

Science and Art.

Valuable Discovery of Gum.

A few weeks ago we noticed the discovery of great fields of gypsum, and great supplies of gum arabic, at the head waters of Red Brazos, by the expedition of Captain Marcy. Since that period, the *Washington Star* has published some correspondence of Thos. L. Drew, Superintendent of Indian Affairs, and Dr. Shumard, physician to the expedition, describing the gum. Dr. Shumard says, in relation to it, "This gum, for which I propose the name of gum mezquite, is believed to occur in inexhaustible quantities, and will no doubt prove a valuable source of revenue to the State of Texas, New Mexico, and the adjacent Indian territory, besides affording employment to the different tribes of Indians now roving upon the plains, many of whom would no doubt be glad to gather and deliver it to the different frontier posts for a very small compensation.

The mezquite tree, from which this gum is obtained, is by far the most abundant tree of the Plains, covering thousands of miles of the surface, and always flourishes most luxuriantly in elevated and dry regions. The gum exudes spontaneously in a semi-fluid state from the bark of the trunk and branches, and soon hardens by exposure to the atmosphere, forming more or less rounded and variously colored masses, each weighing from a few grains to several ounces. These soon bleach, and whiten upon exposure to the light of the sun, finally becoming nearly colorless, semi-transparent, and often filled with minute fissures. Specimens collected from the trunks of the trees were generally found to be less pure and more highly colored than when obtained from the branches.

The gum may be collected during the months of July, August, and September:—but the most favorable period for that purpose is in the latter part of August, when it may be obtained in the greatest abundance, and with but very little trouble. The quantity yielded by each tree I found to vary from an ounce to three pounds; but incisions in the bark not only greatly facilitated its exudation, but causes the tree to yield a much greater amount. As it is, a good hand will probably be able to collect from ten to twenty pounds in a day. Were incisions resorted to, probably double the amount may be obtained."

Mr. Drew says respecting it, "The remarkable similarity of taste, appearance, and mucilaginous qualities of this gum to that of gum arabic, induced Dr. Shumard to make some experiments, the result of which proving satisfactory, he caused some twenty pounds to be gathered, which was brought home on his return some ten days past.

Upon diluting one ounce of this gum in two ounces of cold water, I had a fine glutinous paste, which I have used in sealing envelopes and other packages. I have also caused it to be mixed with starch in the application to linen, and in both instances have no hesitation in saying that it is equal to the article for which it must soon become a popular substitute. In its first form the Indian Department, you will perceive, is permitted the privilege of its first official use. It will be seen that its adhesive or glutinous qualities cannot be excelled, as I have sealed up the box with it and will use it on the outward envelope."

Our constant readers will remember that we have oftentimes urged travelers and exploring geologists to search for new natural products in our forests, asserting while we did so, that new gums, resins, substitutes for gutta percha and india rubber, might be discovered. This new gum is the first fruits of such explorations, and perhaps, by the Rider process of vulcanising gutta percha, it may be adapted for making water-proof fabrics. Not one tith of the natural riches of our extensive country have been developed yet.

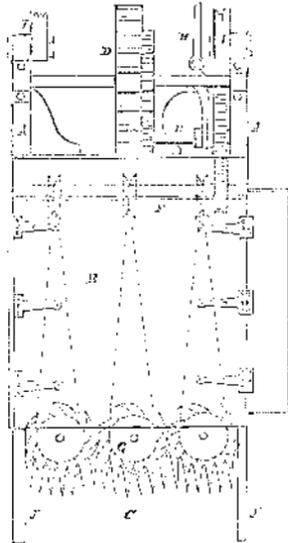
Drying Potatoes.

The *Country Gentleman* states that M. Bollman, professor of an agricultural institu-

tion in Russia,—by experiments extending through three years, from 1850, has demonstrated that the drying of seedling potatoes is a sure preventive of the rot. They should be dried in a room at a temperature of about 100°.

History of Reaping Machines.—No. 9.

FIG. 28.



