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BOOK REVIEWS

THE COLLECTOR'S BOOK OF FLUORESCENT MINERALS. By Manuel Robbins, Van Nostrand Reinhold, New York, 1983. Hardcover, xiii, 289 pages, 64 color photographs, many figs., tables. $45.00.

Since publication in 1960 of Sterling Gleason's *Ultraviolet Guide To Minerals,* still available in paperback, no large popular work has appeared until now to satisfy the need for an up-to-date work on the subject. Robbins' book is therefore a welcome addition to the mineralogical literature. It contains much of interest to the general mineralogist and geologist as well as the collector of fluorescent minerals.

As may be expected, Gleason and Robbins cover about the same ground but there are significant differences in the choice and treatment of subject matter with the result that each book complements the other and both books should be obtained by the fluorescent specialist. The subject matter leads off with a few historical remarks, followed by comments on the nature of ultraviolet light and the means by which it is generated. There is an excellent discussion of the merits of several types of currently available apparatus with guides for prospective buyers. Next appears a very readable chapter on collecting which owes much to the verbatim accounts of collecting experiences by Tom Warren and Dick Bostwick, the latter providing an especially interesting story of collecting in the Sterling mine in the Franklin district of New Jersey. A large chapter then follows which describes major mineral/ore deposits, e.g., pegmatites, ore veins, metamorphosed limestones, evaporites, etc., and the fluorescent species which may occur in them.

The largest chapter in the book is on mineral descriptions which is divided into two sections, the first on species found within the United States and the second on those found elsewhere. This division is of doubtful merit because it requires the reader to consult two places in the text, if he wishes to know all the data on any one mineral. Furthermore, the space devoted to extra-U.S. species is so comparatively small that this information could have been easily incorporated with the other and would have saved considerable text space. In this connection, the information on foreign species is meager and could have been usefully enlarged by including localities taken from Werner Lieber's "Die Fluoreszenz von Mineralen," *5.Sonderh., Der Aufschluss,* 1957.

Within the descriptive sections species are arranged in the usual chemical class order to which are appended hydrocarbons and a special convenient grouping of uranium-bearing minerals which tend to occur together. Amber and similar fossil resins are omitted from the hydrocarbons and none in this class is shown in the foreign division. Chemical formulas are provided for species in the first division but not for those in the second division.

After the descriptive chapter appear three others on theory, the first on activators, the second on solid state luminescence theory, and the third on color and its preception. Together they present a formidable 52 pages devoted to rather dry subjects which require considerable concentration on the part of the reader in order to understand and appreciate their content, which effort probably will not be made by most ordinary collectors. The material presented possibly reflects the author's background interests in physics and offers the reader far more fluorescent theory than has ever been put down in any previous book written at the popular level. The placement of these chapters near the end of the book inevitably introduces problems, for example, numerous references are made to activators in the descriptive chapter, which term is unexplained except for a brief reference to it at the beginning of the book, but the descriptive text is written as if the reader is thoroughly familiar with the term and its significance. In some places, e.g., under sphalerite, halides, and calcite, discussions of activators are of considerable length and depth. The final chapter of the book is a series of identification tables to be entered according to color displayed under short- and long-wave UV.

There are a considerable number of spelling errors, as in a footnote reference on p.13 where two occur in the same entry, plus the wrong choice of a journal name. Misspellings and other mistakes occur especially in the several bibliographies and include incomplete references and wrong titles to journals. As worthwhile as the book is in its present state, it can be considerably improved in subsequent issues by reorganization of parts, elimination of much deadwood, "tightening" the text, using obvious abbreviations throughout as UV, SW, and LW, and eliminating misspellings and other errors noted above. Far more foreign fluorescent mineral occurrences should be included and certainly fossil resins should be treated too. It would also be helpful to include a section of fluorescence among gemstones, natural and synthetic, because many fluorescent mineral collectors display examples of gems in their collections.

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INTERNATIONAL TABLES FOR CRYSTALLOGRAPHY, VOLUME A. SPACE GROUP SYMMETRY. Edited by Theo Hahn, D. Reidel Publishing Company, Dordrecht and Boston, 1983. 854 pages. Institutional price: U.S. $165; individual: U.S. $90.

