plaster and dress them out nicely. Now for the secret. When the sets show for blossoming, then is the time to take two parts plaster and one part fine salt; mix well together, and put one large spoonful of this compound on each hill; drop it as nearly in the center of the hill as possible. Just as soon as the potatoes are ripe, take them out of the ground; have them perfectly dry when put in the cellar, and keep them in a dry cool place. Some farmers let their potatoes remain in the ground, soaking through all the cold fall rains until the snow flies. The potatoes become diseased in this way more and more every year; hence the potato rot. With such management they should rot.

THE PHILOSOPHY OF A DRY NORTH-EASTER.

On the eastern coast of the United States the causes of meteorological phenomena are so numerous and complex that they must generally remain in mystery; but occasionally a few forces overpower all others, and thus produce results which we are able to explain. Such is the case with the dry north-east wind which is blowing as we write, and which forms an exception to the usual humid character of the winds from that quarter.

All rain, snow, hail and dew is formed simply by cooling the air. Warm air will hold a great deal more water than cold air; and when a portion of the atmosphere has been warmed and brought in contact with the ocean, lakes, rivers, or moist earth, until it has absorbed a large quantity of water, and is then cooled below the temperature at which it will hold all of the water that it contains, the surplus above the quantity sufficient to saturate it at its reduced temperature is deposited. A south-east wind comes from the tropics, across the warm water of the Gulf Stream, being warmed, and saturated with moisture at that high temperature. When it leaves the Gulf Stream it encounters the cold belt of water along the coast, and is rapidly cooled, so that it can no longer contain the whole of its moisture. Of all the weather signs in this region, there is no other so certain as that a south-east wind will bring rain.

Even a north-east wind usually passes over the waters of the Gulf Stream which spread away toward the coast of Ireland, and when it reaches the land it is cooled; producing rain or snow. But after a long spell of hot weather, when the earth has become much heated, the wind may be warmed instead of cooled by striking the land; and in this case it will not part with its moisture. It is still more likely to find the land warmer than the ocean, if the ocean is filled with icebergs, as at the present time.

If this view is correct, a north-east wind would be less likely to be dry in winter than in summer; and perhaps some of our readers who keep meteorological registers will inform us how the facts accord with the theory.

Flax in Illinois.

This year has witnessed everywhere in the north a largely increased crop of flax, raised, not as heretofore, for the seed alone, but for the fiber, to supply the wearing material deficiency created by the sad downfall of the braggart King Cotton. From Illinois, a correspondent writes to the *Ohio Farmer* that flax was "very generally sown, and in some sections largely, some putting in as much as one hundred acres. In Central Illinois the straw is short, but the seed is superior. In my travels I noticed that the little old spinning wheel is out, buzzing once more; that the baby again is trying to get its fingers in the flyers, and that the ladies are knitting linen summer stockings. I actually saw a piece of checked, white and blue, flax pocket handkerchiefs. I also saw several men wearing pantaloons made this spring from flax which has lain for years in the loft of the barn."

Serious Accident.—The splendid steamship *Golden City*, lately built for the Pacific Mail Steamship Company, met with an accident on her trip out to California, which obliged her to return to this port. When off the coast of Florida one of the boilers was so badly burned that the arches over the fire-box were almost completely inverted. It will take a long time to repair the damage. It is wonderful and most fortunate that the arches were not collapsed entirely.

Correspondence

Treatment of Engineers in the English Navy.

Messrs. Editors:—In late numbers of the Scientific American you notice a discussion in British scientific journals, on the Condition of Marine Engineers in the Royal Navy. As a late chief engineer of that service, I thank you heartily for the candid and just spirit in which you have brought the question before the public. I feel satisfied that a comparison between the condition of Marine Engineers in other countries and those of the English service, will result in improving the condition of the latter; especially in your journal, which is so generally read in England and the United States, and so well known for its efforts to improve the condition of the mechanical trades generally. The truth really very far exceeds what is stated as "Grievances to be brought before the English House of Commons." I have known many young men of talent and good education who found themselves in a manner compelled to leave the service; not so much on account of the pay (small as it is), as from inferior accommodation, and having no real position: for their nominal position goes for nothing; they are consequently consigned to evil companionship, or the alternative—perpetual solitude. The treatment received by Engineers at the hands of officers of the Navy, is too often unfeeling. They are looked upon as interlopers, and treated accordingly. Class distinctions (absurd as they are generally) are something very tolerable in England, in comparison with the length to which they are carried on board war steamers. In short, the treatment is such that no man of any spirit or self-respect could submit to. The result is such as might be expected—an inferior class of men to fill these very important situations. To my certain knowledge, railway drivers, stokers, &c., having got sufficiently "*crammed*" to pass a nominal examination as third-class Assistant Engineers, are often appointed, who frequently render the efforts of the Chief Engineer inadequate to maintain everything in proper working order when on a foreign station.

