# Correspondence

## The Boiling of Water and Steam-boiler Explosions.

MESSRS. EDITORS:—I have read with much surprise an article originally published in the *Providence Journal*, and republished in the SCIENTIFIC AMERICAN (on page 196, current volume), upon boiling water freed from air being a cause of steam-boiler explosions, and I have also read your editorial comments upon that article, on pages 201 and 217. Believing that the article has a direct tendency to mislead engineers, and would, if adopted as a theory for steam-boiler explosions, be productive of the worst consequences, I rely upon your uniform courtesy heretofore extended to me, to publish my protest against sending abroad such a theory, and especially supported as this is by the sanction of the SCIENTIFIC AMERICAN.

In my opinion, in ninety-nine out of a hundred explosions, the cause is directly the consequence of low water in the boiler; in other instances defective boilers, either in form, workmanship, poor material, or injury from rust or use, but then seldom if ever with great violence. It requires immense volumes of vapor generated inside of the boiler so suddenly that the safety valve cannot relieve it finally to burst the shell by which it is confined. The effect of low water in a boiler is to lay bare and uncover the internal surfaces, flues, &c., leaving them exposed to the action of the fires from the furnace passing around and through them; if this is continued these surfaces become unduly heated, and, of course weakened, when, by some change in the position of the boat or by lifting the safety valve to force water into the boiler, or lifting the valve to start the engine, water is thrown over these heated plates and steam is suddenly generated; and if there is more steam generated than the boiler can hold, it must burst; this is generally determined within two or three revolutions of the engine. In this lies the plain, simple and unmistakable cause of explosions. It cannot be evaded, denied or controverted; it may be attempted to mystify it by wise-drawn theories of "boiling water freed from air" bursting into terrific explosions—based upon a doubtful statement of a little-known Donney, who has since sunk into obscurity.

The effect of opening a valve upon a steam boiler can hardly be appreciated by the uninitiated. The rush of steam and water toward the opening in such cases affords a spectacle of the greatest interest. Every engineer ought to provide himself with a glass boiler, or a boiler with a glass dome, to witness this remarkable exhibition. He will then see how water may be thrown over the heated flues of a boiler, and how steam may be suddenly generated in sufficient quantity to produce explosions of the grandest character. Every engineer of any practical experience knows how fast water will waste away in the boiler while the vessel is lying at the dock. He knows that it rapidly disappears, no matter how apparently tight the boiler may be; the pump must be worked to make up this almost unaccountable waste; if it is not, as in the recent case of the steamboat *Crary*, he will sooner or later be reminded of it in peals of thunder, not to be mistaken. In reference to this particular theory of water freed from air being likely to explode on being converted into steam, let me say that there is hardly one boiler in a thousand where the feed-water to the boiler is not freed from air in passing through some kind of heater. The very effect of boiling water frees it from air. To prove this, take a sample of water thus heated, and after it is cooled, put into it a live fish; it will die instantly, simply because the atmospheric air, which is necessary to its life, has been expelled.

In condensing engines, where the water is taken from the condenser, it is freed from air pretty perfectly, because it passes into a vacuum instead of escaping, as it does in the non-condensing engine, under the pressure of the atmosphere. Now, first, we are told to provide some perfectly pure water, freed from air, in a perfectly clean glass vessel, and apply heat equally to every part of the bottom, &c.; then we are told that no ebullition will take place until reaching a temperature somewhere from 220° to 300°, and it will then explode; and from this very questionable assertion we are asked to believe that this is a true explanation of the cause of steam-boiler explosions.

I contend, in the first place, that the statement is not true; if there is any difference, it is so small as to be a matter of no moment one way or the other. I would much rather, if there is any truth in it, adopt the views of M. Magnus (see Bourne's last edition on the steam engine, page 80), that pure water, without any admixture of foreign particles, has its boiling point slightly above 212°, whilst water with particles of dirt may boil at 212°. There is an approximation to the pure water freed from air, in boilers using water from surface condensers, and it is absurd to suppose they are any more liable to explosion than others.

