In general, I find this volume a timely contribution to the field of benthic ecology and to the study of shallow marine ecosystems in general. Approximately a third of the contributions provide new insights that will influence the direction of future research in the field.

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Synthetic Gemstones

Gems Made by Man. KURT NASSAU. Chilton, Radnor, Pa., 1980. xviii, 364 pp., illus., + plates. $28.50.

Kurt Nassau's *Gems Made by Man* received extensive prepublication publicity, and its readers will not be disappointed.

Gems Made by Man is written with a scholarly attention to detail in both its technical and its historical sections. The treatments of the commercial development of processes for the growth of gemstones and of current commercial practice are particularly thorough. Much of the subject matter has been described in articles by Nassau, particularly in the *Lapidary Journal*, and there is, of course, considerable overlap with the reviewer's *Man-Made Gemstones* (Halsted [Wiley], 1979), but there is also an extensive amount of original material.

The book consists of 26 chapters arranged in eight sections. The first section is introductory and includes brief details of growth techniques and gem testing. A relatively long second section deals with the growth of ruby and sapphire, stressing particularly the work of Auguste Verneuil, who can be considered the originator of the modern synthetic gemstone industry, and the development of his flame-fusion technique from its less successful predecessors. Section 3 covers quartz, with chapters on the growth of colorless and colored crystals (amethyst, citrine, and so on). Section 4 deals with emerald, with mention of other beryls. Section 5 deals with the growth of diamond. Diamond substitutes are treated in section 6 with particular emphasis on cubic zirconia but with detailed discussion also of synthetic garnets and earlier alternatives to diamond. Section 7 treats a range of materials and topics, with a brief discussion of alexandrite, turquoise, and the like, which are grown on a fairly small scale, and a fairly detailed discussion of opals, imitation gems, and the treatment of gemstones by heat and irradiation. The final section contains a survey of crystal growth techniques and a detailed and authoritative chapter on the origin of color in gemstones.

The book contains for each material a section of technical data, with a useful summary of properties and structure together with notes on the choice of conditions of preparation, and so forth. Suggestions for additional reading are included with each chapter, but serious readers may be irritated at the absence of a comprehensive list of references. On the other hand, the patent literature is referenced comprehensively. *Gems Made by Man* is well-illustrated, interesting reading even for nonspecialists.

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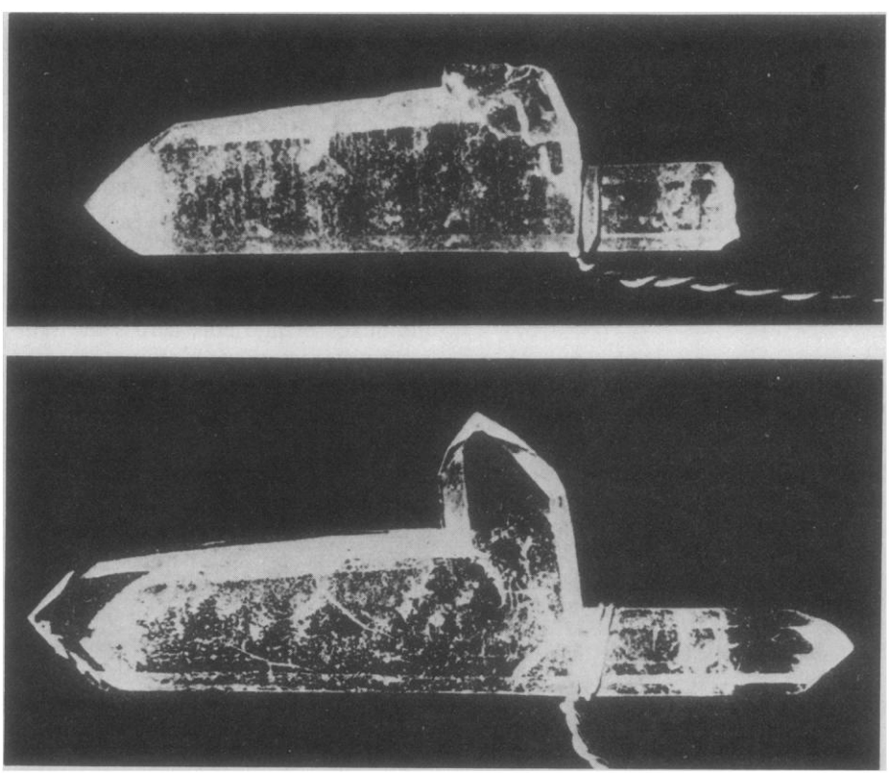

