

Spherulites in the Phosphatic Concretions of the Woodford Chert, Arbuckle Mountains, Oklahoma

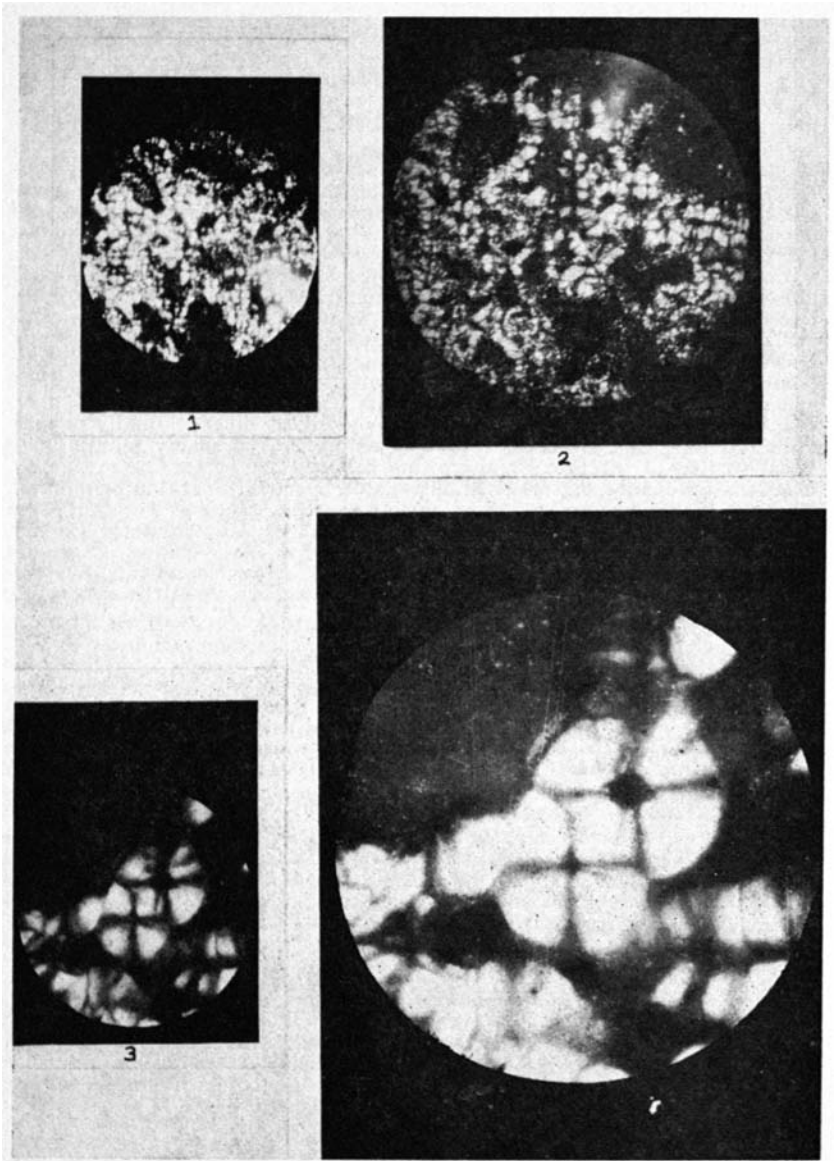
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Some of the gross characteristics of the concentric spherical phosphatic concretions of the Woodford Chert were discussed in an earlier paper (Shead, 1964). Thin rock sections of this material were made at the time and photomicrographs of them were taken for study of the fine structure of these nodules. With one exception, the detail was remarkable for its lack of significant features and its structural uniformity, especially under plane-polarized transmitted light, to which it was essentially opaque, except in some localized areas conspicuous for their transparency. However, under crossed nicols of the petrographic microscope, the transparent areas were shown to be filled with numerous sharp, well-defined spherulitic crosses. Since the material is highly phosphatic, these spherulites were finally identified as dahllite, one of the apatite family of minerals (Larsen and Berman, 1934). This mineral probably makes up a large portion of the area of many thin sections but is, for the most part, obscured by opaque matter such as organic debris of one kind or another. The phosphatic concretions from which the thin sections were prepared came from the Woodford Formation southeast of Ada, Pontotoc County, Oklahoma. The nodules are widely distributed in the Woodford Chert but how characteristic the spherulitic structure is, is problematical. The accompanying photomicrographs (Figs. 1, 2, 3 and 4) show the spherulitic crosses associated with the dahllite.

LITERATURE CITED

- Larsen, E. S. and Harry Berman. 1934. The microscopic determination of the non-opaque minerals. USGS Bull. 848, 2nd ed., 82-83, 228.
- Shead, A. C. 1964. Some phosphate nodules and the beds from which they were derived. Proc. Okla. Acad. Sci. 44: 74-76.

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Figures 1-4. Photomicrographs of thin sections of phosphate nodules from the Woodford Chert, taken under polarized light and crossed nicols to show spherulitic crosses with increasing degrees of magnification from Fig. 1 through 4. Actual size about 0.07 mm. Specimen from southeast of Ada, Pontotoc County, Oklahoma.