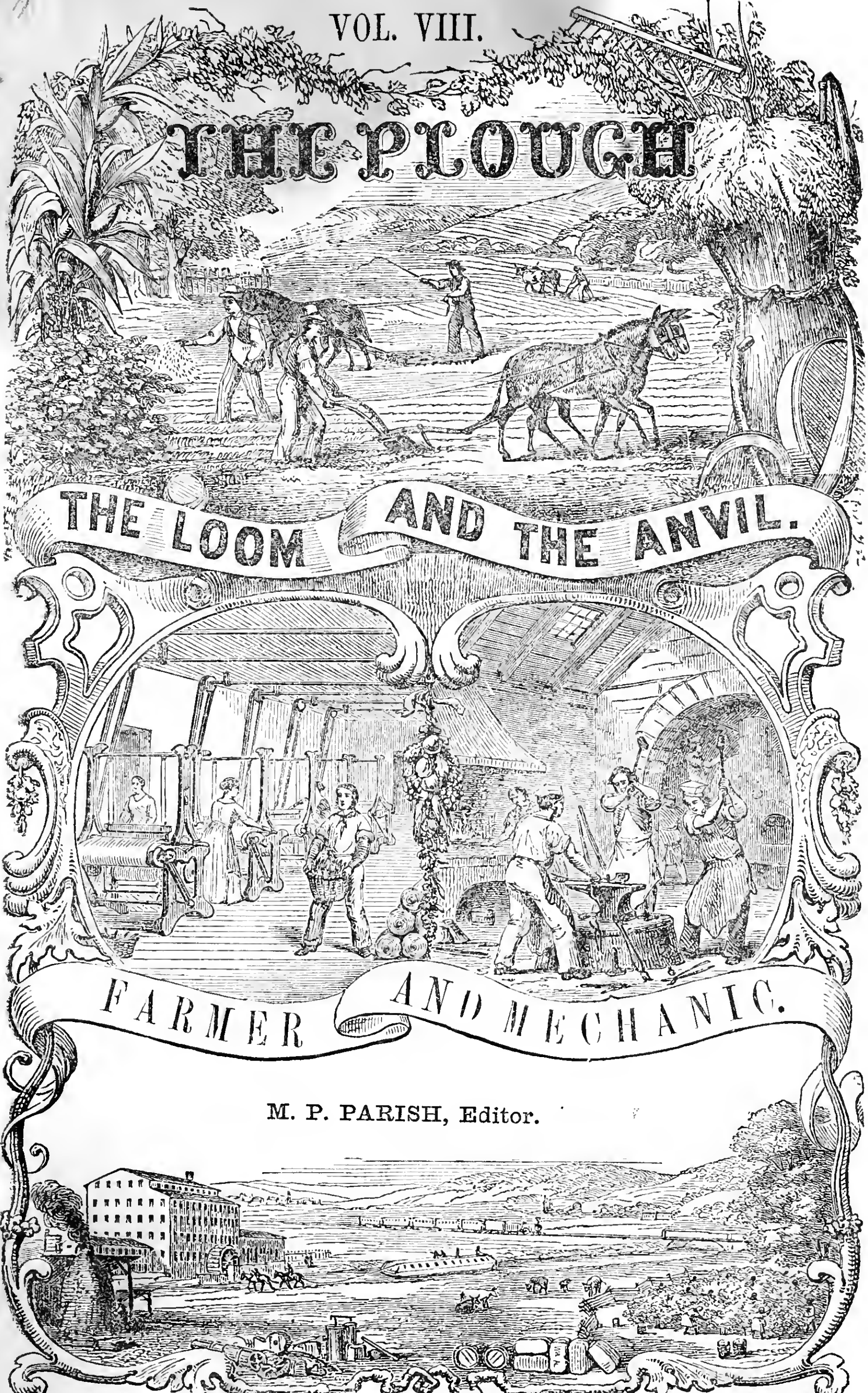

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The Plough, the Loom, and the Anvil.

Vol. VIII. JANUARY, 1856. No. 7.

WHAT CONSTITUTES A PROFITABLE CROP? SOUTHERN POLICY.

This is a question which lies at the foundation of all judicious management. It seems also to be a very simple one. We wish our farmers and planters in every section of country would keep proper farm accounts. The labor of it is but small, and the value of it would be great. Let the time spent upon each lot of ground, the manures used upon it, the crops gathered, with the market value of those the prices of which are well known, and the estimated value of those others used as feed, such as corn-stalks, etc., all have their place in the farm record-book; and this would of itself suggest many important changes in the management of many a farm. But let us recur to our inquiry, What constitutes a profitable crop?

There seems to be a very indefinite idea on this subject, particularly among some Southern writers and orators. Were it not for this it might seem superfluous to say that profit, applied to crops, can always be ascertained by the Profit and Loss account of the producer. No matter how many others may be profited by it—no matter how many ships are loaded with it, nor how many companies get rich in the various uses they make of it—their profit and loss account is a different affair, and tests the value of a very different process. One might enrich and work over a dry sand-bank till he could make a good crop of corn upon it, and selling that one crop to his neighbor B. for one-tenth its actual cost, he, neighbor B., might make a very handsome profit on a second sale. This would not make that crop of corn a profitable one. This is plain, even to a child.

Now we ask whether, independently of all collateral matters, such as increased value of lands, advantages of a home market, etc., etc., which would result from a diversity of pursuits, the cotton crop of this country is a paying crop, in comparison with many other agricultural products, raised both at the North and South?

In our last issue we set forth the facts of the case as far as we had the means at hand. We there found that the prevailing price of cotton for many years, at the seaboard, is eight cents a pound; and from all the statements there set forth, from cotton growers and statistical tables, we found that it actually costs nearly, if not quite, that amount. But take another view.

The whole quantity of land cultivated with this crop is estimated at 5,000,000 acres, and if the gross value of the crop is $100,000,000, the gross product of an acre is $20. Can that be called successful husdandry which obtains by a year's toil only this pittance?

It is practically true that every dollar expended in judicious cultivation and improvement of lands, yields a still greater per cent. in return. The poorest land, and land to which little attention is given, yields the smallest per centage in return. Now laying aside all other considerations, and regarding only the one fact, that almost the entire laboring population of the cotton regions is devoted exclusively to the culture of this crop, might we not infer that such lands were in the best condition, and that they repay the care bestowed upon them with rich and abundant products? The supposition is no sooner made than "twenty dollars an acre" stares you in the face.

Lands are sadly neglected at the North. Much land is used for convenience or otherwise in raising small and unremunerating crops. But who there, would be satisfied with a gross income of twenty dollars to each cultivated acre? On many capital farms, of a hundred acres or more, the quantity of cultivated land is often less than an eighth or a tenth of the total area. To cultivate properly any land, and to almost any crop, requires an outlay of ten or fifteen dollars. At the highest of these, the profit would be but five dollars an acre, and this pittance must pay all the family expenses and the interest of the capital.

That same land, if in good condition, might bring a hundred dollars per acre, under the hammer, and if five dollars is the extent of the profit, the owner therein receives interest on his capital, at five per cent., with nothing for tools, stock, waste, repairs, losses, etc., and the land is annually becoming less and less able to produce. Is that skillful agriculture?

At the North and West the profit actually earned out of the land is earned by only a portion of the working population. In the New-England and Middle States, only about two-thirds the adult males are engaged in agricultural labor. In the Southern States nine-tenths are thus employed, and many females. A large corps of laborers at the North and West are engaged in more lucrative trades than the farmer, while they create a market for what the farmer can sell. Let all those give themselves to agricultural pursuits at home, the quantity of products would be very greatly increased, though the market value might be at a lower rate than it is now. Had the South such a reserve force, with abundance of stock, what a difference there would be in her financial statistics!

There are lands at the North devoted to the culture of various crops, not remunerative, as wheat for example, in which the returns are only some ten or twelve bushels per acre. And yet on those lands the value of the annual harvest will no doubt exceed the sum of twenty dollars per acre. This may be near the average of some agricultural products at the North, as laid down by staticians who are not familiar with the facts belonging to the subject, but are far from being accurate records. Lands devoted to given crops, as corn, grains, grass, etc., change so constantly at the North, that a discreet man might well be in doubt how to make out his record, even in his own neighborhood. No man can make correct estimates even for a county, without long and laborious investigation. Such difficulties do not present themselves in the cotton-growing States, with few and limited exceptions. The same lands are used, year after year, and almost the whole land is devoted (in more than one sense of the word) to the culture of "king" cotton. Hence statistical estimates in that matter are probably very near the truth.

Profits increase in a much greater ratio than crops. The difference between the profits of a crop of wheat, twelve bushels to the acre, and a crop twenty-four or forty-eight bushels, is much more than one hundred or four hundred per cent. Between the two crops of twelve and forty-eight bushels, the profits of the latter will, perhaps, be ten times the greater. Suppose wheat is worth $1 a bushel; with the first crop the cost is, say $10; the profit will be $2. In the other case the cost may amount to $20. The value of crop is $48; profit, $28, or fourteen fold.

There is another view in which the importance to the South of a variety in agricultural crops assumes, in our own view, even gigantic proportions.

A short supply of cotton raises the price of the article. Suppose, instead of the usual supply of two and a half millions of bales, only one and a half millions were grown. Very nearly the same value must be received for this diminished quantity that is now received for the whole. It might be that more would be received. Besides, these two-fifths of the land, before devoted to cotton, will now be cultivated with other crops, and thus the entire proceeds of some 2,000,000 acres of land, producing, at the rate only of the cotton lands, a gross sum of some $40,000,000 annually, without a day's additional labor, or any material increase of expense. This would be annual net gain, while the lands would be improved by the change.

There is another record in the census tables which, if there is any meaning in its title, confirm our views as heretofore expressed, and authorizes even more unfavorable conclusions as to the profits of this crop. Table 188 shows that in all "the slaveholding States" there is raised 101.03 lbs. of cotton "to each person." That is to say, THE GREAT crop which overshadows every other crop grown, at 8 cents the average price for a series of years, pays a gross annual sum of $8.0924 to each person. Should it cost only 6 cents, the *profit* of this chief crop could be only $2.0924 to "each person. But it uses up, in a double sense, 1,000,000 acres. If this is within gun-shot of the truth, the South surely ought not to support the spindles of the north and of England at rates so ruinous to themselves. That same land, properly managed, ought to earn a net profit of $20 to $40 per acre, and would do so if the system we advocate were properly carried out.

Some months ago we gave it as our belief that some other crop might be profitably grown instead of wheat in many sections of country where that is a favorite growth. Let us look at this.

The census returns are our only data in these matters, in respect to nearly the whole country. A few States have made up their own census, and it is probable that these are more reliable than those under the direction of the general government.

A reference to this source of information gives us the following general result, with certain crops, for all the States:

		Products.	Acres.	Value.
Indian Corn, - -	bushels	592,071,104,	31,000,000	$296,035,552
Wheat, - - -	"	100,485,944	11,000,000	100,485,944
Oats, - -	"	146,584,179	7,500,000	43,975,253
Irish Potatoes, - -	"	65,797,896	1,000,000	26,319,158
Sweet " - -	"	38,268,148	750,000	19,134,074
Hay, - - -	tons	13,838,642	13,000,000	96,870,494

This gives us, also, the following:

		Per Acre.	Value.
Indian Corn, - - - - - - -	bushels	19.03,	$0 50 per bush.
Wheat, - - - - - -	"	9.13,	1 00 "
Oats, - - - - - - - -	"	19.53,	0 30 "
Irish Potatoes, - - - - - -	"	65.08,	0 40 "
Sweet Potatoes, - - - - - -	"	51.00,	0 50 "
Hay, - - - - - -	tons	1	7 00 per ton.

These returns, no doubt, are only approximations to the truth, and in some crops scarcely so much as that, notwithstanding the laborions study of our friend Mr. De Bow, with all his well-known talent and indefatigable industry, in searching for the truth out of a mass of inconsistent and irreconcilable figures. But, unfortunately, this is, in most States, our only source of general information.

These figures do not give us a very flattering account of the profits of agriculturists. But in many instances, sections of this territory do not appear to reach even these results. Thus Alabama raises but five bushels of wheat to the acre, and fifteen bushels of Indian corn. We do not believe that the wheat or the corn, at this rate, pays the cost of cultivation. Georgia raises 5 bushels of wheat and 7 of rye. These cannot pay their actual cost. Kentucky raises 8 bushels of wheat to the acre, N. Carolina 7, S. Carolina 8, Tennessee 7, and Virginia 7; none of which can pay the cost of growing it.

South Carolina raises but 11 bushels of Indian corn to the acre, and but 12 bushels of oats.

Florida raises but 250 pounds of cotton to the acre, or only half the average crop; Tennessee but 300 pounds, and S. Carolina but 350 pounds. We have just seen that a crop of 500 pounds is scarcely remunerative.

Now compare these results with some of the more favorable products in other States.

Florida, Texas, and Pennsylvania are returned in the census as producing 15 bushels of wheat per acre, and Massachusetts 16 bushels. But we all know of numerous instances in which 30 and 40 bushels per acre are grown.

