

COMPTE-RENDU - BOEKBESPREKINGEN

F. ROBASZYNSKI, M. CARON, C. DUPUIS, F. AMEDRO, J.-M. GONZALEZ DONOSO, D. LINARES, J. HARDENBOL, S. GARTNER, F. CALANDRIA & R. DELOFFRE - **A tentative integrated stratigraphy in the Turonian of Central Tunisia : formations, zones and sequential stratigraphy in the Kalaat Senan area**, *Bull. Centre Rech. Explor.-Prod. Elf Aquitaine*, 14/1: 213-384, 35 fig., 44 pl., 1990. Edité en juin 1990 par la Soc. Nat. Elf Aquitaine (Production), F-31360 Boussens.

A very complete Turonian section comprising a sedimentary sequence of 810 m, has been studied in Central Tunisia (Kalaat Senan). Its intermediate position between basin and platform offers the advantages of a wider range of lithologies and paleontological contents representative of either domain.

The analysis covers aspects of the lithology (lithofacies and microfacies), the biostratigraphy (ammonites, planktonic foraminifers and nannoplankton), some physical and chemical properties (mineralogy, total organic carbon and CaCO_3).

The lower and upper boundaries of the Turonian are defined according to the recommendations of the Subcommittee of Cretaceous Stratigraphy. Faunal changes occurring near these boundaries are explained.

The microfacies analysis provides insight into the way sediments respond to changes in relative sea-level. The Turonian sediments can be organised in three complete and two partial sequences which can be correlated with the type areas (Touraine, Saumur) in France. The Late Turonian is much better developed than in the type areas. As a result an additional sequence was recognised at 89.2 Ma in the latest Turonian.

This exhaustive study, coordinated by our vice-president F. Robaszynski, is a superb example of an integrated stratigraphic analysis of an important time interval. The edition is impeccable and the abundant coloured illustrations make it very attractive as well.

M. DUSAR
Belgische Geologische Dienst

TEJEDO, J.-P. - **Guide pratique du Litholamelleur destiné aux Enseignants, Chercheurs, Etudiants, Techniciens en Géologie**, Université des Sciences et Techniques du Languedoc, Place Eugène Bataillon, F-34060 Montpellier Cedex 1, France, 99 p.

Jean-Pierre Tejado, technicien géologue à Montpellier II présente un guide clair et concis de la fabrication des lames minces pétrographiques. La fonction de "litholamelleur" est à la fois une tâche ingrate et passionnante. Du chercheur au technicien, en passant par l'étudiant, toute personne touchant à la pétrographie devrait connaître les quelques principes et conseils énoncés par J.P. Tejado.

Ce recueil se veut non exhaustif mais traite malgré tout des principaux aspects du problème comme les lames minces standard (30 σ) et les lames polies, il propose certains trucs et conseils, présente quelques machines existant sur le marché français, dresse la liste des produits et du matériel de base...

Tout cela constitue donc une excellente entrée en matière pour le débutant. Pour les personnes plus averties, ce livret pourra également apporter certaines lumières. Mais malgré toutes les qualités de ce guide, rappelons que l'expérience, le soin et l'amour du travail bien fait restent quand même les meilleurs atouts pour la mise en oeuvre efficace de ces techniques.

D. HIBO
U.C.Louvain

CRAMEZ, C. - **Glossaire de stratigraphie séquentielle**, anglais-français. Chambre Syndicale de la Recherche et de la Production du Pétrole et du Gaz naturel. *Revue de l'Institut Français du*

Pétrole, 45/3: 435-453, mai-juin 1990. Prix : 50,- FF.

Ce glossaire me paraît extrêmement utile, d'abord car la terminologie de VAIL et de ses collaborateurs a été établie en anglais et a parfois varié dans le temps, ensuite car il s'agit d'une percée scientifique de toute première importance en stratigraphie et en sédimentologie. L'auteur ne se contente d'ailleurs pas d'une simple traduction et donne une explication assez détaillée de chacun des termes. C'est un excellent outil pour l'enseignement et les praticiens.

A.HERBOSCH
U.L.Bruxelles

LOZET, J. & MATHIEU, C. - **Dictionnaire de Science du Sol**. *Technique et Documentation, Ed. Lavoisier, rue Lavoisier 11 - F-75384 Paris Cedex 08*, 1990, 384 p. ISBN : 2-85206-617-3. Prix : 425,- FF.

