

GRAPHITE.

The element carbon exists in three allotropic forms, one of which is the mineral *graphite*, also known as *plumbago*, and *black lead*.

This mineral is soft, unctuous, and black or steel grey, has a metallic lustre, and is electro-conductive to a high degree.

It is, practically, always associated with either igneous or metamorphic rocks, occurring in three manners.

- (1) Veins of crystalline (columnar, or foliated) graphite.
- (2) Lenticular masses of crystalline (flake), or amorphous graphite.
- (3) Particles of graphite, either crystalline (flake), or amorphous, disseminated through the country rock.

The workable deposits, in nearly all cases, belong to the last of these classes.

There are a number of minerals which are commonly associated with graphite, such as quartz, calcite, mica, chlorite, pyrite, and pyrrhotite, varying, of course, according to the rocks in which the graphite occurs.

PREPARATION.

Crude graphite of the third class, referred to above, and that containing impurities, must be subjected to a very elaborate milling treatment to prepare it for the market.

It must be ground to such a degree of fineness as to detach the particles of graphite from the associated minerals. This grinding is not an easy matter, as the graphite cakes badly in the machines. Following the grinding, the graphite is separated from the accompanying minerals either by a wet or dry process of concentration.¹ The resulting concentrates are then graded into various sizes by screening and bolting.

The graphite is further graded according to purity.

¹ For descriptions of various processes see: "Graphite, its Properties, Occurrence, Refining and Uses," by Fritz Cirkel. Report No. 18, Mines Branch.