lectures may be read with utmost profit. His style is utterly transparent and completely without artifice. The range and depth of his observations cannot fail to move his readers. His pages glow with wisdom and humanitarianism. He and his sponsors and publishers are to be congratulated upon the production of what can only be called a lovely book.

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Milner Revised

Sedimentary Petrography. vol. 1, *Methods in Sedimentary Petrography* (643 pp.); vol. 2, *Principles and Applications* (715 pp.). Henry B. Milner. Allen and Unwin, London; Macmillan, New York, ed. 4, 1962. Illus. $35.

Forty years and three editions later, a slim volume of 125 pages has grown into two volumes of 1358 pages. Although this fourth edition has a dozen contributing authors, old friends will continue to call it *Milner*.

Milner has done most of my work for me. In his preface he describes the contents, chapter by chapter, tells us what is retained as well as what is new, and introduces the contributors.

Almost all of the first volume, *Methods in Sedimentary Petrography*, is new or completely rewritten and enlarged. For example, chapter 6 (19 pages in 1940) has grown into eight chapters (266 pages) the last of which is entitled "Nuclear methods in mineral and rock analysis." A chapter on the theory and application of statistical methods to specific problems closes the volume.

Let me stress that this volume on "methods" should be useful in many fields other than, or in addition to, geology. Just one example (p. 137) is the use of air elutriation for particle-size analysis of cement and of flour.

About half of the second volume, *Principles and Applications*, is devoted to the identification and description of minerals and rocks and, to a limited extent, to the interpretation of these data. No major change has been made in this material since the third edition (1940). Much of the rest of the volume is given to important new chapters on clay minerals and on soils, each with its own impressive bibliography, and to a final chapter on asphalts, slags, ceramics, fillers, and other esoteric substances, many of them industrial raw materials and products.

In his preface Milner explains why the material in chapters 4, 5, and 6 has been retained pretty much as it was. This section, some 85 pages, deals with such fundamental problems as correlation and paleogeography, and this ever-demanding reviewer wishes Milner had provided an entirely new version, even if that were to mean another volume and a thousand pages more! But much of the literature (up to about 1957) which would have been used in this rewriting can be found in the final bibliography of some 1600 titles.

For geologists not familiar with the earlier editions, it should be restated that Milner's book is aimed principally at techniques, methods, and economic applications. It avowedly does not devote much space to theory, origins, and processes, fields in which Pettijohn's *Sedimentary Rocks* (1957) is particularly strong. The two books complement each other.

Nongeologists working in research, engineering, and industry should find Milner useful in ways far beyond my power to imagine.

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Resources of the Sea

Meeresprodukte. Ein Handwörterbuch der marinen Rohstoffe. Ferdinand Pax. Borntraeger, Berlin, Germany, 1962. xii + 459 pp. Illus. DM. 78.

Since the last edition of Tressler's *Marine Products of Commerce* there has been no general handbook for ready reference on the commercial and applied resources of the sea. This encyclopedia will partially fill the need.

Mineral products are less adequately covered than biological products, and although there are short entries on sodium, potassium, magnesium, bromine, and iodine, one looks in vain for gold or manganese nodules. Fossil resources from below the sea—such as amber, sulfur, and petroleum—are likewise neglected. And only one column refers to perhaps the most important marine resource—the inexhaustible supply of fresh water that eventually will be retrieved from seawater. However, the animals range from Aal (eel) to Zwergwal (little piked whale) and the plant materials from Agar-agar to Zelex (a commercial dental impression material derived from alginates).

There is good coverage of individual genera of both plants and animals, from *Acipenser* and *Alaria* to *Zeus* and *Zostera*. There are fascinating articles on palolo worms, sea-silk, "Thallasotherapie," Tyrian purple, wampum (Molluskengeld"), and molluscs used as symbols and magical materials ("Zaubermittel"). Kombu, nori, and dulse are there, though Limu is not. Ambergris is pictured (in a 417-kg lump), and so is precious coral.

Amongst the commercial biological products, certain shellfish are very well covered: thus mussels have 16 pages, and oysters 26, while lobsters have but 4 pages, langouste 2, and crabs a bit over 1. Fishes as a group have only 8 pages (of which a third is illustration), but various commercially important fishes have the following coverage: cod, 1 page; herring, 1½; mackerel, 1; menhaden, 1; sardine, 2; sturgeon, 1; and tuna, 1. On the other hand, trepang (*bêche de mer*) gets 2½ pages (including a picture of canned trepang in piquant tomato sauce!) and caviar 2 pages. Pearls rate 12 pages and Perlmutter 6 (compared with ½ page for potash).

There is abundant reference to seals and sea lions, sponges, squid, sepia, octopuses, and whales. Strangely, however, elasmobranchs and sharks escape the index, though *Ecklonia* and eelgrass, *Eledone* and elephant's ear, shad and sheepshead, shrimp and sild, and even skate and *Raja* are all there in the multilingual entries. One must be a good enough ichthyologist or linguist to look up nurse, hammerhead, basking, and other sharks as such; there is not even a German entry for *Hai*. Shark fins (*Haifischflossen*) are discussed, but shark-liver oil appears only briefly under fish-liver oil.

However, despite such discrepancies, the book should be useful. The German is fairly simple, equivalents are often given in eight or ten languages, and despite some omissions, the entries are generally indexed in these languages as well as in German.

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