Stach's Textbook of Coal Petrology

By E. Stach, M.-Th. Mackowsky, M. Teichmüller, G. H. Taylor, D. Chandra and R. Teichmüller
Gebrüder Borntraeger, Berlin, Stuttgart; 1975 428 p.
Cloth DM 124 (U.S. $49.80)

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The title of this book is a tribute to Professor Erich Stach of Krefeld, Germany, who is one of the founding fathers of modern Coal Petrology. In his original *Lehrbuch der Kohlenpetrographie* he showed, with many illustrations, the great merit and facility of examining the heterogeneity of coal with the aid of polished sections and oil immersion objectives. Great strides have been made in coal microscopy since publication of the first edition in 1935. The current version is a complete new work by a number of authors of international repute, who have made contributions in their specific areas of expertise. In addition, the new edition is published in the English language and, like the original textbook, is profusely illustrated with excellent photomicrographs and diagrams.

The book is a comprehensive survey of nearly all aspects of coal petrology and since it is at present the only one of its kind, it most certainly fills an important gap in fundamental scientific literature. It deals with the subject matter in five chapters, which have been written under single authorship or by several authors, with each contributing individual parts. The chapters have the following titles: 1) Introduction and historical survey (4 p.); 2) Fundamentals of coal petrology (50 p.); 3) Origin of the petrographic constituents of coal (74 p.); 4) Methods and tools of examination (73 p.); 5) Applied coal petrology (80 p.).

Chapter 2 discusses the origin of coal and the development of coal facies in relation to different peat-forming environments, and how the original vegetable material changes into coal is dealt with under diagenesis and coalification. Of interest also is a comparison between coalification (leading to coal formation) and bituminization (leading to oil generation). The recently developed views of M. Teichmüller regarding the formation of oily substances during the coalification process are briefly referred to. A large part of Chapter 2 is devoted to detailed descriptions and terminology of the macerals, the microlithotypes and the lithotypes of coal as defined by the International Committee on Coal Petrology.

In Chapter 3 the individual coal constituents are related to botanical entities and to specific conditions of peat formation. The alteration of these constituents during the peat, brown coal and hard coal stages is mentioned and illustrated with photomicrographs.

Chapter 4 gives an excellent survey of the methods used in preparing the coal for microscopic study; also described are the procedures used for the quantitative maceral, microlithotype, and mineral matter analysis as well as for rank determinations. The latter are carried out by vitrinite reflectance measurements, which are dealt with in considerable detail. A section on coke microscopy is included also.

For those unfamiliar with coal petrology, the last chapter of the book may well be a revelation. It shows how varied are the applications of these investigations. They range from actual coal technological processes, such as coal preparation, and the evaluation of suitability of coking coals and their blends for the production of metallurgical coke, to geological applications. In the latter field, the value of coal petrology for seam correlations and for oil and gas prospecting (through vitrinite reflectance measurements) are discussed in some detail.

This book has covered the subject matter in a most admirable manner and the authors can be congratulated on a job well done. It is modern in concept, contains an extensive and up-to-date bibliography, and can be recommended for both college students and professionals who desire more information on this comparatively new field of scientific endeavour. Only the high price is considered a disadvantage for individual purchases.

MS received August 23, 1976.

Stone: Properties, Durability in Man's Environment (Second Edition)

By E. M. Winkler
Springer Study Edition, Springer-Verlag, New York, 230 p., 1975.
$14.80

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The publication of a second edition of this book, two years after the first edition, testifies to its popularity and usefulness. It is the only recent book on monumental and structural materials that deals in depth with damage due to environmental factors. All of those involved with the practical application of rocks will find this book useful. It is recommended for architects, engineers, geologists and stone producers. Ecologists and conservationists will be interested in the chapters on "Silicosis" and on "Stone Conservation on Buildings and Monuments".

The book is divided into 13 chapters. The characteristics, origin and classification of rocks are covered for those who do not have an adequate background in petrography. Considerable detailed data are given in the chapter on the physical properties of rocks. The effect of stresses in the earth's crust on quarrying operations is discussed, especially in relation to obtaining large blocks of fresh sound rock. The selection and use of materials for monuments and buildings together with the properties which influence their final appearance and durability are covered. A chapter on the decay of stone deals with the natural weathering agents and with the increased rate of deterioration due to man-made pollutants. In this regard the cover picture showing a monument in the highly industrialized Rhein-Ruhr district of Germany illustrates the great difference between the slight effects of weathering in a period of 200 years and the complete decay that occurred following in the 60 years due to industrial pollutants.

