

the demand for the gas for domestic or industrial purposes is sufficiently great after ten years, the gas must be supplied to gas-line connections. If the gas is found to contain gasoline in excess of one-half gallon per 1000 cubic feet, the gasoline is required to be extracted on a royalty basis.

Africa, at the present time, supplies over 90 per cent of the world's production of diamonds.

### Graphite Crucibles

The most important use of crystalline graphite (graphite whose crystals are of sufficient size to be seen by the naked eye) is in the manufacture of crucibles used in the steel, brass, and bronze industries. Graphite crucibles are superior to clay crucibles because of their infusibility, and their ability to withstand sudden changes of temperature. Because graphite does not have the same tendency to stick together as clay does, clay and sand are added before the crucibles are shaped and baked.

"Amorphous" graphite, or graph-

ite which does not consist of crystals large enough to be seen with the naked eye, is used in the manufacture of "lead" for pencils, for lubricants, and for electric conductors.

### Uses of the Diamond

Because of its extreme hardness, the diamond is used for many purposes other than jewelry. These may be listed briefly as follows:

- (1) as a material for cutting and grinding the diamond itself;
- (2) as a material for cutting and drilling glass and porcelain;
- (3) as a material for making the points of dental drills;
- (4) as a turning tool for electric light carbons, hard rubber, and similar materials;
- (5) for bearings in watches;
- (6) for the points of some special kinds of rock drills;
- (7) for wire drawing. A hole is drilled through the center of a diamond and the metal is drawn through this. Other materials can be used for this purpose, but none of them is so enduring, or gives a wire of such uniform thickness.

## THE DIAMOND'S LATEST RIVAL

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The abrasives used in modern industry need to possess not only hardness, but reasonable cohesiveness. With the softer materials, such as wood or brass, hardness is more important. Thus carborundum,<sup>1</sup> in spite of its brittleness, is suitable for grinding such materials. With steel, on the contrary, alun-

dum<sup>2</sup> is ordinarily preferred; for though this is not so hard as carborundum, it is superior in cohesiveness. In the preparation of tools for cutting on a lathe, one needs to consider not only hardness and cohesiveness, but tensile strength. In

<sup>1,2</sup> For composition of carborundum and alundum, see any elementary text.