La rédaction d'un dictionnaire sur quelque sujet que ce soit s'avère toujours une longue et pénible entreprise exigeant une patience traditionnellement attribuée aux moines. Le travail, auquel J. Lozet et C. Mathieu se sont attachés, a abouti déjà en 1986 à la première édition du Dictionnaire de science du sol. Son accueil particulièrement favorable n'a pas empêché les auteurs de reprendre, de compléter et d'affiner graduellement leur "magnum opus" qui vient de connaître maintenant sa deuxième édition.

Le nombre de définitions est porté de quelque 2400 à 2800. Comme la science du sol emprunte largement à des disciplines comme la pédologie générale, la géomorphologie, la micromorphologie, la minéralogie et la pétrographie - pour n'en citer que les principales - la sélection des rubriques traitées n'a pas toujours été facile et inévitablement l'on garde parfois l'impression d'un choix arbitraire. Mais qui aurait fait mieux ?

Comme dans la première édition, chaque définition est accompagnée de son équivalent anglais, tandis qu'un index anglais-français est inséré à la fin du volume. Un aperçu des principaux systèmes de classification est présenté en annexe, y compris une liste donnant l'"appellation ancienne et nouvelle des horizons". Sans entrer en détail - un dictionnaire n'est pas un traité - leur présentation synoptique favorisera le recyclage répété auquel les pédologues se voient contraints par l'évolution rapide de la science qu'ils pratiquent.

Bien illustré et d'un emploi agréable et pratique, il est inévitable que cet ouvrage s'attirera dans le monde scientifique francophone le succès éclatant qu'il mérite.

R. NIJS
R.U.Gent

LETOUZEY, J. - **Petroleum and Tectonics in mobile Belts**, Proceedings 4th IFP Expl. & Prod. Res. Conf. Bordeaux, Nov. 14-18, 1988. *Editions Technip*, 1990, 224 p. ISBN 2-7108-0579-0. Price : 336,- FF.

Number 47 of the "Collection Colloques et Séminaires" contains fourteen papers which were presented during the 4th IFP Exploration Production Research Conference at Bordeaux in November 1988. A number of papers are case studies of fold-thrust tectonics in the Alps, Pyrenees, Apennines, South American Cordillera and Rocky Mountains. Some techniques in cross-section balancing are also discussed. Other contributions involve a numerical model for the thermal and kinematical evolution of thrust basins, a study of structural controls on fluid migration in foreland thrust belts and a discussion on the factors controlling the inversion of pre-existing extensional faults. This book gives a good general view of the present state-of-the-art in fold-thrust belt research.

V. LANGENAEKER
K.U.Leuven

BLUNDELL, D.J. & GIBBS, A.D. - **Tectonic Evolution of the North Sea Rifts**, *Oxford Science Publications*, 272 p., Clarendon Press, Oxford. Price : £ 55.00, ISBN 0-19-854595-9.

This book comprises thirteen research papers on the tectonic evolution of the North Sea rift system. The authors gave a verbal presentation on this issue at a symposium held during the EUG meeting at Strasbourg in March 1989. Most papers discuss or compare the two most widely accepted extensional basin development models : the McKenzie pure shear model (stretching) and the Wernicke lithospheric simple shear model. Especially the McKenzie model is advocated by a number of authors to account for most of the general geometry and subsidence history of the North Sea rift. The theoretical reasoning is substantiated by deep seismic reflection data and gravity modelling. Other papers deal with the paleogeographic development of the rift system,

the rift-related magmatism and the hydrocarbon plays in the northern North Sea. This book should not be missing on the bookshelf of those who are involved in quantitative basin modelling but will also be of value for those generally interested in extensional tectonics or in the regional geology of the North Sea basin.

V. LANGENAEKER
K.U.Leuven

WALTER C. SWEET - **The Conodonta - Morphology, Taxonomy, Paleocology and Evolutional History of a Long-Extinct Animal Phylum.** *Oxford Monographs on Geology and Geophysics, 10*, 1988, Clarendon Press, Oxford, 212 p. ISBN 0-19-504352-9, Prix : £ 35,00.

Depuis les trente dernières années, les conodontes ont acquis une valeur exceptionnelle en biostratigraphie et nombre d'entre eux ont accédés au rang de fossile-guide dans de nombreux intervalles de la colonne stratigraphique.

Les conodontes sont malheureusement éteints et inconnus des néontologues et même en ce qui concerne les traités de paléontologie, la place qui leur est réservée est souvent limitée. Cette méconnaissance résulte probablement de divers facteurs. Ce sont des microfossiles ; leur importance comme outils stratigraphiques n'est reconnue que depuis ces dernières décennies et enfin ils ne ressemblent à aucun être actuellement vivant ce qui rend leurs affinités zoologiques incertaines.

