

## SCIENTIFIC MUSEUM.

## Agricultural Science.

**NIGHT SOIL—ITS VALUE.**—The best of all manures is one which in our country is almost wasted. In Belgium, where agriculture is carried to great productiveness, they "order things differently." There, the estimate is, by nice calculation, that it is worth \$10 per year for every individual, man, woman, and child. We traverse sea and land, send to Africa and South America to bring elements of fertility which at home we throw away on every farm in the country. What an immense amount is wasted in our cities! It must be the most valuable, containing the elements of all kinds of food consumed by man, and in returning these to the soil, we return the identical constituents which former crops and animals, had taken from the land. Night soil contains the phosphate of lime, which is indispensable to the growth of animals' bones and to the nutriment of plants, and which is not supplied from the atmosphere, like carbonic acid and ammonia. All fluid and solid excretions should be preserved by mixing them with burnt clay, saw-dust, ashes, peat or wood charcoal, &c.

**ASPARAGUS.**—In reply to the query of a "Lady Subscriber," the American Farmer recommends the following mode of renovating old asparagus beds:—

"The bed should be cleared of all stalks, grass and weeds, and then dressed with 7 parts rotten dung and 1 part ashes; the compost should be forked in between the rows carefully, so as not to injure the crowns of the root, then rake and strew salt over the bed with a pretty free hand. This done, cover the bed with straw, which should remain on until the plants get above ground next spring, when the straw should be carefully removed, and the ground given another top-dressing of similar compost, which should be forked in, and the bed receive another dressing of salt."

**SOAP-SUDS FOR VINES.**—A. J. Downing, editor of the Horticulturist, says:—"I have seen the Isabella grape produce 3,000 fine clusters of well ripened fruit in a season, by the liberal use of manure and soap-suds from the weekly wash."

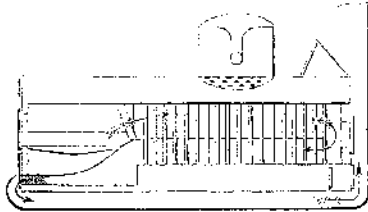
The effect of soap-suds on other plants is something surprising. A cypress vine, which had remained stationary for a fortnight, when about two inches high, immediately commenced growing after a good watering with soap-suds, and grew about six inches the first five days.

**CULTURE OF RICE.**—A correspondent of the Rome Courier, recommends the culture of rice in the low wet lands of the Cherokee country, and gives the following directions for its management:—

"I will endeavor to explain how to prepare the field; take one of our branches, the more level the better, with a spring at its head. Cut a ditch on the upper side and keep the water as much on a level as you can. To drain it above the field make a band with the earth excavated on the inner side. On the lower side, cut a larger ditch to carry off the surplus water from the drain. Divide your land by cross banks and ditches, so as to have an equal depth of water when the land is flowed. In each field you must have two trunks, one on the upper ditch to take in the water—the other on the lower ditch to let off the water. When your land is thus prepared, drill it with hoes, 15 inches asunder, and three inches deep; commence to sow about the 15th of April; put two and a half bushels gold rice to the acre; cover it with a bat. Then let the water on and allow it to remain five days. Should the weather be cold you can hold on for ten days. Then draw it off. Let the rice remain dry until the plant has four leaves; hoe, clean, and stir the earth deep below the rows, keep out the grass, and put on the water fourteen days, allowing the ends of the rice to be seen, draw it off, hoe again as often as convenient. Let the rice remain dry until it joints, then put back the water, and let it remain until it is fit for the sickle; occasionally changing it to prevent stagnation and sickness, and by the time the next season comes round, you will have a fine rice mill to prepare your crop for market."

**CHEAP HOT BEDS.**—Instead of expensive glass covered boxes, get little rough boxes made of wood and cover them with coarse cloth prepared as follows:—Stretch it and nail it on the top of the boxes, and make a mixture of common white paint and common varnish sold in any painters' shop, and lay it on with a brush. Two coats will answer.—Those who have little gardens can raise early tomatoes or other vegetables for a treat at but a small expense, by using such boxes. Any man can construct them.

