

PRESENTATION OF THE MINERALOGICAL SOCIETY OF  
AMERICA AWARD TO JULIAN ROYCE GOLDSMITH\*

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*Ladies and Gentlemen of the Mineralogical Society of America:*

It is a matter of statistics that during the school year 1.6 decades back there were 30 students taking my crystallography-mineralogy sequence. Most of these became geologists, but four of them or 13% turned into mineralogists and are fellows or members of this Society, and two of these have received the Mineralogical Society of America award. So far this may look good. But while statistics such as these are exact and correct, their interpretation can be and frequently is controversial. "Figures don't lie, but liars figure." In this particular case it is clear I played no important role in shaping any of these individuals; they took their Ph.D.'s under others. I can only claim that I did not keep them out of mineralogy. As a specific example let us consider today's award-winner. What influence may I have had on him? Well, I try to have my students imbibe a little culture. I emphasize what slaves we are to words and slogans. Who wants to be just a technician; or even just a scientist? I indicate it would be nice not to mis-pronounce the names of common minerals. But today's recipient invariably says peer-ocks-een, not py-rok-seen, though he does say py-rite, not peer-ite. What do you suppose the English natural scientist who devised the reflection goniometer in 1809 W. H. Wollaston (Wōōl'-ās-tūn) thinks as he looks down on this promising youth who is likely to speak of wō-last'-ton-ite? And like the telephone girls, he says aitch-oh-el, meaning of course aitch-naught-el, though I am sure deep down he realizes that "oh" is the fifteenth letter of our alphabet, not a zero.

The conditions of the Mineralogical Society of America award given this year require that it be based primarily on contributions published after October 1951 and before March 1954 or the 35th birthday of the recipient, whichever came first. However, this work can hardly be isolated from that which preceded it. After his return to the University from Corning Glass where he spent the war years as a research chemist, Goldsmith

\* Goldsmith, Prof. Julian R(oyce), Rosenwald Hall, University of Chicago, Chicago 37, Ill. GEOLOGY. GEOCHEMISTRY. Chicago, Ill., Feb. 26, 18; m. 40; c. 3. S.B., Chicago, 40, Ph.D. (geol.), 47. Asst. petrol., Chicago, 41-42; research chemist, Corning Glass Works, 42-46; asst. petrol., CHICAGO, 46-47, research assoc. GEOCHEM., 47-51, asst. prof., 51-55, ASSOC. PROF., 55-. A.A.; Miner. Soc. Amer.; Miner. Soc. London; Geol. Soc.; Chem. Soc.; Ceramic Soc.; Phase equilibria and crystal chemistry of silicates (feldspars) and carbonates.

carried out his thesis under the supervision of Norman L. Bowen, then Charles L. Hutchinson Distinguished Service Professor of Petrology. This covered a portion of the soda-lime-alumina-silica system containing anorthite (not anorthite), and appeared in 1947. During each of the following two years another paper was published dealing with neighboring portions of this quaternary system.

But by this time Goldsmith had become interested in other than dry silicate-system phase-rule studies, as is shown by his 1950 paper on synthetic Ga-Ge in place of Al-Si feldspars; some of these were prepared in bombs under hydrothermal conditions. Julian succeeded in growing K, Na, and Ca end-member Ga-Ge feldspars, and some partial-substitution Ca-feldspars; on all these he obtained thermal and refractive index data. These crystals were prepared in hopes that single-crystal  $x$ -ray study of them would yield conclusions regarding feldspar structure obtainable if at all only with very great difficulty from ordinary feldspars. That this hope was valid was found to be true in later work in collaboration with F. Laves; only this year has appeared the first paper going into details as regards the results of such studies on the Ca feldspars, though an abstract was published in 1951.

Further hydrothermal work with Ca feldspar then resulted in recognition that the hexagonal polymorph which had been identified at the Geophysical Laboratory from material formed under dry conditions around 1250° C. developed in a hydrothermal environment below 375° C. As a by-product of this work, synthetic soda-free thomsonite was produced; also a Ga-bearing form of this material.

During those years of Goldsmith's life when his work resulted in the present award, he had been giving much thought to the order-disorder relations in the feldspars, a problem which Tom F. W. Barth had discussed with him, and the "ease" of crystallization of the various types of silicates. At a time when diffusion as a geologic process was being hotly discussed, he pointed out that the common occurrence of zoned plagioclases had little bearing on this matter in spite of what some had written. The homogenizing of a zoned plagioclase requires a coupled exchange of Na-Ca and Al-Si, and while diffusion of Na-Ca alone might occur without too much difficulty under certain conditions, this was far from the case when interchange of Al and Si was simultaneously involved.

Mr. President, for all this work of great promise, which indeed has already shown fulfillment to a remarkable degree by the publication of at least ten significant papers since his 35th birthday, I take great pleasure in presenting Julian Royce Goldsmith to you as the choice of the committee confirmed by the council to receive the fifth Mineralogical Society of America award.