SCIENTIFIC MUSEUM.

Scientific Memoranda.

The English papers received by the late steamer state that a house in Westminster street, London, belonging to a carver and gilder, was set on fire and nearly destroyed by a meteor, which descended upon the roof in the shape of a ball of fire.

A Curiosity.—The Boston Traveller has received what it calls "a great curiosity of the fruit kingdom." It is an admixture of apple and pear, which grew on a pear tree, the branches of which mingled with those of an apple tree. The fruit has partially taken the color of the apple which grows upon the tree. It has the taste of the apple, but retains the shape of the pear. The apple which grows upon the tree is of a deep red.

Conveying Parcels in an Air Tight Tube.—An experimenter in Boston is now testing whether packages may not be transmitted through a tube, by means of atmospheric pressure. The Boston papers call it something new under the sun, but we heard the same idea broached more than two years ago, by a gentleman of this city, as among the possibilities of modern improvements.—[Philadelphia Ledger.

[The same thing was proposed nearly thirty years ago. We have a description of the plan in a work published in 1824.

Preservation of Fat and Oils.—An article in the Western Lancet, by Dr. C. W. Wright, of Cincinnatti, states that the hunters of Ohio, in ancient times, had a curious way of preserving their bear's fat from becoming rancid, by melting it along with the powder of fine shreds of the bark of the slippery elm—about a drachm of the former to a pound of the latter—and then straining it. The bark communicates an odor to the fat resembling that of the kernel of the hickory nut. Dr. Wright has subjected other fatty bodies, including butter and lard, to the same experiment, and in every instance, he states with success. Butter thus prepared, he says, was a year afterwards, as sweet and free from disagreeable odor as on the day it was made;—a fact, if it really be a fact, of no mean interest to house keepers and others.

[From the Southern Patriot.]

American Tea.

Since I informed you of the germination and beautiful growth of a good number of seeding tea plants on my plantation, I am happy to continue the report of increased numbers vegetating, of the sound and healthy condition of the seedings. Some of them are now from 8 to 19 inches in height, with a proportionable number of leaves. Having planted tea nuts every month during the last year, the result shows that they will germinate either in spring or autumnal planting, but a larger proportion of nuts planted in the autumn vegetate, than when planted at any other season of the year.

The excessive heat and drought of this season, have proved fatal to many nuts and some plants. The indispensable necessity of a more thorough irrigation is plainly demonstrated. The older and larger plants, transferred from the garden in the village, will now withstand the frosts of winter and the heat of summer. They have grown luxuriantly during the summer, and are now generally covered with blossom buds. The first full blown blossom appeared yesterday, others are just ready to open out, and in the course of a week the shrubs will have thrown out many, and they will begin to drop off. To these plants alone can we look for the first growth of American seed for future planting. I look at them, therefore, with more than ordinary interest, as the harbinger of great and expanding results from the planters of Carolina. I have just received a fresh supply, the whole of my annual importation of tea nuts from China, in the finest condition, of this year's gathering, and carefully selected by Chinese gardeners, employed and sent into the interior of China, at my expense, for that object only. A small quantity of these nuts will be spared for the use of those desirous of planting.

Junius Smith.

Greenville, S. C., Sept. 23, 1851.

Buffum's Centripetal Gold Amalgamator.

The accompanying engravings represent an invention of Mr. Arnold Buffum, which has been secured by patent. It is an application of principles hitherto not recognized, and for which the inventor deserves golden opinions, for he no doubt has hit upon the most simple and beautiful method of winning gold from the sand.

Fig. 1.

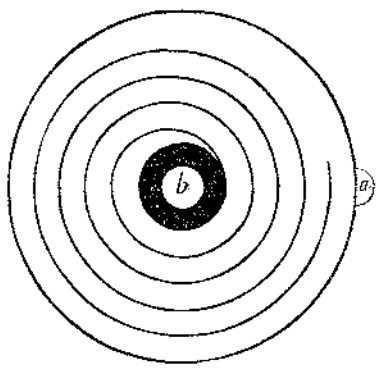
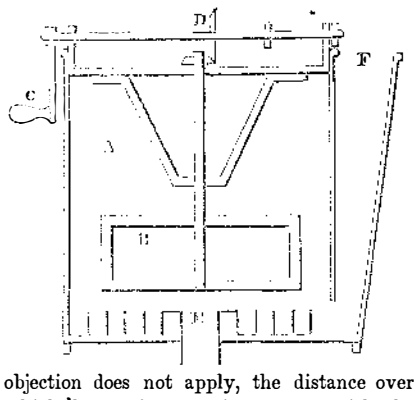