Let me introduce proof of the soundness of my views of the cause of steam-boiler explosions—no more conclusive and satisfactory proof, in my opinion, can be required:—Congress, in 1852, passed laws to provide for the better security of the lives of passengers on board of vessels propelled by steam. At that time explosions were of almost every-day occurrence, and sometimes of such frightful character that the country became justly alarmed, and this law was passed to prevent them, if possible. In this law there is a provision that the water in the boiler shall never be allowed to fall to less than four inches above the flues. Penalties of the severest character were to be inflicted upon engineers who should, under any pretext, be guilty of violating this provision, and masters and owners are punishable for navigating a steamer without ample provision at all times to keep up this supply. What has been the result? Why, steam-boiler explosions are almost unknown where they were once so common. Among licensed engineers, and upon inspected steamers, scarcely a single explosion in the whole country has occurred during the last year, and for the last ten years very few. In every explosion that has occurred, the investigation has proved it was from low water. All intelligent engineers now understand this well enough, and it is useless to attempt the revival of any fossil theories to excuse the ignorant or reckless engineer from the performance of his proper duties—no others are likely to have explosions.

A. GUTHRIE.

Chicago, Ill., April 20, 1863.

## Is the Sun a Habitable Sphere?

MESSRS. EDITORS:—The sun's envelope, according to my observations, is composed of three layers of different characteristics—the outer photosphere or luminosity, the underlying penumbra of a greyish color, and a thin cloud stratum. These three layers lie upon contiguous plains, like the coatings of an onion; the two first as a compact material of about equal thickness, and each of about the same thickness as shown by their edges when a spot breaks through, as that of the edges of the lines of feculæ seen on the luminous surface. The third or cloud stratum is superficial in thickness, and resembles a diffused fleecy cloud, dusky in color, and when a spot breaks down through this cloud stratum, which is not always the case, such portion of the spot is of an intense black, by contrast with the color of the cloud stratum. Feculæ lines do not rise above the luminous surface, as frequently named, but are only the edges of the depressed luminosity, when that breaks through the whole or part of its thickness, preparatory to exhibiting the penumbra beneath, which is generally followed by a parting of the penumbra also, and the formation of a spot. Over the whole luminous surface of the sun, not temporarily occupied by spots, or areas within concentric fecula lines, there appears a network of depressed meshes, slightly darker than the dividing ridges, which gives a finely-divided net-work appearance to the general surface. The luminous surface or photosphere of the sun is probably electricity (positive), developed in virtue of being the center of a system of revolving planets and satellites; the sun imparting this positive or repellant electricity to all the planets and satellites, and receiving in return from them, when exhausted of its positive character, negative or attractive electricity; thus reciprocally maintaining the planets and satellites in their required orbits, and inexhaustibly maintaining a supply of light and heat, without possible change or extinguishment. If light existed as such in the photosphere of the sun, then it would be developed in space, darting off to the separate planets and satellites of our system, which would be visible at night from our globe, and thus prevent nocturnal darkness of the heavens or earth; but as no such appearances present themselves, it therefore follows that this photosphere or luminously-appearing surface of the sun is but the undeveloped storehouse of light and heat—not really active or developed until its electric materials reach the planets and satellites. Doubtless a similar development of light and heat from the same central photosphere, or Leyden jar of our system, is also projected upon the body of the sun, beneath those two underlying envelopes; the intermediate penumbra and cloud stratum probably serving to screen the body of the sun from an excess of this contiguous store of electric light and heat, thereby maintaining a perpetually-softened daylight and equable heat over the whole habitable surface of the sun. Such data, derived from observed phenomena, as named, and rational deductions therefrom, probably give to our primary (the sun) characteristics more enjoyable for animal life than any conditions for such obtainable upon any of the planets or satellites; beside which, the greater dimensions of the body of the sun, exceeding that of all the planets and satellites combined, probably embodies a proportionately grander system of physical features than that of any of the planets, therefore embracing those additional charms for intellectual residents.

