author has done. Where he has no personal experience of the deposit, as with the Rand, he does not attempt to adjudicate, but where on familiar ground, as in the Colorado Plateau, he records his own conclusions. United States deposits perhaps have more than their fair share of attention on the grounds of economic or geological importance alone, but it would be ungracious to quarrel with that.

The book ends with the very full bibliography already mentioned and separate indexes for mineral species, localities, and subjects.

There are a few misspellings, notably 'thucolite' (no second h) throughout the book and 'montroesite' and 'paramontroesite' in chapter 10. Parentheses are used instead of braces to denote forms and cleavage, and instead of brackets to denote zone axes. The half-tone illustrations are excellent.

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The Geology of Uranium. Translated from Вопросы геологии урана [Problems in the Geology of Uranium], Supplement no. 6 of the Soviet Journal of Atomic Energy, Atomic Press, Moscow, 1957. London (Chapman & Hall Ltd.) and New York (Consultants Bureau Inc.), 1958. vi+128 pp., 61 tables, 90 text-figs. Price (bound) 48*s*.

This is not an introduction to uranium ore deposits, as the title suggests, but a collection of a dozen unconnected papers. There are three on various aspects of uranium geology, six on uranium minerals, and three on radiometric techniques.

Two of the geological papers discuss the role of metamorphic processes in concentrating uranium in certain Palaeozoic sediments. A third is on the origin of uranium mineralization in coal and has appeared in somewhat different form in the proceedings of the second Geneva conference;[1] comparison of the photomicrographs accompanying the two versions shows discrepancies in the magnifications quoted. These geological papers suffer from the usual Russian omission of localities and sketch-maps. The uranium content of coal is given only in relative units.

A paper by Polikarpova amplifies his earlier description of the uranium silicate nenadkevite,[2] rejected by Fleischer[3] as 'an unnecessary name for what is probably a variety of coffinite'. Several photomicro-

[1] Z. A. Nekrasova, Proc. 2nd U.N. Int. Conf. Peaceful Uses At. En., 1958, vol. 2, p. 412.

[2] See Min. Mag., 1958, vol. 31, p. 967, and M.A. 13–385.

[3] M. Fleischer, Amer. Min., 1957, vol. 42, p. 441.

graphs are now given and from these and other data it seems likely that the mineral is indeed a new species. Thus some specimens at least are not deficient in silica and the dark varieties are amorphous, whereas coffinite contains (OH) in substitution for (SiO_4) and invariably yields a powder pattern. The powder pattern of light varieties of nenadkevite is certainly not that of coffinite; it shows some similarity to those of huttonite, monazite, and cheralite, but is not necessarily of a single phase. The photomicrographs suggest that nenadkevite may have originally crystallized as a thorite-like tetragonal mineral, which subsequently became metamict and in some cases recrystallized as a new phase or phases after hydration and alteration. Further work, including synthesis, is necessary.

The new minerals uramphite (uranyl ammonium phosphate) and ursilite (a uranium silicate) are described in two short papers, which have been fully summarized by Fleischer.[1] Another paper discusses the paragenesis and mode of formation of natro-autunite. Sidorov and Rafalsky describe the hydrothermal synthesis of uraninite in a carbonaceous shale. A slice of the rock was heated in an autoclave with a uranyl sulphate solution for 2 or 3 days. Cubes of uraninite formed on and in the specimen, thus demonstrating the efficacy of organic material in precipitating hexavalent uranium from hydrothermal solutions.

Ambartsumian contributes the longest and perhaps the most interesting paper in the book, in which he gives the results of detailed thermal investigations on a number of hydrated uranyl minerals. It is noteworthy that meta-uranocircite, in contrast to meta-autunite and other minerals tested, is still strongly fluorescent after heating at 1000° C. Powder photographs and optical data confirm that the structure is essentially unchanged. It appears that the large size of the barium ion prevents the structure collapsing in spite of complete dehydration.

The radiometric papers contain little that is new. One of them reviews airborne prospecting as practised in Western countries but makes no reference to Russian methods.

In summary, the book contains much of interest to the specialist in uranium minerals. The translation is clear, but the half-tone illustrations, though numerous, are of poor quality.

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[1] M. Fleischer, Amer. Min., 1959, vol. 44, p. 464.