This is an extension and complete revision of the symmetry tables portion of the International Tables and is the first volume of the third series of the *International Tables for Crystallography.* The first series was published in 1935 under the title, *Internationale Tabellen zur Bestimmung von Kristallstructuren.* The second series was published under the title *International Tables for X-Ray Crystallography,* Volume I (1952), Volume II (1959), Volume III (1962), and Volume IV (1974). The current volume supercedes the direct-space symmetry tables portion of Volume I of the previous series.

Compared with previous series, the current edition is greatly expanded in size, both in layout (23 × 30 cm page), and length. The increased size is occasioned by extensive expansion of the space-group tables with a standard format of two pages per group in place of the prevoius one, and by expansion of the introductory text with additional synoptic tables and theoretical discussions.

The volume is divided into two parts. Part I is entitled "Tables for Plane Groups and Space Groups" and consists of text sections describing symbols and format used, basic matrix algebra for axial transformations, plus the descriptive tables for

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plane groups and space groups. As quoted from the Preface: "New features of the description of each space group, as compared to IT (1952), are as follows: (1) Addition of Patterson symmetry; (2) New types of diagrams for triclinic, monoclinic and orthorhombic space groups; (3) Diagrams for cubic space groups, including stereo-diagrams for the general positions; (4) Extension of the origin description; (5) Indication of the asymmetric unit; (6) List of symmetry operations; (7) List of generators; (8) Coordinates of general position ordered according to the list of generators selected; (9) Inclusion of oriented site-symmetry symbols; (10) Inclusion of projection symmetries for all space groups; (11) Extensive listing of maximal subgroups and minimal supergroups; (12) Special treatment (up to six descriptions) of monoclinic space groups; (13) Symbols for the lattice complexes of each space group (given as separate tables in section 14)." The descriptive tables for monoclinic space groups are given for both b-axis, and c-axis unique settings, and these are extended to include various possible cell choices for each group.

Part II is entitled "Symmetry in Crystallography" and corresponds to a concise, advanced text in crystallographic theory. This part consists of theoretical background discussion of symmetry algebra, lattices and point groups, symmetry operations, space group symbols, and isomorphic subgroups.

Large portions of the tables are computer-generated and computer-typeset. The volume is handsomely laid-out and finished, and the editors describe meticulous procedures for error-checking in the tables. This volume should serve the crystallographic community well into the next century. I look forward to publication of Volume B on reciprocal space symmetry and Volume C on physical and chemical data pertaining to crystallography.

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MINES AND MINERALS OF THE GREAT AMERICAN RIFT (COLORADO-NEW MEXICO). By Richard Walker Holmes and Marianne B. Kennedy. 332 p; Van Nostrand Reinhold Co., New York, Cincinnati, Toronto, London, Melbourne, 1983, $29.50.

This book deals with selected mines in a south-to-north strip on both sides of the Rio Grande, San Luis, and Upper Arkansas Valleys of New Mexico and Arizona. For each mine, the authors give an historical summary of operations and a list of minerals. Gangue, country rock, alteration products, primary ore and supergene ore are distinguished in only a few examples. Illustrations include 72 high-quality color photographs of minerals, numerous black-and-white photographs, line drawings of crystals, location maps and geologic sketch maps. Not all of the maps have scales. Unfortunately, the selection of districts covered is quite arbitrary. The Grants, New Mexico, uranium district, for example, is discussed even though it cannot be placed in the Rio Grande Valley (or rift) by any stretch of the imagination. The Cerrillos district, much closer to the Rio Grande, is not mentioned even though it has a colorful history of pre-Columbian turquoise mining and, perhaps, the oldest (A.D. 1581) base-metal mine in the United States. The book describes the mines on the margin of the Silverton caldera, far from the Rio Grande, but fails to mention molybdenum mining in the Questa caldera, much more productive than Silverton at present and within sight of the Rio Grande Valley.