Illinois and Indiana grow 30 bushels of corn, Missouri 34, Ohio 36, and Connecticut 40 bushels, as reported in the census. But cases are not unfrequent in which from 80 to 100 bushels are raised per acre, and sometimes 110 are obtained.

How can our land owners be content which such paltry returns for such immense outlays, when the way is so plain to increase their gains five and ten-fold. If wheat can be produced in a given territory at these lowest rates only, let something else be cultivated. Lands will produce something that will pay; and if there should be found some poor, forsaken territory that cannot give the careful tiller a better return for his investments than some that we have here pointed out, let them be abandoned, and more favorable locations be selected. Let them lie fallow a few years, as if they did not exist; and most probably, in a large majority of cases, the natural growth that will spring up will prove beyond dispute that these lands were not as utterly sterile as they were supposed to be, and that the grand mistake was in the treatment of it.

To Preserve Sweet Corn.—Gather the corn just as it begins to harden boil as for the table; cut the kernels carefully from the cob; spread them to dry on a sheet or clean floor, and keep them thus till well dried; then preserve them in a dry, cold and even temperature till needed for use. Soak the corn a few hours, and boil till properly softened, and serve them to your taste.

MR. EVERETT'S SPEECH,

AT THE BANQUET OF THE U. S. AGRICULTURAL SOCIETY AT BOSTON.

MR. PRESIDENT, AND LADIES AND GENTLEMEN:—My most excellent friend, who has just taken his seat, was good enough to remark that he was waiting with impatience for me to speak. Far different was my feeling while he was speaking.

I listened not only with patience, but with satisfaction and delight, as I am sure you all did. If he spoke of the embarrassment under which he rose to address such an assembly—an embarrassment which all, however accustomed to public speaking, cannot but feel—how much greater must be my embarrassment. He had to contend only with the difficulties natural to the occasion, and with having to follow the most eloquent gentleman from Philadelphia. I have to contend with all that difficulty, and with that of following not only *that* gentleman, who delighted us all so much, but my most eloquent friend who has just taken his seat.

And where *two such gentlemen* have passed over the ground, the one with his wide-sweeping reaper, and the other with his keen trenchant scythe, what is there left for a poor gleaner like myself, that comes after them?

With respect to the kind manner, sir, in which you have been so good as to introduce my name to this company, it is plain that I have nothing to respond, but to imitate the example of the worthy clergyman upon the Connecticut river, who, when some inquisitive friend, from a distant part of the country, asked him somewhat indiscreetly whether there was much true piety among his flock, he said, "Nothing to boast of."

If this were a geological instead of an agricultural society, and if it were your province not to dig the surface but to bore into the depths of the earth, it would not be surprising if in some of your excavations, you should strike upon such a fossil as myself. But when I look around upon your exhibition—the straining course—the crowded bustling ring—the motion, the life, the fire—the immense crowds of ardent youth and emulous manhood, assembled from almost every part of the country, actors or spectators of the scene—I feel that it is hardly the place for quiet old-fashioned folks, accustomed to quiet old-fashioned ways. I feel somewhat like the Doge of Genoa, whom the imperious mandate of Louis XIV. had compelled to come to Versailles, and who, after surveying and admiring its marvels, exclaimed that he wondered at everything he saw, and most of all at finding himself there.

Since, however, sir, with that delicate consideration toward your "elder brethren," which I so lately had occasion to acknowledge at Dorchester, you are willing to trust yourself by the side of such a specimen of paleontology as myself, I have much pleasure in assuring you that I have witnessed, with the highest satisfaction, the proof afforded by this grand exhibition, that the agriculture of our country, with all the interests connected with it, is in a state of active improvement. In all things, sir, though I approve a judicious conservatism, it is not merely for itself, but as the basis of a safe progress. I own, sir, there are some old things, both in nature, and art, and society, that I like for themselves. I all but worship the grand old hills, the old rivers that roll between them, the fine old trees bending with the weight of centuries. I reverence an old homestead, an old burying-ground, the good men of olden times. I love old friends, good old books, and I don't absolutely dislike a drop of good old wine for the stomach's sake, provided it is taken from an original package. But these tastes are all consistent with, nay, in my judgment, they are favorable to a genial growth, progression, and improvement, such as is rapidly taking place in the agriculture of the country. In a word I have always been, and am now, for both stability and progress; learning from a rather antiquated, but not yet wholly discredited authority, "to prove all things, and hold fast to that which is good." I know, sir, that the modern rule is "try all things, and hold fast to nothing." I believe I shall adhere to the old reading a little longer.

But, sir, to come to more practical, and you will probably think, more appropriate topics, I will endeavor to show you that I am no enemy to new discoveries in agriculture, or anything else. So far from it, I am going to communicate to you a new discovery of my own, which, if I do not greatly overrate its importance, is as novel as brilliant, and as auspicious of great results as the celebrated discovery of Dr. Franklin; *not* the identity of the electric fluid and lightning, I don't refer to that, but his other famous discovery; that, in the latitude of Paris, the sun rises several hours before noon; that he begins to shine as soon as he rises; and that the solar ray is a cheaper light for the inhabitants of large cities than the candles and oil which they are in the habit of preferring to it. I say, sir, my discovery is somewhat of the same kind; and I really think full as important. I have been upon the track of it for several years; ever since the glitter of a few metalic particles in the gravel washed out of Capt. Sutter's mill-race first led to the discovery of the gold diggings of California; which for some time past have been pouring into the country fifty or sixty millions of dollars annually.

My discovery, sir, is nothing short of this, that we have no need to go or send to California for gold, inasmuch as we have gold diggings on this side of the continent, much more productive, and consequently much more valuable than theirs. I do not, of course, refer to the mines of North Carolina or Georgia, which have been worked with some success for several years, but which compared with California are of no great moment. I refer to a much broader vein of auriferous earth, which runs wholly through the States on this side of the Rocky Mountains, which we have been working unconsciously for many years, without recognizing its transcendent importance, and which is actually estimated will yield the present year ten or fifteen times as much as the California diggings; taking their produce at sixty millions of dollars.

Then, sir, this gold of ours not only exceeds the California in the annual yield of the diggings, but in several other respects. It certainly requires labor, but not nearly as much labor to get it out. Our diggings may be depended on with far greater confidence for the average yield on a given superficies. A certain quantity of moisture is no doubt necessary with us, as with them, but you are not required, as you are in the *placers* of California, to stand up to your middle in water all day, rocking a cradle filled with gravel and gold dust. The cradles we rock are filled with something better. Another signal advantage of our gold over the California gold is, that after being pulverized and moistened, and subjected to the action of moderate heat, it becomes a grateful and nutritious article of food; whereas no man—not the long-eared King of Phrygia himself—could masticate a thimblefull of the California dust, cold or hot, to save him from starvation. Then, sir, we get our Atlantic gold on good deal more favorable terms than we get the California. It is probable, nay it is certain, that for every million of dollars' worth of dust that we receive from San Francisco, we send out a full million's worth in produce, in manufactures, in notions generally, and in freight; but the gold which is raised from the diggings this side, yields, with good management, a vast increase on the outlay—some thirty fold, some sixty, some a hundred. But besides all this, there are two discriminating circumstances of a most peculiar character, in which our gold differs from that of California, greatly to the advantage of ours. The first is this:

On the Sacramento and Feather rivers, throughout the *placers*, in all the wet diggings and the dry diggings, and in all the deposits of auriferous quartz, you can get but one solitary exhaustive crop from one locality; and in getting that you spoil it for any further use. The soil is dug over, worked over, washed over, ground over, sifted over—in short turned into an abomination of desolation, which all the guano of the Chincha Islands would not restore to fertility. You can never get from it a second yield of gold, nor anything else, unless probably a crop of mullen or stramonium. The Atlantic diggings, on the contrary, with good management, will yield a fresh crop of the gold every four years, and remain in the interval in condition for a succession of several other good things of nearly equal value.

The other discrimating circumstance is of a still more astonishing nature. The grains of the California gold are dead, inorganic masses. How they got into the gravel; between what mountain mill-stones, whirled by elemental storm winds on the bosom of oceanic torrents, the auriferous ledges were ground to powder; by what Titanic hands the coveted grains were sown broadcast in the *placers*, human science can but faintly conjecture. We only know that those grains have within them no principle of growth or reproduction, and that when that crop was to be put in, Chaos must have broken up the soil. How different the grains of our Atlantic gold, sown by the prudent hand of man, in the kindly alternation of seed-time and harvest; each curiously, mysteriously organized; hard, horny, seeming lifeless on the outside, but wrapping up in the interior a seminal germ, a living principle. Drop a grain of California gold into the ground, and there it will lie unchanged to the end of time, the clods on which it falls not more cold and lifeless. Drop a grain of our gold, of our blessed gold, into the ground, and lo! a mystery. In a few days it softens, it swells, it shoots upwards, it is a living thing. It is yellow itself, but it sends up a delicate spire, which comes peeping, emerald green, through the soil; it expands to a vigorous stalk, revels in the air and sunshine, it arrays itself more glorious than Solomon in its broad, fluttering, leafy robes, whose sound, as the west wind whispers through them, falls as pleasantly on the husbandman's ear as the rustle of his sweetheart's garment; still towers aloft, spins its verdant skeins of vegetable floss, displays its dancing tassels, surcharged with fertilizing dust, and at last ripens into two or three magnificent batons like this, [an ear of Indian corn,] each of which is studded with hundreds of grains of gold, every one possessing the same wonderful properties as the parent grain, every one instinct with the same marvellous reproductive powers. There are seven hundred and twenty grains on the ear which I hold in my hand. And now I say, sir, of this transcendant gold of ours, the yield this year will be at least ten or fifteen times that of California.

But it will be argued perhaps, sir, in behalf of the California gold by some miserly old fogy, who thinks there is no music in the world equal to the chink of his guineas, that though one crop only of gold can be gathered from the same spot, yet once gathered it lasts to the end of time; while (he will maintain) our vegetable gold is produced only to be consumed, and when consumed is gone forever. But this, Mr. President, would be a most eregious error both ways. It is true the California gold will last forever unchanged, if its owner chooses; but while it so lasts, it is of no use; no, not as much as its value in pig-iron which makes the best of ballast; whereas gold, while it is gold, is good for little or nothing. You can neither eat it, nor drink it, nor smoke it. You can neither wear it, nor burn it as fuel, nor build a house with it; it is really useless till you exchange it for consumable perishable goods; and the more plentiful it is, the less its exchangeable value. Far different the case with our Atlantic gold; it does not perish when consumed, but by a nobler alchymy than that of Paracelsus is transmuted in consumption to a higher life. "Perish in consumption" did the old miser say? Thou fool, that that which thou sowest is not quickened *except* it die. The burning pen of inspiration, ranging heaven and earth for a similitude to convey to our poor minds some not inadequate idea of the mighty doctrine of the Resurrection, can find no symbol so expressive as "bare grain, it may chance of wheat or some other grain." To-day a senseless plant, to-morrow it is human bone and muscle, vein and artery, sinew and nerve; beating pulse, heaving lungs, toiling ah, sometimes overtoiling brain. Last June it sucked from the cold breast of the earth the watery nourishment of its distending sap-vessels; and now it clothes the manly form with warm cordial flesh, quivers and thrills with the five-fold mystery of sense, purveys and ministers to the higher mysteries of thought. Heaped up in your granaries this week, the next it will strike in the stalwart arm, and glow in the blushing cheek, and flash in the beaming eye; till we learn at last to realize that the slender stalk which we have seen bending in the corn-field under the yellow burden of harvest, is indeed the "staff of life" which, since the world began, has supported the toiling and struggling myriads of humanity on the mighty pilgrimage of being.

Yes, sir, to drop the allegory and speak without a figure, it is this noble agriculture for the promotion of which this great company is assembled from so many parts of the Union, which feeds the human race and all the humbler orders of animated nature dependent on man. With the exception of what is yielded by the fisheries and the chase (a limited though certainly not an insignificant source of supply) agriculture is the steward which spreads the daily table of mankind. Twenty seven millions of human beings, by accurate computation, awoke this very morning in the United States, all requiring their "daily bread," whether they had the grace to pray for it or not, and under Providence all looking to the agriculture of the country for that daily bread, and the food of the domestic animals depending on them; a demand perhaps as great as their own. Mr. President, it is the daily duty of you farmers to satisfy this gigantic appetite; to fill the mouths of these hungry millions—of these starving millions I might say, for if by any catastrophe the supply were cut off for a few days, the life of the country—human and brute—would be extinct.

How nobly this great duty is performed by the agriculture of the country, I need not say at this board. The wheat crop of the United States, the present year, is variously estimated at from one hundred and fifty to one hundred and seventy-five millions of bushels; the oat crop at four hundred millions of bushels; the Indian corn, our precious vegetable gold, at one thousand millions of bushels! Of the other cereal and of the legumious crops I have seen no estimate. Even the humble article of hay,—this poor timothy, herds' grass and red top, which, not rising to the dignity of the food of man, serves only for the subsistence of the mute partners of his toil—

the hay crop of the United States is probably but little, if any, inferior to the whole crop of cotton, which the glowing imagination of the South sometimes regards as the great bond which binds the civilized nations of the earth together.