Le livre de Walter Sweet a pour conséquence sa place dans toute bibliothèque paléontologique car il constitue une source d'information très complète sur le sujet.

E. GROESSENS
Service Géologique de Belgique

NIELD, E.W. - **Drawing and Understanding Fossils - A Theoretical and Practical Guide for Beginners with Self-assessment.** 297 X 210 mm, 134 p., 85 ill., Pergamon Press, Oxford, 1987, £ 8.95, ISBN 8-033490-9.

This book is a practical manual for the student of paleontology, providing a grounding in theory and the basic graphical skills needed to make clear representative drawings of fossil specimens. As most practical work in paleontology is graphical,

the author has sought to teach the basics of graphic art as relevant to each fossil group.

The manual starts with a general introduction to the origin, preservation and practical use of fossils. For each chapter dealing with a fossil group, basic paleontological factsheets and a selection of self-assessment questions (multiple choice method) on this information are provided. The student in paleontology using this manual as a practical guide in drawing techniques may find all this information, written at the undergraduate level, superfluous, but it is clear that these techniques may especially interest the non-professional paleontologists.

M. DUSAR
Belgische Geologische Dienst

EMMERMANN, R. & WOHLBERG, J. - **The German Continental Deep Drilling Program (KTB) - Site-selection Studies in the Oberpfalz and Schwarzwald,** *In : Exploration of the Deep Continental Crust*, 553 p., hardcover, Springer Verlag, Berlin, 1989 - ISBN 3-540-50922-4.

The German Ministry of Research and Technology has decided on the drilling of a superdeep borehole of the Continental Drilling Program (KTB) in the Oberpfalz area of Northern Bavaria. A field laboratory was established at Windischeschenbach and a cored pilote hole of 4000 m drilled between september 1987 and april 1989.

This book summarises in 19 different contributions the results of the various research projects carried out in the Oberpfalz and in the Schwarzwald, the other potential target area for the KTB superdeep borehole. It presents the interpretations and models that provided the basics for the final site-selection. In this way a comprehensive picture of the present state of knowledge about the structure, evolution and geophysical characteristics of the basement in both areas is acquired.

The content of this book is completed by two papers dealing with the outcome of the pilothole, providing new ideas on the tectonic setting of the drill site but also posing new questions and scientific challenges.

This volume forms an impressive account of german research on deep seated geological features. Despite the heterogenous appearance of the original manuscripts, it remains very well readable with the exception of some figures. Therefore it constitutes a worthy contribution to the exploration of the Deep Continental Crust.

M. DUSAR
Belgische Geologische Dienst

KAUFFMAN, E.G. & WALLISER, O. (Eds) - **Extinction Events in Earth History**. *Lecture Notes in Earth Sciences*, 30, 1990, Springer Verlag, Berlin, 432 p. ISBN 3-540-52605-6. Price : DM 75,00.

Volume 30 of the Lecture Notes in Earth Sciences deals with 34 key papers presented at the Boulder Conference by the members of IGCP Project 216 on "Global Biological Events in Earth History".

This volume focuses attention on climatic and oceanic perturbations resulting from anoxia, advection, rapid thermal change, toxic chemical enrichment and energy shock from impacts and giant tsunamis, as trigger mechanisms for regional to global bio-events.

In contrast to an earlier volume (Vol. 8) of the same series ("Global Bio-Events" edited by O. Walliser, 1986) where specific global mass extinctions were documented (e.g. the Precambrium-Cambrium, Frasnian-Famennian, Cretaceous-Tertiary and Eocene-Oligocene events), this volume is devoted to a fuller spectrum of Phanerozoic mass extinctions (Ordovician through Neogene), their differences or unifying factors, and their causal mechanisms.

A major conclusion presented to the reader of this large collection of papers, is that the correlation among mass extinctions, bolide impacts, ocean anoxic events, and flood basalt volcanism suggests that the major geologic events may be causally related.

The complexity of mass extinctions and the environmental perturbations that seem to accompany the extinctions support the idea that extinctions are multi-causal phenomena.

It is concluded by several authors, on the other hand, that we still have little understanding of the specifics involved in any major extinction event or adaptive radiation on land or sea.

This volume is highly recommended to all earth scientists involved in high-resolution stratigraphy and to newcomers in the search for bio-events.

An extensive list of earlier references related to extinction events is given at the end of each contribution.

Since the exciting paper by Alvarez and co-workers in 1980 on extraterrestrial causes for the

Cretaceous-Tertiary extinction, event stratigraphy and bio-event research have become a dynamic new discipline in earth sciences. Clearly a great deal of excitement and an age of discovery lies ahead of us.

