

CHAPTER VII

NON-METALLIC RESOURCES

THE minerals belonging to this group are those of industrial use which are mined essentially for other purposes than their metal content. They form the raw materials for numerous industries and they are often essential to the conduct of enterprises of large importance, though not entering into the product itself, as in the case of infusorial earth which is used for filtering oil and chemical solutions. Coal, petroleum and sulphur are all non-metallic, but because of their major importance they have been discussed separately.

Fortunately, the non-metallic minerals are much more abundant and widely distributed than the metals, and a country deficient in the latter may well have an abundant supply of the more common raw materials suitable for industries of a different type. It is also true that many of the non-metallic minerals, using that term in the industrial sense, contain metals, and under proper conditions these can be reduced and substituted for others commonly used elsewhere but locally deficient. A common illustration is that of aluminum, which occurs widely distributed as a chemical constituent of clays and is produced commercially from bauxites. For some few purposes aluminum and its alloys can be substituted for steel, but not for most uses of the latter. Unfortunately, it costs about ten times as much to make aluminum even from bauxite, a relatively scarce mineral, as to produce steel even from low-grade iron ores. The amount of energy necessary to make the conversion is much greater and there are no satisfactory reasons for anticipating that aluminum will ever be really cheap as compared with steel. To make it commercially from clay has heretofore proved impracticable though the chemistry of the process has been worked out. Our present knowledge, therefore, does not warrant any cheerful assumption that shortage of steel will be made good as a matter of course by production of aluminum from clays.

The same applies to many other suggested substitutions,