Abstract
This report includes a history of industrial education and of copper enameling. A questionnaire was prepared by the writer and mailed to the heads of the industrial arts departments of selected schools across the country asking for information as to how they included copper enameling in their programs; what materials did they use; how many different enamel colors were used; what mesh size; what techniques were taught in their classes; and how successful had enameling been in their cases. The results of this survey are given by the use of tables with explanations given for each table. A suggested course of study is presented along with a list of suppliers and supplies for copper enameling. Copper enameling, while suitable for inclusion in a general shop program, has not had wide acceptance by industrial arts teachers at the present time. The equipment used as reported in the survey has ranged from the minimum required to some of the most elaborately equipped shops in the schools. When offered, copper enameling has been successful. Copper enameling as an area in the general shop has only been offered for a few years. Enameling at the present time is offered either by the industrial arts department or the art department. Copper is the base metal most frequently used, while silver, brass and a little steel were reported. A course of study has been suggested and included to serve as a guide for teachers formulating a course to suit their own particular needs and students.
The general properties of fluid inclusions in hydrothermal ore-forming systems are considered and the interpretation of these data in terms of fluid evolution processes is discussed. A summary of fluid inclusion data from a variety of hydrothermal deposit types is presented to illustrate some of the methodologies described and to emphasise the important role which fluid inclusion investigations can play, both with respect to understanding deposit genesis and in mineral exploration. At present, the number of general reviews of fluid inclusion studies in ore deposit studies are few, providing a stark contrast to the huge number of scientific papers now being published in this field. Copper is especially good for enameling, not only because of its low cost, but its rates of expansion and shrinkage and high melting point also make it reliable for virtually every enamel. Of course copper forms oxides easily and because of this colors will not be as bright, especially with transparent enamels. Brass alloys with less than 5% zinc make excellent surfaces for enameling. They have the advantages of copper and in addition offer a somewhat higher tensile strength. After grinding, the enamel powder is washed by placing it in a shallow dish and swirling it in clean water. Pour off the cloudy water and add fresh, repeating the process several times. In the case of opaques you may quit after a couple of rinsings, but transparents require that they be rinsed until the runoff water is clear. After deciding on which enamels to use for your particular project, it's time to prepare them to be applied to your piece. You do this by washing your enamels, and possibly grinding them with a mortar and pestle set prior to washing. The decision to grind your enamels will be based on the desired particle size which will work best for the technique you are trying to accomplish. Also, if the enamels you are using happen to be in chunks, you will want to grind those into a powder. Using only the amount needed based on the size of your piece, place your enamels in a small glass or plastic container, approximately the size of a shot glass. Colores Mixing Cups work perfectly for this. Pour about twice the amount of water into the cup and swirl it around slightly to stir up the enamel making the water cloudy.