Historical accounts of mines are generally factual, although short on human interest. Only rarely does fancy crowd the facts. For example, it is most improbable that the Aztecs mined turquoise at Santa Rita. Although the book is directed to the "mineral collector and hobbyist," its mineralogy is not elementary. The reader is expected to understand terms like tactite, pseudomorph, propylitic zone, flos-ferri; to distinguish Carlsbad, Baveno, and Manebach twins, and follow sentences such as: "Quartz crystals with spire-like terminations (similar to the reversed scepters of the San Juan Mountains of Colorado) were found in vugs and cavities." There is no glossary. For readers unfamiliar with structural terms, an illustration labels an overturned isoclinal anticline as a monocline. Readers who have a hard time finding "pyragenesis" and "zenolith" in a dictionary might have an even harder time finding certain localities on a map. The Sierra de las Uvas and Potrillo Mountains are said to be east of the Rio Grande and north of the Caballo and Fra Cristobal Mountains. The San Luis Valley is placed east of the Sangre de Cristo Range. The system of literature citations is utterly eccentric, which is a pity because the bibliography is comprehensive. The authors have diligently researched the literature and have brought to light many useful but obscure publications. Misspelled names abound (e.g., Judo for A. M. Kudo; Durham for Sir K. C. Dunham).

The book verges on absurdity in the first two chapters, which purport to deal with regional geology and ore genesis, respectively. The Great American Rift of the title refers to the Rio Grande rift. Readers of the *American Mineralogist* who have missed the plethora of symposia, workshops, and conferences on the Rio Grande rift need only to know that it runs from the Upper Arkansas Valley of central Colorado to southern New Mexico, where (in the reviewer's opinion) it merges with the Basin and Range province or (in the opinion of most other workers) it continues into Trans-Pecos Texas or northern Mexico. Various authors have placed the beginning of rifting between 32 and 20 m.y.b.p. A modest amount of mineralization is associated with the Rio Grande rift, mainly veins of fluorite, manganese oxides, and precious metals. Most of them are fault-controlled epithermal or hot-spring deposits without known links to magmatic processes. Igneous activity and mineralization at Questa may be related to an early stage of rifting and the Bland (Cochiti) gold-silver district is related to an intrarift intrusion but (like Questa) is not mentioned in the book.

The authors of the book take a different view. Their Great American Rift is said to extend from "Rocky Mountain Trenchtintina (sic), of the Desert Bolson zone north of Mexico City . . . to the North Slope of Alaska . . . The rift zone was active in PCe (sic) time; in Pennsylvanian time; extremely active in the Laramide orogeny, and again in Neocene (sic) to Recent time." Meanings of *Recent* and *Neocene* are explained in a time chart, which defines *Recent* at the last 10,000 years of the Holocene, which in turn is said to go back 3 m.y. and was preceded by the Neocene.

Rift zones, according to the authors, "have deep-seated faults through which igneous rocks can rise into the crust" and "all major metallic ore deposits are near and related to large silicic masses of intrusive rocks." This relationship is illustrated by a fanciful diagram showing a batholith beneath the Arkansas Valley and attributed to U.S. Geological Survey Professional Paper 726-C, by Ogden Tweto and J.E. Case. The original reveals a schematic profile across the Colorado Mineral Belt, which crosses the Arkansas Valley with an angle of about 45°.

Tweto and Case inferred a shallow pluton of late Cretaceous to early Tertiary age from gravity data and took pains to distinguish its gravity signature from that of the Upper Arkansas graben. With this background, the authors explain Precambrian pegmatites, Mesozoic sandstone-hosted uranium and copper deposits, Laramide porphyries, veins in ring-fracture zones of Oligocene calderas, and even some fluorite veins and perlite deposits actually related to the Rio Grande rift. To emphasize the worldwide importance of rifts, we are told that, "The world's largest concentration of fluorspar occurs in the Bushveld Complex in the Eastern African Rift System, in South Africa."

In summary, this book has value to the mineral collector who needs information on minerals from specific mines. It gives guidance to the mining-history buff. It is no help to the mineral collector interested in the genesis and geologic setting of mineral deposits, or in the Great American Rift.

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NATURE OF EARTH MATERIALS, second edition. By Anthony C. Tennissen. Prentice Hall, Englewood Cliffs, NJ, 1983. xv + 415 pages. $21.95.

