Science and Art.

Cocoanut Oil.

This oil is extracted from the kernels of the cocoa palm, by grinding, and pressure aided by heat. The palm tree which bears the cocoa is indigenous to the two Indian peninsulas, viz. the coasts, chiefly, of Malabar and Bengal, as well as to Ceylon, the Maldives, and Siam; it is also abundantly found in the Brazils. The whole Brazilian coast from the river San Francisco to the bar of Mamamguape, a distance of 280 miles, is almost entirely covered with it.

The cocoa palm grows to the hight of 60 or 90 feet, the stem is soft and fibrous and marked with rings, occasioned by the fall of the leaves, two of which are said to drop off every year. From 11 to 12 leaves, each 12 or 14 feet long, form a tuft at the top. The flowers proceed from within a large pointed spathe, which opens on the under side. In wet seasons the tree blossoms every five or six weeks, so that there are often fresh flowers and ripe nuts on the tree at the same time. There are 5 to 15 nuts in a bunch, and in good soils a tree may produce from 8 to 12 bunches every year.

The kernels yield about 60 per cent. of oil, and they are now imported in large quantities to Europe for the purpose of making soap and candles.

Early Rising.

Early to bed and early to rise,
Makes a man healthy, wealthy, and wise.

This is an old saying, and properly understood and practiced proves itself a verity.

A certain amount of sleep and rest are necessary as "tired nature's sweet restorer;" but for these the night was made—the day for wide-awake, active, energetic, systematic, constant labor. All, therefore, men, women, and children, should be up in time to behold "the rosy dawn of day." If any of our readers indulge in different habits—turn after morning light upon their beds like doors upon the hinges, hug their pillows, and fold their hands to a little more sleep, we insist upon a speedy reformation. If they need assistance let them get an alarm clock; and if that should fail to produce the desired effect, then we would recommend to them the new invention of a friend, who will soon be out with a patent bedstead, which is to be so constructed, with a spring that it will be wound up at the right bed time, and at daylight, precisely, will run down, capsize, and turn its occupant so roughly on the floor as to make him find himself getting up in time wide-awake for all day. Will the Scientific American put this in its list of applications for new patents.

[We extract the above from *The Arator*—a valuable agricultural journal published at Raleigh, N. C. A New Yorker has got the start of the North Carolinian in the capsizing bedstead. In No. 4 of the present volume Scientific American, we published an engraving of Houses' Patent Alarm Bed, in which the inventor is represented as undergoing the capsizing process.

At the last Fair of the American Institute this invention was exhibited to an astonished multitude. It was generally disapproved of by *lazy sleepers.*

Sea Waves and Sea Sickness.

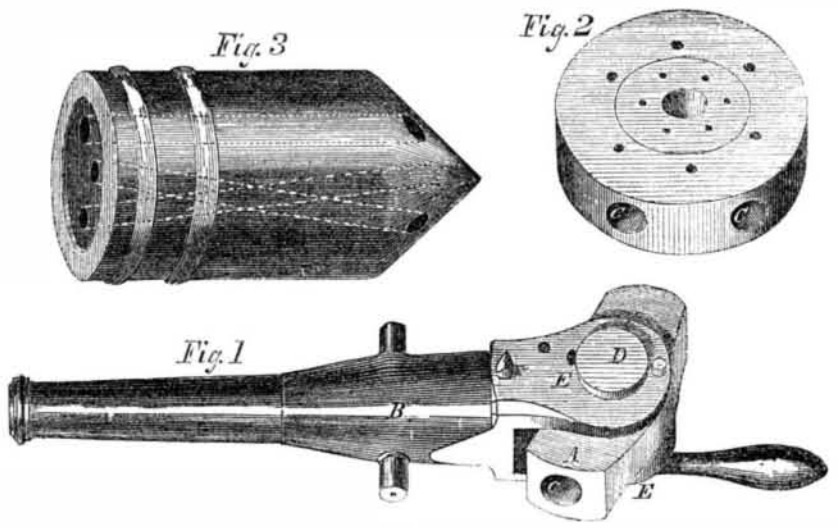
The old vague account of waves being "mountains high" was well known to be an exaggeration; but we do not think even philosophers were prepared for the statement made at a meeting some years since of the British Scientific Association by Dr. Scoresby that they averaged no more than 20 feet in altitude, and rarely exceeded 28 feet. The popular impression, principally produced by marine painters, that waves formed valleys thousands of yards across, down the sides of which ships slid as though they were about to be engulfed, seems to have been equally erroneous, as the maximum length of ocean waves, according to the same authority, is 600 feet, whilst in a moderate gale they are only 300, and, in a fresh sea, about 120 feet in length. A moment's consideration of these facts leads to the conclusion that long ships must have a great advantage over short ones with respect to the rapidity with which they make their journey, as it is quite evident that whilst the latter have to perform their voyages by making a series of short curves—much to the impediment of their progress, and to the discomfort of their inmates—the former by ruling the waves with their commanding proportions, make shorter and smoother passages. As steamers grow larger and larger, sea sickness must therefore gradually diminish.

American Steamboats in China.

A company of Americans in Canton are building two steamers to run upon the rivers of China, at first by way of experiment, and then to select that river for their future course which proves the most profitable to them.

