

## MISCELLANEOUS.

**ANOTHER IMPROVEMENT PROJECTED.**—It is well known that the main stream of the Nile is supplied by the great equatorial lakes of Africa, and that the annual inundations are caused by the inrush of torrent water laden with soil from the fertile slopes of the Abyssinian plateau in July, August and September. This silt is now for the most part being deposited in the bed of the Mediterranean, where it is gradually forming a new delta similar to the delta already formed at the river's mouth. Sir Samuel Baker has written to the *Times* suggesting a plan by which not only water of the Nile, but the mud which it now deposits wastefully in the sea, may be turned to good account as a fertilizer of the deserts of Nubia, Libya, and the Soudan. He proposes by suitable engineering works to divert a portion of the Nile flood-water into these deserts, where it can deposit its rich sediment on the sands, and also irrigate them so as to transform them from a desert into "cotton-fields that would render England independent of America." This could be effected by having suitable dams and sluices at different points of the Nile, say at the Cataracts. These dams and sluices, by enabling craft to pass the Cataracts, would also render the Nile navigable from the Mediterranean to Gondokoro, a space of 29 deg. of lat.—*Telegraph Journal*.

**IMPORTANCE OF BREAD.**—Bread is the foundation of human nourishment, and any attempt at improvement should begin there. Hundreds of years ago the importance of this was seen in France, and a society of physicians was organized, under the auspices of the government, "to improve the art of making bread," at first more especially for the patients in the hospitals, and afterward for the people at large as a matter of public hygiene. The labors were attended with good results, and from that time down to the present the knowledge became general, and the nation has uninterruptedly eaten good bread. Vienna bakers also furnish an excellent bread. What is sold in New York as French bread in most of the American hotels and restaurants is not much better than the American baker's bread, and bears no resemblance to French bread, as made in France, in taste, texture, or nutritive qualities. Through the inferiority of the bread made here, it is not as much eaten as it would be if better made. It is, when properly prepared, superior to any of the other vegetable products in nutritive qualities, and on it probably depends more than on any other aliment the mental and physical health of our people.

**RULES FOR ASCERTAINING REVOLUTIONS OF GEARING.**—To ascertain the revolutions of gearing: *Rule*: Multiply the number of cogs in the driver, by its number of revolutions, and divide the product by the number of cogs in the driven; the quotient will be the number of revolutions of the driven.

To ascertain the number of cogs in the driver, the number of its revolutions, and the number of cogs and revolutions of the driven being known: *Rule*: Multiply the number of cogs in the driven by the number of its revolutions, and divide the product by the number of revolutions of the driver; the quotient will be the number of cogs in the driver. So, *vice versa*, to find the number of cogs in the driven, its required revolutions being given.

To ascertain the diameter of cog gearing: *Rule*: Multiply the number of cogs by the number of thirty-seconds of an inch in the pitch—Example: A pitch of two inches has sixty-four thirty-seconds of an inch; say the wheel has 120 cogs,  $120 \times 64$  gives 76.80 (seventy-six inches and eighty-hundredths of an inch) inches, the exact diameter on the pitch line.

**IMITATION TERRA COTTA.**—The *Magasin Pittoresque* gives the following original recipe by which it is stated plaster casts may be made to imitate terra cotta ware with great fidelity. The following colors are necessary: brick red, lamp black, zinc white, and yellow ochre, all in powder. The object to be treated is first carefully rubbed over with "00" sand-paper, so as to remove all roughness of the surface or ridges indicating where the parts of the mould have been joined. The mixed color consists of yellow ochre 2 parts, brick red 2 parts, and black 1 part. These are well rubbed together. Then 3 parts of zinc white are separately mixed with a little milk to a paste. All the ingredients are then combined in a mortar with 8 or 10 parts of milk, and the resulting mixture is passed through a fine sieve to relieve any particles of the white. A soft brush is then used to spread the stain over the object, care being taken to lay it on evenly. After 24 hours' drying a second coat is applied. When the article is completely dry, rubbing with the finger will eliminate brush marks.