CHARLES E. TOWNSEND.

Locust Valley, N. Y., April 20, 1863.

## A Churn Power wanted.

MESSRS. EDITORS:—Do you not know of some real practical and useful invention for saving the labor of churning, which, at the same time, will avoid the unpleasantness and inconveniences of the various machines moved by animal power, now in use? Perhaps there is no kind of work done about a farm that, in proportion to the results attained, requires so much time and hard labor as churning by hand, and this labor is often required on days when other duties are very pressing and laborious; as, for instance, washing days and baking days, when but little time or strength can be spared for it. To avoid this difficulty many resort to the use of machines propelled by dogs, calves or sheep. But oftentimes those animals cost more trouble than they are worth for such purposes. Their use in warm weather is very disagreeable, and not unfrequently cruel, and if we carefully estimate the expenses, the inconveniences and the unpleasantness attending their use, their utility for farmers generally must appear quite questionable. It seems to me, therefore, that if some person could invent a power that would relieve a weary care-worn housewife from the unpleasant necessity of imposing the task of a two hours' churning upon a tired husband as he returns from his day's labor, he would richly deserve to be styled a "public benefactor."

J. B. SCHOOLEY.

Wyoming, Pa., April 13, 1863.

[Here is a chance for the energetic inventor to proceed forthwith. Who will invent the desired power? Who will reap the praise and pence of the overtaxed farmers' wives? We can testify fully to the unutility of calves for the duty, both biped and quadruped, and we think some other motor more desirable and efficient. Animals for churn-driving are hard to train, bad to catch when trained, and nearly useless after caught and trained, and with all these objections we think few will have the temerity to mention brute force in connection with the subject. Let us have some positive movement, gentlemen inventors, that will stand hard usage, and we doubt not, as our correspondent remarks, but that you will be rewarded. Some progress has been made in this line of invention, *vide* SCIENTIFIC AMERICAN during the last fifteen years.—EDS.]

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IT has been ascertained that, in China, black and green tea grow on the same bush; the difference in color and quality is attributed to the age of the leaf when picked.

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A COMPANY has been formed in Chicopee, Mass., with a capital of $100,000, for the purpose of manufacturing leather goods and hardware.

**The Electric Light.**

The following condensed extracts are from a lecture lately delivered by Professor Frankland, F.R.S., before the Royal Institution, London :—

"The electric light is produced by the interruption of an electric current flowing through good conductors. By this interruption the current is made to leap across a space provided for its passage in order to make its circuit. The limits of this space, in what we ordinarily term the electric light, are made by two portions of carbon or charcoal, in a peculiar form, capable of conducting the current with great facility. During the passage of the electric current across a space of this kind, the most intense heat is generated; and the two pieces of carbon, which are made the terminals, are heated to a degree far beyond that produced by any other means. The great source of illuminating power is obviously the ignited ends of the two pieces of gas-carbon, between which the electric current is passing. Such being the nature of the electric light, the first of the improvements which have been effected in it during the past ten years consists in the production of the electric current through the intervention of heat and mechanical force, by what is termed magneto-electricity. More than thirty years ago, Mr. Faraday produced a spark from the ordinary permanent magnet. The improvement constitutes one of the greatest steps in advance which has been made in the application and production of the electric light. By the combustion of coal a certain amount of mechanical power is obtained, which is applied to the rotation of masses of iron in the neighborhood of very powerful magnets. In this way currents of electricity are produced, and these are thrown together and made to circulate through a system of conductors, just as the electric light apparatus. There is no difference between the action of this electro-magnetic apparatus and the ordinary electric current produced by the chemical action which takes place in the voltaic battery. But this improved mode of producing the electric current demands less manual labor; in truth, the mechanical work is all performed by a steam engine, of greater or less power, which causes the rotation of these armatures. The electric current is thus obtained and is transmitted between carbon points. This mode of producing the electric light has been now in use for a couple of years or more in the South Foreland and Dungeness lighthouses, where it has performed its office without a single instance of failure; thus proving itself well adapted for the purposes of light-house illumination.