I meant to have said a few words, sir, on the nature of this institution, and its relations to our common country, as a bond of Union. (Cries of "go on, go on.")

I have lost my voice and strength, and my good friend who has treated that topic never yet left anything to be said by those who come after him I will only, in sitting down, take occasion to express the great interest I feel in the operations of this institution. I see that it is doing, and I have no doubt that it will yet do infinite good.

I beg, in taking my seat, sir, to tender you my most fervent wishes and hopes for its increased and permanent prosperity and usefulness.

VIRGINIA AND THE WEST—ITS INDUSTRY, ETC.

The message of Gov. Johnson, of Virginia, furnishes much statistical information, and from it we make the following abstract:

"The Central Railroad, which is but the prolongation eastward of the Covington and Ohio road, is in a state of forwardness, and will doubtless be completed within the period prescribed for finishing the Covington road. The same may be said in reference to the Richmond and York River Road; the last connecting link between the Great West and the capes of Virginia.

"The Virginia and Tennessee Railroad is rapidly approaching completion at the Tennessee line, where it will connect with a net work of improvements, terminating respectively at Knoxville, Nashville, Memphis, and Little Rock in Arkansas. Add to these improvements, the Great Water Line of the James River and Kanawha Company, now extending continuously 200 miles.

"The Richmond and Danville Railroad is rapidly approaching completion to the town of Danville, its southern terminus, and before the end of the year will probably be in use throughout its whole extent."

We take the following passages, entire, from the Governor's Message.

"If the interest of our people required this improvement, (the Covington and Ohio Railroad) in 1800, when the combined population of Norfolk, Richmond, and Petersburg, the three largest cities in the State, was less than 17,000, and the revenue of the State less than half a million, how must the demand have augmented now, when the population of those cities has increased to 70,000, and the revenue to two and a half millions. If called for when Mississippi, Illinois, Indiana, Louisiana, Missouri, Arkansas, Michigan, Wisconsin, and Iowa, had scarcely emerged from their primeval state, what must be the comparative demand now, when the above-named States have become the most productive in the Union. In six of these States, including the western portion of Virginia and Pennsylvania, there was raised in 1849 within a fraction of three hundred and fifty millions of bushels of corn. And according to the ratio of increase during the last te n years, we may safely estimate the crop of 1860, within the above region, at five hundred and fifty millions of bushels, which is about two-thirds of the entire quantity raised in the United States. Of this enormous crop, it is fair to suppose that one hundred and fifty millions can be spared for exportation, and will seek a transit through the several thoroughfares terminating on the seaboard, provided the foreign demand shall justify such exportation. And in order to determine how far we should rely upon such demand, let us examine for a moment what can be gathered from an estimate of trade in that article for some years past. By reference to statistics, believed to be reliable, it will be found that the exports of corn and corn meal from this country at different periods, have been as follows:

In 1837,	951,276	bushels.
1846,	3,326,068	"
1849,	15,283,054	"
1850,	7,892,302	"
1851,	4,444,921	"
1854,	20,000,000	"

"The above statement shows conclusively that the foreign demand is rapidly increasing, and that notwithstanding the falling off immediately after the famine in a portion of Europe, the exports for the year 1854 amounted to 20,000,000 bushels, establishing the fact, that it is the cheapest and best bread within their reach, and that its use, at no distant day, will extend throughout all western Europe. In that country it is not grown except to a limited extent. Consequently, the supply must be from the United States, and is destined to form a staple article, equal if not exceeding that of cotton in amount.

"I have said nothing of the extensive production of wheat, oats, hemp, and tobacco, all of which admit of transportation, and yield a fair profit to the producer. The census of 1850 shows that the region of country above named produced upwards of fifty millions of bushels of wheat in 1849, and that Kentucky alone exported fifty-five millions of pounds of tobacco. This immense and almost incalculable amount of trade must find its way to a foreign market through some of the great leading thoroughfares now in operation or in progress of construction. The next inquiry is, can Virginia compete successfully for this trade and travel? The ready answer is, yes. Her Atlantic ports are nearer the center of these western and south-western granaries than any other on the coast; her roads of easier grades; her climate more genial, and the scenery more picturesque and inviting, while her ports and harbors are more spacious and safe, and the egress to the ocean more convenient and direct than from any other that could compete with her.

"It is a self-evident proposition that the production of a country intended for market will be conveyed by the cheapest and most direct line; and as the communication with the European markets will be shorter through the ports of Virginia than any other, it is but reasonable to infer that the trade of the South and West will necessarily pass through this channel when these improvements shall have been completed. And yet, for want of them, the census of 1850 shows that there was received, during that year, in the city of New-York, from Western States, 984,434 barrels of flour, 3,344,647 bushels of wheat, 2,608,967 bushels of corn, 146,836 barrels of provisions, besides a corresponding quantity of ashes, stores, wool, butter, cheese, lard, etc., a large portion of which is forced upon a route more than one hundred miles longer than that terminating on the Capes of the Chesapeake, and much of which must of necessity return by way of the Capes in its regular transit to a foreign market, being a palpable innovation upon the established rules of traffic, the end and object of which is gain to the operator.

The foregoing statistics have reference to the section of country bordering on and northwest of the Ohio river; but it should be remembered that at the mouth of the Big Sandy River Virginia shakes hands with her daughter Kentucky, who has long been importuning her tardy mother for permission to pass her rich treasures through the ancestral domain to the Chesapeake, and from thence, by a direct transit, to the different marts of the world. Kentucky proposes also to make common cause with Virginia in the completion of improvements now in progress, by which a direct communication will be formed between Norfolk, Petersburg, Richmond, Fredericksburg, and Alexandria, in Virginia, and Maysville, Lexington, and Louisville, in her own State, and extending from thence, by way of Memphis, on the Mississippi river, to the distant southwest.

The system in progress is equally magnificent in plan and importance; and when completed, in connection with a direct communication with foreign cities and depots, will impart renewed vigor and activity to all branches of business, greatly enhance the value of our lands, build up our cities, and make Virginia conspicuous among the most flourishing in the category of States.

UNITED STATES AGRICULTURAL SOCIETY.

Let all who can, give their attendance at the meeting announced below. It cannot fail to be highly interesting and important.

The Fourth Annual Meeting of the United States Agricultural Society will be held at Washington, D. C., on Wednesday, January 9, 1856.

Business of importance will come before the meeting. Reports from its officers will be submitted, and a new election be made, in which it is desirable that every State and Territory should be represented.

Lectures and interesting discussions are expected on subjects pertaining to the objects of the Association, by distinguished scientific and practical agriculturists. The transactions of 1855, containing a full account of the late exhibition at Boston, will be distributed to such members as are present.

The various agricultural societies of the country are respectfully requested to send delegates to this meeting; and all gentlemen who are interested in the welfare of American Agriculture, who would promote a more cordial spirit of intercourse between the different sections of our land, and who would elevate this most important pursuit to a position of greater usefulness and honor, are also invited to be present on this occasion.

W. S. King, *Secretary*. Marshall P. Wilder, *President*.

December, 1855.

NORTH CAROLINA, ITS CAPACITIES AND ITS CONDITION.

We have read with much pleasure the following statements of the condition of the lands and of general industry in North Carolina, in the address of Hon. Thos. Ruffin before the State Agricultural Society. We wish there were many more such energetic and efficient advocates of this cause in every part of the country. We take the following from the address of Mr. Ruffin as published in the Carolina *Cultivator:*

"The profits and the comforts of agriculture depend mainly on climate, soil, labor, and the facilities for disposing of surplus production. The two first, climate and soil, should be congenial to products requisite for the sustenance of the husbandman himself, and in demand for others who cannot produce for themselves. In both points North Carolina is highly blessed. In her position on the globe she occupies that temperate and happy mean, which is conducive to health and the vigorous exertion of the faculties and energies of body and mind, in employments tending more than all others to the hospitalities and charities of life and the other virtues of the heart, and which constitutes a climate, that, in unison with her fertile soil, yields abundantly to the diligent tiller nearly all the necessaries and many of the luxuries required by man. We do not work barely to maintain life; but, beyond that, to realize gains that may be employed in the addition of other things productive of the elevation and refinement of civilized man. Our winters, by their duration and rigor, do not confine us long within doors, nor cause us to consume the productions of our labor during the other parts of the year; but we are able to prosecute our field operations and comfortably pursue our productive employments throughout the four seasons. Though not of such extent of latitude as thereby to create much variety of climate, and consequently of production, yet the dimensions of North Carolina, east and west, supply that deficiency in a remarkable degree. The proximity to the ocean of her eastern coast, and the difference in elevation between that and the mountains of the west, with the gradations in the intermediate regions, produce a diversity of genial climate which gives to North Carolina, in herself, the advantages of many countries conjointly. By nature, too, her soil was as diversified and as excellent as her climate. The rich alluvial of the east, the extended and extremely fertile valleys of the many long streams—the Roanoke, the Tar, the Neuse, the Cape Fear, the Yadkin and Pedee, the Catawba, and other rivers, which appear upon our map, besides those of smaller streams, almost numberless, all, at a moderate expense of care and labor, return large yields of nearly every grain and other production fit for food. Rice, maize, wheat, rye, barley, oats, the pea, the potato of each kind, besides an endless variety of other sorts, vegetables, and fruits, are found abundantly therein; while higher up the country, in addition, the grasses grow so readily and luxuriantly as to afford not little plots on the moist bottom sof brooks, but extensive pastures and magnificent meadows to the mountain tops. Then, there are the great articles of cotton and tobacco, so extensively used and in such great and increasing demand—to one or the other of which the greater part of the State is eminently suited. Of fruits, melons of every kind and of the best qualities, apples, peaches, pears, cherries, nectarines and apricots flourish almost everywhere, as do also the smaller, but most valuable kinds, as the strawberry, the raspberry, the gooseberry, currants, and, above all, our native grapes, the sweet and prolific Scuppernong and the rich Catawba, which mature well, besides some of foreign origin. When to these are added the fish, with which our eastern waters abound through the year, but are alive in the spring—our naval stores and lumber, our marls, our minerals, gold, silver, copper, and especially the extensive and rich deposits of iron ore, and the coals, one may confidently ask, is there any other country which contains or produces more or a greater diversity of things to sustain life or to bring money? And then let me inquire of you, North Carolinians, what better country do you want than your own? I hold it is good enough—too good, I am tempted to say, for sinful man. It requires only to be dressed and tilled to give nearly all we want on earth, and much for our fellow-man less happily situated. There may at some time be a stint below our usual abundance; but we need never fear a famine here while we work. Indeed, that calamity can hardly befall a country where maize—which we call Indian corn—grows to perfection. There is no record of a dearth, approaching famine, where the principal crop was maize, as it is here. Our climate and soil are so congenial to the other cereals, that a failure of that crop from an unpropitious season is necessarily perceived in time to provide the others, or some of them, as a substitute.

"If not to the lowest, certainly to a very low condition, much of the land in the State had been brought; and the time came, when, if improvement was ever to be made, it would be commenced. I use the expression, 'the time came,' instead of 'has come,' because it is a joyful fact, that some persons in various parts of the State, many in some parts, have improved, and continue to improve their lands and increase their crops—profiting much therefrom in their fortunes and setting the rest of us examples by which we ought also to profit. We have all heard for some years past, that the era of improvement had begun in the great and wealthy county of Edgecombe; and I learn from unquestionable sources, that the intelligent and enterprising planters of that county have been rewarded by signal success. I do not propose to enter into a detail of their system further than to say, that it consists chiefly in draining by ditches and embankments, making and applying composts, the use of guano and plaster of Paris, and the field-pea as an ameliorating crop, as well as food for stock. I advise every one, however, who has the opportunity, by minute inquiries to obtain from those who have put this system into use, detailed information respecting it; and I feel no hesitation in preferring a request to the planters of Edgecombe, as public-spirited gentlemen, to communicate through our agricultural periodicals the history of their improvements, and their experiments—as well those in which they failed as those in which they succeeded, with all other matters which may be useful to their brethren in other sections.

To Preserve Sweet Potatoes.—Dig them carefully, before they are injured by the frost; place them in barrels without bruising their skins, and let the barrels stand upon their ends to prevent their rolling. Keep them as cool as is safe, (guarding them from the frost,) and at an equal temperament. A little dirt will be no injury, and may serve as a slight protection both from injury and from frost.

PELLA, IOWA—ITS INDUSTRY, ETC.

A late number of the *Gazette*, published at this thriving place, (and a very good paper it is,) contains an article from which we gather the following facts:

Green hides can be purchased there at three cents a pound, and dry hides at six cents, while in this city they are worth from 15 to 25 cents.

Bark costs 75 cents to a dollar a cord.

Leather is as high as at the East. That used in Iowa is imported from St. Louis, Burlington, Keokuk, Cincinnati, etc.

