

CULTIVATION AND MANUFACTURE OF OSIERS.

A writer in the Boston *Advertiser* says that the osier, or basket willow, is a very profitable crop, and can be grown upon lands too wet and cold for ordinary crops. He says it will yield from two to four tons, green, per acre—worth \$40 per ton—and, peeled, it has been sold as high as \$200 per ton within two years.

Without indorsing entirely his statements, it is an indisputable fact that the osier can be made a very profitable product of the farm, even when the manufactory is distant from the place of production. After being once fairly started it will almost take care of itself, requiring only the attention necessary to its cutting and preparation for the manufacturer. It is tenacious of life, is not frost killed, and, after the second year, continues indefinitely to yield an ever-increasing amount. It is easily cultivated from cuttings, and, keeping the soil mellow and free from weeds and grasses the first two or at most three years, it asserts its supremacy and adheres as tenaciously to the soil as the Canada thistle.

The principal obstacle to its general cultivation is the labor of peeling it, a work that must be performed at or near the locality of its growth. The shoots are cut after the ground is frozen, to prevent the roots from being pulled from the soil in the act of cutting. They are bound in large bundles and placed in a tank, or on a level piece of ground, supported in an upright position, and water to the depth of two or three inches is allowed to flow over the butts. After standing until spring, the stem has absorbed water enough, by capillary attraction, to render the removal of the bark easy. This is done by drawing the shoots through a split sapling or between two upright pieces of iron. This is a labor of patience and cannot be slovenly performed. Although machines have been devised for the work, they have not, we believe, proved entirely satisfactory. The attention of our mechanics and inventors is directed to this fact.

The osier is largely used in the manufacture of chairs, settees, baskets, sleigh and wagon bodies, and even tables, and is capable of being applied to a diversity of purposes. We have seen summer cottages furnished almost entirely of willow ware—chairs, tables, sofas, lounges, etc. Large amounts of the raw material and the manufacture are imported into this country, principally from Germany, but within a few years the manufacture has been successfully prosecuted here on quite an extended scale.

One of the largest, if not the most extensive, manufactories of the osier, is at Hartford, Conn. It is one of the enterprises of the late Col. Samuel Colt, and consists of several large buildings for the work, and a village, the houses of which are imitations of Swiss cottages, giving a very picturesque aspect to the locality. The osier is grown upon the sloping sides of the dykes, built by Col. Colt to resist the annual floods of the Connecticut, upon the banks of which the manufactory stands. The osiers were first planted there principally as a protection to the earth work, a service they admirably perform, their roots forming a close network on the surface and penetrating the soil several feet, binding the whole mass completely together. For this property osiers are largely cultivated on the Holland dykes and subserve a very useful design. In England they are employed in the formation of hedges, the pliability of the shoots rendering the formation of an impenetrable wattle feasible.

Direct Trade with Europe.

The experiment of direct trade between Europe and the Upper Lakes has proved so successful that it is now being constantly repeated, and, did our Provincial canals admit of it, would be carried on on a much more extensive scale by vessels of the largest tonnage. The mineral regions along the shores of Lakes Huron and Superior are even yet but partially known and tested; and we are satisfied that their full development in the process of time will give rise to an immense trade, much of which will be direct with Europe. Already we observe that the proprietor of the Bruce and Wellington Mines, on the north shore of Lake Huron, has decided on having a large share of the copper shipped directly from the mines to England. A Mr. Taylor, of Lon-

don, England, who is, we believe, proprietor of the Bruce and Wellington Mines, has been working them with such vigor of late, that the ordinary means of sending the copper from them to Europe via the Northern Railway steamers and road to Toronto, proves altogether insufficient. The steamer *Algoma* has been making regular trips all seasons (three times a month) between Collingwood and the principal points on Lakes Huron and Superior; and another steamer, the *Wabuna*, has also partially traversed the same route, but limiting her trips to the Sault Ste. Marie; and these two boats have, we are informed, had a very successful season, being loaded down with freight and passengers. The *Algoma*, which only accommodates some fifty passengers properly, has had to carry as many as ninety; and her freight, particularly on the return trips, is altogether more than she is able for, even with the aid of the *Wabuna*. The Bruce mines alone could frequently, we are told, load her with eight times the quantity she takes. This state of things has induced Mr. Taylor to open up direct trade with England. He has, we are informed, dispatched three vessels from London to the mines, the first of which arrived there last week after a very successful run. She carried some iron to Chicago and some coals as ballast, which latter she discharged at the mines, where she was, at last accounts, being rapidly loaded with her copper cargo for England.