"For domestic illumination the light has not yet been brought into use; its expense, doubtless, at the present moment, being far too great to admit of its being employed in this way; but where a light of great intensity, regardless almost of the question of expense, is required, as in the case of lighthouses, this magneto-electric light can scarcely be too much prized.

"In addition to this improvement, we have also numerous methods for preserving the light more constant and steady than could be done during the first years of the application of this form of illumination. These improvements are of a purely mechanical nature. We have one example by which the carbon prisms are kept at a proper distance for the current to strike between them. Dubosc's arrangements are also much used; here a system of clock-work effects the same object; so that, as the carbon points wear away by oxidation, they are gradually made to approach one another; and thus the light remains constant. Another mode of effecting this has been devised by Mr. Way, who employs mercury as the material between which the electric current leaps across, in the place of carbon; and, in this way, he obtained a light which enabled him to dispense with a great deal of the complicated machinery necessary to render the electric light, as developed between prisms of carbon, as constant as could be desired.

We have here a lower vessel containing mercury, into which one of the wires of the battery dips. Allow a stream of mercury to run down into the cup placed below; and this stream will bridge over the space for the moment, and enable the electric current to pass over from one of these portions of mercury to the other, in order to complete the circuit. During this passage, the heat will convert the mercury into vapor, which will become incandescent, and give a powerful light. The flickering, which is the characteristic of this mode of illumination, is produced by the constant interruption of the current and of the light for a moment. It is painful to look at; and scarcely seems capable of replacing any of the forms of electric illumination, on account of this flickering, and because the light obtained from incandescent mercury vapor is very inferior to that obtained between pieces of carbon. Probably, the intensity of the former is not more than $\frac{1}{20}$th of the latter; so that there is not much chance of this mode of electric illumination coming into general use."

**The Alpaca, Llama and Vicuna in California.**

We learn from the *California Wine, Wool and Stock Journal*, that the United States sloop-of-war *Cyane* lately arrived at San Francisco with one male llama, a male alpaca, and two (male and female) vicunas. A female alpaca died on the voyage from Lima, S. A., to San Francisco, Cal. The object of bringing these animals to California is for the purpose of acclimating them. Commodore Bissell, of the *Cyane*, also brought several samples of the wool of such animals with him. These have been presented to the Wool Growers' Association, in San Francisco, and Mr. T. Rowlandson has read a paper on the subject before the California Academy of Science. The following interesting extracts are taken from it :—

"The llama has long been known to the students of natural history, as the earliest explorers of Peru have made mention of their docility, great powers of endurance under heavy burdens, and their ability to carry 125 pounds fifteen miles per day over mountains and rugged roads. They will live where mules will perish for want of food, and they will be very serviceable as carriers in developing the mineral resources of the numerous mines on the elevated sierras. The vicuna is known to Californians by the Peruvian hats made from its silken coat. The alpaca was but little known out of its native country until about thirty years ago, when a few bales of its wool were sent to Messrs. Joseph Hegan & Co., of Liverpool, England, who at once went largely into its importation, and being a firm of princely pecuniary means, the importation of alpaca wool immediately assumed a most important magnitude. Mr. Titus Salt was the first that devoted his exclusive attention to the perfection of its manufacture, some of which alone or mixed with silk, forms enduring and elegant dresses. The great market for this particular variety of fabric is South America, where the senoras and senoritas give a preference to it over all the species of silk or other silk mixtures for female clothing. Since the first introduction of alpaca wool for the manufacture of a textile fabric, a race has taken place between the producer and manufacturer, in which, from the gradually-increasing price of the raw article, it would appear that the manufacturer is gaining ground; this renders it, therefore, the more desirable that the raising of these animals should be vigorously set about. They are docile and produce fleeces of from 8 to 12 pounds each, worth, according to color and fineness, from seventy-five cents to one dollar per pound. The meat is said to be good, and the hide tans into a superior leather for harness purposes.

