(For the Scientific American.)

Muntz Metal for Bolts.

I feel much interested in the article in the last week's SCIENTIFIC AMERICAN, in relation to the use of Muntz metal, or compounds of copper and zinc for sheathing and bolting of vessels; having on several occasions noticed the deterioration of tenacity in brass rods, wires, &c., after being in use for considerable periods of time. Mr. Armstrong attributes the decay to electrical action, induced when Muntz metal or brass is exposed to the action of sea water, as the altered appearance of the metal sufficiently indicates; its nature seemed to be quite changed, having more the appearance of brown earthenware than brass. In the cases in which I have noticed the decay of tenacity in brass, the metal was exposed to the air, or at most to fresh water, and the metal in each instance had become crystalline, retaining, however, its metallic appearance. This change appeared to be due to irregularity of strain exerted on the brass, it having been long subjected to sudden, alternating, or jerking strains in the direction of its length. Sudden strains or concussions in the direction of length, tend to draw the molecules of brass apart, and perhaps, after a time, separate them beyond the sphere of their mutual attraction, and so impair the tenacity of brass wire bars, &c.

To test the truth or probability of the foregoing, the following experiment was tried:—About six years since my office bell was removed to the dwelling, about one hundred feet distant, and about eighty feet of very stout and good brass wire was joined to the end of the copper bell-wire attached to the handle, the brass wire passed through the yard for forty feet, then through a shed for twenty feet, and through another yard to the house, where the bell was hung. There were six bell cranks used for turning angles, and when the whole was finished, it required a pretty strong pull to ring the bell in the house. All answered very well for about five months, when the brass wire broke; with some difficulty, owing to the now brittle state of the brass wire, it was mended, and after a few more breaks and repairs, the greater part of the wire fell to the ground, and the whole of it became brittle, breaking when an attempt was made to bend it. The remnant of brass wire not used remained as good as at first. Small portions of the brittle wire were examined, and found to retain their tenacity in the direction of the diameter of the wire.

The instances in which this decay of tenacity was noticed, was in wire drawn brass, or perhaps it had been passed through a grooved roller; this is a subject worthy of a thorough investigation. In the above experiment the brass circular rims of the bell cranks were less stout than the brass wire, and were subjected to the same straining as the wire, yet they remained uninjured; now if the Muntz metal bolts are made by rolling or drawing through die-plates, will not this latent predisposition to weakness in wire-drawn brass cause the bolts soon to lose their tenacity, without any reference to the electrical action of sea water on the bolts? The sea water would probably act as a powerful accelerating force to help to destroy the tenacity of the brass bolts. It is not pretended that wire-drawn brass, when used for regular and gentle strains, amounting to a small fraction of the strength of the metal, will be seriously injured in any reasonable time. What is meant is, that brass bolts so prepared are probably unsafe, and that when subjected to the severe and uncertain straining they would be exposed to in ships, in foul weather, would soon become weak and useless.

J. T.

[This is very useful information on this subject. Armstrong also pointed out the deterioration in the sheathing, of ships and his inference was a very plausible one, namely, an electric action.

Wind Mills.

MESSRS. EDITORS—In No. 20, page 156, SCIENTIFIC AMERICAN, this sentence occurs:

"Mr. Curtiss intends to try his wheel (wind wheel) on a propeller, so as to try what wind can do with his sails in moving a vessel directly against itself."

This question arises: Will not the same force employed in turning the screw or the paddle-wheel to move the craft against the wind, be also exerted against the wind-sails in an opposite direction, so that the two forces will stand as equivalents in a mutual resistance; then add the force or amount of the wind against the vessel, and it will be driven to windward. Not long since, the same project was started in the vicinity of our Oneida lake, but I believe the inventor was reasoned out of the experiment.

Now, Sir, as you have just come out of the Ericsson furnace of hot-air, you are presumed to be posted in these matters, and we look to you for a solution of the question.

A. OSBORN.

Albany, Feb. 11th, 1855.

[As action and re-action are equal, the wind mill will not be able to propel a vessel directly against the power that drives it.

For the Scientific American.

Soup as Food, and how to Make it.