This is one of the many evidences which come to hand of the growing magnitude of this Upper Lake trade, and it gives us great pleasure to chronicle the extension—gradual though it be—of the commerce of this great mineral and lumber region. Successive explorers have, time and again, repeated the story of the almost inexhaustible mineral wealth of this section, and we are glad to note each increased effort to develop its riches. In the export of breadstuffs and all the *et ceteras* of housekeeping to the mineral and lumbering districts hereabouts, as well as the carriage of passengers to and from the mines, several American steamers and sailing vessels now find remunerative employment, and there is room for more.

With its immense mineral, fishing, and lumbering interests, this upper country possesses a mine of wealth which has been hardly touched, and the richness of which, when fully developed, can scarcely be over-estimated.—*London Weekly Report on the Iron Trade.*

[It might be added that the productions of the Western Pennsylvania oil wells will soon reach Europe by vessels direct from Erie, Pa., arrangements having been perfected in Europe last winter by a committee of gentlemen from that city for the conveyance of the crude and refined petroleum direct from Erie to Liverpool and Bremen.—EDS.]

Newspaper Enterprise.

THE NEW YORK DAILY SUN, the pioneer of cheap newspapers, comes to us in a much enlarged and improved form, with new type, etc. Its time-honored motto, "It shines for all," is handsomely realized in its present appearance. There are few newspapers that enjoy so large a measure of the public favor, or that are so truly adapted to the wants of the great industrial classes—the bone and sinew of the country. Its extremely low price, *two cents*, places it within reach of the humblest citizen, to whom it daily brings the latest and most interesting intelligence from all parts of the world. The same telegraphic news, word for word, including the dollar-a-letter Atlantic cable dispatches which are published with so much parade in the larger papers, is to be had for two pennies every morning in the *New York Sun*. This lively paper is a shareholder in the famous New York Associated Press, and therefore receives for publication duplicate copies of the telegraphic dispatches which appear in the other city papers. Who would pay four cents for news which they can always have for *two* in "The Sun?" Not the intelligent working people.

We observe with pleasure that Mr. Joseph P. Beach, long and favorably known in connection with the public press, is announced as Editor-in-chief of the *Sun*. Mr. Beach is one of the active, industrious workers who are always to be found at the post of duty, making their mark for good in the

community, and striving to help forward, with noble vigor, the cause of humanity and truth.

Three Processes for Preserving Meat.

The perfect preservation of fresh meat in warm countries offers such a remunerative field to the successful inventor, that many methods have been proposed for its accomplishment. In an official report laid before Parliament on the preparation of beef in South America, for the English market, three methods, proposed by Prof. Morgan of the Royal College of Surgeons in Dublin, Baron Von Liebig, of Munich and Mr. Sloper, of London, are to effect this end.

Mr. Morgan's process is based on forced infiltration, using the circulatory system of the body as a means of introducing in the tissues of the animal, by injection, a preparation the constituents of which have not yet been made public. The process is simple and efficacious; by it an ox can be preserved in ten minutes, using from twelve to fourteen gallons of the fluid.

Liebig's process differs essentially from the former, for the meat, instead of being preserved whole, is reduced to an essence to be used in making soups. The concentration is carried to such an extent that thirty-three pounds of meat are reduced to one pound of essence, and the alimentary matter of an entire ox is contained in eight pounds of this preparation, making over one thousand basins of good, strong soup.

