Correspondence.

To Fish Broken Screw Shafts.

To the Editor of the Scientific American:

Observing an article in your issue of the 6th inst., "Mending a Big Shaft at Sea," in which mention is made of the Thompson coupler as a means of fishing broken screw shafts, I wish to say that this coupler was devised by me in April, 1881, and a sketch of it published in the *Mechanical Engineer* of that date. The article is too long to quote here, but reference thereto will show you that it is the same thing which Mr. Thompson, an English engineer, invented some years later. It is now carried on most English ships.

EGBERT P. WATSON.

New York, June, 1891.

To the Editor of the Scientific American:

In your paper of the 6th instant, under the head of "Great Tower of the City Hall, Philadelphia, Total Height 547 Feet," you say, "The total height, when completed, will be 547 feet 2½ inches, and will only be surpassed in this respect by the Eiffel Tower and the Washington Monument, which surpasses it by less than three feet." The last part of this statement is not correct, as the Washington Monument is 555 feet high, and, therefore, it is 7 feet 9½ inches higher than the tower of the City Hall at Philadelphia.

I take great pleasure in reading your paper, and I am always glad when Friday comes, so that I can receive my paper. Yours respectfully,

H. H. MILLER.

1625 Thirty-second St., Washington, D. C., June 5, 1891.

The Wonderful Redwood Forests of the Pacific Coast.

To the Editor of the Scientific American

About two years ago I made a visit to the Pacific coast, and being engaged in the manufacture of saws, I took a steamer for Humboldt Bay and stopped at Columbia City, this being the headquarters of the redwood kings. Major Vance, being an old customer of mine, invited me to mount his donkey engine and ride some 8 or 10 miles and see the redwood forest and their manner of cutting and getting the logs to their mills. Upon our arrival at the terminus of the road we clambered down through the roughness of the unbroken ground to the very edge of the vast mammoths of the Pacific. Said I, "How large is this forest?" "Well," said my friend, "it is about eighty miles through it to Oregon, and it is over one hundred miles in length, and will average over 200,000 feet of lumber to the acre." I will not stop to figure this up, but will let the reader make an estimate of the number of feet of timber it contains.

But this is not the only redwood forest on the Pacific coast by any means.

The underbrush is so thick and dense that few living things ever venture among the redwoods. No grizzly bears inhabit these forests. Near the ground about every redwood is shaken and slit, so they chisel into the tree up say 6 to 8 feet high and wedge in a piece of small joist and build a staging, then clamber up, and with narrow, long crosscut saws saw them down in winter; then, when the sap runs in spring, go in and peel off the thick bark, some of it nearly two feet thick, and trim or cut the thick bushes, and in the dry season set fire and burn up what they can. Then it is in shape to run a railroad track in and get the timber.

At the terminus of Mr. Vance's road there were two or three donkey engines at work, one 8 ox team (four yoke of oxen), another team of six large mules, all with blocks and falls, getting a log 16 feet long and about 10 feet through on to a car for the saw mill. I was told that this one log would weigh about 18 tons. Just on a sloping piece of ground were shattered redwood strips, and some teams and a gang of men getting out the shattered pieces and roots, some with blocks and falls, and piling them up and trying to burn them off, and this was a slow job, as redwood is very difficult to burn. I said, "Mr. Vance, what in the world are you trying to do here?"

Said he, "Well, I have been trying to experiment in raising French prunes on a small patch, and I succeeded very well, so I am clearing off a 100 acre plot, and have ordered 200,000 dozen plants from France, and am going to try that first."

"But this experiment will cost you some money," said I.

"Oh, not more than $200,000," said my friend.

I afterward learned that my friend was worth over $3,000,000, all made out of redwood timber.

