

SODIUM DANGEROUS—THE SEA SET ON FIRE.

The Boston *Commercial*, of May 19th, has this story:—

"We understand that the ship *S. T. Joseph*, recently arrived here from Liverpool, had a narrow escape on the passage. It seems, as the matter is reported to us, that among the cargo was a box marked sodium, which was placed on deck, with instructions to the effect that if there was any trouble with it from getting wet or otherwise, to throw it overboard. Soon after getting to sea the captain took a dislike to this box, supposing it might be something of the nature of lime, and possibly might set the ship on fire. So he ordered a couple of old salts to pick it up carefully, and throw it over the stern. Instantly on its striking the water a terrific explosion occurred, and an immense column of water was thrown up, filling all hands who witnessed it with consternation and amazement. Captain Alexander is entitled to much praise for acting thus promptly with the terrible stuff (probably nitro-glycerin), for had a stray block from aloft or a heavy sea struck the box as it lay on deck, the ship might never afterward have been heard from."

The box no doubt contained sodium. It is the nature of sodium to be very violent when thrown into water. We have heard of several similar accidents. Some of the importers of sodium have had a pretty costly experience of its dangerous properties. Shippers who are aware of the risks will have nothing to do with it. One reason of the high price of sodium in this country is an extra charge to cover losses by shipment. We understand that the Wurtz Amalgamation Co. are about to commence the manufacture of sodium on a large scale, and that on account of the danger of transporting it they will offer it for sale only when combined with mercury.

The danger from sodium comes from its extraordinary affinity for oxygen; it (Na) will take that element (O) away from almost any other. When brought in contact with water (H₂O) it seizes the oxygen, forming caustic soda (NaO) while the hydrogen escapes. But these chemical changes are brought about with violence and if the quantity of material be great, as in Captain Alexander's case, the effects are fearful. Generally, also, there is something besides noise. The sodium and hydrogen are both combustible in the ordinary sense of the word, and when these burn together the fire is not to be put out with water.

Potassium (K), the base of potash (KO), is very like sodium. Its dangerous properties are much more decided. Whenever it touches water it bursts into flame; it even burns fiercely when placed upon a piece of ice.

Sodium and nitro-glycerin are new applicants for employment in the arts, and as is fitting for our position, we have given them a hospitable welcome. They are well commended to us and we have asked for them a trial. They have their faults, it is true, and who has not? But when we understand them, we have only ourselves to blame if we suffer instead of profit by their employment.

PERMANENT INK FOR WRITING IN RELIEF ON ZINC.—Bichloride of platinum, dry, one part; gum arabic, one part; distilled water, ten parts. The letters traced upon zinc with this solution turn black immediately. The black characters resist the action of weak acids, of rain, or of the elements in general, and the liquid is thus adapted for marking signs, labels, or tags which are liable to exposure. To bring out the letters in relief, immerse the zinc tag in a weak acid for a few moments. The writing is not attacked, while the metal is dissolved away.

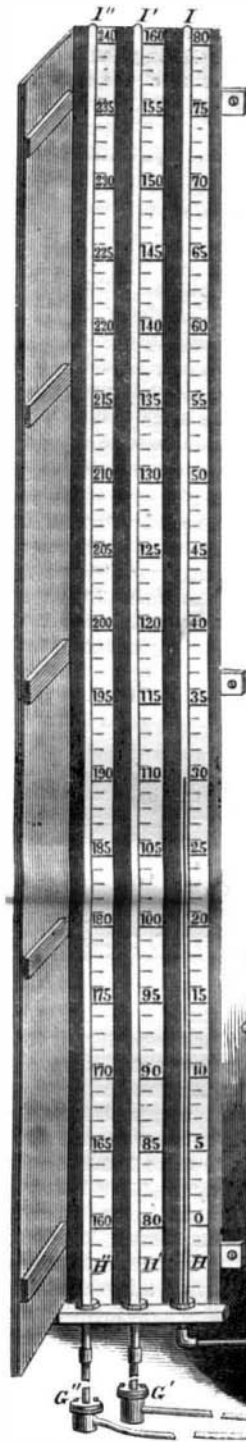
A SUBMARINE VARNISH.—Rosin, two parts; galipot, two parts; essence of turpentine, forty parts. Melt the above and add, in the form of very fine powder and well mixed, sulphide of copper, eighteen parts; regulus of antimony, two parts. This varnish is said to protect wood from worms and to prevent the adherence of barnacles and parasites to the bottom of ships. It also preserves iron from oxidation. The author of this does not say whether the sulphate of copper (blue vitriol) will answer the same purpose. In all probability it would serve quite as well as the sulphide.

[Communicated.]
Improved Steam Gage.