Figure 1 is a plan view of the bottom of the machine, and figure 2 is a sectional elevation. The vessel resembles one of the vertical paddle churns. It has a raised rim on its bottom in the form of a coil leading nearly from the entrance tunnel, *a*, to the central opening or escape, *b*, in fig. 1. In fig. 2, A is the vessel or cistern, and B is a revolving rectangular paddle or dasher; C is a handle to give it a rapid motion by the bevel gearing, D—the shaft is firmly secured at the sides, in proper bearings E is the vortex aperture, and F is the inlet spout. The gold sand, or auriferous deposits are put in at the spout, F, and the vessel is filled with water; motion is then given to the paddle, B, when the water rises on the sides of the vessel, but the sand passes from the circumference to the centre, into the escape channel, E.

It is uniformly conceded that, in the amalgamators now in use in all the gold mining regions in the world, there are faults which it is very desirable should be obviated: in those where rocking or shaking is relied on for floating the sand and washing it away, the quicksilver is constantly changing its position, and leaving parts over which the golden sand is passing, with no underlayer of quicksilver to absorb the gold; and in those to which this

Fig. 2.



objection does not apply, the distance over which the sand passes in contact with the quicksilver is so short, that a large per centage of the gold passes off with the sand. None of them are so arranged as to give the necessary action to the water to carry off all the impurities, so as to keep the quicksilver bare and clean for the absorption of the gold; and in all of them the operations are such that, with heavy iron sand, the quicksilver gets broken into globules, so that much of it is lost.

It is a mistaken idea that gold invariably unites with quicksilver immediately on coming in contact; on the contrary, it often passes in a current of water a distance of several feet on the surface of quicksilver, before a sufficiency of the quicksilver adheres to the gold to bring it into amalgam. An amalgamator for the fine scale gold in crushed quartz or in black iron sand, to be complete in its operation, must present a surface of quicksilver on which the compound passes in continuous contact, for a distance of not less than six or eight feet, and for rapid operation the distance must be proportionally greater; and the power of the current must be such that every thing which does not settle into the quicksilver will be washed away.

To construct a mechanical arrangement for this purpose, in such a manner as will most perfectly accomplish its design, the inventor must understand the philosophy and action of centrifugal and centripetal forces when applied to fluids: for, by a proper combination of these forces, the necessary action is brought to bear over such an extended distance on the surface of quicksilver, as to secure, at one operation, the amalgamatian of all the gold, wash away all other substances with rapidity and ease, and lose none of the quicksilver.

An application of momentum to fluids moving in a circular direction, gives centrifugal force; and on this basis, scientific writers have asserted that a whirlpool of water must carry every thing that is dependent on its momentum from the centre; this is an error resulting from an oversight of the fact that the centrifugal force in a whirlpool, confined within certain limits, as in a cistern, is greater on the upper surface than it is at the base. In a whirlpool produced by a horizontally revolving paddle in a stationary cistern, the centrifugal force throws the water from the centre and piles it against the sides of the cistern, forming an inverted hollow cone. The centrifugal force increases the elevation at the periphery, until the weight of the pile overpowers the centrifugal force at the base; the water continuing to go out from the centre on the upper surface, on reaching the periphery, sinks downward to the bottom, forcing that which was there before it to the centre, to be returned on the upper oblique surface to the periphery, making between the centre and the periphery a continual spiral movement, in the direction of the thread of a screw bend horizontally to a circle. The momentum imparted by the circular movement of a whirlpool to a solid substance on the bottom of a cistern, gives to the substance a centrifugal tendency, but the centripetal pressure of the water, from the elevated periphery of the whirlpool, is more powerful than the centrifugal force imparted by its circular motion, and consequently the solid substance is carried with the water spirally to the centre.