Clearly, then, the British Royal Navy is no place for educated or talented young men. This system is driving the best skilled workmen to foreign countries. The prejudices against the English Navy are so strong, and the advantages offered in other countries are so great by comparison, that even long after a better state of things is brought about, there will be great difficulty in persuading suitable men to serve their country in the capacity of Engineers.

John Ashurst.

Toronto, C. W., Sept. 5, 1863.

Launch of the "Re don Luigi di Portugallo."

The two splendid frigates—so long the object of admiration to all observers—which Mr. W. H. Webb has had upon the stocks for the past two years, are now safely launched. On Saturday, the 29th ult., the last one was sent down the ways precisely at 10 o'clock. The dimensions of this vessel are 294 feet in length, 50 feet beam, and 36 feet 6 inches deep. These figures convey a very slight idea of the imposing outlines of the grand hull as it stood upon the ways, and afford no conception whatever of the thoroughness of the work. The occasion of a launch is generally the signal for a simultaneous laudation of all concerned in the building of the ship, from the person who slushes the ways to the proprietor of the yard; but we could not bestow any encomiums on Mr. Webb other than he has already won, or in any way add to the world-wide fame he has achieved. The vessels just launched for the Italian Government will have two powerful engines of 84 inches cylinder and 45 inches stroke of piston, and are to drive a propeller 19 feet in diameter, with a pitch of 31 feet 6 inches: the wheel so arranged as to be hoisted when not under steam. The machinery has all the modern improvements, and is much the same as that fitted to the *Grand Admiral*—the Russian line-of-battle ship built some years since by Mr. Webb. The armor on the *Re don Luigi* will be four and a-half inches in thickness, and the ship will be completely clad from stem to stern; she has also a short ram at the bow. These two vessels, with the others now building abroad, are to form the nuclei of a powerful navy.

Antidote to Nux Vomica.

Messrs Editors:—In No. 10 of the Scientific American, I notice an article headed "Antidotes of Poisons." In it you say, "for Nux Vomica there is no antidote." About sixteen years since a friend of mine had a dog, which had been poisoned by Nux Vomica, and was nearly dead; I told him to give the animal strong coffee; my friend poured about a pint down the dog's throat, and in the space of half an hour it was well." C. Leavett.

Windsorville, Conn., Sept. 5, 1863.

Improved Printing Telegraph of David Hughes.

It seems many inventions are the result of accident. David Hughes, when he invented the printing telegraph improvement, was endeavoring to contrive a machine for copying extempore music, so that his melodious improvisations might not be lost. Boarding in the same house with him was the well-known musical composer and piano teacher, Louis Hast, and the very intelligent telegraph operator, Norbonne M. Booth; one supplied him with electro-magnetic instruments, the other gave him the use of a piano; a printing telegraph was the consequence.

Hughes is now living in Europe, enjoying the well-merited fortune which his genius has earned. At the time of his residence in Kentucky, he was twenty-two years of age: a beardless boy in face and stature, and apparently lacking in mental power. His features were careworn: when spoken to he had a constant grin and giggle, not calculated to impress his interlocutor favorably. His ear for music was so acute that he could tell you, to a semitone, the note of anything sounded, from a dry stick to a shovel. This has been suggested by an article on Caselli's Pantelegraphy, found in the July number of the Paris journal entitled *La Science pour tous*. We had lost sight of Hughes, till seeing this article.

