni Field as a major producing field in the Sirt Basin. Last of all, the work by Mokhtar I. Lashhab and Ian M. West gives an appealing insight into the special processes of reservoir formation related to descending evaporitic brines.

Part 10 also has a lot of information on Quaternary deposits. We were particularly pleased to find the paper by Gilani M. Abudelgawad and K. Ben Mahmoud, who soundly document the formation of pedogenetic palygorskite in relict soils of humid periods. Abundant data collected over huge areas, but with poor dating, come from the contribution of Ludek Domácí, Pavel Röhlich and Pavel Bosák, on lacustrine and other deposits of Northern Fazzân and Central Sirt Basin. Lastly, the importance of the work of J.M. Anketell and S.M. Ghellali on the Quaternary sediments of the Jifârah Plain deserves special attention: provided that precise dates will become available, this contribution gives what appears to be a future landmark for the Quaternary geology of Mediterranean regions.

Part 11, Hydrogeology and hydrology. From this much shorter part, we select the "awakening surprise" given by David J. Burdon and Roberto Gonfiantini, who report eleven lakes in the very middle of a sand sea, eight of which are permanent, and at least one proven to be older than 140 years. Burdon and Gonfiantini's explanations are worth reading! In addition to their isotopic data, part 11 contains two more sets of valuable isotopic results: in a paper by R.E. Becker and M. Fürst on the Al Kufrah Area; and in an article by M. Wolf, H. Moser and H. Zeino on the western rim of the Sirt Basin.

Volume VI, edited by M.J. Salem, A.M. Sbeta and M.R. Bakbak consists of three parts:

Part 12, General geology. We noticed three interesting papers, two of them dealing with Palaeozoic palaeoenvironments, the third one with Mesozoic formations. The paper on the Nubian sandstones by D.D. Clark-Lowes and J. Ward presents a good regional synthesis at the scale of North Africa (but why are 8 pages devoted to geomorphology and rock painting?). Another paper, by J. Wendt, presents a good review of the Devonian palaeogeography starting from Morocco. An interesting sequential analysis, based on subsurface data from the Late Jurassic and Early Cretaceous of the Sirt basin is given by M.E. Rossi et al.

Part 13, Structure and tectonics. Except for the review paper produced by J.R. Vail on the Precambrian structure of North Africa, somewhat outdated by numerous recent geochronological data in Niger, and reconnaissance works in Tchad and Central Africa, there is nothing convincing about the basement geology of the region. Two good synthetic papers, dealing with fault kinematics and strike-slip continental-scale behaviour are

presented by J.M. Anketell and S.M. Kumati and J.M. Anketell and S.M. Ghellali, respectively on the western Sirt basin and the Jifārah Plain region.

Part 14, Geophysics. To be noted is a good synthesis of the structure of the passive margin, the Sirt rise, established from seismic data given by A. Del Ben and I. Finetti; and a seismic hazard-oriented compilation of Hellenic seismic data and their influence on the eastern Mediterranean region by G.A. Papadopoulos.

Volume VII, edited by M.J. Salem, M.T. Busrewil and A.M. Ben Ashour consists of two parts:

Part 15, Geochemistry, mineralogy and are deposits. Starting with a well-documented synthesis of the anorogenic magmatism in NE Africa by D.C. Almond and by three very good and complementary papers on the geochronology, mineralogy and geochemistry of the outstanding Al Awaynat alkaline ring complex by L. Andre et al., D. Flinn et al. and M.P. Atherton et al., the rest of this part dealing with ore deposits is a desert except for the well-documented synthesis of the oolitic ironstone belt of North Africa by S. Guerrak.

Part 16, Petroleum geology. The three papers constituting this part, by E.M. Meiter et al., K.A.R. Ghori and M.W. Ibrahim are good introductions to the structure and oil potentialities of the well-known Libyan basins.

To conclude, we noticed especially the paleontology and sedimentary geology, most of volume IV and part of volume V, with well-illustrated papers and lots of new data. The rest of the volumes is weaker except for some interesting syntheses on geochemistry and stratigraphy. A general paper presenting the problems of Libyan geology should have been added.

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(Vandoeuvre)

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Beiträge zu Paläoökologie und Paläoenvironment des Buntsandsteins sowie ausgewählte Bibliographie von Buntsandstein und Keuper in Thüringen, Franken und Umgebung by Detlef Mader (Editor), Gustav Fischer, 1992, 628 pp. Hardcover. Price: DM 98.– ISBN 3-437-30694-4.

The present book contains contributions on the geology of Buntsandstein (and Keuper) in Thuringia, Bavaria, and Saxony-Anhalt. Following a general introduction there are nine different sections, being itself single publications which, despite of one section, stem from the feather of the editor.

Section 2 is a selected bibliography of the Buntsandstein, focused on Thuringia, but also on the surrounding outcrop areas in Bavaria, Hessen, Lower Saxony and Saxony-Anhalt.

Section 3 describes the paleoenvironment of the south Thuringian Buntsandstein in terms of lithofacies and sedimentary regime in order to characterize the secondary occurrences of the silicified woods *Pleuromeia* and *Dadoxylon* in the surroundings of Sonneberg. This section represents the introduction to the following chapter of Gerhard Roselt in which he reports the second part of his investigations on Buntsandstein plants, entitled: Anatomy and Paleoecology of a Silicified *Pleuromeia* with Cell Structure from the Upper Buntsandstein of Forschengereuth in Southern Thuringia (with a epilogue of the editor). This section 4 is thought to be the "core" of the book, since it is the first description of the anatomic internal structures as well as the structure of hair-tufts on stems and leaves of these characteristic and wide-spread lycopodes in the Middle European Buntsandstein. Here a missing link is pointed out between the Paleozoic and recent Lycopodes. However, because the material is sampled from pebbles in secondary beds, the exact formation time is not certain. This section includes more than 30 photographic plates of the plant species, so one can be sure that this meritorious publication will be cited very often.

Section 5 describes the sedimentation in the Middle Buntsandstein (better: and Lower) of Eastern Thuringia. Mader found an intensive mixturing of fluvial, aeolian, and lacustrine influences. Broadly discussed is also the appearance and the genesis of the red colouration. He shows that the area under consideration is a fitting part in a belt with aeolian influence, which can be seen between western Europe and Poland. This section with 55 pages is very voluminous, and it seems to be the main study of the author, because, only for the