due to the following reflections are present in the original negatives: 012; 021; 032, 034; 036, 038; 052, 054, where the indices refer to the *Pnma* orientation. Reflections, in the $hk0$ zone, for which h is odd are considerably weaker, and the corresponding precession photographs are not suitable for reproduction. The following reflections, however, have been observed: 120, 140; 310; 360; 530, 550; 710, 730, 740. Precession photographs, therefore, show only axial halvings for the principal zones, and there are no systematic hkl absences, so that the space group of conichalcite is now established as $P2_12_12_1$. It is interesting to note that the list of observed reflections that forbid the n and a glides in conichalcite is very similar to corresponding observations on adelite (Hägele, *Neues Jahrb.* Min. Abt. A, Beil.-Bd. 75, 101, 1939). It may also be pointed out that the case of conichalcite serves as another example of the power of the Buerger precession method for space group investigations.

The structure of conichalcite is under investigation in connection with studies of the minerals of the descloizite group at the National Research Laboratories. It is appropriate, therefore, to mention at this time that a few very weak spots corresponding to reflections with $k+l$ odd have now been observed on a 200-hour $0kl$ Weissenberg film of descloizite. Thus it appears that Hägele's contention that the space group of descloizite is $P2_12_12_1$ probably will be confirmed. If so, then the necessity for separating the adelite and descloizite groups, at least on structural grounds, would virtually be eliminated. This will be discussed in greater detail in connection with the structure determination at present in progress on conichalcite, descloizite, pyrobelonite, and brackebuschite.

COMPLEX INCLUSIONS IN PEGMATITIC MINERALS

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Recently I reviewed the literature on mineral inclusions and related facts which have a bearing on temperature of crystallization. It was surprising to find a considerable amount of excellent descriptive and illustrative data in petrographic and mineralogic papers published throughout the last century. It was even more surprising to note that the early workers, such as Brewster, Sorby, and Zirkel observed many features of inclusions which are not mentioned in most current works. The question arises: were the earlier observations erroneous or are the current workers failing to notice these features?

It has been recorded that certain pegmatitic minerals contain complex inclusions which consist of intergrowths of minute crystals, usually with one or more liquids, and often one or more gas bubbles as well.[1] It was postulated in the past, and it still seems reasonable, that such inclusions represent small specimens of silicate liquid present when the minerals originally were formed or when the minerals subsequently were cracked and healed, or recrystallized. However, a number of recent studies of inclusions in pegmatite minerals have shown the absence of this type of inclusion and the abundance of fluid inclusions containing liquid water (with or without carbon dioxide) and a vapor bubble. A reconnaissance examination of pegmatitic minerals by the writer has confirmed this generalization, but in two specimens of idiomorphic quartz, the complex multi-crystalline inclusions were seen, and the only normal fluid inclusion were in a few secondary planes.

The above facts suggest the following hypothesis: the crystallization of at least the early pegmatitic minerals was in the presence of a hydrous silicate liquid, which became included in small amount in the minerals and crystallized there, but subsequently the pegmatite itself was crushed, healed, recrystallized, and/or decomposed by hydrothermal solutions, which left secondary inclusions in some of the minerals. A test of this hypothesis would consist of an examination of uncrushed pegmatitic minerals, which may occur only in drusy cavities. It is significant that most of the early data on complex multi-crystalline inclusions was obtained in the study of gems, which contain few or no planes of secondary inclusions.

In other words, I am suggesting that most of the liquid inclusions in pegmatitic minerals are of secondary (=subsequent) origin and the composition of such inclusions may bear no simple relation to the composition of the liquid present during the first crystallization. Only the inclusions in crystals which grew in druses or otherwise were protected from later fracturing can be used to deduce the character of the solutions which deposited the crystals.

[1] Bilgram, H.: *Proc. Acad. Nat. Sci., Phil.*, **55**, 700, 1903. Brewster, D.: *Trans. Roy. Soc. Edinb.*, **10**, 1–14, 1826; *Idem*, **16**, 11–22, 1845; *Phil. Mag.*, **33**, 489–493, 1848; *Idem* (4), **5**, 235–236, 1853; *Trans. Roy. Soc. Edinb.*, **23**, 39–44, 1861. Currie, J. B.: *Econ. Geol.*, **46**, 765–778, 1951. La Vallée Poussin, C. de, & Renard, A.: *Mem. Cour. Acad. Roy. Brux.*, **40**, 34–45, 1876. Lindgren, W.: *U.S.G.S., Prof. Paper* **43**, 213–218, 1905. McMahon, C. A.: *Br. Assoc. Adv. Sci.*, 589–596, 1902. Prinz, W.: *Bull. Soc. Belge Micr.*, **8**, 97–105, 1882. Smith, F. G.: *Am. Mineral.*, **37**, 470–491, 1952. Sorby, H. C.: *Phil. Mag.* (4), **15**, 152–154, 1857; *Quart. J. Geol. Soc. London*, **14**, 453–500, 1858. Sorby, H. C., & Butler, P. J.: *Proc. Roy. Soc. London*, **27**, 291–302, 1869. Zirkel, F.: *Sitz. Akad. Wiss., Math.-Natur. Cl.*, **47**, 226–270, 1863; *N. Jahrb. Min.*, 769–787, 1866; *Die mikroskopische Beschaffenheit der Mineralien und Gesteine*, 39–85, 149–150, 1873; *Prof. Papers Eng. Dept., U. S. Army* (18), **6**, 1–297, 1876.