In Keokuk prices range as follows:

Red sole leather,	25 to 26 cents.
Oak, Cincinnati,	25 " 31 "
Harness,	30 "
Upper,	26 " 36 "

Hence the manufacture of leather in these places must pay a great profit, all the requisites for tanneries are easy of access.

Lard is worth 7 to 10 cents, Stearine candles 30 cents, lard oil a dollar per gallon. Tallow averages 10 cents, and mould candles 20 cents. Soap grease say 2 cents, and soap from 12 to 15 cents, finer much higher.

There are stone quarries, brick kilns, and steam saw-mills, but building materials are scarce. Lime and sand are abundant.

"All that is required is pressure of one part lime with from ten to twelve parts sand, and they dry and harden in the sun. Cost of machine, with transportation, two hundred and fifty dollars. Cost of patent right for county, say two hundred dollars. Two men and a horse required to work it, and machine averages, say fifteen hundred brick a day, each brick from three to four times as large as a common brick, and ready to put together with a cement composed of lime and water. They will make a handsomer, more durable, and cheaper house than any now built.

"Steam Grist Mills.—There are a large number of our citizens who are already aroused respecting this enterprise, who know its importance, utitity, and profit, and who would gladly engage in it, if they had the means. We learn that Messrs. Grafe & Henckler intend to erect a mill of this description in this place; but we candidly think the field is large enough for two. We live in a well settled farming region, and if such mills are built, they will encourage the growth of grain, and the demand for both home consumption and exportation is sufficient to support and give constant employment to at least two large-sized grist-mills. And it will be certainly to the advantage of the farmer, as 'competition is the life of trade.'

"Iron Foundry.—It is well known that there are large beds of iron ore, of superior quality, in this vicinity, with abundance of coal, wood and water in the same vicinity, so that such an enterprise can be successfully put into operation here. Of course such an enterprise would begin with minor castings of such things as are in universal demand. But we think it would not require a great stretch of imagination to conceive that such an enterprise would gradually enlarge until railroad iron, steam engines, and locomotives would form an important part, and distinguishing feature. Then it would give constant and profitable occupation to numerous workmen, and add materially to our present wealth and prosperity. We long to see some enterprising individual take hold of this work.

"GLASS FACTORY.—The risk of breakage is so great on transportation of glass that it forms an important item in its cost to the consumer. All this would be obviated if we had a glass factory here. Abundance of fine sand exists in this vicinity, and potash can be readily procured from the surrounding country.

"POTASH FACTORY.—Potash is now worth here about 20 cents a pound. It could be made with profit at 12 cents, and the market would be excellent if we could get soap and glass factories.

"CHAIR FACTORY.—This useful article of furniture is now about entirely imported from the river and Cincinnati. The cost of transportation would alone form a handsome profit to the manufacturer. The same remark will apply to sash and door factories.

"CARDING MACHINES.—Iowa is one of the best States in which to raise sheep in the Union. Wool is worth here from 40 to 50 cents a pound, and yarn from one dollar to one dollar and a quarter a pound. From 50 to 75 cents a pound is pretty good profit."

We give the above statements and commend them to the attention of our mechanics, etc., who are in the market, that they may carefully view this field. It offers strong inducements for young men of enterprise, and we hope to see this section rapidly occupied with every form of industry. God speed our friends in the far West.

THE COST OF RAISING COTTON.

[WE avail ourselves of the following very satisfactory testimony in corroboration of our own estimates of the value *to the planter* of the latter crop, by one who evidently knows how to estimate the expenses of agricultural products. We hope our Southern friends—whom we count by many hundreds—will give them the attention they deserve.]—ED. P. L. & A.

MESSRS. EDITORS:—Knowing, from the regular perusal of your paper, that you do not desire to circulate erroneous information, I take the liberty of correcting a very incorrect statement which appeared in your tri-weekly issue of the 28th ultimo, in a communication headed "The Gulf States of our Union and the Valley of the Mississippi." The misstatement, doubtless an unintentional one, occurs in the following paragraph:

"The cost of raising cotton is four cents a pound; one bale of five hundred pounds to the acre is considered a fair crop. A twenty-acre field yielding twenty bales, or ten thousand pounds, at eight cents a pound, only yields a profit of four hundred dollars." [See our leading article.]

The true state of the case can best be reached by taking the case of an improved plantation of the most available size and with a proper number of slaves upon it, and making the estimates from that basis. This is a most favorable way of making the estimate to exhibit the largest profit; for it is well known to every experienced planter—and how dearly some have purchased their experience!—that the expenses incident to the opening and improving of a plantation for several years after the undertaking is begun, eat up all the profits and often leave a load of debt behind, sometimes forcing a sale of the whole property, which thus leaves the lands of the original proprietor to fall into those of some wiser man who has eschewed the toil and hazard of opening a new place.

A plantation of sixteen hundred acres, one thousand of which is cleared land, and has the necessary cabins and other buildings necessary for carrying on a place of that size, is worth from forty to sixty dollars per acre, according to locality. Estimating its value at the lowest rate, say $40 per acre, and it makes $64,000. To work this place to advantage—that is, to cultivate seven hundred and fifty acres in cotton and two hundred and fifty in corn, peas, potatoes, etc.,—will require a force of 75 effective hands, which, with the young and old, who do not go to the field to work, who would ordinarily be united to the 75 hands, would constitute about 130 or 140 slaves on the place, who, at an average $600 a piece, would be worth about $75,000; 50 mules worth $130 each, would make $6,400 more; 100 head of cattle may be estimated at $1,200; 300 hogs may be estimated at $700; 12 yoke of oxen at $600; wagons, farming utensils, furniture, blacksmith and carpenter's tools, and all the other necessaries, including gin-stands, mill, etc., may be estimated (and it is an under estimate) at $2,000; so that any one, by simply adding these different amounts, will see that the entire value of such a place as I have supposed will be about $150,000; and this upon the supposition that the place is worked without a steam-engine to gin the cotton with.

Such a place, with favorable seasons, will make ten bales to the hand, or about one bale to the acre, and sometimes when everything is prosperous, an early spring and a late dry fall, as many as twelve bales to the hand, and in some very extraordinary instances even as high as fifteen bales have been gathered. But on an average of ten seasons every experienced planter will agree that eight bales to the hand is an outside estimate, making a crop of about six hundred bales; and taking 8 cents as the average price per pound, which for swamp cotton is again a full estimate, and the gross income for a single bale of 400 pounds, which is the well known uniform weight, will be $32, and the whole crop $19,000, exclusive of the cost of shipping, and soiling the crop, which amounts to at least $2 50 per bale in every case, and where the place is distant from market nearer twice that; leaving say a net income of about $18,000. From this must now be deducted the cost of cultivating the place, overseer's wages, feeding, clothing, and doctoring the negroes, supplying wear and tear of tools, and losses of mules and stock, altogether, on a place of the size I have named, not falling short of $6,000, many planters estimating their expense at $100 to the hand, which would make $7,500. Taking it at the former sum and we have the net profits of such a place as I have described amount to $12,000, being just about an interest of 8 per cent. on the value of the capital invested.

This, Messrs. Editors, I believe a fair statement of the profits of the cotton planter; and you can now see how it comports with the fancy sketch of your correspodent. If I have exaggerated at all it has been in giving too favorable an aspect to the side of A PLANTER.

VICKSBURGH, July, 1855. [*National Intelligencer.*

SHELBY COUNTY (ALA.,) LIME.

[WE are always glad to announce such statements as the following, which we find in the Alabama *Planter*.—ED. P. L. & A.]

"We received yesterday a specimen of the lime manufactured by the Shelby County Lime-Kiln Company, (situated some sixty miles above Salem) under the management of Mr. Robert Hall. Those interested in the article can see it by calling at this office.

"The company, we learn, has a large capital, and is getting ready to furnish one thousand bushels of lime per day. It is manufactured from blue limestone, which, we believe, is considered the best stone for the purpose. The supply of material is inexhaustible.

"Several barrels of the article have been brought to this city for trial, and some of our most experienced builders pronounce it superior to the Thomaston lime. Others are about to put it to test, and their opinions we shall, doubtless, have presently.

"The specimen at this office is extremely fine, and worthy of the attention of dealers and builders.

"There is only now one drawback to the enlarged operations of the company, and that is the uncertainty of communication with this city. The confident belief is that if the supplies can be got here it will drive all other limes from the market. And this, after all, is the chief obstacle to the development of the immense wealth of the interior; and is another reason why our citizens should give their attention more generally to the subject of internal improvements. With a certain communication, either by river or railroad, with the seat of our mineral wealth, within a few years we should have numerous companies of wealthy men diverting their capital from cotton to these mines of wealth which, in many cases, are now almost worthless. The result would be good both for town and country. It would draw us more closely together, and save to our people hundreds of thousands of dollars which now go to enrich places which have no interest or sympathy in common with us.

"If the rivers do not cheat us this season, however, the company will find means enough to send hither large quantities of this lime. We wish it all the success which it seems to merit."

COMMERCE OF THE COUNTRY.—The Washington papers contain official documents giving in detail the exports of domestic merchandise from the United States to foreign ports for the year ending on the 30th June last.

The total exports of breadstuffs amounted to $21,557,854; of provisions, $15,138,277. Making a total of breadstuffs and provisions of $36,696,131, against $65,901,240 of the same in 1854; showing a decrease in 1855 of $29,205,109.

TOBACCO EXPORT, JANUARY 30, 1855.

Treas. Year.	Hogsheads.	Value.
1855	150,213	$14,712,468
1854	126,107	10,016,046
Increase	24,106	$4,666,422

France is the largest importer of our tobacco, taking 40,866 hogsheads Great Britain takes 24,303, Bremen, 38,053, Holland, 17,124; the balance is distributed among the different Continental States.

The following is a comparative export of the great staples:

	1855 Value.	1854 Value.
Cotton,	$88,143,844	$93,596,220
Bread and provisions,	36,696,131	65,901,240
Tobacco,	14,712,468	10,016,046
Rice,	1,717,953	2,634,127
Total	$141,270,396	$172,147,635

Of the 1,203,540 bbls. of flour exported in 1855, New-Orleans exported 345,743 bbls. Of the 294,440 bbls. pork, New-Orleans sent off 168,311 bbls. She sent off 43,312 hogsheads of bacon, of 38,186,989 lbs., the entire amount exported from the country; 791,635 kegs of lard, of 39,025,492 lbs. We exported 1,270,264 bales of cotton, and 64,100 hhds of tobacco.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

FOREST TREES OF NICHOLS, TIOGA CO., N. Y., AND THEIR USES.

CARTANEA VESCA AMERICANA, OR CHESTNUT.

The chestnut is found in this vicinity growing on the river and creek flats, also on the highest hills, in nearly all situations. Trees on the flats are generally bushy, like the apple-tree, and seldom over 40 feet high, and two feet in diameter. They have generally grown since the land was first cleared, while on the tops of the highest hills they are from 70 to 90 feet high, and from 2 to 5½ feet in diameter. A number of old trees on a high ridge near here will average 3 feet and occasionally one near 6 feet.

Leaves oblong lanceolated, accuminate, mucronately serrate, smooth on both sides, ribs to leaves fifteen on each side, stems to leaf about three-fourths of an inch long, leaves from 8 to 12 inches long, and 2 to 3 inches wide. Sterile aments about 6 inches long; the numerous flowers, white or cream color, and show to a great advantage a mile or more, emitting a sickish sweet odor that can be smelt a long way. The chestnut was in full bloom this year the 18th of July, and is frequently in bloom the 10th of July. We generally think it the best time to sow buckwheat when the chestnut is in full bloom.

Fertile involucres or burs solitary or several in a cluster, like apples, scaly when grown large, frequently two inches in diameter, nearly round, and covered with slender compound rigid prickles, which are one-fourth of an inch long, hard and stiff when ripe, making it difficult to handle. These burs are a beautiful green, till within a few weeks of being ripe, when they turn a brownish drab. Each bur generally incloses three nuts; one or two are often abortive. Nuts varying in form according to the number in an involucre or bur. When there are two, each will be compressed on the inside;

and when three are perfected, the middle one will be flattened on each side.

The chestnut flowers here from the 8th to the 18th. Fruit ripe in the latter part of October, generally not till after a hard frost.

The chestnut is the most valuable tree we have in this vicinity. It splits very readily into posts or rails; and when green chops very easily. A man that understands the business will often split from three to five hundred rails in a day. The timber is light and stiff when seasoned. The rails last from thirty to forty years, and posts in the ground from twelve to sixteen years, and perhaps much longer. The chestnut after being cut down sprouts very much. The sprouts frequently grow five feet in a year, and by letting them stand, there will be a large growth of timber in a few years. If the land is to be kept clear, the sprouts are easily knocked off. Sprouting for successive years generally kills the stump, when it rots out in fifteen or twenty years, unless very large. But the chestnut stump comes out early in comparison with the durability of the timber. Stump machines are getting so common here, that stumps of all kinds of timber are readily pulled when green.

As yet, chestnut timber has been used only for fencing in this vicinity, with the exception of sills, plates, etc., for frames.