R. DREESEN
ISSeP

THEYS, P. - **Log data acquisition and quality control**, *Editions Technip*, 1991, 1 vol. hardback, 17 x 24 cm, 352 p. ISBN 2-7108-0601-0. Price : 440,- FF.

Geophysical wireline logs have become increasingly important as prospecting tools for most field geologists, especially as the quality and diversity of tools and methods of interpretation are greatly improving. They even have surpassed their original complementarity to the material drilling data (cores, cuttings) by providing an accurate and nearly continuous analysis of the rock formations. However, the traditional approach to reservoir description and stratigraphy has been rather qualitative.

The focus is now turning towards assessing the quantitative properties of the reservoir, relying on the accuracy of the logging tools. Until now, few documents describe the characteristics of the measuring devices, and much less so the uncertainty of their measurement. Logging procedures and quality checks are changing fast and seemingly incomprehensible for those not initiated in the logging company's vocabulary ; therefore the data so derived are generally not exploited to their full extent.

While many books deal with log interpretation, few address data acquisition. Little or no information from other sources is available to validate the logging data. Log quality can be assured by the stringent control of depth, environment, calibrations, processing and operating procedures. These aspects of log data acquisition need to be understood and analysed.

This book dwells on log quality control, and how quality control methods are related to the estimation of the accuracy of observable parameters, such as pore volume computation. It begins (Part I) with a description of the jargon of the logging companies. The components of data acquisition, from raw data to the beginning of the interpretation process are then listed exhaustively (Part II). Finally, methods of log quality control are exposed in detail (Part III). It is indeed refreshing to learn why a particular method a logging tool did not perform properly. Exercises

are scattered in the book to complement the practical chapters. Most examples are extracted from Schlumberger literature (obviously the author is associated with this company). Nonetheless they are representative for the real problems affecting the entire logging industry and applicable to data acquired by all logging companies.

This methodical and practical handbook is written in a language and a style accessible and even attractive for most geologists involved in well log interpretation. It is a must for logging engineers and analysts, but is also highly recommended for students of geophysics, hydrogeology and petroleum geology.

M. DUSAR
Belgische Geologische Dienst

ZIEGLER, Peter A. - **Geological Atlas of Western and Central Europe 1990**. Second and completely revised edition. *Shell Internationale Petroleum Maatschappij*. Distributed by Geological Society Publishing House, Unit 7, Brasmill Enterprise Centre, Brasmill Lane, Bath BA1 3JN, England, 239 p. and 56 enclosures. ISBN 90-6644-125-9. Price : £ 50,00.

We are extremely pleased to announce a new, much enlarged and completely revised edition of the 1982 Geological Atlas of Western and Central Europe by Peter Ziegler. Both atlases are based on data gathered by the Shell Group in the course of their exploration efforts in the onshore and offshore sedimentary basins of Western and Central Europe, and on published literature. Each atlas can be considered as the most up-to-date compilation of a tremendous amount of stratigraphic and structural data.

During the eight years which passed since the publication of the first edition, research and exploration activity has yielded a vast amount of new data, some of which has been published in the rapidly proliferating literature dealing with the geology and geophysics of Europe and its continental shelves. The new edition has particularly expanded towards the North and the East by incorporating the author's studies on the evolution of the Arctic-North Atlantic rift system, the Western Tethys and Laurussia, in an effort to place the geological evolution of western and Central Europe in a global plate-tectonic framework. In this way the reader is provided with an updated overview of the tectonic and stratigraphic framework of Western and Central Europe and its evolution in a global context since the Mid-Paleozoic.

Although local details may not show up on the geological and paleogeographical maps, and palinspastic reconstructions of the Caledonian and Hercynian massifs have not been attempted, it should be noted that still important work is expected from Belgian geologists : especially the origin of the Brabant Massif and its relationship to the London Massif have to be clarified as well as its influence on subsequent sedimentary basin configuration.

The author and the Shell Group should be congratulated for this most welcome present to all geologists and students in Europe. The edition and the figures are impeccable and attractive, and we feel confident that the new atlas will quickly become the standard reference for any study on the regional geological development of Europe.

M. DUSAR
Belgische Geologische Dienst

KENNETH, J. HSÜ - **Physical Principles of Sedimentology - A Readable Textbook for Beginners and Experts**. *Springer Verlag, Berlin*, 1989, 233 p., 64 fig., Softcover DM 42,-. ISBN 3-540-51268-3.

