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CHAPTER XXI

HEAT, LIGHT, AND POWER

**Heat.** — The development of civilization is characterized not only by a vastly increased utilization of material resources, but no less by growing dependence upon immaterial resources, especially heat, light, and power. The discovery of the use of fire, at first accidental from lightning or a volcano, was a step second in importance to none in the rise of man.

The invention of methods for kindling fire when wanted has exercised a marked influence upon human progress. The savage rubs two sticks

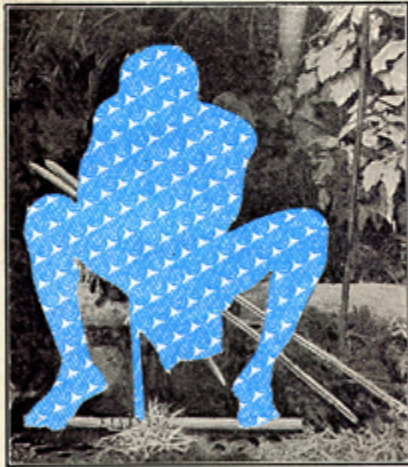


Fig. 284. — Savage kindling a fire.

together until they ignite, — a thing not easy to do. Our ancestors of only a century ago depended upon sparks struck by flint and steel, while with us lucifer matches are the cheapest and most abundant of devices. While artificial heat is not needed for comfort in tropical regions, fire enables men to cook food, and this will always be its prime function. The use of fire to maintain bodily temperature became necessary as men migrated into higher latitudes and altitudes. The burning of brick and pottery, the smelting of ores, the working of metals, and the manufacture of glass require the highest temperatures attainable by the use of fuel. Some modern industries, such as the extraction of aluminum, are made possible only by the electric arc at 6,000°.