The remaining process, patented by Messrs. McCall & Sloper, professes to preserve meat in its fresh or raw state, arriving at market in the exact condition of butchers' meat just killed, but with an additional advantage of keeping twice as long as ordinary meat, after being exposed to the air. The curing process is based on the extraction of oxygen from the vessel in which the meat is packed. Tin cans are used in putting up the meat, in which a vacuum is formed to be filled by a certain gas, the composition of which is kept a profound secret. The only difficulty of this process, in some respects superior to either of the preceding, is, that the smallest opening in the tin case proves destructive to its contents, by allowing the gas to escape and the air to get in.

The Volume of Paper Money.

As there appears to be a conflict of opinion as to whether the volume of paper money afloat in the United States is increasing or not, we give the comparative figures from the latest authentic data:

	June 1, 1866.	Sept. 1, 1866
Legal Tenders.....	\$564,140,458	\$555,115,732
National Bank Notes.....	278,905,675	289,915,828
Fractional Currency.....	27,354,965	26,483,998
Total.....	\$870,381,098	\$871,515,559

It will be seen from these figures, that while the legal tender currency has been reduced \$9,024,726 and the fractional currency \$850,967, during the last three months, there has been an increase of \$11,010,154 in National Bank notes. The amount of National Bank notes to be issued, before the \$300,000,000 prescribed by law shall be reached, is now about \$10,000,000, after which we shall witness a gradual reduction in the volume of paper money, a consummation devoutly to be wished, as the decrease in volume will be accompanied by a corresponding increase in value of the circulating medium. The reduction in legal tenders since June 1st has been mainly in the compound interest notes, which, three months ago, stood at \$162,012,140, and are now down to \$155,512,140. The plain greenback circulation on June 1st, was \$402,128,618, and Sept. 1st, \$399,603,592. Fully one-sixth of the entire legal tender circulation lies in the vaults of the banks of this city, which at present hold the heaviest reserve in this legal tender form ever before controlled by the local banks. A year ago the legal tender circulation of the Treasury was up to \$684,138,959. It has since been reduced nearly \$136,000,000, or at the rate of close on eleven millions a month. The National Bank note circulation has been increased, during the year ending on the 1st of September from \$177,487,220 to \$289,915,829, or absolutely, \$112,428,609, which increase is at the rate of less than nine and a-half millions a month, showing conclusively that, during the past year, the legal tender circulation has been diminished far more rapidly than the volume of National Bank notes has been augmented. A very considerable portion of

the issue of National Bank currency through the year has superseded the circulation of State Banks, converted into National Banks or wound up altogether, so that it is safe to assume that the volume of paper money of all kinds in circulation has been materially lessened since Sept. 1, 1865. The compound interest legal tender notes have ceased to circulate from hand to hand, as money, and have now no other function to perform in our financial system, except that they are held as a reserve by the National Banks. On the whole, we think we have reached the maximum amount of paper money circulation.—*Shipping and Commercial List.*

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular weekly meeting at its room at the Cooper Institute, on Thursday evening, Sept. 21, 1866, the President, Prof. S. D. Tillman, in the chair.

LIME IN THE PURIFYING OF COAL GAS.

When the approach of cholera was apprehended many complaints were made against the gas works of this city on account of the noxious odors arising from their premises, caused by emptying, for removal, the lime which had been used for purifying the gas. The evil was apparently remedied by inclosing the lime and conducting the odor through a pipe into the upper air.

The paper on this subject proposed the more effectual plan of thoroughly incorporating dried peat with the lime, thus absorbing the odors, when the composition might be sold as a fertilizer. It was remarked by the members that in London, during the prevalence of cholera, the workmen in the gas houses preferred taking their families there for safety, as no case of cholera had ever occurred among any employed there.

DYEING OF WOOD.

A communication to the Institute was read, describing a process for expelling air from the tissues of common pine wood, and injecting any of the aniline dyes. By this means lumber can be uniformly dyed throughout, in imitation of the valuable woods, and then wrought into articles of furniture.

VENTILATION AND RESPIRATION.