Many academic geology departments in the United States offer a course designed to introduce non-geology, and particularly non-science, majors to minerals and rocks. In this second edition of Nature of Earth Materials, the late Anthony Tennissen has provided a text intended to meet the needs of such a course. It differs in only minor respects from the first edition. In general format, coverage, and depth of treatment, the text would likely prove generally satisfactory, but it has some shortcomings that might limit its usefulness for some instructors.

The author takes a conventional approach to the description of earth materials, beginning with a simplified model of the atom. While this discussion is adequate, it is occassionally marred by the insertion of unnecessarily inaccurate statements. For example, our knowledge of the nature of atoms is attributed to X-ray experiments, and all solids are alleged to be held together by attraction between cations and anions (an assertion that is correctly contradicted two pages later). The discussion of atomic bonding is satisfactory with the exception of the van der Waals bond, which is described in terms of molecular dipole moments implied to be permanent, and to which is ascribed the attraction between sheets in micas. More-or-less inaccurate statements are similarly scattered through the section on morphological crystallography; most will have little effect on the student's understanding of the subject at this level, but the instructor may find them bothersome. It seems a major flaw to this reviewer that crystallographic form names like pinacoid and prism are never defined, but are illustrated only in figures, so that the student is faced with simply memorizing which Miller indices correspond to prisms, which to pinacoids, etc. (Enough information is provided in figures and tables, however, that an insightful student can infer the definitions for himself.) It also seems unnecessary to burden students in this type of course with distinctions among first-, second-, third-, and fourth-order forms.

There follows a chapter on mineral properties, and descriptions of 110 common minerals. Again, there are regrettable inaccuracies (a photo, for example, of cleavage octahedrons of fluorite alleged to show a common habit of that mineral, and prismatic cleavage being cited as typical of triclinic crystals). The section on mineral classification serves as a good introduction to the mineral descriptions, which are concise and well-written. Each description is on a single page with a photograph at the bottom, which is potentially helpful if laboratory specimens are not readily available. Unfortunately, the photographs are all black-and-white, so that features referred to in the captions, such as luster, color, diaphaneity, and sometimes even form, are not at all obvious or discernible.

The next three chapters cover igneous, sedimentary, and metamorphic rocks, respectively. The black-and-white photographs often obscure what they are intended to reveal, but rock textures and coarse structures suffer less than mineral luster and diaphaneity. Each chapter contains discussions of the origins, compositions, classification, and structures of the respective rock types. Classification schemes are based on simple modal compositions, and would likely be acceptable to any geologist for use in general education courses. (The only exception might be the inclusion of pyroclastic rocks with sedimentary rather than igneous rocks.)

The discussion of igneous rocks leaves the student with the distinct impression that all types discussed are equally abundant in the earth, that rhyolitic glasses and basalt glasses occur with equal frequency, and that batholiths and other rock bodies might with equal likelihood be of any igneous rock type. Ash flow tuffs are not mentioned, either in this chapter or with pyroclastics in the chapter on sedimentary rocks. Plate tectonics, which might have served as a framework within which to discuss the distribution of rock types, is not brought up until the discussion on mineral deposits in the last chapter of the book (except for three or four sentences in the chapter on metamorphic rocks). Even without that framework, however, some treatment of igneous rock distribution and relative abundances of rock types would have been a valuable asset for the text.

The chapter on sedimentary rocks appears to be done well, at least to a reviewer whose specialty is not closely related to that area. The classification scheme used would not find universal acceptance by sedimentary petrologists, but it adequately serves the needs of students who would be using this text. Tennissen discusses both depositional environment and rock characteristics, but does not provide much specific correlation between the two.

The classification of metamorphic rocks, based on mineralogy and fabric, is standard. Except for a few early sentences alluding to plate tectonics concepts, the chapter on metamorphic rocks does not deal with tectonic processes that produce the rocks. In describing kinds of metamorphism, the author divides metamorphic rocks into burial, contact, hydrothermal, and regional metamorphic types; this unfortunately combines two terms describing field relations with two terms identifying metamorphic process.

The final chapter concerns the uses of geologic resources, and covers materials as diverse as metals, construction materials, water, gemstones, and fossil fuels, among others. Worldwide distributions and geologic environments are discussed for most resources covered. A brief but adequate summary of plate tectonics is included and used as background for a discussion of mineral deposits. Sufficient attention is given to careful use of nonrenewable resources to make students aware that problems, current and potential, exist in this area.

