had proportions or ungraceful form, while a beautiful form unadorned is itself ornament of the most refined and pleasing description. Neither should ornament be so prominent as to overlay or prevent the full development of form ; while neither form nor ornament ought to interfere with utility. The shape of Greek and Etruscan vases, beautiful as they are, are not more adapted to modern pottery or hardware than is the decoration of the fictile wares. We do not want to convert lachrymatories into scent bottles, funeral urns into tea-pots, vases into flower-pots; nor are the forms of amphoræ suitable for decanters, or of pateræ for candle cups. The material and uses of the vessel should determine its form ; tea-pots that will not draw, jugs that can never be washed clean, glasses and cups that one cannot drink out of comfortably, however elegant their form, are essentially defective ; and the adaptation of the thing to its purpose, so far from producing ugliness, tends to beauty, and it also induces new forms. The problem to be solved is simply this, --- "Given the use and material of the article, to find a beautiful shape." In the commonest, rudest, and oldest implements of husbandry -the plough, the scythe, the sickle-we have examples of simple ye; beautiful curves. The most elementary and simple forms, if well proportioned and of graceful contour are the most pleasing.

There are other points that need to be touched upon, and those that have been adverted to need fuller investigation, but enough has been said, I trust, to prove the importance of a knowledge and observance of the principles of Art by designers; and perhaps to show also that these principles are easily ascertainable by studious attention and rational reflection.

TITANIFEROUS IRON ORE, OR ILMENITE.

Titaniferous iron, or Ilmenite is very abundant in Canada, at least in one locality. At St. Urbain, Bay St. Paul, there occurs a bed of Ilmenite ninety feet thick, exposed for about 300 feet on the strike and traceable for about a mile.* It contains:

Dide of Titanium	48.60 46.44
Magnesia	3.60
· · · · · ·	98.64

We are indebted to the *Mechanics' Magazine* for the following on Titaniferous iron ore:

The reduction of the titaniferous iron oresfound in the form of sand on the shores of the Black Sea, the Bay of Naples, and also along the shores of New Plymouth, in New Zealand—has lately engaged the attention of practical metallur-

* Minerals of Canada-Descriptive Catalogue.

gists to a considerable extent. Several companies have been formed in the City with a view of working these deposits with profit; and considerable sums of money have been spent in experiments conducted with a view of arriving at some means of converting this rich and valuable ore on a large scale.

We have examined different specimens of this peculiar metallic sand; from the shores of New Zealand; from Poti, in Asia Minor; and from Naples. They have all a similar appearance, that of fine steel filings, and they are strongly attracted by a magnet. The Italian specimen is somewhat mingled with common sea-sand or silica. The great value of these ores is due to their large percentage of iron, to their freedom from sulphur. phosphorus, &c., and to the presence of titanium itself in the form of an oxide. There is little doubt that steel is considerably improved by a mixture with titanium; and it is not improbable that the presence of this metal would also raise the quality of cast iron. The wonderful temper and tenacity of the sword blades of the Japanese are said be partly due to the presence of titanium in the steel of which they are manufactured. It is stated by recent travellers in Japan that all the iron of that country is made from this peculiar sand. The sword blades used by the Circassians are also made from the titaniferous iron ores of the country, and according to well authenticated accounts their temper and durability is something marvellous. Of course, the mere presence of titanium does not wholly account for excellent quality of the iron manufactured by these semi-barbarous nations, the ore itself is pure, and it is always smelted with charcoal.

The most common mineral containing titanium is this titaniferous peroxide of iron. It is very similar in appearance to the magnetic oxide of iron, and it is, indeed often mistaken for the latter mineral. Titaniferous iron ore is found in small small quantities in Cornwall. Its scaroity has prevented its adoption up to the present in practical metallurgy; and this is also the reason that the metal titanium has been only discovered within a recent period. The titaniferous oxide of iron of the secondary formations has always the appearance of black-grained sand, the particles of which are attracted by the magnet. For a long time the titanium was only known in the form of an oxide. It has been found united with nitrogen and carbon in the slag from the blast furnaces of the Merthyr Tydvil iron works, in the form of well-defined prismatic crystals, of a copper colour. The various titaniferous iron ores contain from 13 to 52 per cent. of oxide of titanium in union with oxide of