

COMPTE RENDU - BOEKBESPREKINGEN

Das Oberdevon des Rheinischen Schiefergebirges - Datierung und Grenzziehung als Grundlage für Fazies und Paläogeographie. *Fortschritte in der Geologie von Rheinland und Westfalen, band 35*, Geologisches Landesamt Nordrhein-Westfalen - De Greiff-Strasse 195 - D-4150 Krefeld 1. 413 p., 72 fig., 40 tab., 22 pl. Price : DM 72,-.

The 35th volume in the Fortschritte series of the Geological Survey of North-Rhineland-Westphalia concentrates on new fact finding on the regional Upper Devonian. Furthermore previous reports became outdated because of a shift in the Middle/Upper Devonian boundary, based on conodonts. This volume contains a wealth of new data on exploration boreholes, outcrops and fossil collections, as well as reflections on the comparative value of different fossil groups and on the shifting paleogeographical context during this highly variable time-interval. As a result many traditional stratigraphic interpretations, based on goniatite occurrences, have to be revised.

Conodonts become ever more important and gradually have replaced goniatites as the basis for biostratigraphic correlation. The study of goniatites from an exploratory well in Balve leads to a better insight in the goniatite zonation at the Middle/Upper Devonian transition. Sporomorphs, mainly studied from Frasnian strata, form a welcome addition to conodonts for the zonation and facies interpretation of clastic sediments.

Detailed investigations of outcrops covering the Devonian/Carboniferous transition in Sauerland provide a continuous profile through these strata containing all known conodont zones. Results show that lithostratigraphic boundaries below the Hangenberg Kalk are diachronous, which has some consequences on the value of the Devonian-Carboniferous boundary traced on local geological maps. The Drewer quarry is proposed as a new stratotype for the Devonian-Carboniferous boundary.

Upper Devonian conodont studies have also led to a better understanding of biofacies and paleogeography. Debris flows from carbonate platforms at the Warstein anticline continued throughout the Upper Devonian. Clastic dykes both synsedimentary and orogenic abound in massive carbonates from the Warstein area. Their origin is discussed in detail. Synsedimentary dyke fillings containing mixed faunas testify of sedimentary events which are otherwise no longer detectable. It can be demonstrated that stratigraphic gaps are primarily caused by reworking of sediments. Later dykes and cavities, widened by karstification developed in the Cretaceous and in the Quaternary. Silicified ostracodes from Drewer have preserved glauconite crystallites. Since this constitutes the first documented occurrence of paleozoic glauconite

east of the Rhine, its mode of formation and diagenetic alteration is described.

Different facies types in the Brilon fore-reef area are described and related, allowing a reconstruction of the fore-reef environment. The world-wide regression in reef growth at the end of the Frasnian is seen as a global response to an extension of the vegetal cover on the continent and to the subsequent increase in chemical alteration, influencing the depositional environment of the predominantly carbonate platforms.

This volume contains essential information for all researchers concerned with the Belgian Upper Devonian in its regional context.

M. DUSAR
Belgische Geologische Dienst

B. DOLIGEZ Ed. - Migration of Hydrocarbons in Sedimentary Basins - Editions Technip, Paris, 1987, 681 p., Price : FF 640.

This compendium of 34 papers represents the Proceedings of the 2nd IFP Exploration Research Conference, held near Bordeaux in June 1987.

The main purpose of this meeting was to integrate the physics of fluid flow in subsurface environments, the mathematical and numerical aspects concerned with modeling and the actual observations of migration phenomena in sedimentary basins.

After two review papers (with, in particular, a remarkable synthesis of migration problems by B. Tissot) the book is divided into four parts dealing with both theoretical and practical aspects of migration :

1. Observations of migration phenomena (7 papers) ;
2. Physics of flow in porous media and migration (10 papers) ;
3. Mathematical evaluation and modeling of migration (11 papers) ;
4. Laboratory experiments and applications (4 papers).

