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Wonderful Work Done by the  
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**A MARVEL IN CUTTING STEEL**

This Astonishing Tool Will Slice a Massive Metal Beam Almost as Quickly as Though it Were Made of Cheese—it is Also Used For Welding.

One of the most curious instruments used by the structural iron workers and steel shipbuilders, the most astonishing in its performance and the most spectacular when seen at work is the oxyacetylene torch. It is made in two forms—a welding torch and a cutting torch. With the former cast iron, cast steel, steel, wrought iron, aluminum, brass, copper, platinum and various alloys can be welded with ease, while a perfect weld can also be made between any combination of cast iron, steel, brass and copper. Welds are often made in steel and iron with this torch up to eight and nine inches in thickness, the heaviest weld of which there is any record being fourteen inches.

With the cutting torch steel and iron (other than cast iron) are readily cut, with the aid of mechanical devices for guiding the torch, up to a thickness of eight or nine inches. This means that with the oxyacetylene torch a piece of steel eight or nine inches thick and of any width can be cut squarely in two, just as a carpenter saws through a board or a beam. The kerf in cutting the steel—that is the part of the metal that is burned away where the cut is made—is only about one-eighth of an inch wide.

Steel six inches thick can be cut in this way at the rate of one foot in three minutes.

To the man who knows nothing of chemistry or what actually takes place when any object burns this seems incredible. When the process of combustion is explained the mystery is swept away. Combustion, then, in its simplest terms, consists in raising the temperature of an object to a point where it will unite chemically with the oxygen of the air. When this chemical action takes place it is accompanied by light and heat, and the object is said to "burn."

This temperature varies greatly with different objects or substances. Many substances that burn at a comparatively low temperature can be set on fire with a match. With these substances every one is familiar, and other substances that will not readily burn when a match is applied to them are popularly regarded as "fireproof."

But this is a wrong view. It may simply mean that the temperature at which the object will burn—called the "kindling temperature"—is too high to

be reached by the burning match. This is the case with iron and steel, and when the oxyacetylene flame cuts through a bar of steel nine inches thick and three feet wide it simply burns up a layer of the metal one-eighth of an inch in thickness.

The welding torch, to describe it as simply as possible, consists of a handle through which extend two tubes of brass. These tubes are connected with two gas tanks, one containing oxygen and the other acetylene, and these gases are admitted to the tubes by valves at the rear, the oxygen entering the upper tube and the acetylene the lower. Both tubes open into the head of the torch, into which is screwed a nozzle or tip. The gases enter this tip by separate passages and are there mixed together and, being under pressure, spurted from the jet. The acetylene is first turned on and lighted. This is the fuel of the flame. Then the oxygen is turned on. This supports the flame.

The quantity of each gas can be regulated by the valves, and thus there is produced what is called a "neutral flame"—that is to say, it contains neither an excess of oxygen nor of acetylene, but just enough of each to accomplish complete combustion. The temperature produced by this flame, with an almost pencil point concentration, is approximately 6,300 degrees F.

In the cutting torch there is a difference in construction, because the object now is not only to heat the metal, but also to burn it—to consume it by fire. The torch is so made, therefore, that at first a "preheating" flame, which is the same as the welding flame, is directed against the metal, its purpose being to heat the metal to incandescence, or "white heat." When this point is reached a slight movement of the thumb on the hand holding the torch opens a valve that sends rushing against the hot metal a separate stream of oxygen under high pressure.

At its great heat of 6,300 degrees and in the presence of this free oxygen the metal readily burns. The iron or steel is the fuel, and the stream of oxygen supports the combustion.

The cutting torch is now used in the repair of ships in many ways. A new ventilator hole, a porthole, a piece of damaged deck or side plating can be cut out and removed in a few minutes. Very often when new boilers are to be installed in a vessel the old ones are cut into pieces with the torch and removed in a few hours.—New York Tribune.

The attitude of unhappiness is not only painful; it is mean and ugly.—James.

**FIELD MICE IN FRANCE.**

At Times They Overrun and Completely Devastate Whole Cantons.

The average loss inflicted annually by field mice upon the cultivators of France is estimated at 2,000,000 francs—about \$400,000. From time to time, however, there is an enormous increase in the number of these pests and in the extent of their ravages.

France has experienced about a dozen serious invasions by field mice since the beginning of the nineteenth century. The most disastrous was that which occurred from the summer of 1801 to the end of the autumn of 1802. On that occasion three departments were absolutely devastated. As an illustration of the prodigious numbers in which these animals appear it may be stated that, during the outbreak of 1822 in Alsace, within a single fortnight 1,570,000 were slaughtered in one canton—the French equivalent of a township—500,000 in another and 272,000 in another.

The sudden appearance of these animals in such numbers is not due to a rapid migration, but simply to the astonishing rapidity with which they multiply when the weather happens to be favorable to their preservation. Under such conditions a field containing 150 animals—the females are about twice as numerous as the males—at the end of winter would have more than 20,000 in September.

There are many ways of fighting the pests, including the use of various poisons, and asphyxiation of the animals in their burrows by means of noxious vapors, but the plan recommended by the French government is to spread a contagious disease among them by giving a bacterial preparation.

Worms in children, if they be not attended to, cause convulsions, and often death. Mother Graves' Worm Exterminator will protect the children from these distressing afflictions.

F. A. Bowen, of Petrolia, narrowly escaped death when his automobile plunged through the port gangway of the ferry boat Hiawatha into the St. Clair River. He went down with the car and it was nearly a minute before he came to the surface and was rescued. The Reid Wrecking Co. raised the car not much the worse for its immersion.

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