The nuts that grow on chestnut trees in some years are quite abundant, and are worth from $2 50 to $3 per bush. ROBERT HOWELL.

NICHOLS, Dec. 13.

INSECTS INJURIOUS TO VEGETATION.

HEMIPTERA. (Continued.)

WE proceed with the description of insects of this order, and next describe the

COCCIDÆ or BARK LICE.—They have thread-like or tapering antennæ, longer than the head; females wingless, but furnished with beaks; males with wings, which lie horizontally on the top of the back, and are not furnished with beaks, (suckers.) Feet with only one joint, terminated with a single claw; skin firm and hard; two slender threads at the extremity of the body in both sexes. The females are without piercers. They are about one-tenth of an inch long, and of an oval shape.

These insects live chiefly in the barks of the stems of plants, though sometimes found on the leaves and roots. In their early stage the head is concealed beneath the shell of the body, and the beak seems to issue from the breast. The legs, six in number, are very short, and invisible from above. The females scarcely undergo any change except an increase in size, though the males pass through a complete transformation ere they arrive at their perfect state. They are found early in the spring, in a torpid state, adhering close to the surface of the bark, with the head upwards, and an attempt to remove these insects generally crushes them, when a dark-colored fluid issues from the body. At a later season, if lifted from the bark by a knife-blade, numerous eggs will be discovered, and the insect appears to be dead and dried up. On the approach of warm weather, the young escape through the lower end of this shield, and move about with considerable activity.

These insects form the Genus Coccus. They present various aspects in regard to their covering. The *Coccus cacti*, or cocheneille of commerce, is covered with a mealy powder. So also is the Coccus Adonidum, or *mealy bug* of our green-houses. Some are hairy or woolly, and many others are naked and dark-colored. The young are generally white, or nearly so. They draw their sustenance from the bark, and plants often suffer severely from the loss of sap exuding through the punctures thus made. In process of time they fasten themselves by threads to the bark, and undergo a transformation. If these shields are raised, the rudiments of wings, antennæ, etc., appear. This is their pupa or chrysalis state. The larger insects are the females, who remain immovable. After pairing, the females increase in size. The eggs, which are numerous, pass under the body of the insect, which gradually dries up as already stated. The bark-louse of the apple-tree produces two or more broods in a season. The females survive the winter and lay their eggs in the spring. The males die in autumn.

Young apple-trees suffer from the attacks of these lice.

The eggs of these insects are very numerous, 30 or 40 being often found under a single shield. They are white and oblong, like snake's eggs. They begin to hatch, in the Northern States, about the 25th of May.

Chichadees and *Wrens*, and some other birds, are the natural enemies of these lice, and devour great numbers of them. Ichneumon flies of very small size also destroy them.

Soap-suds mixed with lime is a useful application. The lime should be added in such quantities as to make a thick whitewash. This should be applied with a brush, so as to fill all the crevices, cracks, etc., existing in the bark. It should be applied in June.

There are other kinds of lice found on these trees, of a different species, one of which is nearly the shape of an oyster-shell, which are dormant in winter. The female is minute, wrinkled at the sides, flattened above, of a reddish color. She undergoes no change. The male completes its transformation about the middle of July. The perfect male is scarcely more than a point, but under a microscope appears furnished with whitish wings, long antennæ, six legs with their joints, and two bristles, terminating the tail.

The young lice are pale yellowish-brown, oval, and appear like scales. They move about for a while, and then become stationary, and after pairing lay their eggs.

The Cotton louse sucks the sap from the leaf and tender shoots of the plant, by which the vigor of the plant is wasted, and the leaves curl up, turn yellow, wither and die. It is of a green color, about a tenth of an inch in length. Two slender tubes, growing from the abdomen, secrete the "honey-dew," which attracts multitudes of ants. The young insects appear during the summer, and the depredations of the insects continue till November.

It is impossible to describe all the numerous species of the louse, and a microscopic examination would scarcely enable one not having great experience to distinguish them. Nor is this ability requisite for the agriculturist, as the same means are efficient alike for the entire order. The minute classifications are important only to the student of natural history.

LIST OF FRUITS FOR OHIO.

Taken from the published report of the Ohio Pomological Society and the State Agricultural Convention at Columbus.

The object of the meeting was stated by Dr. Warder to agree upon a list of apples to be recommended for general cultivation throughout the State of Ohio.

On motion, it was agreed to take up the several kinds of apples in the order of their season, as summer, fall and winter varieties.

Early Harvest was reported as good in all parts of the State—not a profuse bearer, but fair in most localities; does best in rich or well manured soil. Highly approved wherever known. Recommended unanimously.

Early Strawberry.—Highly approved in south and center of the State, also in north-west and north-east. Not much known in some of the northern counties, but does well wherever known. Recommended unanimously.

Large Yellow Bough or *Sweet Bough.*—Gen Worthington has grown this extensively for many years in Ross County, and approves it very highly. Was reported good in all parts of the State. Not a great bearer. Dr. Warder proposed to recommend it only for limited cultivation. Recommended with one dissent.

American Summer Pearmain.—Proposed by Dr. Jones, and highly recommended by all who know it, but passed as not sufficiently known.

Golden Sweet.—Generally known in different parts of the State, and highly recommended, especially for baking, for apple butter, and for stock. Recommended with one dissent.

Maiden's Blush.—Commended by numerous gentlemen, especially for its fine looks and for market. Some like it for cooking and for the table; does well in all parts of the State—is larger and of less flavor south than north. Recommended with several dissents.

Fall Pippin or *Golden Pippin.*—Well known and highly approved in all parts of the State. Keeps best and has best flavor at the north, but is largest at the south. Recommended with one dissent.

Cooper.—Dr. Hempsted said he believed the history of this apple had not yet been fully stated. The grafts were brought from Boston to Marietta by Mr. Adams, of Zanesville, who called it a *French Apple*, the original trees having been imported, as he believed, from France. All present who knew the apple called it first-rate; but some gentlemen thought it not sufficiently known to warrant its recommendation for general cultivation, especially in the northern part of the State. Recommended with one dissent.

Rambo.—Was pronounced first-rate, especially in central parts of the State. Dr. Warder said it was good at the south, but ripens early, becomes dry, and does not keep as well as at the north. Recommended unanimously.

American Golden Russet.—Gens. Worthington and Green said it was first-rate when in perfection, but with them it soon perishes, and is not generally of fair and healthy growth. Mr. Steele finds it first-rate, good size and trees healthy, considers it the best of winter apples for the table. Other gentlemen said it was not of attractive appearance, and not good for market; though persons who knew it would buy it. Dr. Cone said trees were not healthy with him. Dr. Warder considers it first-rate—tree of slender growth. Recommended unanimously.

Yellow Bellflower.—Much approved in most parts of the State; not so large and handsome at the north as in central Ohio. Recommended with several dissents.

White Bellflower or *Ortley.*—Mr. Ernst and others from southern Ohio approve it highly; and all agree that it is a good apple, and adapted to most parts of the State. Recommended with several dissents.

Newtown Spitzenberg.—Very highly approved at Cincinnati, and also in other parts of the State wherever known, for table and for market. Recommended.

Winesap.—Well known and everywhere approved. Recommended unanimously.

Talman Sweeting.—Recommended and several others as very excellent for baking, and as a great bearer, profitable for stock. Passed, as not sufficiently known.

Roxbury Russet.—Condemned by many as uncertain, and liable to speck and rot. Passed as not worthy of general commendation.

Newtown Pippin.—Highly commended generally, but Gen. Worthington and several others found it to speck with them. On sandy soils not generally good, also on beech clay soils at the north. Professor Mather thought it was good only on limestone soils. Gen. Worthington thought this and some other *old* kinds are losing their health and vitality. Recommended with several dissents.

Rawles' Janette or *Geneting.*—Dr. Warder said this was *the* winter apple of southern Ohio, Kentucky, etc., but he was afraid it was not generally known through the State, especially in the north. Several gentlemen from different parts of the State said they knew it, and approved it highly. Recommended unanimously.

Winter Sweet Paradise.—Specimens presented by Mr. Brush, who commended it very highly, especially for baking; read Downing's description. Has been grown by Wm. Merion, near Columbus, for ten or twelve years. Said to have come from Pennsylvania. Mr. Bateham thought it was identical with the *Wells Sweeting*, of Rochester, N. Y. All agreed that it was a first-rate sweet apple. Recommended for general trial.

Broadwell Sweet was highly commended by Mr. Ernst and others from Cincinnati, near which city it originated. Elliott's description was read, and his commendation seconded. Recommended for general trial.

Belmont or *Gate.*—Mr. Bumrickhouse said this apple was considered indispensable in his region; thinks the tree rather tender. Gentlemen from central and northern Ohio spoke of it as very excellent, and deserving general cultivation. Recommended for general cultivation in northern half of the State.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

DRY BROTH.

Dry broth is a very useful and nutritious article. It is very common in Russia, and in other countries amid huge forests where game is scarce and fuel of great price. In traveling in that country, I came to a place where this broth was manufactured, and remained there three days for the purpose of learning the process. It is as follows:

Take half of an ox, half of a sheep, entire, ten fowls, ten partridges, and cut all these into small pieces. Place it in a copper boiler well tinned, and pour six quarts of water to one pound of flesh. Cook this in the open air or in a basement over a moderate fire, skim it carefully, and after the soup is well cooked add some vegetables, &c., that is to say, celery, pork, parsley cut fine, and cook the whole ten hours or more, or until the soluble portions of the flesh are dissolved. Then strain the liquor through a colander. Place the residue under a press and pour what flows from it into the soup. The residue of the flesh is comparatively tasteless, and may be given to dogs, swine, &c.

The soup which has been strained, is again poured into the boiler, and made to boil moderately. It should be taken from the fire at such time as, when poured off and allowed to cool, it will become a compact mass, resembling chocolate. This moment must be determined by repeated trials. The soup should then be poured into vessels of tin or potter's ware, and suffered to remain several days. The mass is then placed in the sun or in a dry room, until it shall become dry soup.

Dry soup is prepared of different sizes, of one, three, six or twelve pounds, and is sold by weight.

It should be observed that in its composition there is no salt, nor spice. Salt has a tendency to soften and moisten it, and any spice does not suit all persons alike. Besides, the broth, being administered as soup and dissolved, would not be suitable for the sick.

This dry broth forms a very convenient kind of food for those traveling on foot or through uninhabited districts.

The Russians who make the voyage from Moscow to Kiachta, over the steppes of Siberia, scarcely use any other kind of food. A vessel holding six or eight ounces of boiling water, into which is thrown a half pound or more, according to the number of guests, seasoned with salt and pork, and with garlic if to their taste, poured upon biscuits, furnishes a nutritious, wholesome and pleasant repast. For sailors it is useful as a preventive of the scurvy. (When wrecked, should each man secure a few pounds of it they might thereby save themselves from starvation and death.) In long journeys over prairies and desert countries, it is of very great value.

This broth might be prepared with the beef and mutton, without the addition of other things. But it would not be so pleasant to the taste, nor command so high a price. SANEWSKI FELIX.

[*Translated from the French manuscript by the Editor.*]

THE DIFFICULTY OF JUDGING BETWEEN FIRST-RATE ANIMALS.

THE following, from the *Mark Lane Express*, may be read with profit by those acting as judges at our public fairs. The recommendation in the last paragraph may be useful to State Societies:

"SIR:—Allow me to offer a few remarks on this subject, as applicable to the approaching meetings of our leading agricultural societies, now close at hand.

"The difficulties which are often experienced by the most competent judges, in deciding between two really first-rate animals of a first-rate sort, are greater than the majority of people who have never acted in the capacity of judges have any idea of. I am happy to say that at the meetings of the Royal Society such cases frequently do occur, and, I hope, always will, and with the wish that what I here assert may tend to assist judges on their laborious duties, I am induced to trouble you with these remarks.

"I will take an instance of two first-rate short-horned bulls, neither of them having a faulty point. Judge A. says, 'What a superb back No. 1 has!' B. says, 'But look at that depth of carcase in No. 2!' 'But the length of quarter in No. 1!' continues A.; and in return B. draws attention to the silky texture of the skin of No. 2. The question is here put to Judge C. who *should* decide the case; but he has to balance, in *his* mind, whether a superior back is more to be considered than extraordinary depth of carcase; and again, is a first-rate quality of hide equivalent to an unusual length of quarter? And thus points, without having some definite value attached to them, might be compared one against the another *ad infinitum*, without ever coming to a satisfactory conclusion.

"Now, what I wish to see is, a definite value affixed to every point in the perfect animal, and when such cases of nicety as I allude to do occur, let the judges take point by point, and compare value in numbers, and then the animal commanding the highest amount would be the one selected. If the perfect animal were 50, the component parts might be something as follows:

	Bull.	Sheep.	Boar.
General Appearance, - - -	8	12	20
Back, (length and width,) - - -	8	10	8
Chest, - - - - - - -	6	4	5
With of hips and loin, - - -	5	4	5
Depth, (rotundity of carcase,) - -	5	5	4
Quarters, - - - - - - -	5	3	3
Head, - - - - - - -	4	4	9
Hide, (or wool,) - - - - -	4	5	2
Bone, - - - - - - -	3	3	2
Shortness of legs, - - - -	2	1	2
	50	50	50

"This table is merely on a rough scale; but I think if the committee of the Royal Society would devote one of their meetings to the consideration of the subject, their time would not be wasted; and a scale made under their direction, similar to the above, would be received by the agricultural public as an authentic data to refer to.

