Acute attacks of arthritis resembling gout (pseudogout) were described in six patients. Fluid from the affected joints showed rod-shaped crystals that did not have the characteristics of monosodium urate monohydrate under compensated polarized light. These crystals were identified as calcium pyrophosphate dihydrate. Such crystals produced an inflammatory response when injected into normal human or animal joints. [The SCIP indicates that this paper has been cited in over 290 publications since 1962.]

But fluid from a third patient had crystals identical to those found in the gouty ear tophus, and we confirmed their identity by digesting them with highly purified uricase. Thus, within two weeks of research, I knew that there were at least two kinds of crystals in human joints and that one of these was not urate. A companion paper described studies showing that calcium pyrophosphate dihydrate (CPPD) injection of synthetic monosodium urate (MSU) or CPPD crystals into normal human or canine joints produced a dose-related inflammatory response, fulfilling Koch's postulates in both diseases.

The use of compensated polarized light microscopy to examine wet smears of joint fluid for crystals gained rapid acceptance and was soon used worldwide. It has always fascinated me that our original paper is rarely cited nowadays by anyone, although nearly the entire effort in the crystal deposition diseases sprang from this work. Confirmation of the specific identification of MSU and/or CPPD crystals was achieved within a few years in many laboratories. Nearly every journal reference to synovial fluid mentions that crystals were or were not found—but reference to the technique used is rare, probably an example of what Garfield has referred to as the "obliteration phenomenon." New terminology resulting from this work includes the terms "crystal deposition disease," "crystal induced inflammation," and "pseudogout." More recent identification of basic calcium phosphate crystals (BCP) in joints (carbonate-substituted hydroxyapatite, octacalcium phosphate, tricalcium phosphate) has led to the use of the specific term "BCP crystal deposition disease" in parallel with MSU and CPPD. The best-studied arthritic condition associated with BCP crystals has been termed the "Milwaukee Shoulder Syndrome." Recent reviews on these subjects have been published. The paper referred to here and its progeny have been amply recognized by a number of awards, including the Hektoen Silver Medal (AMA), Gairdner Foundation International Award, Gerig International Rheumatism Prize, Heberden Oration and Gold Medal, Bunin Lectureship and Gold Medal, and the Van Bremen Lectureship and Gold Medal.