The most accurate and convincing means of testing gages is a column of mercury; but to test a gage up to 240 lbs. requires a column about 40 feet high, which is inconvenient to the observer. In the arrangement illustrated by the accompanying engraving the inconvenience of a glass tube of great

height is avoided by using three tubes of mercury, whose upper ends are on the same level, so that they may be observed without ascending steps. The lower parts of two of the columns descend into rooms or cellars below; and columns of water transmit the pressure down to the cisterns of mercury at their feet.

In the engraving, A is the table on which the gages to be tested and the hand pump to produce the pressure are fixed. B is the pump; C is the test gage, and D the gage to be tested; E is a cistern



KEEN BROTHERS' STANDARD STEAM GAGE.

from which the pump draws water; F is a pipe into which it pumps the water. From this pipe there are branches leading to cisterns, G, G', G'', which contain mercury enough to fill the respective graduated glass tubes, I, I', I'', connected with them.

The operation of testing is as follows:—1st. The gage is screwed on to the nipple; and the pump is worked until the mercury rises in the tube, I, to the height marked 80 on the scale, H. This shows 80 lbs. per square inch pressure. The stop cock, a, in the pipe leading to the cistern, G, is then shut to prevent more water from entering that cistern and forcing the mercury out of the open top of the tube. 2d. While the mercury was rising to 80 in the glass tube, I, it rose in the iron tube from the cistern, G', up to the glass tube, I', to the level marked 80 on the middle scale. The pumping is then continued until the mercury rises to 160 lbs. on the middle scale. 3d. The stop-cock, a', is then shut, to prevent more water from going into cistern, G', and pressing the mercury further up in tube, I', and the pumping is resumed, forcing water into the cistern,

G'', until the mercury rises to 240 lbs. in the tube, I''. In the same way other tubes and scales may be added, if it be required to test gages to indicate higher pressures. The steam gages manufactured by Keen Brothers are all tested by this mercury column.

This gage is used at the headquarters of the Metropolitan Police in New York for testing the steam gages of boilers officially inspected by the engineers acting under the Police Commissioners, and by Messrs. Hopper & Douglas, U. S. Local Inspectors for this district, who have them for test gages; and they are recommended by the superintendents of many steamboat and railway companies.

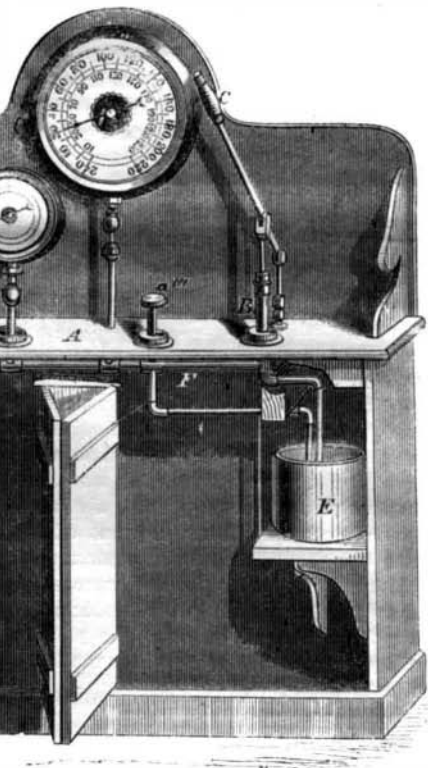
Manufactured by Keen Brothers, 218 Fulton street, New York.

OUR SPECIAL CORRESPONDENCE.

First Impressions of Washington—Some facts in Ethnology—The way debates are conducted in Congress—Able administration of the Patent Office.

WASHINGTON, May 21, 1866.

As seen from the upper windows of the Capitol, Washington seems to be a flat city of brick houses, with green rows of tree tops rising from among the red walls; on traveling over it, however, it is found to be an excellent site for a town—sufficiently rolling for drainage, but not too hilly for the easy transportation of merchandise. Like most American cities, it is traversed in all directions by street cars; the fare is six cents—the same as in New York, and one cent less than in Philadelphia. The place has an unfinished air, but in a few years, with its wide



streets and large trees, it will be one of the most beautiful of all our cities. The great public buildings, of white marble and pure Grecian architecture, are magnificent, but in their location the grave fault has been committed which has been remarked generally of American public buildings—that of placing them directly upon the street instead of locating them in the midst of ornamented grounds. The Capitol and the White House are exceptions; but even the grounds of the Capitol, though beautiful exceedingly, are far too contracted for the size of the edifice. What a pity that the Capitol, with its superb dome, could not have been placed on the highest ground in the city—say where the City Hall now stands.

As the SCIENTIFIC AMERICAN embraces within its province the whole circle of sciences, I keep my eyes open for any facts, in any department of these, which may prove of interest to its readers. There is one department of ethnology which has attracted my attention for several years, and which seems to me of peculiar interest to the American people—that is,