This was the regular subject for the evening, having been continued from the last meeting. The principle was then stated, that the rising of a balloon, and the draught of chimneys were owing simply to differences in gravity.

When the air comes in contact with the fire, the oxygen unites with the carbon, the nitrogen is released, it expands and becomes the vehicle by which the products of combustion are carried off, and this produces the draught of the chimney.

In the same way, the air is taken into the lungs, the increase of temperature expands the nitrogen, and this, again, carries off the products of the internal combustion. When the thermometer stands at 98 degrees, the difference between the external and internal temperature is not sufficient to produce breathing except under difficulty from the necessity of making use of some muscular exertion, and this causes the difficult breathing, particularly noticeable in young children.

In relation to ventilation, the trouble was not so much how to get the foul air out of a room, as how to get the fresh air in without incommoding any by having a current blowing upon them.

Where the top of the window is lowered, a comparatively solid body of cold air comes in and mingles with the heated air only to a limited extent; by dividing up this column of air, the mixing would be much accelerated, while no decided current would be produced. To accomplish this it was proposed to insert into the open window a board having a number of tubes connecting with the air outside. The subject was discussed pretty fully, but the hour for closing having arrived, further debate was adjourned till the next meeting.

By an imperial edict, native Japanese artisans wishing to visit any of the various countries beyond the sea, for the purpose of learning any science or art, will receive permission from the Government on application.

[From the American Journal of Photography.]

Porcelain Process and Developer.

BY WILLIAM HADDOCK.

PORCELAIN PROCESS.—Some time since, I sent for this Journal an account of the use of a chloride collodion for negatives; and I now make another application of this chloride—for porcelain, that I wish you would try, and if it suits, give it to the fraternity.

Ether, 4 ozs; alcohol, 3 ozs; gun cotton, 40 grs; nitrate of silver, 32 grs.

Dissolve the silver salt in the water and add to the collodion; then add the chloride a few drops at a time, shaking until it becomes quite milky. Then add twenty-four grains of chloride of uranium, and eight grains of citric acid, dissolved in alcohol.

After coating the plate, and when dry, fume it, the same as paper, and you will find that it prints about as fast as paper, and is rich in tone.

I have an impression that it can be used for solar work in making large porcelain pictures. Why not?

For the preliminary coating, I use the following: Albumen, 1 oz; ammonia, conc., 2 drms; water, 12 ozs.

And by the way, should you want to use this for negatives, put five grains of iodide of potassium in it, and you have a fine coating for negatives that will keep a long time, and will dry as hard as flint.

DEVELOPER.—I see by the Journal, that a quick developer is wanted. I believe that the developer is one of the most important requisites of picture making.

I send you one, and also a print from a negative made with it. My aim has been to cheapen every thing I use, and at the same time to get good results.

I am using twenty-five grains of silver to the ounce for my paper.

The print sent was made with twenty-five grains. The paper had A. S. B. brand; you will see that the albumen is not affected in the least.

No. 1.—Water, 1 quart; sulphate of iron, 4 ozs; nitrate of potash, $\frac{1}{2}$ oz.

Dissolve and add pure cider vinegar, 12 ozs., and 1 oz. sulphuric acid.

No. 2.—Water, 1 quart; white of two eggs; and four drams ammonia conc. Shake up thoroughly and mix with No. 1.

Give about half the time you generally do in the camera; you can push a negative as far as you want without fogging, and it comes out promptly.

In using it for ambrotypes, I add a few grains of acetate of soda to four ounces of the solution, which takes out the free acid and removes the tendency to metallic luster.

It should be made about twenty-four hours before using it; then filter through cotton six or eight ounces at a time.

Circleville, O., Sept. 6, 1866.

The Throttle Valve.