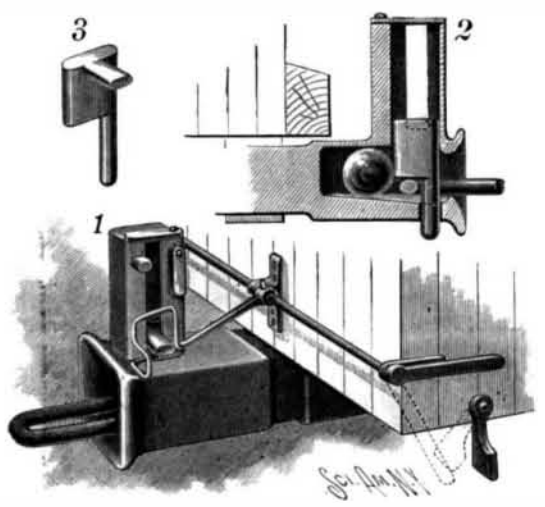
J. E. EMERSON.

Beaver Falls, Pa., June, 1891.

THE only proper way to keep a gun barrel in good order is to wash it out with boiling hot water, dry with linen swabs and oil with vaseline or cylinder oil, every time that it is used. It should never be laid aside unattended to for a day or two after firing.

AN IMPROVED CAR COUPLING.

The illustration represents a coupling device designed to hold the link in extended position, or hold the pin elevated, as desired, for coupling with an approaching car, the coupling being automatically effected as the cars come together. Fig. 1 is a perspective view showing the application of the device, Fig. 2 showing a section through the drawhead, and Fig. 3 representing the coupling pin detached. Near the flaring edge of the lower wall of the drawhead is a cup-shaped depression forming a seat for the arrest of a steel ball which rests and rolls in a longitudinal channel extending back from the seat, the ball not leaving the drawhead. Near the front end of the drawhead is a vertical oval passage adapted to loosely receive the coupling pin, sliding in a guide box, an arm or limb projecting from one side of the pin through a slot in the guide box. The coupling pin lifter has a rectangular loop adapted to engage this arm of the pin, a hub at the other end of the pin lifter being adjustably secured on a transverse shaft journaled on the end of the car, the shaft having hand levers adapted to be operated from either side of the car. When the coupling pin is fully elevated, it may be locked in such position, if desired, by a latching engagement of a dog with the hand lever, as shown in dotted lines, but if the lever is released after being raised, the coupling pin then rests on the ball, which rolls by gravity into the cup-shaped depression. By the entrance of a link, when the parts are in this position, the ball is pushed backward and the pin drops, thus effecting the coupling. Fig. 2 represents the manner in which the parts are arranged to support a link in horizontal position for automatic coupling with an approaching car. Near the top of the slotted side of the guide box is pivoted a latch, which may be used independently



STEWART'S CAR COUPLING.

of the pin lifter if desired to hold the pin in elevated position until it is designedly released, and to prevent the lifting of the coupling pin above the surface of the guide box, a keeper plate is pivoted at the top of the slot.

This car coupling has been patented by Mr. Elmore Stewart, of No. 601 Milton Avenue, San Diego, Cal.

How Insulators are Made.

A writer in the recent issue of the *Tradesman* gives the following description of the manufacture of insulators as carried on by one of the factories in the South:

Steatite is the material out of which is made a long list of goods used by almost all classes of people, and which have become almost indispensable.

Seward's patent lava electric insulators are so well known to all electricians of the world, and their superior excellence so universally acknowledged, that all persons, whether electricians or not, will be interested in knowing something of the process of manufacture. The crude material, as it is received from the mine, is as uninteresting as any other pile of rocks, which it seems to be, and to the uninitiated it would seem to be a hard task to produce anything from it which would be of any use to any one. The first process is that of reducing the rock to powder, which is done by passing it through an ordinary stamp mill, such as is used for reducing gold and silver ores; it is then carried by chain conveyor to the mills proper, where it is ground to an impalpable powder, then conveyed by elevators to the bolts, where it passes through the finest silk bolting cloth, and is deposited in large bins or settling chests, whence it falls to the lower floor again, and is thence taken to the mixing tubs, which revolve, and stir the mass of material with chemicals in combination until it resembles dough for bread. It is then passed to the rolls, where it is repeatedly pressed, the same as if for crackers. The next machine is a peculiar double-acting press, used for forming the charges for the hydraulic press. The latter machine is the only one of its kind ever built, and is the subject of several patents. Its capacity is something wonderful; it can make 200,000 slate pencils or 1,000 gross dustless school crayons in a single day's run. It makes the pressed blanks from which the lava insulators are made in any diameter required by simply changing the die. Tubes for insulators are also made on this machine, and are meeting with great success for interior or underground work, as they are not only absolutely fireproof, but they cannot be damaged by rats, as the insulation on the ordinary wire, and when once placed in position they are almost everlasting.

