

(T: -40 bis >100°C; pH: 0–12,5; Salzfracht: 0–5,2 M NaCl, Strahlendosis: bis 30.000 Gray), widmen MEERSMAN et al. das 19. Kapitel der Untersuchung der Hochdruck-Biochemie und -Biophysik extremophiler Bakterien, die selbst einen Druck von mehreren Gigapascal überleben können. Am Ende des Kapitels gehen die Autoren auch kurz auf die Auswirkungen von Meteoriteneinschlägen auf das frühe Leben und auf den von manchen Autoren postulierten extraterrestrischen Ursprung des Lebens ein. Das letzte Kapitel in diesem umfangreichen Werk widmen ANDERSON et al. den Viren und deren Zusammenspiel mit den Bakterien im „tiefen Untergrund“ und machen auf eine mögliche virale Komponente bei der Evolution des Lebens im Erdaltertum aufmerksam.

Wie alle anderen Bände der Serie besitzt auch dieser rund 700 Seiten starke Band keinen Index. Diesen Mangel gleicht das Inhaltsverzeichnis mit seiner guten Übersicht über die angesprochenen Themenbereiche teilweise wieder aus, wo man z. B. auf der Suche nach paläontologisch relevanten Themen vergleichsweise schnell fündig wird.

Mit dem vorliegenden Band der international bekannten und bei Geowissenschaftlern beliebten Buchreihe geben die Mineralogical Society of America & Geochemical Society und das Deep Carbon Observatory allen Studenten der Geologie und Paläontologie, der Mineralogie, Geophysik und Biologie sowie allen ausgebildeten Geowissenschaftlern und Biologen ein sehr zu empfehlendes Werk in die Hand. Ein vergleichbares Buch über den aktuellen Stand der „Carbon in Earth“-Forschung gibt es bisher nirgendwo auf der Welt. Aufgrund seines angenehm niedrigen Preises gehört es in jede geowissenschaftliche Fachbibliothek und Universitätsbibliothek und in die Hand jedes Geowissenschaftlers. Da es auch Online kostenlos zur Verfügung steht, kann es sich jeder Student und Forscher kostenlos ansehen und selbst ausdrucken. Wer das Buch als Ganzes besitzen möchte, für den lohnt der Kauf des gedruckten Werkes allemal. Die Rezn. wünscht ihm eine weite Verbreitung!

CORNELIA SCHMITT-RIEGRAP, Münster in Westf.

826. **Huc, A.-Y.** (2013): Geochemistry of fossil fuels. From conventional to unconventional hydrocarbon systems. – In: IFP Energie Nouvelles Publications. – XI + 254 pp., 226 figs. (67 in col.), 1 table, 1 box; Paris (Éditions Technip), 17 x 24 cm, paperback, ISBN 978-2-71-08-0990-6; € 65,- (US-\$ 75.-).

State, origin, migration, accumulation, and exploration of fossil fuels remains an urgent subject for geoscientists. Unfortunately, it is as urgent as difficult to explain But what a surprise! We now have a book by Huc, which formulates the very idea of fossil-fuel geochemistry and clarifies a lot of relevant issues. And this book is not something boring, dry, full of chemical formulae, and, thus, disinteresting. No, this is a very special book based on the own experience of explorer and teacher and the very broad vision of the discipline. The more the reviewer looked through its pages, the more he was impressed by the author's knowledge and inexhaustible talent. Rich, impressive, exciting, stimulating, well-thought ... these epithets are not enough to demonstrate the potential importance and the high quality of this book.

The reviewed book consists of five main parts, introduction, conclusions, and some supplementary sections. The first part reveals the composition of hydrocarbons. One can read there about saturated and aromatic hydrocarbons and see their chemical structure, as well as to learn many things about biomarkers. The

attention is also paid to various analytical procedures like gas chromatography. The second part, which is the largest, describes the petroleum system. On one hand, there can be found information about source rocks, hydrocarbon generation, and migration. On the other hand, Huc tells about geochemical methods (including those experimental) that permit to characterize the dynamics of petroleum system and to model it. The reviewer's attention was caught by the section entitled *Tracking oil from source rock to trap: the use of molecular descriptors*. It is devoted to interpretation of the history of a given sample of hydrocarbon. For instance, steranes with different side chain lengths may help for solution of such a complex task.