Despite the shortcomings cited in this review, the text has some strong points that may, depending on course structure, make it the preferred alternative for a general education course

in rocks and minerals. With a few gaps that could be filled in by the instructor, the text covers all of the subject matter that would probably be required. The least accurate sections, those on atomic bonding and crystallography, might well be the least critical sections for a course of this nature. The descriptions of minerals and rocks make an additional laboratory manual unnecessary, and, while many of the black-and-white photographs are disappointing, adequate laboratory specimens would remedy that problem. For general courses on rocks and minerals for nonscience majors, this text is decidedly among those that should be considered.

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COOKE–RAVIAN VOLUME OF VOLCANOLOGICAL PAPERS. Edited by R. W. Johnson. Geological Survey of Papua New Guinea, Memoir 10, 1981, xvii + 265 pages. PNG Kina 22.00 (Approx. U.S.$30.00).

Some of world's most persistently active (and dangerous) volcanoes are in Papua New Guinea; at least 14 of them (more, if one includes oral legends) have erupted in historical time, and the activity of 12 of them is discussed in this excellent new book.

Robin Cooke, volcanologist with the Rabaul Observatory, had planned a memoir to summarize recent Papuan activity, including the considerable new information unearthed by his exhaustive research of obscure published and unpublished references; but this plan was not implemented because of his untimely death. Thus, the present volume was prepared as a tribute to Cooke and Elias Ravian, both killed by an unexpectedly violent phreatic eruption of Karkar Volcano on March 8, 1979. The scope of this book goes far beyond Cooke's original intent, however, because the volume is far more than a regional compilation of volcanic activity; most of the 25 included papers report on original research of wide interest. Cooke is a posthumous author or coauthor of nine of these papers.

Three papers of particularly timely interest deal with Rabaul caldera, an area which is presently undergoing a major seismic/deformation crisis. *Emeleus and others* report on the possibility of dating Rabaul eruptive products by an evaluation of secular magnetic-field changes, and *Almond* discusses an aeromagnetic survey of Rabaul which suggests the existence of hot rock beneath the caldera. *Walker and others* discuss the distribution and characteristics of tephra from a major (11 km^3 volume) ignimbrite eruption 1,400 yr b.p.; they demonstrate that the rising of basaltic magma may have "triggered" the subsequent explosive silicic eruption. They write, "We note that even a modest basaltic eruption may be the precursor to a violent and highly dangerous event involving rhyolitic magma."

Phreatic eruptions are probably the most dangerous type for volcanologists, because of the general unpredictability of such events. Four papers deal with volcanism at Karkar volcano, where Cooke and Ravian died in 1979. Precursory phenomena for the 1979 phreatic eruptions are discussed in an important paper by *McKee and others*, who describe these eruptions in detail and suggest a correlation between heavy rainfall and phreatic activity. Another paper of interest to those attempting to forecast volcanic activity is by *Palfreyman and others*, who demonstrate the correlation between semiannual solar declination maxima and eruptive activity at Langila volcano.

Other papers of particular interest include *McKee and Wallace's* quantitative description of the fluid 1974–75 andesite flows at Karkar, a paper by *Fisher and Branch* on the dacite-associated origin of Pleistocene(!) epithermal gold mineralization at the Morobe Goldfields, and a paper by *Jaques* which proposes a major change of tectonic setting to explain the Quaternary transition from island-arc andesitic volcanism to mid-oceanic tholeiitic volcanism within the Admiralty Islands.

This volume is available from the Geological Survey of Papua New Guinea, P.O. Box 778, Port Moresby, Papua New Guinea. Remittance checks should be made payable to the Department of Minerals and Energy, Port Moresby. Cost (including surface postage) is PNG Kina 22.00 (approx. US $30) or via airmail, PNG Kina 34.50 (approx. US $47). Drafts in Kina are obtainable from most large banks; international drafts in U.S. dollars are acceptable *only* if Kina drafts are not obtainable.

