

CHAPTER III

IRON AND STEEL

STEEL forms the skeleton framework within the body of modern civilization. Without steel the whole range of power-generating and power-using industries would be virtually impossible. Modern building requires enormous quantities of it, speedy and abundant transportation are alike dependent upon it; communication, whether by telegraph, telephone, and radio, is similarly conditioned. The tools of industry and the implements of war, the thousand and one essentials and conveniences of daily life are all made in whole or in part of steel. The ease and certainty with which under ordinary conditions of trade it is available to any country have led us to forget how essential it is, but in times of war or general trade disturbance a shortage of this material promptly drives home the fact that steel is necessary to modern industry. In the world as it now is, no nation can be strong in time of peace or safe in time of war without an adequate supply of this basic material.

Steel is made from iron, being an alloy of that metal with carbon and usually various other elements in minor amounts. Iron is one of the commonest and most widespread metals of the earth. It is found, however, almost exclusively in compounds from which it must be reduced by metallurgical processes before being adapted to use. Not all the iron found in the crust of the earth is adapted to known processes, or if so adapted, occurs in such richness or in deposits of such size as permits treatment at any cost within reason. The black sand often strikingly in evidence on a seashore contains iron; but rarely, if ever, is it a possible source of supply for industry. In a specific case, careful sampling developed that it would be necessary to mine 70 to 200 tons of the sand to produce one ton of black sand concentrate and that the latter would then contain such a large amount of titanium and other deleterious impurities that to make iron from it was only feasible on a laboratory scale and without regard to cost. In competition with deposits from