"According to the classification of the best naturalists, the alpaca, llama and their congeners belong more to the camel family than the goat or sheep; for although the hoofs of the South American animal are cloven, the same soft, pad-like character found in the Eastern camel is perceived on the hinder part of the hoofs of the South American variety, whilst the fore parts of the feet in the latter terminate in hard, talon-like curves, which are exceedingly useful to the llama species in climing abrupt rocky acclivities which a mule would not attempt, and where a goat would fail. In the resemblances between the camel and the llama tribe which have been enumerated, it has also been asserted that the digestive and masticatory organs have a considerable affinity to each other. They are very fond of the wild oats of California, and will probably thrive well in that State. They have already been acclimated in Australia and Scotland."

FLAX seed for sowing should be of the previous year's growth, and it should be plump, heavy, glossy, of a uniform size and a clear brown color. All seeds of a light drab color should be rejected.

**A Laughable Lottery.**

The prizes drawn at the Sanitary Gift Concert were partly distributed, yesterday, from the rooms, 54 Wells street, Chicago. The place was thronged from morning until night by young men and old, little girls, young damsels, old ladies—all ages, sexes and nationalities—Michigan-avenue brushing Kilgubbin, and Araminta jammed into the crowd with Biddy, the kitchen girl. The distribution was exceedingly ludicrous and afforded material for a volume of fun. A blushing young damsel from the country, evidently on her first visit to the great city, went home to gladden the rural hearth-stone with half a barrel of white fish. A prominent pork-packer drew a box of soap. A venerable old lady, with expectant eyes peering through her spectacles, handed in her ticket and went off with a bale of Killikinic tobacco. A Michigan-avenue heiress astonished her lady shopping friends by going down Lake street with a box of Havana cigars. A ragged little *gamin*, with a bundle of newspapers under his arm, drew a Greek lexicon. A prominent Sunday-school teacher was astonished to receive "The Adventures of Dick Turpin" and "The Female Pirate Captain, or the Scourge of the Atlantic." A bulky, jolly, spectacled grain-merchant got a bottle of "Hutchin's Diarrhea Exterminator." A highly-indignant feminine Milesian came in for a bundle of tracts. A homeopathic doctor went off with a bottle of the "Wizard Oil." A fireman on the *Little Giant* got "The Private Diary of a Devout Clergyman." And thus it went all day. The streets were filled with old bachelors, with perplexed countenances, carrying to their upper chambers boxes of pearl starch, and cream of tartar; young ladies with packages of bicarbonate of soda, cigars, and chewing tobacco; lawyers with nests of pails; staid deacons with the latest editions of yellow-covered blood and thunder; grain men with patent medicines, and newsboys with lexicons. It spoke eloquently of the infatuated worship at the shrine of Fortune. Her devotees are of all ranks and conditions, and in her presence the millionaire and the drayman, the snob, snob-ess and scullion, go down with their delicate or brawny knees into common dirt.—*Chicago Tribune.*