The largest chapter in the book explains the action of water and dissolved salts in stones and the effects of chemical weathering especially in relation to the porosity and permeability of the material. The following topics are discussed: sources of moisture, moisture transfer mechanism in capillary systems of stones and masonry walls, and origin and behaviour of salts in capillaries. The chapter dealing with the effects of plants and animals stresses their chemical action. Interesting is the finding that weathering conditions are strikingly similar to those in urban areas.

Fire and frost action are also discussed. The processes which may produce disruption of stones due to frost action are: volume increase occurring when water changes to ice, displacement of water away from the advancing ice front, conversion of pore water into ordered water at the surface of solids, and volume increase due to the unfrozen water at temperatures below freezing. The environmental changes increase the damage and cracking of rocks due to frost action.

The book is well illustrated with photographs and graphs. The bibliographies, conveniently located at the end of each chapter include English and European literature up to 1970. The appendices contain a useful table of properties of some rock forming minerals but should mention the reaction between dolomite and high alkali portland cement. The specifications for stones published by the American Society for Testing and Materials should be updated to include the recent specification for concrete aggregates (ASTM C33-74a) which contains the concept of varying weathering conditions for different types of concrete constructions in different regions of the U.S.A. Conversion tables and a glossary of geological and technical terms are included.

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The Encyclopedia of World Regional Geology Part I: Western Hemisphere (Including Antarctica and Australia)

Edited by Rhodes W. Fairbridge
Dowden, Hutchinson and Ross, Inc., 204 p., 1975.
$40.00

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In turning to such a compendium as the Encyclopedia of World Regional Geology the reader generally would be looking for specific factual data - the age and lithology of rocks, stratigraphic relationships, tectonic settings and events, mineral deposits, or seeking references to individuals and organizations whereby he can obtain additional information. In this book he can find them in abundance, together with general reviews, geological and tectonic summaries of broad regions, geographical and physiographic descriptions, and notes on the history of exploration and development.

Part I, the Western Hemisphere, includes the Americas, Antarctica, Australia, New Zealand and Oceania - that is most of the small Pacific islands. Part II, which is to follow, will include the Eastern Himisphere, the rest of the world. All entries are alphabetically sequential with cross-references that refer the reader to the relevant summary and adjacent countries. The lack of an index to the general summaries, and the entries each embraces, makes it difficult for the user to start with the general and continue with the detailed accounts.

Different countries and regions do not get the same treatment, but this is deliberate. The smaller countries receive a relatively more detailed and thorough treatment, a well considered approach as published information on them may be rather scarce or obscure. Some of the accounts are models of condensation of data and precise expressions of concepts that give the reader a clear understanding of the salient features of the geology and the more significant regional stratigraphic tectonic relationships or the geological evolution of the region and country. Some others, such as parts of the United States and Canada, ieave something to be desired, perhaps understandably as the volume of available data may be large and it is difficult to avoid excessive descriptive or stratigraphic detail on the one hand, or on the other, to so condense and summarize that little in the way of specific information is presented. There is some variability in the evolutionary and tectonic syntheses that reflects the current state of transition from geosynclinal to plate tectonic concepts in the analysis of geological data.

The book is well illustrated with an interesting selection of photographs, informative tables and figures showing stratigraphic and structural relationships, and numerous maps - not only generalized geological maps but several tectonic, physiographic, paleogeological and other maps. Legibility is good. Bibliographic references extend into the early 1970s. The book is well edited and attractively composed, an altogether worthwhile product.

For reference, a must.

MS received June 7, 1976

Stach's Textbook of Coal Petrology. GebrÃ¼der Borntraeger, Berlin. Staplin, F.L., 1969.Â Organic petrology of source rocks history and state of the art. In: Leythaeuser, D., Rulkoetter, J. (Eds.), Advances in Organic Geochemistry, vol. 10, pp. 581â€“599. Tissot, B.P., Welte, D.H., 1984. Coal petrology is also a branch of coal science that dates back to the beginning of the 20th century, and it was in 1913 that White and Thiessen laid down some of the fundamentals that underpin coal petrology today. The titles of Thiessen's works in the 1920s, Under the Microscope Coal Has Already Lost Some of Its Former Mystery, reflected new discoveries in this emerging field (Thiessen, 1920aâ€“c, 1921, 1926).Â At about the same time, Stach (1935) was developing the discipline in Europe, in this case using reflected-light microscopy techniques. These techniques are still used in modern coal petrography. by E. Stach (Author). See all formats and editions Hide other formats and editions. Price. New from. Used from. Hardcover. "Please retry".Â Language: : English. Best Sellers Rank: #4,932,653 in Books (See Top 100 in Books). #104 in Coal Energy. Tell the Publisher! I'd like to read this book on Kindle. Don't have a Kindle? Get your Kindle here, or download a FREE Kindle Reading App. Related video shorts (0). Upload your video.