"Hoping that these remarks may draw the attention of our great stock-breeders to the subject, I remain yours, etc., X. X."

NATIVE GEORGIA WINE.

The cultivation of the grape has received of late some attention from our Southern friends. We are exceedingly glad to be able to add this to the variety of products for which extensive tracts of land are well adapted. A late number of the Augusta *Chronicle* contains a statement on this subject which we copy, that some at least of our many Southern readers may try the experiment for themselves. We also wish to avail ourselves of so favorable an opportunity to commend the enterprise which of late is so manifest in many of the Southern States. There is no reason why every useful mechanical and manufactured product of the North and West should not be also produced at the South. But for our extract:

"On Monday, the 12th inst., quite a large party of gentlemen of this city and its vicinity assembled at the store of Messrs. Dawson & Skinner for the purpose of sampling some native wines made by Mr. Charles Axt, at his vineyards in Wilkes county, Georgia. The wine offered was the pure juice of the Catawba grape, only about eight weeks from the press, and of the quality known as "still Catawba." It was very impartially tested, side by side with several other brands, from some of the most noted Ohio vintners, and the best judges present unanimously pronounced it superior in aroma and purity of flavor to any native samples yet presented to their notice, and predicted for it the highest degree of excellence, when it shall have attained the proper age.

"The business of grape-growing and wine-making may now be considered most auspiciously started in Georgia and the South; and it only remains for those who prefer the pure and wholesome juice of the grape to the vilely adulterated mixtures of commerce, and who wish to aid in the successful development of a most important and promising enterprise, to give the matter their countenance and support at the outset; and thus secure to the South, in a few years, an entirely new source of large income and profit."

BUTTER MAKING.—SWEET CREAM.

A WRITER in the *Ohio Farmer*, discussing the propriety of allowing cream to turn sour before it is churned, says:

"If milk be churned as soon as drawn from the cow, and butter be separated, the buttermilk will be found to contain acid, though it may not taste very sour. Whether this lactic acid is a cause or an effect of the separation of the butter, has not been satisfactorily settled; but that it is always present after butter has been churned is a well ascertained fact, and this fact all scientific books in the dairy assert. Johnson, Ballantyne, Ayton and Traill, all teach that "butter made from sweet cream is less in quantity and requires more labor to produce it, and is therefore unprofitable."

We do not quite agree with this. We cannot imagine why the presence of a minute portion of lactic acid should be presumed without evidence to promote the gathering of the butter. That should be proved ere it is put forth. We know that nice tests often discover the presence of lactic acid in *new milk*, and we have good reason for believing that the process of churning, by which the temperature of portions of the milk must be somewhat affected, should tend to increase the amount of acid. We are not satisfied that the presence of lactic acid is either the cause or the effect of the separation of the butter. Nor does the fact that sweet cream requires longer churning than sour cream, *if it be a fact*, show that it is less economical. The quickest process is not always the best. Besides, our scientific men are not the best authority on such questions. We should much prefer the opinions of judicious dairymaids. We have facts, from such sources, which we would offset against a host of mere chemists, though ever so "scientific." Ask the dairymen and women of Orange county, so widely distinguished for its good butter, and the information they would give would not strengthen the doubts which this writer suggests.

We do not believe that the presence or the absence of lactic acid can have any effect on the "quantity" of butter. The butter is there confined in sacks, and lactic acid cannot increase it, nor can butter produce lactic acid. Science cannot begin to give a reason why it should be supposed to do so. Facts show that the best butter, the butter that with a given amount of washing will retain its sweetness the longest, is from sweet cream.

But we doubt whether sweet cream requires more labor to "produce" butter than sour cream. Each little sack must be broken, and its contents gathered. We can see how the presence of *very* sour milk might hasten the process of gathering or collecting the butter, after it has "come;" but this is not what the chemists mean to say; and whatever they mean, their opinion is of no more value than that of any mere professor of science, who may be fond of his own theory. Such questions are for actual practical churners to determine, who use various kinds of churns and various qualities of milk and of cream, and so far as our experience, which is not small, and our inquiries, which have been extensive, can elucidate this question, the conviction is full and complete, in our minds, that it is desirable to have sweet cream for butter that is to be kept a long time. Sour milk does not of necessity make sour butter, but the presence of sour particles in the butter made from sour cream cannot be *certainly* avoided by almost any amount of washing, and there may be enough present, after very frequent washings, to convert the whole, ere long, into a rancid mass. Hence we go for sweet cream.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

COMPARATIVE VALUE OF CROPS.

Mr. Editor:—We have kept an account the past season of the cost of cultivating different crops, thinking it may be interesting to some of your readers. We make the statement as brief as possible.

Rye ½ bushel sowed Sept. 16, 1854, on corn stubble. Quantity of land, half acre:

Seed and Cultivation, - - - - - -	$3 38
Seven bush. Rye, - - - - - - - -	8 75
Leaving as profit to land,	$5 37

Wheat sowed April 24th, 1855, where corn had grown the previous year. Seed, 1 bush.; land, one acre; injured by weevil and worms.

Seed and cultivation, interest, taxes, etc., - - -	$12 50
12 bush. of wheat at $2 25, - - - - - -	27 00
Profit to land,	$9 50

Corn No. 1, ploughed Nov., 1854, 8 inches deep, a sod, manured 25 loads of compost and manure on the furrow, and in the spring, and harrowed well, had been in grass from 6 to 15 years; land, 183 rods.

Whole expense of cultivation, interest on land, taxes, etc., - - - - - - - -	$35 09
60 bush. shelled corn at $1 25, - - - -	75 00
Top stalks and butts, and 12 bush. small corn on the ear, - - - - - - - -	23 00
Profit to land,	$62 91

No. 2, about $\frac{2}{3}$ in clover the previous year, had been mowed twice, and winter killed, $\frac{1}{3}$ under the plough for 3 years, with a rotation of crops without manure.

16 loads of corn-manure spread broad-cast and ploughed 8 inches deep in May, 1854; land, 126 rods.

Whole expense of cultivating, interest, etc., - -	$27 55
55 bush. of shelled corn - - - - - - - -	68 75
Top stalks, etc., and ten baskets of small corn, - -	20 00
Left to land,	$61 20

Remarks.—Corn planted from May 16th to 23d, 3 feet by $2\frac{1}{2}$, 3 stalks in a hill. A cultivator was passed between the rows 4 times; 4 bush. of plaster were applied soon after it come up to both pieces, and hoed twice.

Stalks topped from Sept. 4th to 13th, and well secured; harvested from Sept. 25th to Oct. 16th.

Potatoes No. 1, in pasture, perhaps for 20 years; ploughed in Nov. 1854, 6 inches deep; land, 128 rods; harrowed well in the spring; seed, 4 bush., one piece in a hill; hills, 2 by 3 feet, cultivated and hoed once, and once manured. Two bushels of plaster applied before hoeing.

Whole expense, interest, etc., - - - - -	$18 40
100 bush. potatoes at 40 ct.s, - - - - -	40 00
Left to land,	$21 60

No. 2, a piece of moist, cold land; in all applied 5 loads of coarse manure broad-cast, and ploughed 4 inches deep; then applied 5 loads of earth from a spot where an old house had stood, and harrowed well, and planted $1\frac{1}{2}$ bushels of the Oregon potatoes, May 28th, applied 1 peck of plaster in the hill, hills 2 by 3 feet, 1 piece in a hill. Cultivated and hoed twice; quantity of land, 34 rods.

Whole expense, etc., - - - - - - -	$9 50
40 bush. potatoes, - - - - - - - -	16 00
To land,	$6 50

This crop was injured by frost; potatoes no more than three-fourths grown, but a variety we believe free from, under all situations a late potato, requiring a long season and high manuring. I have cultivated them three years.

Remarks.—You will readily see at a glance the crop that pays best, and that will furnish the largest amount of fodder, for manure for succeeding crops. Our estimate of the value of small corn and fodder is lower than it ought to be in comparison to the price of hay, worth from $18 to $20 per ton in town.

We charge nothing for manure in the yard, only the labor of drawing it, being what the land is entitled to. No. 1 and 2 of corn is increased in value for the four succeeding crops perhaps 20 per cent., and probably No. 2 of potatoes. No. 1 of potatoes is not increased in value, but probably will bear a fair crop of corn next season, and then will be stocked with clover and to pasture again. We have charged the different crops one dollar per day board, included labor performed mostly by myself.

Epping, N. H., December 12, 1855. D. L. Harvey.

VARIOUS USES OF ARTIFICIAL AND MINERAL MANURES.

At the suggestion of a subscriber, in our last number, we described the various modes of applying guano to the soil. We propose to extend these suggestions to other mineral and artificial manures.

1. POUDRETTE AND NIGHT SOIL.

Night soil should always be mixed with powdered charcoal, or pulverized peat, or with lime or gypsum, to overcome the odor and retain the gases. It may then be mingled freely in composts, and applied to the soil, scattered broadcast, or in hills, like any other manure. But the concentrated poudrette should not be in contact with the seed in large quantities.

If poudrette is applied in the hills, only a tablespoonful should be placed on a hill, and this not in a pile but scattered, either before or after the seed is dropt. Potatoes will bear a more liberal allowance than corn. For melons, cucumbers, squashes, etc., a large hole should be dug two or three feet in diameter, and poudrette be scattered freely, and thoroughly mingled with the soil, which should be made mellow for a foot or more in depth. The seed may then be placed in a circle around the hole. For cabbages, a handful may be applied to each root. For carrots, beets, etc., the poudrette may be mixed with the seed before it is sown, and both dropt in the earth together. For a crop of oats, rye, etc., twenty or thirty bushels may be spread over an acre, and harrowed in before the grain is sown; or it may be ploughed in, or it may be broadcast afterwards as on grass lands. On grass land it may be scattered broadcast, at the rate of thirty bushels per acre, more or less, and this should be done just before a shower. It may applied to grape vines, trees, etc., by scattering a half peck or more over the roots, and covering and mixing it by the spade, etc.

It is better to use poudrette in connection with farm-yard manure or guano, rather than alone. It "stimulates" for a time very highly, but is not so durable in its effects. Hence it is better for the land, to use it in connection with other manures. It may also produce an abundance of leaf and stem, and afterwards fail to secure fruit and grain.

Night soil requires the same management as poudrette; though exposure to a bad odor may sometimes require more caution in the application of it.

GYPSUM OR PLASTER OF PARIS.

This is more generally applied in the hill, for hilled crops. A tablespoonful or so may be placed in a hill. Prof. Johnston says that if it be mingled with common salt, when applied to clover, beans, peas, etc., it will be much more efficient; but we have not seen it so applied. The salt may be one half the weight of the plaster. Gypsum may be dissolved in water; 50 gallons of water will dissolve a pound, and applied in this form to any crop. Gypsum is however more generally efficient on clover and other grasses, peas, beans, etc., than it is with grains, turnips, or other green crops. It is also more useful on light and dry soils than on clay. It is well, also, to alternate the use of this with animal manures. When sown with grain, or a bulk equal to that of the grain, 200 or 300 pounds to the acre may be thus applied. For corn, potatoes, peas and beans, etc., in the hills and to grass lands, five or six bushels per acre may be properly used.

Gypsum is very useful also if mixed with barn-yard manure, whether it be daily or frequently sprinkled over it, or mixed with it when it is turned over, preparatory to using it. It is also useful when sprinkled over the floors of stables, in fixing gasses, as well as by its own action as a fertilizer. This is perhaps as important as any other form of applying it.

Fish, Flesh, and other matters like these, consisting of very concentrated manures, should be mixed with six or eight times their weight of earth or other compost. A liberal proportion of powdered charcoal is advantageous. Cover a dead animal with powdered peat, muck, leaf mould, and the like, and the result is a very efficient manure. Dry gypsum will also be very useful in confining the gases and preventing a bad odor. Charcoal is of equal value. A little quicklime is also useful. Fish should never be spread over the ground and left uncovered. They produce evils of various kinds, and their fertilizing properties are wasted. They should be placed in layers, and covered with dry mould or muck, with charcoal or peat, if at hand, and thus alternating, be suffered to remain till thoroughly decomposed. It may then be used broadcast or in hills.

In clay soils, fish may be ploughed under. The clay has power to retain the gaseous elements. From six to ten thousand of the smaller fish, like Menhaden, may be ploughed into an acre. Sometimes, on such soils, entire fish are applied in the hill. One fish, with a little wood ashes, or yard manure, or two or three fishes applied alone, may be buried in a hill of corn.

The effects of fish when used alone are but temporary. Their influence is more permanent when used in connection with charcoal, ashes, guano, gypsum, etc.