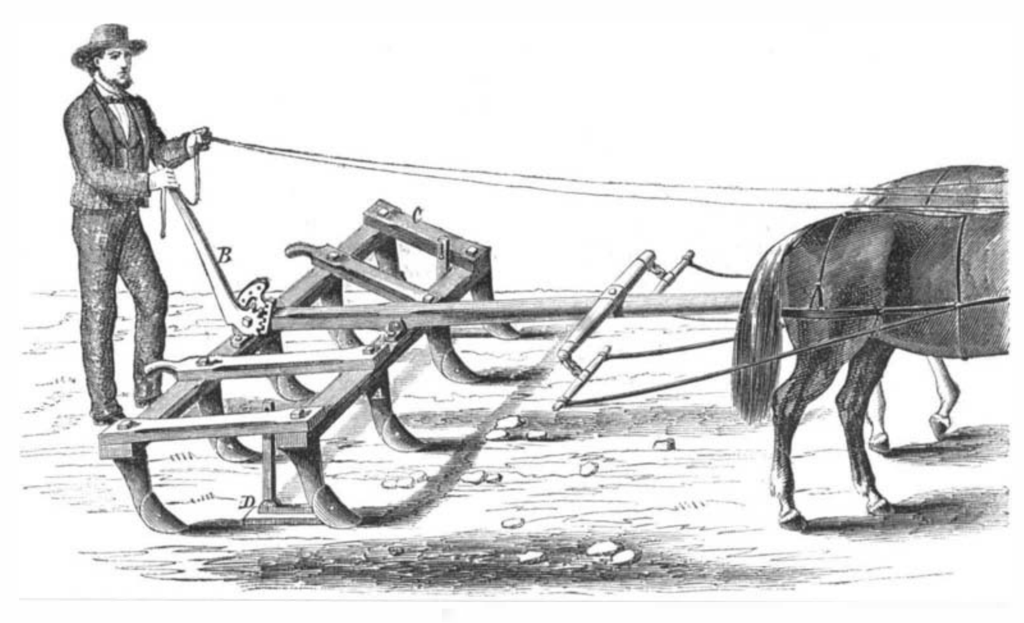
**Peculiar Gunnery Experiments.**

Some novel gunnery experiments were lately made at Shoeburyness, England. The first consisted of trials to ascertain how far a method now rather in favor among French artillerists, by which a series of holes, about an inch in diameter, are bored through the substance of the cannon near its muzzle, and permitting a quick escape of gas, to diminish its recoil, affects the service of the piece as to range and accuracy. The experiments were made with two brass 9-pounder ordinary smooth-bore field-pieces, loaded with the usual service charges and spherical shot. Five rounds were fired from each gun in succession. They were then shifted, so that each occupied the platform which had been used by the other, when again more rounds were fired. The general merits of the performances of each gun could be seen at a glance. The recoil of the ordinary gun was, in round numbers, just twice as great as that which had the holes bored round the muzzle, while the range and accuracy of the latter were scarcely more than half as good as that of the common piece. The lateral escape of gas and flame through the side holes of the French gun, was very great. One-half of the force of the explosion evidently escaped through the side holes before the force of the powder was expended on the shot, and virtually, therefore, the barrel of the gun is shortened by as much of its length as is thus perforated. As a general rule, the recoil of the gun is always in exact proportion to the force it exerts in propelling the shot, and anything which takes off from this recoil, by allowing the gas generated by the explosion to escape before it has done its work, just diminishes by so much the range, and, therefore, the accuracy of its fire.

FRESH discoveries are continually being made at Pompeii. In February the excavators brought to light the remains of a family group, consisting of a man, two women and a young girl. The bodies had decayed, but the hard mass around preserved their forms, and by pouring in plaster-of-paris an exact cast was procured, exhibiting the unhappy victims as they were struck down in their efforts to escape.