Perhaps an additional part could have been devoted to some aspects of the uncertainty inherent to quantitative modeling and to computational requirements since a 3-D triphasic flow model is rather a practical problem (software, large hardware facilities ...) than a conceptual one.

In any case, this proceedings volume is a fair assessment of the state-of-the-art in migration and, moreover, is of a great interest for all geologists

involved in the broader field of fluid flows in porous media, from explorationists to hydrogeologists.

It enlightens that only a mutual contribution of the basic disciplines, i.e. geology, geochemistry and numerical modeling will achieve progress in the understanding of migration mechanisms.

P.-Y. BOLLY
Petrofina

F. STEINER & L. ZILAH-SEBESS -
Interpretation of Filtered Gravity Maps,
Akadémiai Kiadó, B.P. 24, H-1363 Budapest, 1988,
344 p., Price : US \$ 38.00.

Due to the integrated nature of the gravity effect, effective prospecting of geological structures inevitably requires transformation processes, which allow the enhancement of some of the original gravity field components at the expense of others.

Most of the presently used transformation methods are actually filtering procedures, deduced from the theory of Fourier transforms.

The present book, written for computer trained geologists and mathematicians dealing with filtered maps, develops the theoretical background of filtering procedures as well as numerous applications.

The first part presents the concept of map transformation and its practical realization. The second part defines the physical connection between the considered anomalous body and the transformed data system (qualitative interpretation) while part three deals with the design of map transformations using a prescribed transfer function (quantitative interpretation).

P.-Y. BOLLY
Petrofina

L.Y. DOYLE & H.H. ROBERTS Eds. -
Carbonate-Clastic Transitions, *Developments in Sedimentology*, 42, Elsevier, Amsterdam and New York, 1988, 304 p. Price : US\$ 94.75/Dfl.180.00.

This book is a compilation of papers dealing with contemporaneous carbonate and siliciclastic sedimentation, a subject that receives more and more attention because of its relevance to depositional model generation and interpretation, stratigraphic development and petroleum exploration.

The eleven chapters are authored by 25 geoscientists from around the world and they cover

studies of Tertiary to recent age depositional systems, including shallow-marine as well as deep-marine settings ; central themes evolve around relating sediment distribution to oceanic circulation patterns and sedimentation rates.

The lead-off paper gives an overview of the whole picture of global patterns of carbonate and clastic deposition. Chapter 2 then proceeds to a discussion of predictive mathematical models of carbonate-clastic sedimentation in shelf and epeiric sea settings.

Chapters 3 to 10 comprise eight case studies on carbonate-clastic transitions while a final chapter deals with the control of carbonate-clastic sedimentation systems by baroclinic coastal currents.

These excellent research papers provide a reference base for additional studies and should certainly find their place on the shelves of all sedimentologists and petroleum scientists.

P.-Y. BOLLY
Petrofina

A. BODEN and K.G. ERIKSSON Eds. - **Deep Drilling in Crystalline Bedrock. Vol. 1 : The deep Gas Drilling in the Siljan Impact Structure, Sweden and Astroblemes**, *Exploration of the Deep Continental Crust*, Springer-Verlag Berlin, 1988, 364 p., Price : DM 138.00 (hardcover).

This book presents the proceedings of the Third International Symposium on Observation of the Continental Crust through Drilling, held in Mora and Orsa, Sweden, September 7-10, 1987 at the occasion of the Gravberg 1 well in the Siljan ring. This first volume contains mainly the papers dealing with the Deep Gas Project in the Siljan Ring. The main purpose of this deep exploration well with a target depth of 7500 m, was to investigate the possibilities of an abiogenic methane reservoir in Precambrian crystalline rocks of the Siljan Ring. The three technical papers may interest researchers working in the drilling industry while the succeeding scientific papers are of interest to earth scientists concerned with the "deep gas" concept. Additional papers deal with general aspects of astroblemes (i.e. cratering and slumping processes, shock metamorphism, ...).