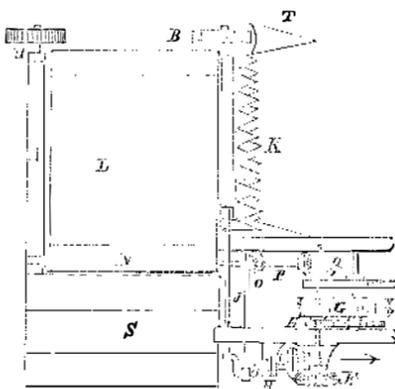
In July 1852 the *Practical Mechanic's Journal*, of London, gave an account of a reaping machine registered for Mr. Mason, of Ipswich, which we illustrate by the annexed figure, 28, representing a plan view.

This machine differs from its celebrated American cotemporary in having rotary cutters.

The frame, A, to which the shafts for drawing the machine are attached, carries a floor or platform, B, with hinged flaps at the sides, and carrying on its front edge a series of combs or teeth, C. The opposite end of the frame carries bearings for a cross shaft, at the center of which is a traveling wheel, D, having attached to it a spur wheel for actuating the pinion, E. The shaft of the latter carries a second wheel, in gear with a second pinion on the shaft, F, beneath the floor.

The latter shaft has upon it three pulleys, communicating motion by means of endless chains or bands to the three horizontal pulleys fast on the shafts of the horizontal rotary cutters, G. The cutters are capable of being disengaged at pleasure by the lever, H, and sliding clutch. The shafts or guiding handles, by which the machine is directed, are broken away at I I, the machine being traversed by the drag links, J J.

FIG. 29.



From the September number of the same journal, we extract the following account of a reaper registered for Messrs. W. Wray & Son, of Leeming, and illustrated by figure 29.

Our engraving is a plan view of the machine. It is built up from a timber framework, A, carried on the running wheels, B C. The cutters are actuated from the large front carrying wheel, C, the shaft of which carries a spur wheel, D, driving a pinion, E, fast on the short shaft projecting from the frame, and having on its end the bevel wheel, F. Hence the motion is conveyed by a bevel pinion, G, so as to drive the double crank shaft, H; each crank having a connecting rod, J, passing across the frame to the two long transverse cutter blades or knives, K. These knives slide horizontally on fixed guides, and being serrated in the usual manner, they are so set one above the other, that when at work and moving in contrary directions, each serration acts as a pair of shears. Thus as

the machine travels forward against the standing grain, the cutting edges form their own abutment for the stalks during the severing action; and the stalks cut exactly as they stand, fall upon the endless traveling web, or carrier, L. This carrier cloth is extended over a pair of rollers, M N, and is made to travel continually at right angles to the path of the machine by the roller, N, the spindle of which is connected by a universal joint at O, with the shaft, P. The opposite end of this shaft is connected by a pair of bevel pinions, Q, and a pair of spur wheels, R, with the shaft of the running wheel, C. The carrier cloth travels in the direction of the arrow, and keeps up a stream of cut grain upon the delivery board, S, whence the grain is raked off by hand whenever the accumulation amounts to the necessary quantity for a sheaf. At the front outside corner of the framing a dividing iron, T, is fixed for denoting the line of cut. The horses are harnessed to a pole attached to the narrow frame in which the front runner, C, is set.

Grape Culture and Wine Manufacture in Ohio.

The *Cincinnati Gazette* contains a long and interesting article on the grape culture and wine manufacture in that vicinity. It appears that in 1846 there were 83 vineyards in the neighborhood of Cincinnati, containing 248 acres under cultivation, and 114 bearing, and although the crop the preceding year was but a partial one, twenty-four thousand gallons was the yield. In 1852, twelve hundred acres were in cultivation, seven hundred and fifty bearing; the annual yield was supposed to be five hundred thousand gallons, and the value of sparkling wine alone, \$175,000. A bushel of grapes will make from three to three-and-a-half gallons of juice. Mr. Buchanan commenced planting his vineyard in 1843; in 1850, from three acres he realized, besides the cuttings, 1,640 gallons of wine.—In 1853 he obtained from five acres 4,326 gallons, or 847 gallons per acre. In particular spots there have been obtained 800 gallons from an acre, but 650 gallons is considered a large yield. The demand for Catawba wine is far ahead of the supply, and the quality is constantly being improved, both by the cultivators and those who prepare it for market.

Elliott the Aeronaut Outwitted.