Logically, the third part is about geochemistry of reservoirs. Particularly, such a peculiar phenomenon as water washing is considered there. If a strong flow of meteoric water affects reservoir, hydrocarbon gas is removing from oil. Production of hydrocarbon fields is the subject of the fourth part. The term "diamondoid" considered there sounds amazing to the reviewer. The author explains that this is microcrystal-like substance with "the basic building blocks of diamond" (p. 222), which occurs in fluids after significant secondary cracking. Its distinctive feature is high melting point. Diamondoids can be employed for the purposes of thermal maturity assessment. It should be added that they have become important in some recent studies of sedimentary geochemistry (BOSTEDT *et al.* 2012; WEI *et al.* 2006) and Precambrian domains (BROCKS *et al.* 2003). The last part of this book deals with unconventional hydrocarbons, or (repeating the Huc's more exact expression) hydrocarbons in "unconventional" settings. Oil shales, geological biogas, shale gas, gas hydrates, etc. are discussed. Not only their geochemistry, but also geological and production aspects are covered.

Significant advantages of Huc's book include (and not limited to) 1) comprehensive and up-to-date review of organic geochemistry (with emphasis of fossil fuels, but also considering some aspects of environmental geochemistry and geochemistry of ancient environments), 2) attention to unconventional hydrocarbons, 3) excellent demonstration of the geologic context of organic geochemical processes (just look at how the author explains accumulation of organic matter with the plate tectonic reconstructions on p. 49!), 4) involvement of numerous representative examples from across the globe, and 5) supply of some practical recommendations and solutions (e.g. see the tip on how to model the thermal cracking of oil in reservoir on p. 186).

Looking at its technical side, this book also deserves praises. All information is well-structured, and the explanations are concise. Theory is balanced with examples. It is very important that this book, although it deals chiefly with geochemistry, is neither overwhelmed by chemistry, nor lacks the relevant knowledge. The author presents geochemistry as **Geochemistry** and not **Geochemisrty**. Well, the reader should have some elementary knowledge in both chemistry and geology for successful understanding of this book, but the level of undergraduate in the Earth sciences seems to be more than enough. And Huc never tests the reader's patience: he writes as less as really enough. That is why this book is so rich despite of its moderate size. Indeed, this is a kind of *bon goût* as his French compatriots say. Numerous illustrations (a triple of them are given in full colour) facilitate understanding of the basic ideas and also present a lot of examples. The moderate-sized list of references indicates some main sources (textbooks and other books, journal articles, and on-line resources), and more literature (with exact citations) are found in figure captions. Even the cover design of this book is so nice!

Probably, the only thing for minor criticism is the subject index. It is detailed, but some terms and geographical localities (e.g., fermentation or West Siberia) occur on more pages than indicated.

The book by HUC is strongly recommended as a textbook for graduate and post-graduate students, teaching material for their teachers, and reference book or textbook for enhanced self-education for professionals. It will serve excellently in the class, lab, and field as a good source of knowledge. The both geochemists working with energy resources and other geologists should appreciate it. Palaeontologists – namely palaeobotanists and palynologists – who so often need a correct understanding of what does occur with organic matter before it is discovered as a fossil, will find many explanations of crucial importance. It would be difficult to imagine a book about fossil-fuel geochemistry better than this one, and it should find place on the shelf/desk of each modern Earth scientist. Besides others, it solves a difficult task: making organic geochemistry something well-understood and very interesting. To tell briefly: the book by HUC is a true success – do not miss it!

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DMITRY A. RUBAN, Rostov am Don

827a. **Jones, R.W.** (2012): *Applied palaeontology*. – XIII + 434 pp., 491 b. & w. figs., 10 boxes; Cambridge, United Kingdom (Cambridge University Press), 19 x 25 cm, paperback, ISBN 978-1-107-40744-2; € 43,- (£ 34.99; US-\$ 59.99); hardback, ISBN 978-0-521-84199-3; € 80,- (£ 65.-; US-\$ 125.-).

The first hardback edition appeared in 2006, another version five years later (JONES 2006, 2011) by the same publisher.

“Classical” geoscience loses ground, and “high-tech” research marches ahead. Is this scenario exactly the same as what the scientific progress needs? The answer is “no”, because consequences of the insufficiency of the “classical” studies are felt already. Moreover, who has told that “classical” means “outdated” or “old-fashioned”? The new edition of the JONES's excellent book demonstrates a lot of possibilities for innovative and fascinating research that one can undertake on the basis of fossil studies. Yes, he describes “classical” approaches, but look at their power!

JONES writes about fossils and their significance in far-going interpretations of the geologic space. His book consists of 7 chapters structured into several levels and so rich in facts that even a well-experienced person will be impressed. These chapters differ in size significantly. Introductory remarks are followed by explanation of what are fossils and how they are formed. Importantly, the author does not forget to discuss briefly the collecting, conservation, and curation of