The book utilizes high-quality paper and is well printed and bound. The photographs (including five color plates) and figures are mostly of very good quality, although printing errors have resulted in poor resolution on a few black and white photographs. Abstracts are presented in both English and Tok Pisin (Papua New Guinea pidgin); a Tok Pisin-English glossary is included to facilitate use by native Papuan readers.

In combination with the 1976 "Volcanism in Australasia" memoir and Taylor's recently reissued "The 1951 Eruption of Mt. Lamington," this volume provides a nearly complete picture of the diverse Papuan volcanic activity, activity which includes virtually all volcanic phenomena likely to be encountered anywhere within the Circum-Pacific "ring of fire".

R. W. Johnson, who edited all three of these books, has performed a great service for those interested in circum-Pacific volcanism. The Cooke–Ravian volume is a worthy testament to two fine men cut down in their prime years, and presents a wealth of information that will enable others to refine their understanding of active volcanoes and to approach the day when tragedies such as that of March 8, 1979 can be prevented by better knowledge of volcano behavior.

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MAC SHORT COURSE IN SEDIMENT-HOSTED STRATIFORM LEAD-ZINC DEPOSITS—Vol. 9, May 1983. Edited by D. F. Sangster. Mineralogical Association of Canada, Toronto, Canada. 309 pages. $12.00 (Canadian).

Reviewing short course notes is always a problem. Should they be evaluated as books or should their pragmatic value as short course notes be considered? In this case, the book would have been better titled, "Short Course on a few Western Canadian, stratiform lead zinc deposits", as approximately half of the chapters provide varying amounts of new information on recently discovered deposits in the Yukon Territory and Northern British Columbia. These articles will be of considerable interest to specialists in stratiform deposits as information on this metallogenic province has previously been limited to newspaper articles and a few abstracts. The coverage, however, is very patchy. The lower Paleozoic deposits in the Yukon (Anvil deposits, Howards Pass) are barely mentioned. Although D.G. MacIntyre provides a very useful review of the stratigraphic setting of the northern British Columbian deposits, the stratigraphic and tectonic setting of the Selwyn basin is largely

ignored despite repeated references to similarities to "Howards Pass stratigraphy", etc. The introductory chapter by D. Large is interesting and undoubtedly was an excellent short course lecture; however, as a review chapter in a book on stratiform deposits it is short and superficial. This is partly redeemed by an up-to-date and carefully chosen reference list. The second chapter is a detailed review of the geology of the Sullivan deposits. Unfortunately this paper is largely a republication of an article in GAC Special Paper No. 25 (1982) and the deposit geology has not changed much in the few years separating the two efforts. A more regional look at the deposit's stratigraphic and tectonic setting would have been more useful. In the fourth chapter, a group of Cyprus Anvil geologists provide an excellent account of the geology of the Cirque deposit. It would have improved the balance of the book if the same group had been asked to contribute chapters on the Anvil Range deposits and/or the regional metallogeny of the Selwyn Basin. J.W. Lydon's chapter on the chemistry of stratiform deposits is, on one hand, full of interesting ideas and insight, but, on the other, is a rather poorly organized compilation of loosely related and only partially explained data. Both this chapter and the subsequent one by Russell on hydrothermal convection make reference to the Howards Pass deposit. Again the book would have benefited from a chapter by John Morgante on this giant stratiform deposit. Russell's article makes interesting reading, however it assumes a significant background knowledge. Russell's model, envisaging convection all up to 15 km deep, must be regarded as wildly speculative and it ignores the body of information on fluid circulation in basins that has resulted from oil exploration. The book, and perhaps the short course, would have benefited from input from lead isotope and stable isotope geochemists. These important topics are relegated to one or two brief paragraphs which are inadequately referenced.

In summary, the most useful aspect of this book is the publication of new data on a few of the Western Canadian deposits. This is welcomed and it is regretable that a more comprehensive treatment couldn't have been put together. As a review on stratiform deposits or as a textbook for an advanced course in Economic Geology, this book is grossly inadequate. Despite these criticisms. I feel that the editor, D.F. Sangsten and the Mineralogical Association of Canada have provided a useful service to the geologic community by making this information available at such a reasonable cost. I'm sure this volume will end up on the book shelves of most professional economic geologists.