The Chinese are a trading people, the population is teeming, and the country is full of towns, factories and fabrics of silk, pineapple rice, ivory, and porcelain, which must crown such an enterprise with signal success, if the exceeding jealousy of the people can only be overcome.

IMPROVED BREECH-LOADING CANNON AND SHOT.



Breech-Loading Cannon and Shot.

These improvements consist in constructing the cannon or piece of ordnance in two pieces, of wrought or cast-iron, or of any other material generally used for such purposes, but it is preferred to use wrought-iron, as being more suitable; one piece, A, forming the breech, or set of breeches, and another, B, the barrel.

The piece of metal forming the breech is made in the form shown in fig. 1, which has two chambers; or it may be made round, like a wheel, and contain several chambers, as shown by fig. 2. The cartridges are placed in the chambers, C. D is the pivot around which the breech, A, revolves.

The breech is secured to the barrel by means of a metal strap or band, E, and the breech is secured up to the barrel by means of a screw or other suitable arrangement, for the purpose of preventing the escape of the explosive power where the parts come together.

The improved shot or projectile is made of cast-iron and elongated, that is to say, of a length greater than its diameter, and it may be either made solid or with a hole or holes through the center, into which hole or holes is is put a thread, for the purpose of causing the projectile to revolve more or less during its flight by the action of the air upon the screw in its interior as it passes through the air. The hole or holes referred to may be either with or without a screw thread, as may be required.

To prevent the escape of the explosive power through the hole or holes during the act of firing, the patentee places behind the shot or projectile a small piece of iron or other material sufficiently strong to stand the explosive power, and slightly attached by means of wax or other means which will not be too strong to prevent its falling off when the projectile leaves the barrel—see fig. 3.

To prevent windage between the shot or projectile and the interior of the barrel, is placed a ring or rings of lead or other soft material in a groove or grooves cut or cast around the periphery of the shot or projectile, the ring or rings projecting sufficiently above the surface of the harder metal, to cause the soft metal ring or rings to fit tightly within the bore of the barrel when fired. Soft metal is used in this way, not only for the purpose of preventing any escape of air or powder whilst the projectile is passing along the barrel, but also for preserving the interior of the barrel from abrasion or injury by the action of the hard metal of which the projectile may be formed.—[London Engineer.

Water Pipe Incrustations.

In some parts of our country much trouble is experienced with the pipes which are employed to conduct water, filling up with incrustations. In Worcester, Mass., cast-iron pipes, 3 inches in diameter, laid underground for conducting spring water the distance of half a mile, have nearly filled up with scale in ten years. The water is clear and soft, and well adapted for domestic and manufacturing purposes, but the formation of scale on the interior of the pipes, and these laid underground where they cannot be conveniently reached, is a serious obstacle to their use for conducting it. Wooden, glass, and tile pipes might be used, but cast-iron pipes are stronger, and would be preferred to all others, were they not subject to encrust. A simple and cheap device or plan, to prevent the scale forming in these pipes, would be valuable information to those who use them.

The cause of incrustations forming, is a deposition on the sides of the pipe of mineral matter held in suspension by the water. This matter cannot be seen with the naked eye, but it is in the water or the crust would not form. The incrustation is simply crystalization, and the action of crystalization is what is called *polarity.* There must be a polar attraction in the interior of the pipes, separating the mineral mater in the water, atom after atom, until the pipe is nearly or wholly filled up.

The scale or crust when formed in the pipes may be removed with an acid, but this cannot be well applied to pipes underground. The grand object would be the preventing of scale forming. We do not know whether or not a counter polar current would prevent crystalization or scale forming in these pipes, but experiments can be made at but little expense. By connecting a large zinc plate with the pipes, by a wire, and sinking this plate in the moist earth, where it can be easily reached to be removed or cleaned, a voltaic current will be generated, and scale may be prevented forming in the interior of the pipe, on the well-known principle discovered by Sir Humphrey Davy, for preventing the decomposition of ships' sheathing, by attaching zinc plates to it. The experiment at least is worth a trial, because it is so simple and inexpensive.

Coal Locomotives in the West.

A report has been presented by James C. Clark, Division Superintendent on the Illinois Central Railroad, describing the economic results of using coal in locomotives in comparison with wood as fuel. He fitted up a wood burning locomotive for burning coal, and he made twenty-one trips with it, running 2310 miles. The expense for converting the engine into a coal burner was only $275, and the results have been gratifying. A wood-burning engine, running with it on alternate days, consumed 89 1-2 cords of wood in running 2310 miles, the cost of which was $389 32; the fuel for the coal-burner amounted to only 38 1-2 tuns, and cost $115 50—less than one-third that of wood. The cost of wood for all the other engines used on the railroad was in the same proportion.

The fire-box of the coal-burner did not appear to be the least injured by the twenty-one trips, and the grates were not warped in the least. The fuel was bituminous coal—that belonging to the Illinois coal fields. All our railroads will yet be driven to the use of coal for fuel; it is the cheapest they can use now, and the sooner they institute measures for its universal adoption so much the better for themselves.

An amendment to the Patent Laws, increasing the force in the Patent Office with two principal and two assistant examiners, passed the Senate on the 15th.