In your valuable paper of Jan. 27th—a number of which has just fallen into my hands—I notice an article with the first part of the above caption, which has induced me to say something on the same subject. With your comments on the extracts from the *Country Gentleman*, I most fully concur, and your exposé of the fallacy of the reasoning contained in it—if reasoning it can be called. But not on that, but on the making of soup I wish here to say something.

Really good soup is a dish very rarely to be met with—not because of the difficulty of making it, I presume, but because of ignorance in making it. There are very few cooks who know how to make it! The broth water, made by boiling a piece of beef, mutton, chicken, &c., a little while, and then taking it out, and stirring in a little flour or corn meal, is not soup, and does not deserve the name. To make good soup requires much boiling—some two or three hours, or more. And it should not be deprived of the meat when taken to the table, or at least all of it, used in making it, but the meat used should be chopped or cut up very fine, when put in the water to make it, and suffered to remain in it, or a good portion of the meat. It should also have the addition of vegetables, where these can be procured, which should also be cut up in it, when put on to cook, and a pod or two of red pepper, to season it with, which makes it much more healthful, particularly in cold weather.—And not any particular kind of vegetables, or one kind only at a time, but it will admit of having almost every sort put in it—and that too at the same time, or in the same dish. Generally speaking, the more you put in the better—potatoes, cabbage, onions, carrots, salsify, shallots, &c., all except beets, sweet potatoes, and perhaps a few others. Fruits, as apples, peaches, &c., are, of course, excluded, and belong, properly, to deserts. The reason for thus boiling soup so long in making it, is to extract the gelatinous portion of the meats—a most important and nutritious principle—and which gives the fine, rich, and peculiar flavor that renders it so palatable and nourishing—and which the "broth water" we have spoken of, has not. This, as is well known, is only to be extracted from meat by long boiling, and by its being divided into small bits. Hence bones, from which the flesh has not been too closely stripped, make the best soup, particularly the parts about the joints, where the ligaments and tendons are, as these contain the most gelatin. And the marrow in bones also add much to the richness and flavor of soup. They should be sufficiently broken or crushed. But the more gelatine the better the soup. There is also economy in the use of bones and bits of meat not fit for the table, and by leaving them in the soup there is no need of eating meat separately. These hints are given, in the hope that they may be beneficial, by A PHILANTHROPIST.

Paduch, Ky.

Linseed oil varnish is perhaps the best that can be used for protecting polished articles of steel.

Painting and Varnishing Carriages.

MESSRS. EDITORS—On page 131 SCIENTIFIC AMERICAN, there is an article on painting, which contains some excellent receipts, but near the close of it there is one which might lead some of your readers to spend their time and money for nothing. Your correspondent says, "Persons wishing to paint their carriages black should put on one coat of lead color, when dry, sand paper well, and finish with copal varnish and a little lamp-black." This will do very well for any article that is not exposed to wet weather. But every person who knows the nature of copal varnish knows that wherever a drop of water stands for any length of time, on any surface varnished with it, it leaves a white or grayish spot. Every person skilled in the art of coach painting will agree that copal varnish is not fit for carriages. Nothing should be used but the best quality of coach varnish.

J. R. G.

North Liberty, Ohio, Feb. 11th, 1855.

Grafted Chestnut Trees.

The Cincinnatti *Gazette* publishes an interesting letter from Mr. Sheldon I. Kellogg, to the Wine-Growers' Association, dated Bordeaux, France, on the cultivation of the chestnut. He says:

"I have been much surprised in seeing the great dependence the poorer classes make upon the large chestnut for their daily food. It is cultivated in this neighborhood in great abundance for this purpose. All classes use them more or less; the rich having them daily brought upon their tables as desert, either boiled or roasted. It is often made into a soup, which is highly esteemed. They are cooked in a multitude of ways, and I know of nothing of a farinaceous nature which is so very delicate and nourishing.

The marron, or large chestnut, is the produce of the wild chestnut after being engrafted. The wild tree, at three or four years of age, is cut square off, say four or five feet from the ground. The stump is then split twice. These splits intersect at right angles at the center of the stump. There is then inserted one good-sized branch of the same tree in every section of the splits, making four branches in each stump. Care is always taken to make the bark of the branches and the bark of the stump join each other as closely as possible. The graft is then surrounded with clay and moss, to prevent the outflow of the sap, and it scarcely ever fails of success. The period selected in this climate for this operation is the month of February. The produce of this graft is usually a fine, large, beautifully colored marron, about the size of our buckeyes. They are much more delicate in texture and flavor than our own wild chestnut. They are never eaten without being cooked. The tree is a very beautiful one, being, though not so high as ours, much more dense in foliage, and shading a larger space of ground."