The Dry Goods Trade.—The dry goods trade is very active at present in this city. The fall trade has set in under very favorable auspices. A large number of purchasers from distant places are in the city; money is plenty, and buyers are liberal. Domestic cotton goods are duller than any other class. Domestic woolens are active, however, and a large business is doing at satisfactory prices. Many articles are selling in advance of production, especially flannels and goods suitable for women's wear. An extensive manufacturer of goods for ladies' wear informed us last week that his orders and sales are larger than ever they have been before; and he has been in the business for nearly twenty years. The demand for shawls exceeds the supply. Foreign goods have been very active also, and a large amount of goods are now selling, both French and English, at full and satisfactory prices. Plain silks and worsted goods, delaines, alpacas, &c., are particularly active, and immense sales are made of all kinds

APPLICATIONS FOR THE EXTENSION OF PATENTS.

The following persons have applied to the Commissioner of Patents for the extension of their patents for a term of seven years:—

William E. Nichols, of East Haddam, Conn., for extension of a patent granted on Dec. 11, 1849, on a machine for making cord. It is ordered that this case be heard at the Patent Office, Washington, on Monday, Nov. 23, 1863. All persons are notified to appear, and show cause, if any, why said petition should not be granted. Also; John F. Rogers, of South Bend, Ind., for extension of patent granted Nov. 27, 1849, on an improvement in railroad trucks. Parties are required to appear on Nov. 9, 1863, at the Patent Office, and show cause why said petition should not be granted.

The Work goes on.—Notwithstanding the numerous vessels added to the navy within the past two years, the work of construction is to still go on. The Navy department has just decided to build another fleet of iron-clad vessels. They will be longer and more formidable than any now in the service of this or any other country—being, in fact, erfect copies of the great Ericsson oce n ships, *Puritan* and *Dictator*, which are now building in this city.

The Government Bakery.

The *Philadelphia Inquirer* thus describes the mammoth bakery, supposed to be the largest in the world in which the bread for the Army of the Potomac, and for the hospitals near Washington, is prepared :

"During my rambles to day I stepped into the Government Bakery, a short distance out of Alexandria, which is managed by Capt. A. B. Mott, of Wyoming county, Pa., attached to the Commissary Department. Capt. Mott kindly showed me through the extensive establishment. I was much surprised at its extent, and pleased at the excellent management and marked cleanliness which prevailed in every department. The bakery, a one story frame building, with its appurtenances, covers a little more than an acre of ground. About two hundred men are constantly employed ; twenty ovens are in operation, and between four hundred and five hundred barrels of flour are daily converted into good wholesome bread, which is furnished to the Army of the Potomac, and hospitals and garrisons around Alexandria. Five hundred barrels of flour will turn out ninety thousand loaves or rations of bread, twenty-two ounces to the loaf. The yeast is made at the bakery from potatoes, malt, and hops, and the bread turned out is of the best quality, there being no deleterious substances worked in to make it weigh heavy, or give it a white, fancy appearance.

According to the army regulations, each soldier is entitled to twenty-two ounces of bread or flour daily ; but by the government doing the baking for its own troops, a great saving is effected in the difference between bread and flour, and the soldiers, who invariably prefer soft bread to 'hard tack' or flour, are greatly benefited thereby. The saving in the month of June alone was three thousand one hundred and seventy-four barrels of flour to the government, in the difference between bread and flour, and the gain in four months has been sufficient to pay all expenses of erecting and supplying the bakery, $23,000, and net a surplus of $7,000 to $8,000 in addition. Gas has been introduced throughout the building, and into the ovens, so that the bakers can see that the bread is not overdone or not baked enough. Water is also introduced, and six hundred feet of hose kept on hand to guard against fire. The railroad passes by the side of the main building, where flour is delivered from the cars into the warehouse, and the bread is taken directly into the cars and sent to the Army of the Potomac, which thus receive fresh bread every day.

Some of the bakers are workmen from Europe, who assert that there is no bakery of this magnitude in the old country, and it is believed to be the largest establishment of the kind in the world. The highest issue of bread in one day from this bakery was 114,550 loaves, in February last. During the month of July only 350,000 loaves were issued, the Army of the Potomac being mostly on the march and subsisting on 'hard tack ;' but since its return to the Rappahannock the bakery has been worked nearly to its full capacity."

