AGRICULTURAL INVENTIONS.

Mr. Isaac S. Bates, of Minonk, Ill., has patented an improved fender attachment to cultivators. In this improvement, the beam of the cultivator has combined with it a laterally adjustable clamping plate having upper and lower eyes, and united by screws with a clamping plate on the under side of the beam. Through these upper and lower eyes, a rod capable of being raised or lowered is passed and pivoted at its lower end to the upper middle portion of the fender, which is connected at its end by a hooked rod with the axle or frame of the cultivator. This construction not only admits of a lateral adjustment of the fender in both directions, but also of its vertical adjustment, to suit the height of the corn or other plants in the row, and it has a free connection with the rod which provides for its vertical adjustment. Although here only one beam is referred to, the invention is of course applicable to the series of beams in a wheel cultivator.

Mr: Oren Stoddard, of Busti, N. Y., has patented a combined hand seed planter and fertilizer distributer, which has a very perfect action and separates the fertilizer from the seed in the ground. In this device, a central box in which phosphate or other fine fertilizer is placed has combined with it outer side boxes for reception of the corn or other seed. Followers terminating in or connected with a handle above, serve, by a suitable construction of the interior of the boxes, to discharge, as they are thrust downward, the fertilizer and seed in measured quantities into the ground, the same passing out through or between elastic plates which form the necessary openings in the soil, while the bottom of the boxes act as a stop to insure the seed being planted at a uniform depth. By this construction the seed for each hill will be divided, and the fertilizer will be deposited in the space between the parts of the hill without being in contact with the seed, so that the seed will not be injured or killed by the fertilizer. Connected with the fertilizer follower are levers, having attached covering plates which, as said follower is drawn upward, force the soil into the openings in which the seed and fertilizer have been deposited, and cover the seed.

Mr. Ludwig Silland, of Edwardsville, Ill., has patented an improved harrow. In this improvement the harrow proper is made up of several interchangeable duplicate sections. The invention consists in the peculiar construction and arrangement of the draught devices and connecting links, whereby the draught can be applied to two or more sections of the harrow as desired. To this end the draught beam is transversely divided into two sections united by detachable plates. One of these sections is permanent and the other removable. On the permanent section, at about the middle of the length of the entire beam, is an eyebolt, and near either end of the beam are corresponding eyebolts. A link connects the eyebolt at the end of the removable section with a central draught ring that is attached by a hook to the central eyebolt fast on the permanent section. Said ring is also connected by another hook with a second ring which is attached by links to the middle and end eyebolts on the permanent section of the beam. By this construction, when it is desired to use three harrow sections, the pull is made on the central ring, but when the removable section of the beam and one harrow section are detached, then the hooks are disengaged and the draught is made on the other ring. The invention has much merit.

An improvement in cultivators, patented by Mr. Johann C. F. Hammer, of Cullman, Ala., has no small amount of merit. The object of this invention is to furnish cultivators so constructed that the plows can be adjusted to keep them parallel with the line of draught. To this end the standards of the plows which are connected with the side beams are journaled at their upper ends to turn in said beams and secured by clamp nuts at their tops, and the braces of the plows are bent to one side at their upper ends and there notched, and pass through eyebolts which project up through the side beams, and are held by clamp nuts on the tops of said beams. With this construction, by loosening the clamp nuts of the standards and braces of the plows, the latter can be adjusted parallel with the line of draught whatever be the inclination of the side beams, so that the plows will always work squarely in the ground.

Memory in Chess Playing.

Wonderful as are the feats of chess-players, who can work out a game or a series of games without seeing the board, there is nothing really remarkable in them. When once mastered, the trick is not only fairly easy of performance, but the fact that the process is purely mental rather facilitates than impedes the action of the mind. To the "blindfolded" chessplayer there is present a mental picture of the board with the pieces in position. He can change the position of the men as easily as he can think, and after he has once mastered the difficulty of fixing the mental picture, it is distinctly before him. Some players, who do not in their common process of memory use picture phantoms, work out the moves as algebraical propositions are occasionally worked, by phantoms of sound; but, as a rule, chess-players are mental-picture-readers, and can at pleasure call up any one of several pictures of boards as they last conceived them. The most difficult feat, and one which very few mental chess-players can accomplish, is to play two or three games simultaneously, the moves made by their opponents being told them in close sequence and their own moves being directed after all the reports of the proceedings of their opponents have been received. Thus, if there be several players against the one mental player, he must be told and remember what each of his adversaries has done *before* he begins to give the instructions for his several counter-moves. In this exploit the most perfect development of the mental faculty of distinct picturing and the displacement and recall of mental pictures at will is exhibited. The prodigious difficulty of the feat can only be realized in the attempt to perform it. Even the expert blindfolded chess-player can rarely succeed in accomplishing the performance we have attempted to describe.—*Lancet.*

Alaskan Mines.

