

obsidian by considering the depth of the hydrated outer shell, the potassium-argon method in dating rocks and the thermo-remnant magnetism method in respect of clays are all touched upon.

This is a book well worth reading both by the amateur and professional worker.

BRIAN SIMPSON

WINKLER (H. G. F.). *Die genese der metamorphen gesteine*. Berlin (Springer), 1965, 218 pp., price 19.80 DM (approx. 36s.).

1. 'Definitions and types of metamorphism'. 2. 'Agents of metamorphism'. 3. 'Concept of metamorphic facies'. 4. 'Metamorphic mineral reactions in carbonate rocks'. 5. 'Graphic representation of metamorphic mineral parageneses'. 6. 'Hornfels facies of contact metamorphism'. 7. 'Regional dynamo-thermal metamorphism'. 8. 'Facies of Barrovian type'. 9. 'Facies of Abukuma type'. 10. 'Intermediate facies'. 11. 'Granulite facies'. 12. 'Eclogite facies'. 13. 'Changes in mineral composition with increasing metamorphic grade'. 14. 'Depth metamorphism'. 15. 'Temperature and pressure in dynamo-thermal metamorphism'. 16. 'Anatexis, migmatite formation and palingenetic granitic magma'. 17. 'Appendix: Nomenclature of common metamorphic rocks'.

The book meets a demand for a reasonably priced modern text on metamorphic petrology, and forms a good foundation for honours and advanced work in the subject. In the foreword the author acknowledges the influence of textbooks by Turner and Verhoogen (1960) and Barth (1962) in his general treatment of the subject. The first two chapters offer some general information on phase-rule and thermodynamics without recourse to mathematical detail and succeeding chapters follow the scheme outlined above. The construction and use of ACF diagrams is considered at some length and good explanations are given for the mineralogical and chemical manipulations involved. One criticism: reference to previous original work is frequently omitted or wrongly assigned, particularly in the sections dealing with carbonate rocks and glaucophase schists.

Of particular interest is the section on anatexis, migmatites, and granitic magma, which, on the basis of Tuttle and Bowen's (1958) work on the granite system and Winkler's (1961) on experimental melting of sediments, provides one of the best chapters and a fitting finale. It is to be hoped that the publishers will present an English translation as soon as possible.

T. W. B.