On Boilers.—No. 18.  
FIG. 36.

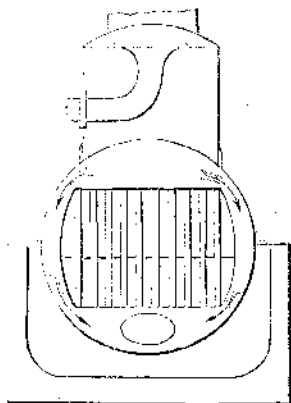


**MONTGOMERY'S BOILER.**—The accompanying engravings are a section length through the boiler, figure 36, and a cross section through the tubes, figure 37, of the boiler of James Montgomery, who secured a patent for the same in 1845, while residing in Tennessee. The course of the smoke to the stack is indicated by the arrows in the longitudinal section, but the circulation of the water in the cross section, figure 37.

His claim is the arranging the fire chamber or furnace of a tubular boiler at the side, so that the heat shall act on the upper half of the tubes, in combination with a diaphragm, or partition, and flue, to carry off the flame, heated air, &c., to act on the lower half of the tubes after acting on the upper half as described.

He also claims the making of the bottom of the boiler of a conical or dished form, with the mud or blow-off valve in the lowest part of the concavity, in combination with the vertical tubes communicating with the bottom, in the manner herein described, to permit the deposit of the sediment, there being a water space surrounding them, (the tubes), to induce circulation of the water up the tubes and down

FIG. 37.



the surrounding space, to wash the sediment towards the mud or blow-off valve, as herein described. From the annexed engravings the boiler will readily be understood. Its distinguishing feature is the use of the diaphragm, which, being placed about mid way of the tubes causes the fire to act as stated. Several of these boilers have been used in steam vessels of moderate size, and for stationary engines; they have given much satisfaction, causing a considerable saving of fuel, we believe, where they have been used in the place of other boilers.

At or about the time these boilers were designed, Mr. Montgomery surrendered his patent, and obtained a re-issue, dated August 15th, 1848. He claims as follows:—

"1st, What I claim as my invention is the employment of vertical, or nearly vertical water tubes for steam boilers or generators, that open into water chambers at top and bottom, which water chambers are connected together by a surrounding jacket or water space, made singly or in sections, to admit of the free circulation of the water, which, rising in the tubes by the effect of the heat, will descend in the surrounding jacket or external water space or spaces, and thus, by this circulation, carry off the heat from the tubes and prevent them from overheating, as described, when this is combined with the fire chamber, placed at the side of the boiler and outside of

the series of tubes, substantially as described, whereby the tubes are prevented from being overheated and unequally expanded to an injurious extent, and the water kept cooler in the jackets than in the series of tubes as described.

2nd, I also claim as my invention, in combination with vertical, or nearly vertical, tubes and surrounding water space or spaces, the employment of a fire chamber outside the series of tubes, and so arranged and located, substantially as described, as to apply the most intense heat at their upper ends and the reduced heat towards their lower ends, substantially as herein described, whereby a greater circulation and evaporation is obtained with a given amount of fuel than by any other plan known to me, thereby not only economizing fuel, but effectually preventing the incrustation of the tubes by the deposit of mineral and other solid matter as described.

3d, I also claim as my invention, the employment of the diaphragm or partition in the flue space between the series of tubes surrounded by the water space or spaces, and in combination therewith, to divide the same into two parts, that the products of combustion, after passing around the upper ends of the tubes, may pass around their lower ends, substantially as described, and thus more effectually expose the upper end of the tubes to a more intense heat than the lower, as described.

4th, And I also claim the making of the bottom of the boiler of a conical or dished form, with a wind or blow-off valve in the lowest part of the concavity, in combination with the vertical tubes, communicating with the bottom, in the manner herein described, to permit the deposit of the sediment, there being a water space surrounding them to induce circulation of the water up the tubes toward the wind or blow-off valve as herein described."