A practical familiarity with these facts, in direct opposition to the theory of scientific writers, has resulted in the construction of a very simple mechanical arrangement, consisting of a long quicksilver holding channel, coiled spirally on the bottom of a cistern, commencing at the periphery and ending at the centre, with a horizontally revolving paddle, suspended above the channel in the cistern. The feed of auriferous compound, commingled with water, is received into the cistern at the base of the periphery; the revolving paddle keeps the water in a rapid whirlpool motion, which carries the auriferous compound in the channel on the surface of the quicksilver, until the gold is all united in amalgam, and the said is discharged through an aperture at the centre of the cistern bottom. When the whirlpool is in operation, the centrifugal force gives a permanent support to the inverted hollow cone form of the whirlpool, in which the revolving paddle obstructs the escape of the water, by throwing it from the aperture at the centre, forward, outward, and upward to the periphery, when it reaches the periphery it sinks downward to the base, where, by the force of pressure it produces a centripetal movement, in harmony with the centripetal direction of the spiral channel.

If the mechanical arrangement were reversed, so as to receive the compound at the centre and discharge it at the periphery, the centrifugal force would throw the fine scales of gold outward and upward on the oblique surface of the whirlpool to the periphery, where it would pass off without any contact with the quicksilver but its reception at the periphery brings it into the whirlpool, where the movement of the water is downward, circular, and centripetal, so that a continued contact of the gold on the surface of the quicksilver is sure, from its entrance until it sinks in amalgam.

Machines constructed upon the principle set forth, according to their various sizes, are adapted for quartz mining, and for separating the gold from the black iron sand; the invention is a harmonious combination of mechanical devices, using the force applied to generate motion in two directions, generally called forces—centripetal and centrifugal—which, in this instance, perform a beautiful operation in a direction inverse to common opinion. This machine may be seen in practical operation at No. 25 Courtland street, this city, where more information may be obtained of the patentee, Mr. Buffum, respecting it.

Poisonings.

From a printed return of trials for poisoning or attempting to poison in England, Scotland, and Ireland during the last eleven years, we learn that the total number is 264; the whole number of parties whose lives have been taken or attempted to be taken by poison, is 243; the number of convictions is 74. The total Scotch cases is 15, of convictions 7; the total of Irish cases is 56, of convictions 13.

LITERARY NOTICES.

Class Book of Chemistry: By Edward L. Youmans, author of "A New Chart of Chemistry."—This work by Mr. Youmans is exceedingly opportune—such a book in the present state of chemical science, was demanded, but to present the science of chemistry, as it is now, in such a clear and comprehensive manner, in a work of the size before us, is more than we expected. The author has happily succeeded in clothing his ideas in plain language—true eloquence—so as to render the subject both interesting and easily comprehended. The number of men who can write on science, and write clearly, is but small, but our author is among that number. The work commences with "Inorganic Chemistry," and the Nature of the Science; it treats of all its principles, such as "chemical action," "chemical affinity," the "atomic theory," "crystallization," &c. It goes over the whole field, chapter by chapter, taking up and explaining the action and combinations of different substances, and to bring all to remembrance again, it has leading questions of the things explained, at the end of each chapter. It is divided into two parts, the latter treating of "Organic Chemistry,"—a science almost new in every respect, and still growing with astonishing rapidity. This part of the work is full of interest to everybody; it treats of Insalivation, Digestion, the Blood, and, in fact, the whole physical man, of which no person should be ignorant, but respecting which there is wide-spread ignorance. This book is adapted for schools and academies, and for popular reading. Its price is only 75 cents. Mr. Youmaas resides in this city.

The Ladies of the Covenant.—Memoirs of distinguished Scottish Female Characters, embracing the period of the Covenant and the Persecution, by Rev. James Anderson: J. S. Redfield, Clinton Hall, Publisher. This work is calculated to afford much pleasure to all who take interest in the initiatory steps which lead to the general spread of Protestantism in Scotland, in the 16th century. Such zeal and nobleness of spirit as was manifested by the Marchioness of Hamilton, and her cotemporaries, is deserving of all praise and emulation; indeed, the reward sure to follow earnest endeavors, when devoted to a good cause, remains a living memorial of them to this day.

Woman and her Needs: by Elizabeth Oakes Smith.—This is an interesting volume, just issued from the press of Messrs. Fowlers & Wells, 129 Nassau st. Price 25 cts.: mailable.