[We have directed attention a number of times to the cultivation of the chestnut, and we publish the above hoping it will effect some good.

Prof. Agassiz on the Smithsonian Institute.

This distinguished man of science has addressed a letter to Mr. Upham, M. C., in relation to the controversy now raging about the management of the Smithsonian Institute, in which he sustains the course pursued by Prof. Henry and the present Board of Regents, and indirectly condemns the policy advocated by Mr. Choate. In the course of the letter he takes the ground that the Smithsonian Institute is not strictly an American institution, but that it was designed by its founder "to increase and diffuse knowledge among men." He also mentions a curious fact, bearing upon the present controversy, going to show that the testator designed that his bequest should be appropriated to the publication, rather than to the accumulation of books. He says that the whole bequest was originally made to the Royal Society of London, but afterwards transferred to the United States because the Society refused to publish certain scientific papers submitted to them for that purpose.

The Steam Fire Engine.

A steam fire engine, built in Cincinnati, at the shop of the Brothers Latta, and purchased for the city of Boston, was tested in this city on last Saturday morning. It was tested alongside of one of our best city engines, No. 42, and the result was a complete triumph of steam over human muscle.

The great and important feature in the steam fire engine is the rapidity with which steam is got up. On this occasion the time occupied from kindling the fire till the engine was working was only six minutes. It sent up two large streams, steady and full, far above the single stream of No. 42. The steam fire engine is destined to supersede the hand one in all our cities.

The Earthquake at St. Johns.

The news which we have received of the late earthquake in New Brunswick, as noticed by us last week, make it a more serious affair than we had imagined. In the city of St. Johns the shaking of the buildings was violent. The walls of brick buildings trembled, windows were broken, and the people greatly frightened, but no material damage was done. A shock as violent was felt throughout the same part of the continent about 38 years ago.

A New Potato.

A. B. Gray, during his recent explorations across the continent, for the purpose of ascertaining the practicability of constructing a railway to the Pacific, discovered a remarkable plant at the head of the Gulf of California, it being found in abundance through a range of naked sand hills skirting Adair Bay. It is described as a parasitic plant, with a large and fleshy root, and has been called "Ammabroma Sonoræ," signifying Sand Food of Sonora. The fresh plant is cooked by roasting upon the hot coals, and resembles the sweet potato in taste, having much saccharine matter in it.

Hickory Nut Oil.

The Toledo *Republican* states that hickory nut oil, considered equal to the best lard or sperm oil for burning and machinery, is manufactured by Mr. Warren Eastbrook, of Dayton, Ohio. The nut oil remains in a fluid state at very low temperature, and it does not "gum" like the ordinary qnalities of oil. It is used in very delicate machinery, and when properly refined could be used by watchmakers. Mr. Eastbrook believes that oil manufactured from the ordinary shell bark, and large sweet hickory nut, will come into general use for the table.

Pennsylvania Commissioners to the Paris Fair.

We have received a circular, issued by the Commissioners of Pennsylvania, who have been appointed by the Executive of that State to represent it at the Universal Exhibition in Paris. They invite contributions from artisans, mechanics, inventors, manufacturers, and agriculturists to the Exhibition, which will open on the first of May next. Pennsylvania should make a considerable show in Paris, as no less than ten Commissioners have been appointed.

Manufacture of Alcohol from Asphodel Root.

It has been observed in Algeria that the tuberous roots of asphodel yield alcohol, on fermentation, in considerable abundance. Its exact source is unknown, since the roots appear to contain neither sugar nor starch. The yield is eight per cent., or double the amount obtained from beet root. It is very possible that during the high price of alcohol, consequent upon the grape-blight, this new branch of industry may prove highly important.

Importing Turnips.

A vessel recently arrived at this port from Glasgow with 56 tuns of turnips. What are our farmers about that both potatoes and turnips have been sent over from Britain this winter.

By the most recent news from Europe, the British Ministry had resigned, and there was a tremendous flare-up in Parliament.