### Improved Cultivator.

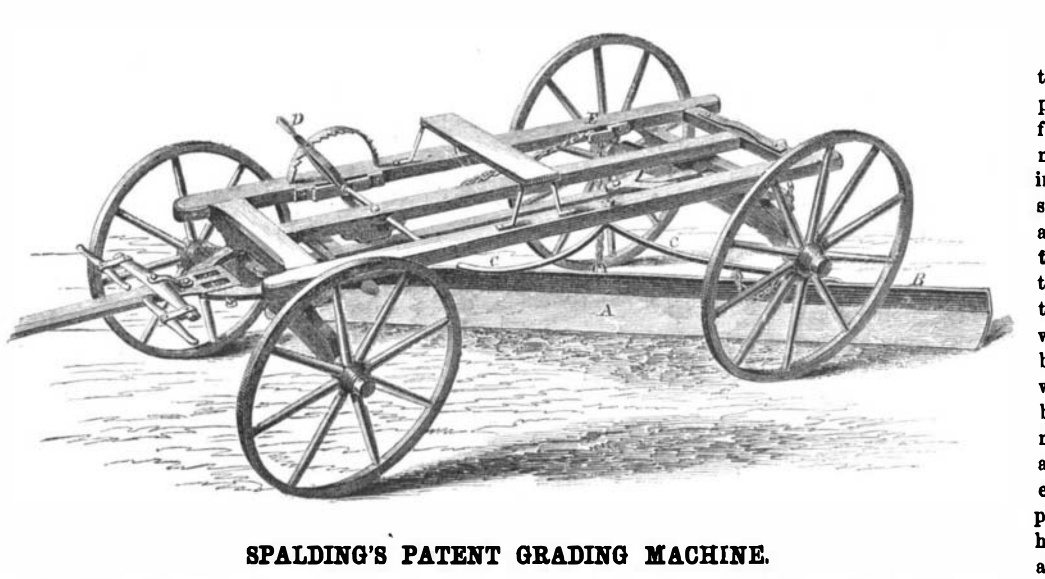
The object of this invention is to obtain a cheap cultivator, of light draft, that shall embrace all the good qualities of the common two-horse wheel cultivator; and at the same time be betteradapted to the culture of orchards, vineyards, and hopyards, by dispensing with the wheels and regulating the depth to which the implements work from the bottom of the furrow. A tool is thus produced that can be drawn close to a tree or plant without injuring it. When the distance between the trees or plants is not sufficiently wide to admit of working two horses, the pole can be removed and a pair of thills inserted. When it is desired to have the teeth, A, penetrate to their greatest depth, the lever, B, is depressed; this causes the back part of the frame, C, to rise, consequently the shoe, D, is elevated from the bottom of the furrow, permitting the cultivators to penetrate the earth until the back teeth are brought on a level with the front ones, and the shoe again presses the bottom of the furrow plowed. Or if it is desirable to have the cultivator work near the surface, the lever is raised, thus throwing the back end of the frame down, making a fulcrum of the back end of the shoe, and causing the cultivator to be inclined upward, until it again finds its level. It then passes smoothly along and is not disturbed by small elevations or depressions in the surface of the earth. The patent for this invention was obtained through the Scientific American Patent Agency on June 10, 1862; further information respecting it can be obtained by addressing the inventor, P. S. Carhart, Collamer, N. Y.



CARHART'S PATENT CULTIVATOR.

### Improved Grading Machine.

The roads in the country are the great highways of the people, and unless they are kept in good condition much loss ensues, both pecuniary and moral; for it is always a source of reproach to any community when they suffer their avenues of communication to fall into a disordered state. The machine herewith illustrated is designed to aid those engaged in the business and is also adapted to other purposes. It consists in the attachment, to an ordinary frame wagon, of the scraper, A. This scraper is made of iron, and is fastened to the wooden beam, B. This beam is connected with the wagon by a series of brace rods, C, in such a manner that, while they secure the scraper from detachment when at work, they also permit of an elasticity of movement which prevents it from being brought into contact with stones or obstructions of any kind. The forward part of the scraper has a plow end, not seen in this view, which permits it to enter easily into the loose earth to be removed, and the hight of the scraper is regulated by the lever, D, rack and chains working over the pulley, E, on the side of the wagon frame. This apparatus can be easily attached to any farm wagon, and we are assured by the inventor that it works admirably. The machine was patented, on March 3, 1863, through the Scientific American Patent Agency, by William Spalding, of Port Clinton, Ohio, from whom further information can be obtained.