On Gas from Tar and Coal.

At a meeting of the managers of Gas Works held at Broughton Ferry, Scotland, lately, Mr. Robert Gray read a paper on the manufacture of gas from coal tar, when treated with superheated steam. In a scientific point of view his experience is valuable, as he failed in all his efforts to obtain an illuminating gas from coal tar. The following are condensed extracts from his paper :

In 1860, Mr. Gray's attention had been called to various paragraphs which appeared in the public press, extolling a "new artificial gas," of a very rich quality, which could be produced in any quantity, at an excessively low price, and in such a short space of time, that gas sufficient for a population of 30,000 could be manufactured in four hours. This was said to be effected by causing superheated steam to traverse hydrocarburets of any kind—this carburetting furnishing, according to the mode of operating and the carburets employed, gas for lighting or for heating purposes." Anxious to adopt any new improvement which would lessen manual labor, he had, in 1860, constructed an apparatus to make experiments with the action of superheated steam on coal-tar. He produced a drawing of the apparatus, and entered into a lengthy explanation of his first experiment, the result of which was that, after working an hour with 7 lb. pressure of steam, 5 gallons of tar in the carburator, only one cubic foot of gas was produced, and that of so poor a nature as to be perfectly unsuitable for the purpose of illumination. The tar used for this experiment was pure as it came from the condensers and hydraulic main, containing naphtha, benzole, and all the other "oils" which chemists tell us exist in coal tar. The tar used for the second experiment had the light volatile matter, such as naphtha and benzole, extracted from it before being put into the carburator. After an hour's working with the same pressure of steam, the gas-holder did not rise a 20th part of a foot ; this result showing that, when the tar is deprived of the volatile substances, the superheated steam has little or no effect upon it. This experiment afforded a most conclusive and satisfactory proof that it is only the light volatile constituents of the tar that are converted into a gas at a high temperature ; and, although it assumed the fluid form of coal gas at a high temperature of 120° Fahr., it did not remain a permanent gas, but was condensed into a liquid at a temperature varying from 40° to 60° Fahr. From the results of all his experiments with superheated steam on coal tar, his opinion was that the tar which is produced from the destructive distillation of coal in close vessels at a high temperature, will never be of any commercial value for being converted into a gas for the purpose of illumination, if the means used to effect the end is the application of heat.

Our Timber Trees.

At the rate oak trees are now being felled and converted into staves and ship-timber, but few years will elapse before our receding forests will be shorn of every "brave old oak." The demand for lumber of every kind, has caused many farmers to devote the major portion of their time to its sawing and marketing. Even our unpretending little port sends eastward an incredible number of feet in the course of a season, and the business is on the increase. So great is the demand that the mills of the country cannot slice up the trees fast enough to satisfy agents and dealers. If the demand continues, as there is no reason to doubt it will, Ashtabula county will in time be robbed of all her lumber material, with nothing left for home consumption. Whether it is wise to sell ourselves lumberless is a question which should be seriously pondered. At the rate our forests are now dwindling and choice timber disappearing, fifty years hence will find the soil of Ohio, Pennsylvania, and other lumber-producing States, almost as barren as the prairies of the West, or the plains of California. We look upon the policy of a man selling all his timber, because it brings a reasonably remunerative price, as very much like selling off all his hay or wheat in the fall, and having to buy in the winter, paying double what he received for it. But it is useless to speculate upon the subject ; people will sell anything for money, without stopping to regard the future.—*Conneaut Reporter.*

Flesh in Vegetables.