**NEW METHOD OF PRESERVING FISH.**—The flesh of fresh fish, either raw or boiled, is cut in thin slices and plunged in a bath of water strongly acidulated with citric acid. After two or three hours' soaking, the fish is removed and dried, either in the air or under moderate heat. In the latter case one hour is sufficient; in the former there should be an exposure of five or six days. M. D'Amelie states that fish thus treated will keep anywhere for an indefinite period, and that it becomes as hard as wood. To prepare it for use three or four days' soaking in fresh water is necessary.

**EMERY BOARD.**—Emery paper is considerably employed for cleaning and polishing metals, but all the kinds in use hitherto have the great disadvantage of not retaining an equal efficiency. The fresh parts bite too much, and the paper itself soon gets worn through in places. Emery on linen has been tried, but without much success. The emery paper recommended herewith is not a pasteboard with emery on both sides, but a board in which emery enters as a constituent part. Fine and uniform cardboard pulp must be procured, and from one-third to one-half its weight of emery-powder thoroughly mixed with it, so that the emery may be equally distributed. The mass is then poured out into cakes of from 1 to 10 inches in thickness. They must not be pressed hard, however, but allowed to retain a medium pliability. This paper will adapt itself to the forms of the articles, and will serve until completely worn out.

**BUTTER PACKING FOR TRANSPORTATION.**—At the commencement of the present century, Appert devised his well-known method of "bottling" butter. It answered admirably, but for some reason or other has completely fallen into disuse. Then M. Beon adopted the plan of covering butter packed in tins with a thin layer of water acidulated with tartaric acid, or with a solution of six grammes of tartaric acid and the same quantity of bicarbonate of soda in a liter of water, and soldering up the cases. This process, too, gave excellent results, and is still practiced by some large houses in Italy and by the Grande Compagnie de Copenhague.

**ANCIENT LIGHTNING-RODS.**—Dr. Munke quotes a passage from the "Talmud," written in the fourth or fifth century of our era, permitting the use of iron "as a protection from lightning and thunder." Wiederman, in an editorial note, says that the Egyptians seemed to have employed gilded masts "for warding off the bad weather coming from heaven."—*Annalen der Physik und Chemie*.

**CARBOLIC ACID ON METAL CUTTING TOOLS.**—The *Papier Zeitung* mentions that a Herr J. Asby strongly recommends the use of carbolie acid for moistening the tools with which metals are worked. The duty of the grindstone is even said to be increased by the use of the acid. The dark and impure acid can be used for this purpose.

**HOW A BOY HELPED THE GROWTH OF THE STEAM ENGINE.**—The steam-engine has now assumed a form that somewhat resembles the modern machine.

An important defect still existed in the necessity of keeping an attendant by the engine to open and shut the cocks. A bright boy, however, Humphrey Potter, to whom was assigned this duty on a Newcomen engine in 1713, contrived what he called a *scoggan*—a catch rigged with a cord from the beam overhead—which performed the work for him.

The boy, thus making the operation of the valve-gear automatic, increased the speed of the engine to fifteen or sixteen strokes a minute, and gave it a regularity and certainty of action that could only be obtained by such an adjustment of its valves.

This ingenious young mechanic afterward became a skilful workman and an excellent engineer, and went abroad on the Continent, where he erected several fine engines.

Potter's rude valve-gear was soon improved by Henry Beighton, and the new device was applied to an engine which that talented engineer erected at Newcastle-on-Tyne, in 1718, in which engine he substituted substantial materials for Potter's unmechanical arrangement of cords.—*Prof. Thurston, in Popular Science Monthly for December*.

**COLOURED INKS FOR STAMPING.**—The following are commended for the colours most frequently wanted for stamping purposes.—Red: Dissolve  $\frac{1}{2}$ oz. of carmine in 2oz. of strong water of ammonia, and add 1 drachm of glycerine and  $\frac{3}{4}$ oz. of dextrin. Blue: Rub 1oz. of Prussian blue with enough water to make a perfectly smooth paste; then add 1oz. of dextrin, incorporate it well, and finally add sufficient water to bring it to the proper consistence.