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LANDOLT-BORNSTEIN, GROUP III, VOL. 12C—MAGNETIC AND OTHER PROPERTIES OF OXIDES AND RELATED COMPOUNDS. Edited by K.-H. Hellwege et al. Springer-Verlag, Berlin Heidelberg New York, 1982, 604 pages. US $392.

This volume deals with hexagonal ferrites and lanthanide and actinide compounds; two previous volumes (12a and 12b) deal with garnets and perovskites and with spinels and iron oxides, respectively. As with past volumes, peering into Landolt-Bornstein is like walking into an old fashioned mineral museum, endless specimens on crowded shelves, with an organization obvious to the curator only. In this case the specimens are data on magnetization, Curie temperature, specific heat, electrical conductivity, photoemission spectra, Mössbauer spectra, lattice constants, and other surprising goodies. An excellent index, by compound, not by property, is provided, as are copious references. Most data are in graphical form, though some tables and occasional pages of discussion are provided. The data are not evaluated so it is hard to judge if all are of equal quality. Certainly anyone needing data can find a gold-mine of information in these volumes. One should mention also that Volumes 5, 6, 7 contain structural data for organic, intermetallic, and inorganic materials. Certainly no library should be without a complete set of Landolt-Bornstein. For individuals, the price, even of individual volumes, is prohibitive.

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NOTICES

ZEOLITE '85

An International Conference on the Occurrence, Properties, and Utilization of Natural Zeolites

Budapest, Hungary August 12–16, 1985

Technical sessions: to treat the following aspects of natural zeolites:

Geology
- Geochemistry
- Mineralogy
- Crystal Chemistry
- Crystal Structure
- Synthesis & Stability

Production
- Mining
- Beneficiation
- Product Preparation

Biological Reactivity
- Hemodialysis
- Antibiotic Action

Properties
- Adsorption
- Diffusion
- Dehydration
- Ion Exchange
- Catalysis

Agricultural Applications
Agronomy
Horticulture
Animal Nutrition
Animal-waste Treatment
Aquaculture
Agricultural Engineering
Industrial Applications
Wastewater Treatment
Water Purification
SO_x, NO_x Adsorption
Catalytic Reactivity
Hydrocarbon Treatment
Solar Energy
Radioactive Wastes
Paper Products
Construction Materials
Detergents
Gas Drying
Oxygen Production

Field Trip: Post-conference, optional field trip to zeolite deposits in the Tokaj Hills, eastern Hungary.

Sponsoring Institutions: Hungarian Academy of Sciences
International Committee on Natural Zeolites

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The U.S. National Mineral Collection

The mineral collections of the National Museum of Natural History, Smithsonian Institution, Washington, D.C., are very extensive and are among the largest in the world. These collections are readily available to, and used by, the scientific community for worthwhile research. The museum maintains, in addition to the study and exhibit collections, a repository for *type* and *described* mineral specimens, *i.e.*, those from which data have been gathered, and usually published. The *type* collection presently contains over 500 mineral species and is continually growing. The number of *described* mineral specimens presently exceeds 4700 specimens. We should all be concerned about the preservation of minerals for which analytical data of any form exists. The data become far less significant if the specimens are lost, for they cannot be verified, amended, or enhanced by subsequent, perhaps more sophisticated, studies.

Far too often, minerals described in published papers are deposited in drawers or cabinets by the authors and subsequently forgotten. With the passage of time and continual shifting from place to place, these specimens are usually lost to science. Such loss, though unintentional, is an irresponsible disservice to our science. It is the rule rather than the exception and this should be changed for the betterment of mineralogy.

Just as it is important to publish our research and disseminate knowledge, so also is it important to see to it that the specimens involved are preserved. Repositories of described specimens should continue to grow in depth and quality to the advantage of all who study minerals. Authors are therefore asked, and strongly encouraged, to send all analyzed or otherwise described mineral specimens to the Department of Mineral Sciences, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560. Acknowledgement of receipt will be by letter, and the specimens will be carefully curated. Postage franks are available upon request. In turn, the museum will continue to do its best to furnish research materials to the scientist upon written request.

Pete J. Dunn
Smithsonian Institution