## Crying, Weeping, and Sighing.

Dr. James Wardrop, an English medical author of eminence, in a recent treatise on Diseases of the Heart, says that among the means to influence the circulation and relieve the heart, not in a poetical though proper enough sense of "the spirits," are crying, weeping, sobbing, sighing, coughing, sneezing, hiccupping and vomiting; that which we suppose to be a mental being in part a mechanical, or at least a physiological action.

Crying, which consists in a succession of violent and long-protracted expirations, will have the effect, by diminishing the circulation in the pulmonary arteries, of unloading the left heart and large arteries, of any surplus quantity of blood, caused by the action of the heart having been disturbed, whether by mental causes or from bodily pain; hence, the relief which those who suffer mental affliction or bodily pain, derive from crying—an act which is resorted to throughout the whole animal kingdom to relieve the heart from the hurtful effects of pain.

From the same cause arise the great languor to the circulation, and even the pernicious effects which have so often been known to follow the endurance of severe bodily pain without crying. A man who had no signs of great suffering during a military flogging, dropped down lifeless.

We see many examples of crying in hysterical women; and the screams which are made from fear or from mental agony, must have a powerful influence in unloading a congested heart.

Weeping, also, consists in irregular respiration, either with or without crying, is an effort or voluntary act made to facilitate the pulmonary circulation, and relieve that congestion in the heart which is caused by grief. Weeping, observes, Haller, begins with a full inspiration, after which follow short expirations and inspirations. It is finished by a deep expiration, and immediately followed by a deep inspiration.

Hence arise the baneful effects, and the sensation of fullness, "the fullness of heart," and even of pain in the cardiac region, so frequently experienced by those who have not wept when the mind has been greatly agitated.

Sighing appears also to be a movement employed by nature to relieve the heart from

congestion. The full inspirations which are made in sighing, by withdrawing the venous blood from the head, will assist in restoring the balance of the circulation, both within the head and chest, when it has been destroyed by some violent mental emotion or bodily pain.

## Important to Railroads.

The patent issued to Truscott, Wolfe & Dougherty, March 17th 1838, for cast-iron car wheels, with double plates, solid hub, and chilled rim, on which an extension for seven years, has been severely contested at Washington before the Patent Office, was rejected on the 17th inst., by the Commissioner. The decision of the office being that it ought not to be extended.

Senator Seward lately argued a case under this patent before the Supreme Court of the United States, and the court decided in favor of the patent.

This made the contest for the extension spirited, and about twenty-five railroad companies in Ohio, New York, Massachusetts, and Connecticut, and other New England States, entered their opposition to it.

The counsel on both sides conducted the case with ability. Keller and Browne appearing for the patent, and Wm. W. Hubbell, Esq., of Philadelphia, for the opposition. The case involved at least a million of dollars. —[Pennsylvanian.

This wheel, we believe, was sold by the inventors and patentees for a mere song—it enriched others—private persons, not the inventors—let the inventors look for pay to those who reaped the benefits of their invention.

## LITERARY NOTICES.

**AMERICAN RAILWAY TIMES.**—This is a large weekly journal, issued on Thursdays, well filled with matter concerning every element of the Railway System, viz. financial management, construction, depreciation, improvements in running and machinery, and every other subject connected with the general economy of the system, furnished from the pens of the most intelligent engineers and practical railway men in the United States. It likewise contains intelligence upon all the railway enterprises of the country; statistical tables of receipts, expenditures, and income; reports of railway law cases; movements of money and trade; review of the money market; prices current of stocks, etc., etc. John A. Haven, Editor. Price \$3 per annum. Haven & Jones, publishers, 27 Devonshire st. Boston, Mass.

**THE MASONIC JOURNAL.**—This is an able monthly magazine, published at Marietta, Ga., edited by J. B. Randal, M. D. and I. N. Loomis, A. M. It is devoted to Masonry, Science, and Literature. It is a valuable periodical to the members of the craft, as it gives the news of the State and progress of Masonry in all the States, and the world.

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