often found that a sample of dry white lead of the purest color, may possess a dark shade when mixed with bleached oil. It is likely that this is due to the presence of a minute trace of carbonate of lime, derived from the source alluded to.

From what has been said it may be concluded that samples of unadulterated white lead may possess very different pigmentary values. The particles of the compound may be crystalline and translucent, or flakey and opaque, hence the difference in the *body*. From want in care in the purification of the metal, or the preparation of the white lead, contaminations may be present which affect the *color*, and again we have conditions which affect the *durability* of the paint. Of the various substances used for the adulteration of lead, the following enumeration may be made:—sulphate of baryta, carbonate of baryta, sulphate of lead, sulphate of lime, carbonate of lime and oxide of zinc. Although oxide of zinc is of more value than white lead, it is not unfrequently met with as an adulterant. There is an impure variety of this substance prepared in the United States, which consists of a mixture of sulphate of lead and oxide of zinc, and as the price of this compound is below that of white lead, it is possible that this is the source of the adulteration.

ANALYSIS OF GROUND WHITE LEAD.

In making an examination of ground white lead, in order to ascertain its purity, we must first deprive it of the oil with which it is mixed. A weighed sample, say 100 grains, is introduced into a small flask, and agitated with petroleum naphtha, or sulphuric ether. After allowing the sediment to fall, the supernatant liquid is poured off, and a fresh portion added, until a drop of the washings, placed upon glass, evaporates without residue. The solid portion must now be turned out into a small capsule, and the last traces of naphtha or ether volatilized by the application of a gentle heat. The weight of the dried residue deducted from the original weight of the paint will give the proportion of oil present. There is seldom more than 10 per cent.—from 8 to 12 is the outside limit.

Treat the powder thus obtained with dilute nitric acid—say half a fluid ounce of acid to two ounces of water. If the quantity of water is much less than this, a precipitate of nitrate of lead will be deposited, which might be mistaken for insoluble impurities. If the powder dissolves without residue, the absence of the sulphates of baryta, lime, and lead may be assumed. If a solid residue remains,