

The Preparation of Thin Sections of Rocks, Minerals & Ceramics

By **D.W. Humphries**, ISBN 0-19-856431-7; Oxford University Press, Royal Microscopical Society, 1992; 83 pages, \$19.95.

Review by Christopher G. Kendall

This slim volume describes in considerable detail how the earth scientist can go about making a thin section. The book consists of some 12 chapters, 3 appendices, a glossary and a short bibliography. The text is clearly written and is aimed at the novice who needs to make thin sections of rocks. It's not the sort of text that the geophysicists would rush out to buy, unless for some reason they were studying the petrofabric of a particular group of rocks. However, for the graduate student and the professional who needs to know something about making thin sections, this book is a great source.

In the first chapter, there's a short section describing how Henry Clifton Sorby, who made the first thin sections of rock, chanced to meet with a Mr. Williamson, a practicing surgeon, who showed Sorby how to make thin sections of fossil wood teeth, scales, etc. Sorby applied Williamson's techniques to making thin sections of rocks. The technology that Sorby initiated has essentially remained unchanged, since Victorian times. However, instead of using slurries of diamond dust, we now use high speed diamond-encrusted blades. And, instead of reducing the thickness of the sliver of rock on an abrasive rock surface, we now use lap wheels and glass plates with different sizes of emory abrasive.

The book explains how to collect and prepare specimens for making thin sections, how to go about the initial grinding of the rock and how to select plates on which to grind the thin section, the nature of grinding machines, how one goes about hand grinding and machine grinding, how one mounts the thin section in the various media used for attaching the rock to the glass, including Canada Balsam, Lakeside 70c cement and various epoxy resins, superglues, etc.

There's some discussion on how one handles the mounting media and general safety. There's a chapter on final grinding, which explains how one begins with initially coarse grits and works straight on through to very fine grits. There's a discussion on how to cover thin sections and then, a chapter on special methods for handling fragile material, embedding specimens, sectioning hard minerals in a soft matrix, water sensitive materials, dry grinding and the making of pseudo-sections of clays and shells. There's a discussion of oriented minerals, a chapter on polishing for reflected light microscopy and polished thin sections, and ultrathin sections, the chapter on staining, etching, and peels. Then, a chapter on etching the extraction of heavy minerals from sand and their treatment. The appendices are on the petrological microscope, the derivation of equations for determining refractive indexes of mounting media, a list of supplies, and thin section makers. Finally, there is a glossary, bibliography, and index.

I enjoyed reading through this book. It was clearly written and well illustrated with photographs and line drawings. I liked the emphasis on Henry Clifton Sorby and his influence on this whole technology. I recommend this book to you if you have the need for understanding how to make thin sections. It will undoubtedly end up on the shelves of all those who are involved in this technology.