The author has deliberately limited himself to the simplest ionic lattices, and has given a comprehensive account of this. He has achieved this without overloading the text with mathematical difficulties. When necessary, towards the end of the book and in an appendix, he gives appropriate mathematical treatment. Many mineralogists may prefer not to give much attention to this part; the book has been arranged so that those with a more general interest in the properties of crystals need not do so. H. M. P.

NORTHROP (Stuart A.). *Minerals of New Mexico.* Revised [second] edition. University of New Mexico Press, Albuquerque, 1959, 665 pp., map (16 miles = 1 in. approx.). Price $10.00.

This is a second and revised edition of the author's former work published in 1942 [M.A. 8–357]. It has been greatly expanded and there are now 665 pages (formerly 387); the page size has been considerably increased and the price has risen from $1.75 (bound) to $10.00. Part I, as before, deals with the history and prehistory of New Mexican mineralogy and in addition to the features in the former edition there are sections on minerals discovered since 1925; recent and unpublished records of occurrences; fluorescent minerals and radioactive minerals. The economic aspects of mineral industry in the state have also been brought up to date. Part II, an alphabetical catalogue of minerals, now includes about 440 species and 130 varieties, also many synonyms, some of them purely local names such as "Mora diamond" and "Pecos diamond" (quartz). The localities of each species are given under counties with descriptions of the occurrence and references to the literature. Part III consists of an alphabetical list of districts, subdistricts, camps, &c., and is followed by an extensive bibliography. This excellent reference book represents such a great amount of careful research that it would perhaps be ungracious to wish that the topographical index had been a complete index of the localities mentioned in Part II. This, however, is always the ideal to be aimed at by the topographical mineralogist. J. M. S.

JUNG (J.) and BROUSSE (R.). *Classification modale des roches éruptives, utilisant les données fournies par le compteur de points.* Paris (Masson et Cie.), 1959. 122 pp., 5 figs., 5 tables. Price 14.00 fr.

This handbook of the quantitative classification and nomenclature of igneous rocks is of interest mainly as an attempt to discard the chemical-

mineralogical system of Lacroix, long a handicap to French petrographers, for one based on modal composition alone. The authors are to be congratulated on this, but they remain slaves to many French conventions, among which are the principle of classifying plagioclase rocks according to the plagioclase first to crystallize, the use of the term "mesocratic" (rightly rejected as nonsensical by Shand), and the preservation, in the index of 492 selected names, of most of Lacroix's terms for local freaks. This last has been carried so far as the creation of a special family to accommodate anabohitsite and avezacite.

The scheme adopted is on similar lines to those of Johannsen, of Niggli, of Tröger, and of Hatch, Wells, and Wells, with conventional names applied to a series of "pigeonholes" defined by the usual coordinates (silica-saturation, colour-index, alkali-feldspar in total feldspar, &c.). A series of indices in terms of these coordinates is proposed to define the position of rocks in the system, but some of the indices are calculated and used in such a manner as to render them of little value. For example, the *indice de saturation* is calculated on light minerals alone, treating olivine as saturated and melilite as a feldspathoid; and in the calculation of negative values from feldspathoids the latter are treated as mutually equivalent despite the great difference in the amounts of silica necessary to convert leucite and nepheline to alkali feldspar. The terminology for sub-ranges of these indices is often misleading; for example, rocks with up to 40 % leucite in total feldspathoid are called *roches néphéliniques* as distinct from *roches leucito-néphéliniques*.

There is a praiseworthy but rather inconclusive attempt to deal with the problem of names of different status, corresponding to the concepts of genera, species, and varieties. As so often happens with petrographic systems, the authors have assigned their own arbitrary meanings to many names in actual current use. Their use of essexite, theralite, tephrite, basanite, and tonalite, to take only a few, is novel and arbitrary; and tonalite only fits into its allotted pigeonhole because the composition of its plagioclase is misquoted. Nor is any authority quoted for the indices of composition given for most of the names indexed.

Most quantitative petrographic systems, however, are subject to criticism of the above kind, and the authors also deserve praise on some points. There is a worthy attempt to deal with the nomenclature of palaeovolcanic and glassy rocks. The proposal to use the prefixes leuco-, meso-, and mela- for the leucocratic, mesotype, and melanocratic facies of rock types is sound, provided that it is not applied to the median type concerned.

The classificatory scheme is prefaced by a practical account of the point-counter technique, including rules for the minimization of analytical errors based on the work of Chayes. S. E. E.

VITANAGE (P. W.). *Geology of the country around Polonnaruwa (one-inch geological sheet 47, preliminary series)*. Memoir No. 1, Department of Mineralogy (Geological Survey of Ceylon), 1959. Price Rs. 7.50.

The Department of Mineralogy (Geological Survey) of Ceylon, reorganized in recent years, has planned to publish a series of Memoirs describing the one-inch map sheets of the island and a series of Bulletins covering its various mineral occurrences. These two series are to supersede the Professional Papers, of which two have appeared; this volume is the first Memoir.

The Memoir is predominantly petrological, for Precambrian crystalline rocks underlie the entire map area. Amongst these rocks ancient metamorphosed sediments are prominent. They include quartzites, charnockites of sedimentary aspect, quartz–garnet–sillimanite–graphite–schists (type khondalites), calc-gneisses, and crystalline limestones. As well as these there are microcline-gneisses and migmatitic gneisses with conformable pegmatites. The rocks have been described in five groups, each with distinctive lithological and structural characters.

All the formations have been isoclinally folded with north–south strike, and overturned towards the east (Tabrobanian movements). A later movement with compression at right angles to the first has produced buckling and fracture of the pre-existing folds and NNW.–SSE. (dextral) with NNE.–SSW. (sinistral) tear faults (Vijayan movements). Finally, there are north–south shear zones in which tectonic breccias occur.

Although no ore deposits exist in the area there is abundant and good building stone and lime available, and the ground water conditions of the district are discussed in detail.

The Memoir is well provided with mineralogical and petrological descriptions, chemical analyses, diagrams, and photomicrographs, together with excellent lithological and structural maps. By reason of the quality of this first volume, and because the island is so largely underlain by crystalline rocks, this series of Memoirs ought to be taken by all Institutes wholly or partly devoted to petrology. G. H. F.