We had a conversation the other day with Col. A. F. Williams, of Oakland, who has recently returned from a prospecting voyage in Northern Alaska. From him we learn some interesting facts concerning the mining resources of the region. Col. Williams left here with a party, on a schooner, in May last. They went up through the Aleutian islands and through the Behring Sea into Norton Sound; but most of the time was spent in Golowin Bay, on the north coast of Norton Sound. Here are high rocky mountains, steep and abrupt, though there are large prairies next to the coast.

Col. Williams went with a whale boat 100 miles up the Fish River and sent a party overland. A land party also traversed the region, and quite an extent of country was located.

The principal location made was a galena lead or deposit. We have seen assay certificates by Prof. Price, giving the value at 83 per cent and 85 per cent lead, and $121 and $161 silver. This is almost pure galena, that containing 86 per cent lead.

Col. Williams says the Esquimaux utilize this by putting a piece in the bullet mould and running lead around it, to make bullets.

The country all about the region visited by Col. Williams and party is a very difficult one to prospect in, but this is not on account of the heavy timber, as most people suppose. This heavy timber is more prevalent in the southern part of the Territory. But there is a heavy coat of moss covering the whole face of the country, making it very hard to get about. In fact, it is a most villainous country to get about in. The moss is from one to two feet thick, and the ground is more or less boggy, so that if one steps off the moss bed, he is apt to get into the bog. Ten or twelve miles is a good day's travel, so it is very hard to prospect.

There are belts of timber here and there, but the mountains are generally barren and free from brush and trees. Yet there is timber here and there, and plenty for fuel or mining purposes.

The country rock is mainly a micaceous slate; but no gold was found. The mountains seem to be of a white spar, which some suppose to be lime. There are great dikes of granite extending for miles and miles. No sulphurets of iron were found anywhere. There is plenty of mica in great scales and sheets.

The schooner was taken into Golowin Bay and there anchored. The prospecting expedition went out from this point. They were in 64·30° N. and 163° W. Overland, they were not more than 50 miles from Kotzebue Sound, in the Arctic.

Col. Williams judges this to be a good mineral region. The Esquimaux talked a good deal of the lead mines they knew of elsewhere. He has no doubt there is a good deal of mineral thereabouts.

The expedition left here on the 5th of May last, and met the ice on June 1. They coasted around Norton Sound some 200 miles. There are a couple of thousand Esquimaux camping around the shores of the sound. The party found them very generally willing to do anything asked of them. These natives packed the ore down to the vessel from the mine, some 15 tons being taken out for shipment.

When they return in the spring, horses will be taken up and sleds will be used for hauling ore. There is plenty of feed and hay along the coast.

They have an average of good weather in the summer, about as they have it in New York. August is wet but not cold. The first frost came on September 15. In June the sun was out of sight about two and a half hours; it was broad daylight and no stars to be seen for two months. There are five good working months for surface work, and when once underground deep enough, the men can work all winter. There is timber within half a mile of the mine, so there is no difficulty in building houses to make the men comfortable. Col. Williams says the ore can be put down here in San Francisco at a cost not to exceed $50 per ton, It is unnecessary to reduce it at the mine, as there is over 1,600 lb. of lead to the ton of ore.

Col. Williams had met some men who had come from 1,500 miles up the Yukon River. Up there they had been making from $10 to $15 per day to the hand in placer mines. They can only work about four months in the year. A little stern-wheel trading steamer now runs up the Yukon, to about 1,800 miles from the mouth. She only makes two trips a year. Her timber was got out here, and she was put together at St. Michaels.

There are only four white women in the Territory north of Kodiak. One lady is at St. Michaels, and she told Col. Williams that it was no colder there than at her native place, Portland, Maine. There is also a Chicago lady four miles from St. Michaels. There is one at Ounalaska, the port of entry, 2,100 miles from here, and one on the Island of St. Paul.