A natural quartz crystal 2½ centimeters long, and the same crystal after a 5-month hydrothermal growth experiment by Giorgio Spezia in 1908. Quartz was the second gemstone material to be synthesized in useful size (ruby was the first). Though not the first to grow quartz by a hydrothermal process, Spezia did the key work, published in a series of reports in 1898 to 1908. "Spezia supported his seeds with silver wire in a steel pressure vessel lined with silver. Growth occurred under pressure from a hot water solution containing sodium silicate . . . , using crushed natural quartz as the feed material. A typical growth run lasted 199 days and produced, at most, 15 mm (⅝ in) of new growth. Curiously enough, Spezia placed his hotter feed-region at the top and his cooler growth-region at the lower end of this growth vessel. He expected the denser solution to move downward, but this was opposed by thermal convection and explains his very slow growth rate. All he would have had to do to obtain much more rapid growth was to turn his vessel upside-down." [Reproduced in *Gems Made by Man* courtesy of P. F. Kerr and E. Armstrong (E. A. Wood)]

Books Received

Advances in Biophysics. Vol. 13, Some New Approaches to Muscle Contraction. Masao Kotani, Ed. Japan Scientific Societies Press, Tokyo, and University Park Press, Baltimore, 1979. x, 290 pp., illus. $39.50.

Advances in Human Genetics. Vol. 10. Harry Harris and Kurt Hirschhorn, Eds. Plenum, New York, 1980. xviii, 294 pp., illus. $35.

Advances in Immunology. Vol. 29. Henry G. Kunkel and Frank J. Dixon, Eds. Academic Press, New York, 1980. xiv, 342 pp., illus. $35.

Aging Phenomena. Relationships among Different Levels of Organization. Proceedings of a symposium, Tokyo, Aug. 1978. Kunio Oota, Takashi Makinodan, Masami Iriki, and Lynn S. Baker, Eds. Plenum, New York, 1980. xiv, 318 pp., illus. $37.50. Advances in Experimental Medicine and Biology, vol. 129.

The Aloineae. A Biosystematic Survey. Herbert Parkes Riley and Shyamal K. Majumdar. University Press of Kentucky, Lexington, 1980. x, 182 pp., illus. $28.75.

Amyloid and Amyloidosis. Proceedings of a symposium, Póvoade Varzim, Portugal, Sept. 1979. George G. Glenner, Pedro Pinho e Costa, and A. Falcão de Freitas, Eds. Excerpta Medica, Amsterdam, 1980 (U.S. distributor, Elsevier/North-Holland, New York). xx, 630 pp., illus. $109.75.

Anatomy of the Dicotyledons. Vol. 1, Systematic Anatomy of Leaf and Stem, with a Brief History of the Subject. C. R. Metcalfe and L. Chalk with contributions from 8 others. Clarendon (Oxford University Press), New York, ed. 2, 1979. x, 276 pp., illus. + plates. $55.

Annual Review of Materials Science. Vol. 10. Robert A. Huggins, Richard H. Bube, and David A. Vermilyea, Eds. Annual Reviews, Palo Alto, Calif., 1980. x, 460 pp., illus. $20.

Antihypertensive Drugs Today. University Park Press, Baltimore, 1979. xxiv, 176 pp., illus. $29.50. Cardiovascular Drugs, vol. 4.