EXHIBITION AT PARIS—PREMIUMS AWARDED TO AMERICANS.

This great exhibition has been closed. The public ceremonies were had on the 15th of November. The Emperor made a speech, which appears from the reports of it to have been chiefly political.

After the entry of the Emperor and his chief officers, ministers of State, the imperial household, the imperial commission, etc., an enormous orchestra seated in the gallery over the throne, composed of 1,300 persons, under the direction of Berloiz, then executed *L'Impériale*, a cantata composed for the circumstance by Berloiz. After its conclusion, the Prince Napoleon stepped in front of the throne, and read a long address to their Majesties, which was heard by no one but those in the immediate neighborhood. Upon its conclusion, the Emperor arose, and in a loud and clear voice made an address which was heard in the remotest part of the immense building.

After the speech, those persons who had drawn the Grand Medal of Honor passed before the Emperor at the foot of the throne and received from his hands their medal. A majority of them also received the decoration of the Legion of Honor.

After the conclusion of this part of the ceremony, their Majesties and suits came down from the platform and passed around the large aisle in the building, where the objects which had gained the grand medal had been placed.

The United States has drawn a fair proportion of medals.

Three Americans were decorated with the Legion of Honor at the Prince Napoleon's, viz.: Mr. Valentine, Chairman of the American Commission; Mr. Marshall Woods, of Rhode Island, Juryman on Fine Arts Department, and Mr. Vattemare, (for services in American Department.)

COMPLETE LIST OF RECOMPENSES AWARDED TO AMERICANS AT THE GREAT EXHIBITION.

Decorations.

W. J. Valentine, Chairman of the American Commission.
Marshall Woods, Juryman on Fine Arts.
Alexander Vattemare, for services in American department.

Grand Medal of Honor, (gold.)

Charles Goodyear, vulcanized India rubber.
C. H. McCormick, reaper.

Medal of Honor, (gold.)

Bache & Kline.
Lieut. Maury.
J. A. Pitts, Buffalo, threshing-machine.

Medals of the First Class, (silver.)

Allston.
Mauny.
Tousley & Read.
Manchester Print Works.
Thomas Blachard, timber-bending process.
Samuel Colt, revolvers.
Merriam, Brewer & Co., cotton goods, Boston.
W. Seabrook, cotton goods.
A. W. Ladd & Co., Boston, square piano.
A. Mirmont, New-York, musical instruments.
Singer & Co., New-York, sewing machines.
D. King, Albany, model of river steamer.
United States Navy Department, for collection of ship models, etc.
M. Richmond, Boston, iron-cutting machine.
M. Stewart, New-York, ———.
Hamilton, cotton and wool fabrics.

Medal of Second Class, (bronze.)

J. Bart.
Webb.
Wright.
Ira Jewell, foreman of Mr. Wright.

Wethered & Brothers.
Grover, Baker & Co.
Garside.
Gurney.
Rawdon, Wright & Co.
F. Toppan & Carpenter.
Boisselerie Americaine.
R. C. Elliott, South Carolina, Sea Island cotton.
H. S. King, South Carolina, Sea Island cotton.
M. Mickell, South Carolina, Sea Island cotton.
G. Gemunder, New-York, violins.
T. Seymour, New-York, sewing-machine.
Wheeler & Wilson, New-York, sewing-machine.
Fowler & Preterree, Paris, dentistry.
Ringuet-Leprince, Marcoite & Co., New-York, sculptured walnut dressing-case.
Hiram Tucker, Boston, artificial marble.
Z. Thompson, Vermont.
J. Harraday, New-York, clothes-cutting machine.
Sanborn & Carter.
Wolle Brothers, Bethlehem, Pa., machine for manufacturing paper sacs.

Honorable Mention.

Valentine & Wheelock.
Vergennes Scales Manufacturing Company
Kline.
Engel.
Hollingsworth.
G. T. King.
Lindworth.
Delpit, Madame.
Richard & Co.
McLees.
Meade Brothers.
Hotchkiss.
Jannecy.
N. W. Kingsley, New-York, artificial teeth.
Nicoll.
J. Ross, New-York, artificial teeth.
Russell.
Schortose.
Jones, White & McCurdy, artificial teeth.
N. Day.
T. Maskell, La., sliding keel for ships.
Nathan Thompson, Jr., New-York, life-preserving seat and safety boat.
L. Lacharme, California, specimens of California gold.
Pioche, Bayerque & Co., California gold specimens.
Backus & Peaslee, New-York, rag-washing machines.
B. Moore.
Th. Hodgkin.
Schmitz & Jarosson, New-York, machine for printing cloth.
Nelson Barlow, New-York, planing machine.
Storms Brothers, New-York, preparation and conservation of alimentary substances.

FINE ARTS DEPARTMENT—PAINTING.

Medal of the Second Class.

G. P. A. Healy, Boston, portrait.

Medal of the Third Class.

T. P. Rossiter, New-York, pictures.
Mr. May, New-York, pictures.

KEEPING TURNIPS, ETC, IN WINTER.

The way I keep my turnips, parsnips, and vegetable oysters in the winter, so as to have them available for use at any time, and to preserve their good qualities from frost or exposure to the atmosphere, may be new to most of the readers of your excellent paper—hence this communication.

As late in the fall as is prudent to wait, I take my old barrel, and put a good layer of dry leaves on the bottom, then put a layer of turnips or parsnips, then another course of leaves, and so alternating, being careful to put in a good supply of leaves between the roots and the barrel, and also between each course of vegetables.

Turnips properly put up in this way will not be *corky*, will keep good all winter, and can be got at any time. Parsnips put up in this manner will be better in the winter and in the spring than if left in the ground as is the common practice; besides, you are not obliged to wait till the frost is out of the ground before you can have a mess. Your barrel of turnips should be kept in as cool a place as possible and still avoid freezing, as they grow unless kept dry and cool. The wind will blow the leaves into heaps soon, when they should be gathered ready for use. Will some one put up sweet potatoes this way and report the result?—*Moore's Rural New-Yorker.*

A NEW ESCULENT IN THIS COUNTRY.

In May last I received from the Agricultural Division of the Patent Office, the "Chufas or Earth Almonds," known to botanists under the name of "Cyperus Esculentus," with the following notices of the same:

It grows spontaneously in the light, humid soils of Spain, and is cultivated in Germany and the south of France. If planted in May or June they are ready to be harvested in October. They resemble in taste a delicious chestnut or cocoanut, and like them may be eaten raw or cooked. They are chiefly employed for making an orgeat, (orchata de chufus) a delightful, refreshing drink, much used in Spain, Cuba, and other hot climates where it is known. When mashed to a flour, which is white, sweet, and very agreeable to the taste, it imparts to water the richness and color of milk. At Almacero and Albargo considerable attention is paid to the cultivation of this plant, eight acres of land yielding a profit of $3,500 in five months.

I planted the tubers or bulbs according to directions accompanying them. They are now growing vigorously, and very easily cultivated, requiring no special care, and I have no doubt will be as productive as any vegetable grown in this climate. I hope to have seed enough to plant some two acres of ground next season. It is worthy of cultivation as an ornamental plant.—J. V. McCullough, *Horticulturist.*

INDUSTRIAL STATISTICS.

Birmingham, Ct.—Birmingham Iron Foundry. S. Bassett, President. Employ 50 hands on average; make castings, turbine wheels, trip-hammers, etc. Henry Whipple and Moses Hawkins, foremen.

Tack Factory of Shelton Co. E. N. Shelton, President. Use 42 machines; make tacks of all kinds and sizes. N. H. Sherman, foreman. Also make bolts and nuts, employing 13 hands in this department.

Plane Factory of L. De Forest. Turn out $20,000 worth goods annually; make bench and moulding planes.

Turning Factory of Geo. W. Shelton. Employ 30 hands on average; turn out $30,000 worth yearly; do plain and fancy wood turning. Messrs. Shelton & Osborn, Agents for "Cast Cast-steel Company."

Ansonia, Ct.—Farrel Foundry Co., F. Farrell, Agent. Employ 50 hands on average; turn out $80,000 worth yearly; do work for rolling and rubber and paper mills; foundry connected. M. P. Wilson and E. Butterworth foremen. Make S. & S. M. Colburn's Double Giant Mill.

Wire Factory of Wallace & Sons. Make brass and copper wire, rolled, sheet and plated brass, tubing, kettles, nuts, jack chains, hooks and eyes, etc., etc.; turn out $150,000 yearly. J. S. Riggs, refiner.

Ansonia Brass and Battery Co. J. H. Bartholomew, Agent; J. R. Light, C. D. Allen, Wm. Smith, R. Matthews, and others, foremen; T. E. Miller, refiner. Employ 70 men on an average; do brass and copper work, tubing, stamping, clock movements, etc., etc.

Ansonia Copper Mill. Peter Phelps, Agent; Thomas Whitney, super.; David Coles, foreman; Conrad Struckman, refiner. Have 9 sets rollers; employ 45 hands; make sheet and bolt copper.

Novelty Company. L. Fenn, Agent. Make Fenn's superior axes; turn out 170 daily; business increasing; also do fancy and plain turning in wood.

Cotton Mill of Sewoss & Schenck. Has 18 cards of 36 inches; 26 looms; make seamless bags.

Factory of Frary & Co. Employ 30 hands; make Wakefield's patent corn-planters.

Factory of C. W. Fisk & Co. Employ 8 men, and machinery; make melodeons of superior quality. Sold by John March, Philadelphia, Penn.

Seymour, Ct.—Humphreyville Manufacturing Co. Reymond French, Agent; Isaac P. Bottsford, Peter Worth, and others, foremen. Employ 250 hands on average; make augers, plane irons, wrought-iron car work, etc., etc.; machine shop attached has 5 lathes, and other tools in proportion.

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New-Haven Copper Co. Geo. De Forest, President; Thomas James, Jr., super. Works have 10 pair rolls; make bolts, sheets, pipes, flues, and white metal.

Rubber Factory of A. G. Day & Co. Work under Goodyear's patent; employ 50 hands; make pencil-cases, letter-folders, etc. Thomas Sault, superintendent of machinery.

Auger Shop of the Upson Manufacturing Co. Hiram Upson, President; H. A. Radford, Agent. Employ 20 hands on average; have 2 trip hammers, 4 fires, etc.; make augers, bitts, etc.

Beacon Dam, Ct.—Beacon Dam Co. Geo. Goodyear, Agent; Elijah Pierce, foreman. Make rubber flasks, casters, tape measures, cork-screws, syringes, pumps, etc.

Novelty Rubber Co. George Langdon, Agent. Employ 40 hands on average; make canes, buttons, etc., of rubber.

Naugatuck, Ct.—Union Rubber Co. J. T. Trotter, Agent. Employ 75 hands; make rubber clothing.

Glove Co. Geo. C. King, Agent. Employ 12 hands; make gloves, mitts, finger cots, shields, etc.

West-Winsted, Ct.—Winsted Foundry and Machine Co. Shop has 8 lathes, and other tools in proportion; foundry has A. A. Perkins, foreman; do job work.

Scythe Factory of Wheelock & Wilder, successors to W. Thayer & Co. Have 3 hammers, 2 stones. Turn out 2000 dozen annually.

Empire Knife Co. Charles Thompson, Manager. Employ 45 hands; make pocket cutlery.

American Hoe Co. Louis R. Boyd, Agent. Make cast-steel hoes for planters and cotton and sugar growers; turn out 10,000 doz. annually.

Forge Shop of Timothy Hulbert has 2 fires and 1 scrap furnace; 3 trip hammers; work scraps; do largest kind of work.

Winsted Auger Co. Charles Spencer, Secretary. Employ 30 hands; use machinery; make augers and bitts.

Beardsley Scythe Co. Francis Brown, Manager. Turn out 5000 doz. annually; make scythes, hay, straw and corn knives.

East Winsted, Ct.—Factory of A. G. Gormans & Co. Employ 20 hands; use machinery; make jewelry.

Winsted Manufacturing Co. John Camp, Agent. Make scythes; turn out 6000 doz. annually.

Clock Shop of Wm. L. Gilbert & Co. Make clock cases and movements; turn out 20,000 annually.

Cook Axel Co. C. Cook, Secretary. Employ 20 hands.

Wolcottville, Ct.—Stockinett Mill. A. G. Brady, Agent. Have 2 sets machinery; make shirts, drawers; employ 100 hands in all, including sewers. Thomas Hollingsworth, foreman.

Union Manufacturing Co. F. N. Holley, Agent; W. R. Slade, Superintendent. 1 mill woolen; have 4 sets machinery; make black cassimeres and doeskins.

Wolcottville Brass Co. Willis Curtis, foreman. Have 6 sets rollers; casting shop and stamping; make brass kettles, rolled and sheet brass, plates and tubes.

Plymouth Hollow, Ct.—American Knife Co. G. B. Pierpont, President.

Employ 80 hands on average; make superior pocket cutlery of all kinds and prices.

Terry's Mill, woolen. H. Terry, owner; John Cady and Ferris A. Castle, foremen. Has 4 sets machinery; make black doeskins.