The Origin of Meteorites.

In former times it was thought that meteorites were of terrestrial origin, thrown out by volcanoes, or condensed vapors, or else that they hailed from the moon.

These suppositions do not hold good when we consider the enormous initial velocity, the great number, direction and periodical recurrences of these phenomena. For the same reasons, is it impossible that they should be fragments of a destroyed satellite—a second moon—supposed to have revolved around our planet in past ages, or yet that they are diminutive, independent planets of our solar system.

The hypothesis that they are identical with shooting stars and comets is the one accepted almost universally by scientific men.

Most important discoveries tending to prove this assumption were made by Schiaparelli, showing that shooting stars, as well as meteorites, are solid bodies, which enter the atmosphere of our earth with an immense velocity and become luminous because of the resistance offered by the air.

It has been calculated that they usually appear at a height of about seventy miles above the earth and disappear at a height of fifty miles. The cause of their disappearance or extinguishing is to be looked for either in their once more leaving our atmosphere, or that they are atomized by the fierce heat generated by their extremely rapid flight and the great resistance offered by the atmosphere. The latter assumption would account for the continuous fall of cosmic dust upon the surface of our globe.

The velocity with which they enter and pass through our atmosphere is enormous. It is many times faster than sound, the flight of a cannon ball, and even the planets revolving around the sun.

The earth travels through space at the rate of 19 miles per second. Mercury, the fastest planet, covers 29·87 miles per second, while a meteorite which fell at Pultusk, Russia, had a velocity of 33·78 miles per second, although it had to overcome the resistance of the air. In space, consequently, it must have traveled still faster.

To clearly understand the high degree of velocity implied by these figures, it is well to add that the fastest cyclone scarcely reaches 150 feet per second, at which rate it exerts a pressure of about fifty pounds per square foot.

It now remains to explain the assumption that meteorites and shooting stars are identical, and to quote the facts upon which this assumption is based.

We know that both are solid bodies which enter our atmosphere from without, and that they become luminous for the same reason. Furthermore, the cosmic iron dust observed in localities where its origin could not be doubted has been found to have the same chemical composition as larger pieces of meteoric iron seen to fall by unimpeachable witnesses.

It cannot be denied that there is a very great contrast between the little star that silently glides through space and noiselessly disappears and the terrifying appearance of a ball of fire, that, approaching with deafening detonations, sends down on us a hail of stones.

Both spectacles, however, are but the extremes of a chain of closely connected phenomena. Considering with what extreme velocity these bodies pass through the atmosphere, it is not difficult to comprehend that particles, and those having the greatest momentum, are destroyed long before they reach the earth, and at such a height that the noise of their passage and disintegration becomes inaudible to us here below.

We find a further confirmation for the belief that both of these phenomena have the same source in the well established fact, proved in many instances, that the direction of the meteorites corresponds to that of shooting stars observed at the same time, and points to a common point of radiation.

The detonations accompanying the fall of a meteorite have three distinct causes: The whizzing is caused by its rapid passage through the air; the crackling, by the combustion of the materials composing it; and the thundering, by columns of air rushing into the vacuum which it leaves behind.—*F. C. Von Petersdorf, in Great Divide.*

WHEN the mosque of St. Sophia, in Constantinople, was built, more than one thousand years ago, the stone and brick were laid in mortar mixed with a solution of musk, and the building it is said has been infected with the odor ever since. Probably age has imparted a musty odor, from which the musk story was fabricated.