In this textbook K.J. Hsü abandoned the natural-history approach to geology or sedimentology and tried to apply the physical-science approach. This implies that a number of sedimentological processes and observations are explained using physical principals as the three laws of motion, three laws of thermodynamics, the principles of the conservation of energy and matter and a few other fundamental relations in science. The study of geological processes is one of applied physics, applied chemistry and applied mathematics.

The fourteen chapters in this book comprise stories on all kinds of sedimentological problems : "Grains Settle (ch. 3), Rocks Fall (ch. 5), Isotopes Fractionate (ch. 12)," and even philosophy of science is not far away : "Why Creativity in Geology ? (ch. 14). Even the question : "Why a Readable Textbook", as the subtitle states this book to be, is dealt with.

The book is a revision of the lecture notes for the course "Principles of Sedimentology" given by the author at the Swiss Federal Institute of Technology. The potential readers are not only undergraduate or graduate students but also instructors who wish to teach a physical-science approach to sedimentology. This book is a valuable supplement to the traditional sedimentology or physical geology textbooks and is certainly more readable than most of these.

V. LANGENAEKER
K.U.Leuven

FULTON, R.J. (Ed.) - **Le Quaternaire du Canada et du Groenland.** *Commission géologique du Canada, Géologie du Canada, 1*, 1989, 907 p.

Comme l'explique le rédacteur scientifique, R.J. Fulton, dans l'avant-propos, ce premier volume de la Géologie du Canada a pour objectif de présenter une synthèse de la géologie quaternaire du Canada et du Groenland. Le lecteur pourra à la fois se familiariser avec les régions qui lui sont moins bien connues, et intégrer dans une perspective élargie les connaissances déjà acquises sur les régions qui lui sont plus familières. Pour le non-quaternariste, le lecteur étranger et l'étudiant, ce volume se veut un ouvrage de référence, une introduction au Quaternaire du Canada et du Groenland, une première source bibliographique des publications sur le sujet.

Ce volume est divisé en trois parties. La première partie, soit la moitié du livre, couvre l'aspect régional de la géologie quaternaire du Canada. Les régions traitées sont : la Cordillère canadienne, les Plaines intérieures, le Bouclier canadien, les basses terres du Saint-Laurent, la région des Appalaches atlantiques et les îles de la Reine-Elisabeth. Cette partie fournit des renseignements descriptifs sur les matériaux, la stratigraphie et les événements du Quaternaire ; des synthèses régionales de l'histoire du Quaternaire y sont présentées. La deuxième partie, axée principalement sur les applications de la Géologie du Quaternaire au Canada, traite plus particulièrement certains aspects thématiques de la géologie du Quaternaire, qui sont applicables à toutes les régions du Canada. Les chapitres thématiques qui la composent (environnements quaternaires documentés par des dossiers paléobotaniques, géodynamique, processus

géomorphologiques et géochimie des terrains, ressources quaternaires et influence du Quaternaire sur l'habitat canadien) visent à mieux faire comprendre quelques-uns des processus et des changements qui ont caractérisé le Quaternaire, et aussi à faire ressortir l'importance de la géologie et des événements quaternaires dans des situations courantes. Ces thèmes sont aussi abordés dans les chapitres régionaux de la première partie, mais généralement de façon plus superficielle. La troisième partie est consacrée à la géologie quaternaire du Groenland. Dans un premier chapitre (le Quaternaire des régions extraglaciaires du Groenland et des plates-formes continentales adjacentes), le Quaternaire est présenté régionalement (régions non englacées du Groenland oriental, du Groenland occidental et du Groenland septentrional, et régions sous-marines). Le dernier chapitre traite plus spécifiquement de l'évolution dynamique et climatique de l'inlandsis du Groenland.

Chaque chapitre, rédigé par plusieurs auteurs, contient une référence bibliographique très extensive. Toutes les régions, ainsi que les processus géomorphologiques sont très bien représentés par de nombreuses photos en noir et blanc. Beaucoup de cartes et figures multicolores illustrent très clairement les textes. Un index thématique, stratigraphique et régional aide à se retrouver dans cette vaste introduction au Quaternaire du Canada et du Groenland. Le volume est également disponible en anglais.

Le livre est accompagné d'un dossier de 3 cartes paléogéographiques de l'Amérique du Nord septentrionale (entre 18000 et 120000 ans, entre 1100 et 8400 ans et entre 8000 et 5000 ans avant ce jour), une carte montrant le retrait de l'inlandsis Laurentidien au Wisconsinien supérieur et à l'Holocène, ainsi qu'une carte concernant l'état des travaux cartographiques dans le domaine de la géologie du Quaternaire au Canada avec une liste bibliographique très extensive.

C. BAETEMAN
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