Romancers are fond of contrasting the power of the locomotive with the apparently inadequate means of managing and governing that power. It is popularly supposed that a child can start and stop a locomotive. Possibly it may be so; but it is not the belief of those who have occupied the driver's position. Apart from the immense responsibility of the engineer of a train, a responsibility greater and more exacting than that of the conductor, there is a large amount of hard labor to be performed. Even the starting of a train is a labor. It requires something more than the "weight of a child's finger," as we have heard it expressed, to pull the throttle of a locomotive. It requires the exertion of considerable muscular power; and it seems as though the throttle valve might be balanced, so that it would not demand such a strain upon the wrist and the biceps muscle, to open the passage to the steam chests. The subject is worthy of attention, although it may appear trifling. It is no easy job to run one or two hundred miles every day, on a route where the stations are but a few minutes apart, as every engineer of a train knows.

THE expenses of the London and North Western Railroad are 67 cents per mile, those of the Great Western, 70 cents. There are 150,000 men employed upon the railroads of the United Kingdom.

MISCELLANEOUS SUMMARY.

A GREAT fire is reported from Corsica, where the magnificent forest of Vizzabona caught fire a week before the last advices, and had been burning ever since. The vast forest, consisting chiefly of pine trees, celebrated for their immense yield of rosin, is now one vast sea of fire. Millions of valuable trees are destroyed, and as yet the efforts of the neighboring population have been ineffectual to arrest the progress of the flames. The damage is estimated at several millions of francs.

M. AUDIGER, a French chemist, has invented or discovered a new mode of embalming, which dispenses with all the repulsive details of the ordinary system. It consists in pouring down the throat of the corpse two glasses of a liquid, whose composition is still a secret. The operation lasts but twenty minutes, and in two or three months the corpse becomes as stone. Experiments have been made with this new method at Marseilles, Algiers, and in the public hospitals, with complete success.

At the recent meeting of the British Association, a paper was read upon the introduction of a new gunpowder for heavy ordnance, in which nitrate of barytes is substituted for saltpeter in composition, the consequence being that the powder, when ignited, consumes more slowly, and the gases are developed less rapidly, while the same effect is produced upon the projectile as regards its ultimate velocity.

THE small crabs found on our Northern Atlantic shores, which are so largely used for bait for the blackfish and bass, are allied to the blue upland crabs of the tropical regions. They are said by some to be a delicious morsel. They seldom reach over one-and-a-half inches in length, and are known by the fishermen as "fiddlers."

At present the copper mines of Arizona are attracting abroad more attention than the deposits of more precious metals. At Williams' Fork on the Colorado river, many valuable copper leads are located and a great deal of work has been done.

THE oil of the menhaden fish, which is caught in immense quantities on the coast of Rhode Island and the southern shores of Massachusetts, is coming largely into use as a substitute for the dark whale oils for carriers' use.

MATRICES for punches originally cut by William Caslon, in 1725, are now in daily use, as the old-faced type has again come into fashion.

THE stock and gold reports by the Atlantic cable to London, are first sold to subscribers, and only published in the papers two or three days after.

THE inventor of the needle gun has constructed a new rifle, a fac-simile of the old, but three pounds lighter, and made wholly of iron.

A RAILROAD is about being constructed between Chicago and Port Sarnia, C. W., to connect with the Grand Trunk Railroad at the latter place.

NEARLY five million letters and papers came to the United States from Great Britain in 1865.

A NEW iron truss bridge is to be erected at Pittsfield, Mass., across the Housatonic River.

A VESSEL has recently been constructed in Oregon having but one knot in her whole structure.

Submarine Photograph.

A French artist, M. Bazin, has been experimenting lately, with the design of obtaining photographs of sunken vessels, so that in attempting to raise the same positive knowledge can be had of their relative positions. To accomplish this M. Bazin descends to the necessary depth, in a strong sheet-iron box, which he calls his "photographic chamber." Thick glass windows afford every facility for making the necessary preliminary observations, and the picture is taken by the aid of a strong electrical light.

An unpleasant feature of the apparatus, and one which would not recommend it to pleasure seekers, is, that the operator is absolutely hermetically sealed, for no means are provided for supplying air, the chamber being constructed of a proper size to contain the quantity required during the ten or twelve minutes occupied in obtaining a negative.