P.-Y. BOLLY
Petrofina

H. BAHLBURG, Ch. BREITKREUZ and P. GIESE, Eds. - **The Southern Central Andes : contributions to structure and evolution of an active**

continental margin, *Lecture Notes in Earth Sciences*, vol. 17, Springer-Verlag, Berlin, 1988, 261 p., Price : DM 54,-.

In Northern Chile, Southern Bolivia and Northwest Argentina, the typical Andean morphostructural units are particularly well developed and can be ideally studied along a geotraverse joining the Pacific Coast to the Andean Foreland.

These units are actually tectonic elements of an arc geotectonic setting, generated by a long-standing interaction between the Nazca plate and the South American continent ; the Western Cordillera represents the magmatic arc, the backarc area comprises the Altiplano, the Eastern Cordillera, the Subandean Ranges and the Chaco lowlands, while the Coastal Range, the Chilean Central Valley, the Chilean Precordillera and the Preandean Depression belong to the forearc system.

This complex setting corresponds to a two-step evolution, with, respectively :

- a pre-Andean cycle, documented by outcropping Paleozoic and Precambrian rocks ;
- an Andean cycle, of Mesozoic-Cenozoic age, characterized by a displacement of the tectono-magmatic activity towards the interior of the continent as well as a development of marginal basins under ensialic conditions.

These interesting features are analyzed and discussed in this 17th volume of the Springer Verlag collection "Lecture Notes in Earth Sciences". Papers compiled here cover topics ranging from Late Precambrian to the Quaternary and include research in geology, paleontology, petrology, geochemistry, geophysics and geomorphology ; they improve the picture of Andean structure and evolution and show that the first simple plate tectonic models have to be improved.

P.-Y. BOLLY
Petrofina

R. COSSE - *Le gisement. Techniques d'exploitation pétrolière*. Editions Technip, Paris, 1988, 1 vol. broché, 329 p., 182 fig., 10 abaques, 19 tabl. Prix : 380,- FF.

L'objectif de cet ouvrage "Le gisement" est d'apporter une information condensée sur les méthodes d'étude des gisements, allant des techniques spécifiques de géologie et de géophysique appliquées aux réservoirs, jusqu'aux principes de base de la simulation des gisements, en passant notamment par des notions sur les diagraphies, l'étude PVT des fluides et les essais de puits. L'accent est également porté sur des méthodes récentes comme les courbes types en interprétation des essais, et les drains horizontaux par exemple.

Het boek is het eerste volume is een serie van 4 boeken over de technieken van de petroleum exploitatie.

In de goede stijl van de Editions Technip is ook dit boek een goed gestructureerd en goed geïllustreerd bondig overzicht van alle aspecten van een olie en gas reservoir.

De behandelde onderwerpen in het eerste volume omtrent het reservoir zijn : de geologie en de geofysica van een reservoir, de fysische karakterisatie van de reservoirgesteenten, de fysische karakterisatie van de reservoirfluida, de berekening van de volumes koolwaterstoffen in het reservoir, interpretatie van puttesten, polyphase gedrag, exploitatietechnieken met een bespreking van de secundaire winningstechnieken. Het boek eindigt met de bespreking van 3 velden in Frankrijk en één in de Noordzee.

De sterkte van het boek is de volledigheid en de coherentie waarmee het reservoir bendaderd wordt. Dergelijke aanpak is typisch voor opleidingscursussen die een inzicht proberen bij te brengen. Dit boek is trouwens een uitvloeisel van een dergelijke opleiding.

Door de schematiserende stijl en de goede illustraties is het boek bijzonder geslaagd als kennismaker met het onderwerp.

De zwakke kant is uiteraard de beperktheid waarmee de onderwerpen telkens worden behandeld. Dit is in het opzet van het boek noodzakelijk, doch sommige onderwerpen worden daarbij herleid tot enkel maar een vermelden.

Het boek is zeer zeker een aanrader voor al wie snel een inzicht wil verwerven in het gedrag van olie en gas reservoirs en een uitstekende oriëntatie voor beginners in de petroleumgeologie.

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