

feet. The inside of the crater was studded with numerous blow-holes, and a slight tremor of the ground was occasionally felt. As it was too late to return Mr. Manson was compelled to remain on the mountain all night without food or blankets and with very little clothing. The cold was intense, the thermometer registering several degrees below zero. About 2 a.m. the wind abated and the moon rose, when a really magnificent sight was witnessed by Mr. Manson and the guides. The upheaval of mud in the crater and the hissing noises all about are described by the party as being the most weird-like that could be imagined. At daylight Mount Egmont could be plainly seen snow-capped. The ascent and descent, with the time Mr. Manson spent in the crater, occupied 21 hours. He has already made the ascent of the principle mountains in the world, including Kilawea, in the Sandwich Islands, and he says that Tangario far surpasses anything he has yet seen in its grandness and weird-like formation.

WORKSHOP NOTES.

Hold a cold chisel firmly to its cut without removing it at every blow. This will increase the effectiveness of the tool, and there will be less danger of breaking by a foul blow.

To fit a key: Smoke the blank over a candle, insert it in the keyhole and press it hard against the wards of the lock. The indentations in the smoked portions will show where to file.

A CORRESPONDENT of the *Mechanical Engineer* says: "If any of your readers have occasion to weld cast steel let them try spent lime, air slacked and use it just the same as borax; they will find it will answer quite as well and cost nothing.

CRUCIBLE steel is made by melting in a crucible either blister steel, or blister steel and wrought iron, or wrought iron and charcoal, or wrought iron and scrap steel, or, in short, a great variety of mixtures, which depend on the quality of steel to be produced.

Rust may often be removed from steel tools by immersing them in kerosene oil for a few days. This loosens the rust so that it may be rubbed off. Where the rust is not very deep seated emery paper will do, but if of long standing the tools must be refinished.

It has been proved by Mr. Waite's experiments that a highly polished bearing is more liable to friction than a surface finely lined by filing. The lines left by the file serve as reservoirs for the oil, while the high polish leaves no room for the particles between the metal surfaces.

The simplest and cleanest substance for cleaning silver articles is, according to Professor Davenport, hyposulphite of soda. It acts quickly, and is inexpensive. A rag or brush, moistened with a saturated solution of the salt will cleanse even strongly oxidized silver surfaces in a few seconds, without the application of any polishing powder.

To keep machinery from rusting, take one-half ounce of camphor, dissolve in one pound of melted lard, take off the scum and mix in as much fine black lead as will give it an iron color. Clean the machinery and smear with this mix-

ture. After twenty-four hours rub clean with a soft linen cloth. It will keep clean for months under ordinary circumstances.

To harden steel take two teaspoonfuls of water, one-half teaspoonful of flour and one of salt. Heat the steel enough to coat it with the paste by immersing it in the composition, after which heat it to a cherry red and plunge it into soft water. If properly done, the steel will come out with a beautiful white surface. Stub's files are said to be hardened in this manner.

A BRILLIANT black is produced on iron and steel by applying, with a fine hair brush, a mixture of turpentine and sulphur boiled together. When the turpentine evaporates, there remains on the metal a thin layer of sulphur, which unites closely with the iron when heated for a time over a spirit or gas flame. This varnish protects the metal perfectly, and is quite durable.

The mode employed in bluing steel is merely to subject it to heat. The dark blue is produced at a temperature of 600°. The steel must be finely polished on its surface, and then exposed to a uniform degree of heat. There are various ways of heating the article, e. g., over a flame producing no soot, by a hot iron or other heated metal, and by means of wood ashes. A very regular degree of heat is necessary, and wood ashes are often used for fine work.

SCIENCE NOTES.

SHEAR steel is made by taking a high heat on blister steel and hammering it thoroughly. Double shear steel is made by cutting up shear steel, piling it, heating it, then hammering again. The best shear steel is made from the best wrought iron. The shear steels are very useful on account of their toughness and the ease with which they can be welded to iron, and, when of good quality and well worked, they will hold a very fine edge.

A NOVEL pair of scissors has been devised by Herr Sievert of Dresden. The blades are represented by two circular steel knives, which slightly overlap at the edges, and are pressed together by two spiral springs. The knives are fastened to a pair of wooden rollers with India rubber rims, which grip and guide the cloth or paper as it passes between the knives, so that the latter may cut straight. These cutters are carried by two handles or levers which are held in hand, and the cutting is effected by pushing the scissors forward, so as to cause the rollers to revolve.

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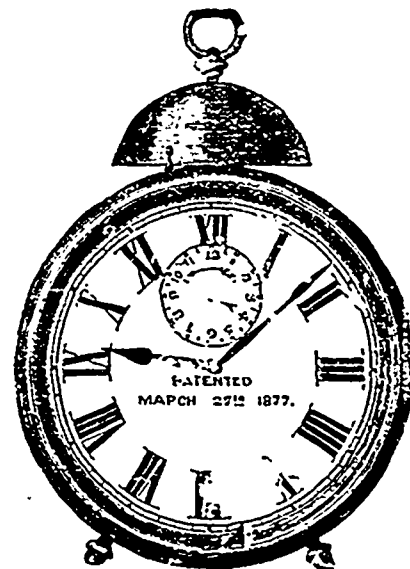
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