

## WHAT METALS MEAN TO THE HUMAN RACE.

The bronze and iron age was an epoch in the advance of civilisation. There can be no doubt that the free use of, or privation from, metals is a question of life and death for any nation. When we take into account the important part that is played by metals in all modern communities, it is evident that without them civilisation would have been impossible. That astonish-  
 ing scientific and industrial movement which this nineteenth century presents to us—the material comfort which existing generations are enjoying—all our mechanical appliances, our manufactures, books and arts—not one of all these benefits for man, in the absence of metals, could ever have come into existence. Without the help of metal, man would have been condemned to live in discomfort; but, aided by this irresistible lever, his powers have been increased a hundredfold, and his

empire over nature is being gradually extended, and will continue to extend so as to become almost supreme.

Some ores containing copper in the form of carbonate and silicate (chrysocolla) and fine gold has been successfully treated by the cyanide process, by first leaching out the copper with a dilute solution of sulphuric acid, and subsequently treating the pulp with cyanide solutions. The success of this operation depends to a great extent on getting rid of the copper solution and free acid, which must be accomplished by means of wash water, and, in some instances, by neutralizing the remaining acid by means of alkali.

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