SPALDING'S PATENT GRADING MACHINE.

### THE CULTURE OF TOBACCO.

The following are some interesting and apparently practical instructions, condensed from the *Michigan Farmer*, as communicated by a cultivator of the weed:—He states that the latter end of April or early in May is the time for sowing the seed in the Northern and most of the Western States. Connecticut tobacco seed is best for Northern cultivation, and the sixteenth of an acre of ground devoted to its culture will supply the personal wants of any farmer who indulges in its use. The soil should be put into good tilth—plowed deep and rendered quite mellow. A light sandy soil or loam, well supplied with rolled stable manure, raises the finest tobacco. A strong-flavored tobacco is raised from what is called "a rich strong soil." A quantity of wood ashes mixed with the soil kills insects and promotes the growth of the plants.

First of all, a seed bed is made; and the seed for sowing is mixed with ten times its weight of fine earth and some wood ashes. The seed is then sprinkled evenly over the bed and it is not raked in, but simply beaten down gently with a spade. This seed bed should be in a sheltered position, and when the plants start they should be covered with a little straw every clear night until all signs of late frost have departed. When the plants are about five inches high they are fit for transplanting. A cloudy or rainy day is best for this operation. They should be set out about two feet apart each way—three feet is the Virginia rule. But, before the plants are set, a small quantity of rolled stable manure should be placed in the spots intended for each, and the earth drawn towards them to form small hills. The plants must be hoed as often as is necessary to keep down the weeds, and a sharp look-out must be kept for the "tobacco worm," which delights in committing ravages on this plant. This worm is about one and a half inches in length, and should be looked after every day.

When the plant begins to head it should be immediately cut back, so as to leave from six to ten leaves; suckers then begin to spring out at the junction of the leaf and stalk, these should be nipped off (some, however, let them grow until six inches long, then pick and dry them, thinking them more choice for various purposes than the larger leaves), as if allowed to exist they will take much from the full development of the main leaves.

Planting is done in May, hoeing and overlooking in June, July, August and September; cutting and housing in October; in the other months, pulling the leaves off the stalks. In the Southern plantations a man and woman are allowed three acres to manage. When ripe the stalk should be cut off near the ground. When tobacco is ready to cut up, it must be attended to, or it will spoil; especially if frost is expected there should be no time lost.

Tobacco of commerce is generally divided into three qualities. The lower leaves or those which touch the ground, are liable to get dirty and torn; but on the higher parts of the same stalk two different sorts of leaves are generally found, one yellowish and one brown. These should be carefully separated and put up in bunches somewhat thicker than a man's thumb and tied round with a thong made of the leaf itself. The bunches should be slung in pairs across poles and put in the drying-house. Too much heat will spoil the whole crop. More depends upon proper drying than any other part to determine its market value. The heat of the drying-house should be moderate and the drying should be slowly conducted. The very finest qualities of leaf tobacco will be destroyed if they are subjected to a high heat in the drying-room.

### MAPLE SUGAR.

When cane sugars obtained such extraordinary prices in the market we fondly hoped that the mildness of the season, the increased advantages in the shape of evaporating pans and other appliances in the way of manufacturing, together with the attention and importance which was given to the subject by the press generally, would have resulted in bringing the article to market in such quantities as to compete with foreign sugars. Our anticipations in this respect have been disappointed, and though it is now the hight of the sugar season, we have only observed very small lots, held chiefly as confectionary, and sold at the *moderate* rate of thirty cents a pound. We do not know whether the article is catalogued in the Internal Revenue bill as sugar or confectionary; if the latter, there is a large difference in the amount accruing to the Government between it as an article of luxury or one of necessity; and those charged with the execution of the laws would do well to consider the matter. Maple sugar at thirty cents a pound will hardly compete with Havana sugar or be considered as indispensable by a majority of the people. Perhaps the trees themselves afford less sap than formerly—on account of the war. Is it so?