All vegetables, especially those eaten by animals, contain a certain portion of flesh ; for instance, in every hundred parts of wheaten flour there are ten parts of flesh ; in a hundred of Indian corn meal there are twelve parts of flesh ; and in a hundred of Scotch oatmeal there are eighteen of flesh. Now, when vegetable food is eaten it is to its fleshy constituents alone that we are indebted for restoring to the body what it has lost by muscular exertion. "All flesh is grass," says the inspired writer, and science proves that this assertion will bear a literal interpretation. No animal has the power to create from its food the flesh to form its own body ; all that the stomach can do is to dissolve the solid food that is put into it ; by-and-by the fleshy portion of the food enters the blood, and becomes part of the animal that has eaten it. The starch and sugar of the vegetable are either consumed (burned) for the production of warmth, or they are converted into fat and laid up in store as future food then required. Grass consists of certain fleshy constituents, starch and woody fiber. If a cow, arrived at maturity, eats grass, nearly, or the whole of its food can be traced to the production of milk ; the starch of the grass goes to form fat (butter) and the flesh appears as casein, or cheese. When a sheep eats grass, the flesh of grass is but slightly modified to produce mutton, while the starch is converted into fat (suet). When a man eats mutton or beef, he is merely appropriating to his own body the fleshy portion of grass, so perseveringly collected by the sheep or oxen. The human stomach, like that of a sheep or ox, has no power to create flesh ; all that it can do is to build up its own form with the materials at hand. Iron is offered to a workman, and he builds a ship, makes a watch-spring, or a mariner's compass, according to his wants ; but although he alters the form and texture of the material under his hand, yet its composition remains the same. So as regards flesh, although there be but one "flesh of men, another of beasts, another of fishes, and another of birds," yet their ultimate composition is the same, all of which can be traced to the grass of the field or a similar source. Flesh, then, is derived from vegetables, and not from animals ; the latter being merely the collectors of it. And, as though the plant knew thatsome future destiny waited the flesh which it makes, it will not use a particle of it to construct a leaf, a tendril, or a flower, but lays it all up in the seed.—*Piesse.*

The Pennsylvania Oil Wells.

A correspondent of the New York *Evening Post*, writing from Titusville, Pa , furnishes the following in reference to the oil region in that State :—

"Almost as old as the hills surrounding it are the springs which once gave it the name of Oil Creek, and now make its fame world wide. There is but one king here, and all are its subjects. The head and front, the root and branch of every species of business, in its legitimate callings—as well as speculation in its most rampant form—is Oil ; consequently you see, in close proximity on every side, oil depots, oil refineries, oil derricks, oil tanks, oil shippers and the everlasting inevitable oil team—at once a nuisance and a necessity, as you may judge from the fact that two thousand of them have passed over a given point or bridge, where a market was kept, in one afternoon, cutting up the roads in a frightful manner, and reducing them to such a state that, between mudholes, stones and stumps, you may well suppose that pleasure riders are not the order of the day. * * * For bustling activity and teeming population, we resemble western towns ; whiledreams of wealth, wilder and more fabulous than the Arabian Nights, have been realized in a day. What do you think of 'the big well' which flows two thousand barrels a day, bringing its owners an income of two dollars a minute, and supplying one-third of all the oil sold here? There has been a million dollars paid by its owners for this well—one small share having been sold for fifteen thousand dollars.

"These are only a few facts out of the many of the wealth accruing privately and collectively to individuals.

"The well owned by the Dalvell Brothers brings them eight hundred dollars a day, and a sixteenth of the Sherman well a hundred dollars a day.

"The revenue which accrues to the Government is five millions a year."

Wine Receipts.

BLACKBERRY WINE —To make a wine equal in value to Port, take ripe blackberries or dewberries, press the juice from them ; let stand thirty-six hours to ferment, lightly covered ; skim off whatever rises to the top ; then to every gallon of the juice add one quart of water and three pounds of sugar (brown will do), let it stand in an open vessel for twenty-four hours ; skim and strain it, then barrel it, let it stand eight or nine months, when it should be racked off and bottled and corked close—age improves it.

BLACKBERRY CORDIAL.—To three pounds of ripe blackberries add one pound of white sugar ; let them stand twelve hours, then press out the juice and strain it ; add one-third of good spirits ; to every quart add one teaspoonful of finely-powdered allspice. It is at once fit for use. Our native grapes produce the best of wine, which is easily made.

COMMON GRAPE WINE.—Take any quantity of sound, ripe grapes, with a common cider-press press out the juice, put it into barrels, cover the bung lightly ; after fermentation has ceased cork it ; place it in a cellar or house. In twelve months you will have good wine, which improves by age ; let it stand on its lees.