CHARACTERISTICS OF PURE WHITE LEAD.

This pigment is not of constant chemical composition. Different samples, prepared by the same process, and by the same manufacturer, are often found to differ slightly. If the chemical composition of white lead could be relied on, the determination of the purity of a sample could at once be arrived at by estimating the amount of metal present. It is usually supposed that this pigment is a carbonate, but many analyses have proved that there is always a certain amount of hydrate present. Some writers assert that the quality and the commercial value depends on the relative proportions of these two compounds, and that the best white lead contains two equivalents of the carbonate to one of hydrated oxide. Such a compound might be represented by the formula $2\,(PbO,CO_2)\,PbO,HO$. If the compound contains a greater amount of carbonate than this, it is said that the body or covering power of the pigment depreciates in a like proportion. It is possible that this may be the case, but it is also likely that there are other conditions, incident to the process of preparation, which influence the result. It is, in great measure, to this opacity or covering power, that the value of white lead depends. There are other pigments of equally good color, and some perhaps as durable, but all are deficient in the matter of body. If either white lead, or oxide of zinc, be mixed with linseed oil, a partial saponification of the oil takes place. At ordinary temperatures this change is effected very slowly. This fact will account for the general belief that these pigments, when ground in oil, improve by age. Painters are well aware of this, although they may not be acquainted with the reason of it. It is found, however, that old white lead resists the action of the air and weather, and spreads better under the brush than that which has been recently ground. Paint made with sulphate of baryta does not possess these characteristics, as the varnish-like skin, formed by the action of the air on the oil, is soon destroyed, and the underlying layer of paint is consequently without protection, and may be easily washed or rubbed off.

The color of white lead depends, to a great extent, on the purity of the metal from which it is prepared. It will readily be seen that traces of such metals as copper or iron would give a tinge to the pigment, although the quantity present might be almost inappreciable, as far as weight is concerned. The purity of the water employed in the process has, probably, some influence on color. It is