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Graphite is an opaque, non-metallic carbon polymorph that is blackish silver in colour and metallic to dull in sheen. Since it resembles the metal lead, it is also known colloquially as black lead or plumbago.

Graphite is most often found as flakes or crystalline layers in metamorphic rocks such as marble, schist"s and gneisses. Graphite may also be found in organic-rich shale"s and coal beds. In these cases, the graphite itself probably resulted from metamorphosis of dead plant and animal matter. Graphite is also found in veins and sometimes in basalt. Graphite also occurs in meteorites.

Graphite consists of a ring of six carbon atoms closely bonded together hexagonally in widely spaced layers. The bonds within the layers are strong but the bonds between the layers are less in number and therefore are weaker. Graphite is the stable form of carbon - diamonds at or near the Earth"s surface are gradually changing to graphite. Fortunately this process is extremely slow.

Diamond is another carbon polymorph; although composed of the element carbon, like graphite, diamond does not have much else in common. Each has a lot of contrasting properties. For instance, diamond is the hardest mineral, but graphite is one of the softest. Diamond is usually transparent, but graphite is opaque. Also, diamond is often used as an abrasive, whereas graphite makes a good lubricant. Graphite is an excellent conductor of electricity, while diamond makes a good electrical insulator.

Named in 1789 by the German chemist and mineralogist A.G. Werner, the name for graphite is derived from the Greek Word graphein, which means: to write. The name therefore denotes the primary use of graphite as an ingredient used to make the lead for writing pencils.

Graphite was first discovered in Cumbria in North England at the beginning of the sixteenth century. Although it resembled coal, it would not burn. It did, however, prove to be an excellent marker of sheepskins.

The government of England took charge of the mining operations of graphite when it was discovered that it also served as an excellent mould for cannonball production. As such, the value of graphite increased dramatically in a short period of time. During the reign of Queen Elizabeth I, graphite was transported to the capital under cover of the local guard.

Dubbed "Wad" by the locals, graphite soon became a precious commodity. In 1752, the government made the stealing and trade of stolen graphite a criminal offence, punishable by hard labour or transportation.

A piece of Cumberland Graphite was cut into slabs. A square groove was then carved into a piece of wood. The slab of graphite was inserted in the groove; the graphite was then broken off, so that it was level with the top of the groove; a thin slat of wood covered the graphite, leaving the graphite encased.

This wood was shaped by hand-plane and the shape of the knife in plain determined the shape of the pencil, round, oval, etc, and all this work was carried out by hand. Later, small primitive types of lathes were introduced which were foot-operated with a treadle similar to a treadle sewing machine and all the shaping was done in this manner. All the pencils were hand-made; many families in Keswick made these pencils in their cottages, the origin of the pencil industry.

In the mid-eighteenth century, the relationship between Britain and France deteriorated. As a result, supplies of graphite from England to France dried up. In 1795, the French artist Conte discovered that graphite could be mixed with clay to produce pencils with varying degrees of hardness. In the mid- 1830s, the pencil making industry in Keswick had started to set up factories; it turned more and more to the use of powdered graphite mixed with powdered clay to make pencils.

This mine was famous for producing graphite that did not come from bedded shale"s or embedded in rock but was associated with an igneous intrusion connected to a hydrothermal vein that contained wads of graphite along it. The mineral was found along a 400 m stretch of the vein in lumps and nodules. A market for it opened up around the end of the sixteenth century. German miners from Keswick in the early sixteenth century had made more progress mining the graphite from this site.