

identification of such phases under the microscope rather than by electron microprobe or other X-ray methods. In fact, more than half the book is devoted to photographs of polished sections under the microscope.

The author has identified no less than 35 different opaque mineral phases, many of which were not known to occur in meteorites previously. The book is divided into sections dealing in turn with the elements and intermetallic compounds, sulphides, oxides, and finally other less well defined minerals. There is also a complete list of the meteorites investigated showing the occurrence of the types of opaque minerals in each. Certain prevalent and incorrect beliefs have also been successfully buried; the gold-like mineral osbornite (TiN), for example, has been found to occur in several meteorites whereas formerly it was believed to occur only in the enstatite achondrite, Bustee. It is also interesting to note that ilmenite (FeTiO_3), which has recently been found in abundance in lunar soil and rock samples, is present also in the majority of meteoritic stones although in considerably smaller amounts.

As explained in the preface, this book was originally meant to be a more comprehensive and extended version of an earlier paper [*J. Geophys. Research*, (1963), 68, 2011–2036] and was, in fact, ready for print in 1964. Apparently, owing to printing problems, there was a considerable delay of some five years,

during which the author made several minor additions mainly concerned with reference to a few of the important papers published in the meantime. However, there appears to have been yet another extensive delay in publication since the preface is dated March, 1969! Nevertheless, although the book may be only of peripheral interest to crystallographers, petrologists and mineralogists whose interests lie in the fascinating properties of matter of extra-terrestrial origin will find this book an authoritative source of information which has unfortunately been denied them for too long.

G. WALKER

*Department of Physics
The University of Manchester
Institute of Science & Technology
P.O. Box No. 88
Sackville Street
Manchester 1
England*

Tektites. Edited by VIRGIL E. BARNES & MILDRED A. BARNES. Pp.xv+445. New York: John Wiley, 1973. Price £ 10.00.

Tektites must surely be the most puzzling of all natural objects and with the development of space science, they have attracted much attention. It is however important to realise how much these

strange objects were studied, through the excellent curiosity of those who worked before the space age – and NASA grants – dawned. This collection of papers published on tektites – the earliest here published in 1934 – puts the subject in perspective.

These glassy, characteristically shaped objects spread on the earth's surface in 'strewn fields', now known to be of different age but fairly recent geologically speaking, have interested mankind for a millenium (the Aborigines of Australia used them for beads). Some scientists wished that these beads, evidently shaped by supersonic projection into the atmosphere, came from the Moon – molten drops of the lunar rocks flung away by great impacts. But it was always hard to see why the resulting jet of objects should be so narrow as to hit only a part of the terrestrial surface. Chemistry and physics point to them being the results of an impact on terrestrial sedimentary rock, as was early inferred by the pioneers of this study. The lunar origin is still believed showing that scientists like other human beings like to be amazed. Remember Lytton Strachey's words 'it is not because the Pope satisfies reason but because he astounds it that people abase themselves before him'.

S. K. RUNCORN

*School of Physics
The University,
Newcastle upon Tyne NE1 7RU
England*