The *Richmond (Va.) Dispatch* of the 3rd inst., states that Mr. Elliott having made arrangements for a balloon ascension from that place, was prevailed upon by a young man named Carrier to allow him to make a brief ascent by cords. Carrier having got into the ear, soon rose above the heads of the multitude, when, to the astonishment of every spectator, he cut the cords which held the balloon to the earth, and sailed rapidly off towards the sky. The disappointment of Mr. Elliott, who was anticipating a magnificent aerial voyage, so affected him that he fainted. Carrier succeeded in making a safe descent, very much to the surprise of everybody, but his conduct was condemned by every right-thinking person.

Pillar Letter Boxes.

A simple and efficient plan for facilitating the posting of letters in the most populous parts of London has been adopted. It consists of placing pillar letter boxes along the leading thoroughfares, at intervals of half a mile or thereabouts. These hollow pillars will be fitted for the reception of letters, and fixed on the footway, in such a position as not to obstruct traffic of any kind, and the Post-office Department will itself bear the whole cost of construction and erection. The letters are to be taken out every hour, so as to continue the present admirable system of the London Post-office, whereby any letter posted within three miles of the General Post-office, is delivered to its address within a period of not more than two hours from the time at which it was deposited in the letter box.

The Largest Mill in the World.

The *Lowell (Mass.) Journal* says:—The largest and most comprehensive mill in the world is the *Pacific*, at Lawrence. It makes none but the finest kinds of goods, and the success of its operations is looked to with

great interest by manufacturers. The floor surface of this immense structure is sixteen acres—the largest mill in England is eleven and a half acres. There is now in operation 40,000 cotton spindles, and 10,000 worsted spindles; and these are to be increased to 80,000 and 20,000 respectively. There are 1,200 looms in operation, to be increased to 2,400. These, with two thousand hands, produce 300,000 pieces of cloth per annum, one-half de laines. The weekly consumption of cotton is 20,000 pounds, say 1,500,000 per annum, and 500,000 pounds of wool. Once a month the two thousand hands assemble at the cashier's office, where Mr. Clapp pays out to them \$50,000 for wages, appropriating to each one the exact amount she has earned.

LITERARY NOTICES.

THINGS AS THEY ARE IN AMERICA.—By William Chambers, Editor of Chambers' *Edinburgh Journal*.—During the latter part of the year 1853, Mr. Chambers paid a visit to this country, and the observations here presented were published in his journal. The writer is evidently a close and careful observer of men and things, and his sketches are very free from that narrow-mindedness which has characterized most of the English tourists who have visited and written about us. In Mr. Chambers' opinion we are neither heatheathish nor extraordinarily refined, but we are a stirring, active, and enterprising people, in some respects ahead of our transatlantic brethren. Every American, and especially every foreigner should read Mr. Chambers' "Things as they are." Price 25 cents. P. D. Orvis, publisher, 130 Fulton st., New York.

A NEW HARMONY AND EXPOSITION OF THE GOSPELS.—Consisting of a parallel and combined arrangement, on a new plan, of the narratives of the four Evangelists according to a continuous commentary, with brief notes subjoined. Being the first period of the Gospel history, with a supplement containing extended chronological and topographical dissertations, and a complete analytical index, by James Strong, A. M., Carlton & Phillips, 200 Mulberry street, publishers, New York. The above is the comprehensive title to one of the most complete harmonies of the Gospels ever published. The work contains nineteen beautiful illustrations of the Holy Land, rendered divinely sacred to the Christian as the chosen spots where our Savior performed some of his mighty works. These, added to the clear and perspicuous commentary of the gifted author, render it a work of uncommon interest to all who love the teachings of the Gospels. Most of the illustrations are full page colored lithographs, and are well done. The typography is bold, clear, and inviting to the eye. It is sold at the very low price of \$3.

THE MUSICAL BOUQUET.—Containing grand selections for the piano forte from the opera of *La Favorita*, by Donizetti. Price 12½ cents, just published by P. D. Orvis, 130 Fulton street. It is the intention of the publisher to continue the *Bouquet* regularly.

The second number of "The Musical Bouquet" contains the celebrated laughing song "A la buffa," "Pop goes the Weasel," and the favorite Scotch ballad "Hey Johnny Cope." Price 12½ cents. P. D. Orvis, Publisher, 130 Fulton st., New York.



Inventors, and Manufacturers

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