Col. Williams says there is an abundance of plumbago all through that country. His party is the first that ever visited that region. At the mine they sunk twenty feet, but did not get through the frost—the frozen ground. The heavy coat of moss seems to protect the ice, as ice is protected in sawdust and blankets. The tops of the mountains are free from the moss. The mosquitoes are innumerable and very annoying, fiercely contesting their rights to the country. They seem to breed in the ice.

When the party started away, they stopped with their vessel to get water, and while at anchor a severe gale drove the vessel ashore and wrecked her, she being a total loss. The Esquimaux took the party to St. Michaels in skin canoes, where some of them joined the revenue cutter Corwin, and were brought to this port.—*Min. and Sci. Press.*

Lime as a Preservative.

Lime, it is well known, preserves ironwork; and Wren, in his "Parentalia," mentions the freshness of iron cramps which had been bedded in mortar for 400 years. It is usual to limewhite iron mains, tanks, and other articles to prevent rust; and bricklayers are in the habit of smearing their trowels with mortar. In the demolition of old buildings the ends of joists, ceiling-laths, quarters, plates, and bond timber which have been bedded in lime-mortar, are usually found in a sound condition, in spite of their having been bedded all round. Higgins, in his well-known treatise on "Calcareous Cements," now rather an antiquated work, speaks of the value of lime-water or water freed from "acidulous gas." Something of this protection is rendered to wood and iron which are covered with lime. It is well known that an alkaline solution prevents corrosion of iron; and Mallet, in his work on "The Action of Air and Water upon Iron," proposed lime-water to replace bilge-water, and thus prevent the internal corrosion in iron ships. Lime has a powerful affinity for oxygen, and to this cause may be attributed its preservative effects upon iron and other materials.

It would be interesting to record the many evidences of the value of lime in arresting decay. As long ago as 1769 a Mr. Jackson, a chemist, obtained permission to prepare timber for the shipyards, by immersing it in a solution of salt water, lime, muriate of soda, etc.; another practical experimentalist suggested slaked lime, thinned with a solution of glue, for mopping the timbers of a ship. The preservation of timber has been attempted by surrounding it with pounded lime, and several attempts have been made to preserve timber by the use of lime. Mr. Britton, in his work on "Dry Rot," mentions a number of cases where lime has been of service. He says "quicklime with damp has been found to accelerate putrefaction in consequence of its extracting carbon; but when dry and in such large quantities as to absorb all moisture from the wood, the *wood is preserved* and the *sap hardened.*" "Vessels long in the lime trade have afforded proof of this fact, also examples in plastering laths which are generally found sound where they have been dry." The joists and sleepers of basement floors are rendered less subject to decay by a coating of limewhite; and this might be renewed at intervals. The same writer adds, "it does not appear practicable to use limewater to any extent for preserving timber, because water holds in solution only about 1-500 part of lime, which quantity would be too inconsiderable; it, however, renders timber more durable, but at the same time very hard and difficult to be worked."

These facts are instructive; they show, at least, that lime in a sufficient quantity kept dry is a valuable preservative agent, and some practical chemist might earn a deserved repute if he could prepare a lime solution that would be capable of rendering so substantial a service to all builders. Such a solution would be at least sufficiently remunerative to make it worth while to try a few experiments in this direction.

It is stated on good authority that the white ant in India costs the government £100,000 a year for repairing woodwork, bridges, etc., caused by its depredations. Concrete basements have been found to resist the encroachments of the ant. Dr. Darwin proposed a process of timber preservation some years ago, in which an absorption of limewater was effected, and after that had dried, a weak solution of sulphuric acid, so as to form sulphate of lime in the pores of the wood. The growth of dry-rot or fungus on timber has been prevented by limewater, and many instances have been mentioned of its value.

The cleansing and sanitary virtues of lime are more generally known. The painter uses limewater to kill the grease upon his work instead of turpentine; and soot stains on the outside of flues have been removed by the agency of thick warm limewash. The value of limewhite as a wash for walls, as a purifier of the air in sheds, stables, and other buildings is unquestionable, though all limewashed roof-timbers have rather a rough and penurious look. As a preservative coating to the joists of floors and other timbers not exposed to damp, it seems worthy of a more extended trial. —*Building News.*

HOLLOW STEEL SHAFTING IN FRANCE.—Hollow steel shafting is being introduced into France. It is made by casting the metal around a core of lime, the ingot being finally rolled into shafting, the lime core going with it and diminishing in diameter in the same proportion as the metal, even when the total diameter is reduced as low as one-fourth of an inch.