Two excellent articles stand out as textbooks-in-miniature. Ludwig presents the mathematics of a Green's function approach to phonon excitations in an anharmonic crystal, using perturbation series diagrams rather than the functional-derivative technique. Résibois's lecture is an extremely lucid account of the electron-like and plasmon-like excited states of metals and of the Landau theory of Fermi liquids.

Still, the book is perplexing. As a whole, it's simply a collection of generally good, generally related lectures. With more editorial control it could have been a fine, broad survey, and can still be, but those who look to the lectures for help in understanding all aspects of a particular research field will have to confront the problem of the book's haphazard organization without benefit of an adequate table of contents.

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Monomineralic Rock

Origin of Anorthosite and Related Rocks. A symposium, Plattsburgh, N.Y., Oct. 1966. YNGVAR W. ISACHSEN, Ed. State Education Department, University of the State of New York, Albany, 1969. x, 470 pp., illus. $20. New York State Museum and Science Service Memoir 18.

Anorthosite is an almost monomineralic intrusive rock and has the distinction of being the most abundant of monomineralic rocks in terms of exposure at the earth's surface. Anorthosite forms very large (up to 100,000 km^2 in surface area) bodies in high-grade metamorphic, Precambrian, "basement" terrains, particularly in North America, Scandinavia, western Siberia, and India. The only other intrusive bodies of similar dimensions are the large batholiths of granodioritic to granitic composition, particularly prevalent in younger and less deeply eroded orogenic belts. The comparison highlights the principal problem in anorthosite petrogenesis. Unlike granites or granodiorites, rocks of anorthosite composition do not melt at geologically reasonable temperatures, and a principal aim in research on these rocks has been to discover the nature of possible parent magmas or of processes of anatexis which could yield the anorthositic complexes as crystal accumulates or refractory residues during high-grade regional metamorphic and magmatic activity.

The proceedings of this conference on anorthosite are presented in 32 papers, 4 abstracts, an annotated bibliography on anorthosite genesis by D. de Waard, and a useful summary paper on the whole conference by the editor. The emphasis in the volume is on North American anorthosites, with papers on the important Nain and Superior provinces of the Canadian Shield and with a further ten papers on the anorthosite occurrences in the Adirondacks. In the Adirondack province, anorthosite is the major rock type, with all authors linking the anorthosite genetically with a border zone of gabbroic anorthosite composition. A. F. Buddington and B. T. C. Davis regard the parental intrusive as being of gabbroic anorthosite composition (part liquid, part suspended feldspar crystals) and the spatially associated syenitic rocks (mangerite suite) as being later, unrelated intrusives. On the other hand, D. de Waard and W. D. Romey regard the anorthosite and gabbroic-anorthosite suite as transitional to and comagmatic with the mangerite-charnockite suite and the whole rock series as related by either fractional crystallization or partial melting of noritic or dioritic parents. S. A. Heath and H. W. Fairbairn report Sr^{87}/Sr^{86} ratios from 15 anorthosite bodies which range from 0.703 to 0.706 and thus argue against an origin for the anorthosites by *in situ* anatexis of metasediments or by significant assimilation of material (either anatectic magma [A. R. Philpotts] or pelitic sediments [J. Michot and P. Michot]) into basaltic magma. L. Silver reports the results of isotopic studies on uranium and lead in zircons from Adirondack anorthosites and associated gneisses yielding ages of metamorphism of 1020 to 1100 million years. H. P. Taylor argues for isotopic homogenization of oxygen between anorthosite and enclosing metasediments during such metamorphism.

The collection of papers illustrates very well the controversial and unsolved nature of the anorthosite problem. Experimental studies by H. S. Yoder and D. H. Lindsley on relevant simple systems involving plagioclase are used by both authors to suggest the existence of gabbroic anorthosite liquid at high-pressure, probably hydrous, conditions. This type of magma is suggested as the parent for the anorthosite complexes. On the other hand, T. H. Green presents experimental studies of crystallization of a quartz dioritic composition at high pressures and suggests that andesine anorthosite complexes may form as either crystal accumulates from such a magma in the lower crust or as crystalline residues after extraction of syenitic or granodioritic magmas during deep crustal anatexis. The continuing need for careful experimental studies and measurement of physical parameters is well illustrated in a paper by S. A. Morse advocating accumulation of anorthosite by flotation of plagioclase crystals in basaltic magmas.

The symposium volume is a very useful presentation of current research on anorthosite genesis. It is a valuable reference work for those who are concerned with deep-seated metamorphism and magmatic activity but clearly does not contain the definitive solutions to problems of anorthosite genesis and emplacement.

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