Thomas' Cotton Mill. Seth Thomas, Agent. Nathan A. Daniels and others, foremen. Have 20 cards of 24 inches; 61 looms; cloth 36 inches: 52 by 52: yarn 18.

BROADBROOK, CT.—Broadbrook Co. 1 mill, woolen; Nelson Palmer, Agent; Wm. Hancock, Superintendent; N. P. Adams, Salmon North, H. W. Phillips, Sylvester Williams, John Wolf, and others, foremen. Mill has 12 sets machinery; 72 looms—10 more to be added; make fancy cassimeres.

WAREHOUSE POINT, CONN.—Warehouse Point Manufacturing Co. 1 mill, woolen; N. K. Benton, President; B. Sexton, Treasurer; A. Dennison, Superintendent; F. W. Carpenter, John B. Orcutt, F. C. Whittaker and others, foremen. Mill has 7 sets cards, 4320 spindles, 52 looms; make fancy cassimeres.

WINDSOR LOCKS, CONN.—Thread Mill of A. Wilmarth. Has 320 spindles; make thread of all colors and Nos.; make superior thread for whips and to use in sewing-machines.

Wire Factory of Royal Prouty. Turn out wire from 0 to 36 Nos., for cards, reeds, stone, brooms, etc.; make satin, silk and cotton wire, all colors, for bonnets.

Connecticut River Mill, cotton. L. M. Pinkham, Agent. Mill has 16 cards, 3000 spindles; cloth is 28 inches wide, 68 by 72, of yarn Nos. 32 and 36.

Stockinett Mill. Alex. Downie, Superintendent. Has 2 sets cards, 12 knitting machines; make hose and stocking yarn.

PITTSFIELD, MASS.—Pomroy's Sons' Mills, 2 woolen. L. Pomroy's Sons, agents and owners. Broadcloth mill has J. Daly, James Daly and others, foremen. Mill has 4 sets cards, 22 broad looms; make cotton warp broadcloths. Satinet mill has 5 sets, 36 looms; make cassimeres, cotton warps for printing. C. Hemenway, superintendent; Joseph Daly, Jr., Wm. Daly and others, foremen.

Pittsfield Woolen Co. R. Pomroy, Treasurer; W. F. Bacon, Secretary; S. M. Caldwell, Charles Harden and others, foremen. Mill has 3 sets machinery, 36 broad looms; make cotten warp broad-cloths; warps purchased.

Woolen Mill of S. M. & C. Russell. Mill has 1 set machinery, 10 looms; make satinets; warps purchased; Tillotson Clarkson, foreman. Wadding mill attached has 7 cards; Cornelius Warner, superintendent.

Pontoosac Woolen Co. Geo. Campbell, Agent; Thaddeus Clapp, Jr., manager; Thad. Clapp 3d, superintendent; Amos Armitage, Timothy Cotton, James H. Wylie and others, foremen. Mill has 6 sets machinery, 40 broad looms; make cotton warp broad-cloths; warps purchased.

Cotton Mill of E. & J. L. Peck; has 30 cards; make satinet warps from 1800 to 2000 ends of No. 18 yarn.

GREAT BARRINGTON, MASS.—Berkshire Woolen Co. A. C. Russell, Agent; Geo. W. Fuller and others, foremen. Mill has 8 sets cards, 82 looms; make plain union cassimeres; cotton warps, which are purchased.

HOUSATONIC, MASS.—Monument Mills. J. M. Seely, Agent. Mill has 16 cards, 1656 spindles, 2 dressers; make satinet warps, No. 18 yarn, from 1500 to 1800 ends. Wm. Black and others, foremen.

Glendale, Mass.—Woolen Mill of J. Z. & C. Goodrich; John T. Fenn, superintendent; John A. Lynd, and others, foremen. Mill has 6 sets machinery, 1820 spindles, 60 looms; make union cotton warp cassimeres for printing. Machinery in part is operated night as well as day. Gas used for lighting; made on the premises.

Lee, Mass.—Center St. Machine Shop. J. A. Morey, owner. Has 5 lathes, and other tools in proportion; make paper-mill machinery, and do job work.

Saxony Mills. Platner & Smith, owners; Jonas Holmes, superintendent; cassimere mill has John McKenna, Ephraim French, James Mitchell and others, foremen; 7 sets machinery; make fancy cassimeres. Satinet mill has Aurora, Moree and Castle, foremen; 3 sets machinery, 36 looms; make satinets; warps purchased.

Cotton Mill of Beach & Royce, has George H. Holmes, foreman; 12 cards, 24 inches; 18 looms; make seamless bags.

Machine Shop of Tanner & Perkins; has 13 lathes, and other tools in proportion; make paper-mill machinery, and do job work; foundry attached has 5 hands on average.

South Adams, Mass.—Pollock's Mill, cotton. Wm. Pollock, owner; A. R. Lovell, superintendent. Mill has 32 cards, 3886 spindles; make satinet warps.

Woolen Mill of B. F. Phillips & Co., owners and superintendents; Wm. Brown, John M. Morin and others, foremen. Mill has 3 sets machinery; make satinets for printing; warps purchased.

Brown Mill, cotton. Plunkett & Brown, owners. Mill has 87 looms; cloth 28, 60 by 56; of yarn No. 28.

Maple Grove Mill, cotton. R. Leonard & Co., Agents; Curtis Rider, superintendent; Charles Tower and D. M. Randall, foremen. Mill has 8 cards, 30 inches; 1600 spindles, 48 looms; make prints, 28 inches wide, 48 by 52; yarn 28.

Adams' Mill, cotton. Adams, Brothers & Co, Agents; Myron Trow, foreman. Mill has 9 cards of 36 inches, 1380 spindles, 40 looms; cloth is 37 inches, 44 by 44; of yarn 16.

Arnold Mill, cotton. S. L. Arnold & Co., owners. Mill has S. W. Howland, superintendent; S. A. Hunt, foreman. 8 cards of 36, 1860 spindles, 56 looms; cloth 28, 56 by 60; yarn 29.

Greylock Paper Mill. L. L. Brown & Co. Has 6 engines; make nice plat papers.

Plunkett Mill, cotton. Plunkett & Wheeler, Agents; Alonzo Wright and others, foremen. Mill has 16 cards of 18 inches; 1808 spindles, 60 looms cloth 28, yarn 27.

Chatham Four Corners, N.Y.—Repair Shop of Harlem and Troy Railroad. John J. Ferris, master mechanic. For the above road repairs are made in iron and wood shops; works are enlarging.

CLOCK STATISTICS.

West Meriden, Ct.—Factory of Bradly & Hubbard, owners; turn out 100 superior clocks daily. Movements purchased. Nathan L. Bradly, Agent.

Meriden, Ct.—Factory of F. Rodolph; turn out 100 clocks daily. Movements purchased—sold to Coe & Co., Boston and New-York.

STORM'S CLOUD ENGINE.

In our last number, we mentioned this as among the valuable inventions exhibited in the Fair of the American Institute. We believe the invention worthy of more extended notice, and that machinists will find something in it to lead them to a careful study of its theory.

Probably we do not make sufficient account, as yet, in the investigation of steam, as a motive power, of the agency of electricity. It may be excited where we have not yet discovered it, and, on the other hand, we may not always avail ourselves to the greatest extent of its tremendous power. This fluid may be within our reach when we little suspect it. A trifling change in the arrangements of an engine might bring it into play, with almost resistless force, where its influence is scarcely known.

The doctrine of *latent heat* is so exceedingly mystical, the nature of it, or rather its state, when latent, is so utterly beyond our conception, that it would not be strange if future experiments should develop some connection, that we have not yet dreamed of, between the action of electricity and the development of latent caloric. Mr. Storm, however, is perhaps too explicit, with our present knowledge of the subject, when he says, "'Latent heat' of steam or of any other artificial vapor generated by heat, in a close vessel, is not such strictly, but would be more properly expressed as combined electricity, heat and electricity being, under certain conditions, *convertible* and different phenomena of the same cause." But we prefer that he should give his own explanations in relation to the power of steam and of his engine. He says:

"Steam is an *artificial* and nearly invisible vapor, never existing outside of the closed space in which it is generated.

"An atom of steam is nearly a solid spheroid (if the term solid may be applied to a *liquid* atom,) while the particles of all natural vapors or clouds are 'vesicular' or hollow. Steam, in escaping from a boiler into the atmosphere, instantly assumes this latter form, and thereby becomes visible—steam itself being always transparent like air. The atoms of steam being thus rendered hollow, vesicular, or *inflated*, necessarily occupy more space and possess a higher elasticity. And while in ordinary steam all the '*latent*' portion of its heat, amounting to about three-fourths of all expended, has to be invested in the water before it has *any* elastic power at all—and where—as this 'latent heat' passes through and away from the engine with the escape steam, without undergoing any change of condition whatever, or being in any manner brought into action—it is consequently wasted. And, as it is well known that '*vesicular*' vapors have only a trifling amount of 'latent heat' for a given amount of elasticity and volume as compared with other vapors, and that all other vapors whatever, have a total power just in the proportion to the amount of their 'latent' heat; it is therefore evident, that by converting such artificial vapor or steam from any liquid into the vesicular form, or natural steam, such as constitutes the *clouds* of the atmosphere, and which is readily effected by allowing them to combine, by the natural affinity which exists, with air or other permanent gaseous body, thus imitating nature, an immensely less quantity of caloric must be consumed.

"CLOUD AS A MOTIVE AGENT.

"The following elucidation of the cause of the great expansion resulting from the admixture, in any closed space of air and steam, may be more satisfactory to exclusively practical minds, because involving no abstruse scientific reasoning.

"That the heat or *temperature* of the steam has little to do with the expansion resulting from the mixture of steam and air, will at once be evident from the well-established fact, that it requires about 540 degrees Fahrenheit to double the volume of a given quantity of air at the ordinary atmospheric temperature (say 60 degrees,) as a starting point.—See 'Effects of heat on the elasticity of the gases,' article, Pneumatic—*Brande's Encyclopedia*, page 947. This temperature, which in steam would give the uncontrollable pressure of about 1000 lbs. per single square inch, or about 65 atmospheres, merely doubles the tension of a *confined* measure of air, about twice this quantity of caloric being necessary to supply its expansion to a double *volume*.

"But the same air, if allowed to form vesicular vapor by contact with heated water (or steam,) will be double in volume, starting from the same point, (60 degrees,) by the time it has reached 192 degrees, or 20 degrees less than the boiling point of water in an open kettle—or less than the formation of steam of a single atmosphere of pressure, and incapable of any force till the atmosphere is removed. And to form even this weak steam five and a half fold more time and five and a half more fuel must be consumed than that required to expand the air to double the *volume* by the vesicular process just mentioned; no "latent heat having been invested in that case. The corresponding increase of *tension* at the same time, instead of being merely double, is over 30 fold!

"These facts are matters of standard record, and were brought to light by efforts to ascertain why a very trifling leakage of air into the condenser of the steam-engine created so much back tension as to almost annul the vacuum.—See *Dalton's experiments*, *Philosophical Transactions*, and *Tredgold on the Steam-engine* (*marine*,) page 78.

"The steam world is challenged to take its choice between the soundness and value of the cloud principle (vesicular vapor *versus* spheroidal vapor, or steam,) or the repudiation of its own highest authorities.

"That the agent of power here brought into action is electricity, is no new discovery; for it is known to all men versed in the physical sciences, that steam, produced by heat, from whatever source, when coming in contact with the air, organizes at once in the form of vesicular vapor or cloud—this hallow or vesicular form, by a law of optics, rendering it then at once visible. It is equally known, that all such vesicles are electrized and mutually repellant.—See *Saussure*, *Thompson on Heat*, *etc.* *My* discovery is, that the *source* of this electricity, and of that of all clouds, is the *so-called* 'latent heat' of the primarily formed vapor or steam, the conversion of sensible heat, from whatever source, sun or fire, into this 'latent' form, being, in fact, its conversion into 'latent' or *combined electricity*, which is afterwards set free when the change to the vesicular state takes place. That immense torrents of electricity may be developed from steam (whatever be the accepted reason *why*,) it is only necessary to refer as proof to experiments wherein, from a boilder of only a few horses power, flashes of lightning nearly two feet long and too fast to count, are evolved from steam escaping into the atmosphere under a moderate pressure of about 60 lbs. to the inch.—See *Noad's Electricity*, page 7.

"Now, if the tension and volume of the air becomes so great by taking up in vesicular suspension the moderate amount of water it can take up under the moderate pressures and temperatures mention in Tredgold's table hereinbefore cited, what must that result be when the water is heated to a point corresponding to 70 lbs. guage pressure, in which case it (the air) would take up over 30 times as much, every 27 degrees, doubling its capacity in this respect?—See *Brocklesby's Elements of Meteorology*, page 32, where tables are given, or any similar work.

"And again, what if this water, previously to being so taken up and combined with the air, had been converted into *steam* at that same *temperature* and pressure (70 lbs.,) and which would then be invested with that *fountain* of *all* expansion, the so-called 'latent heat,' which, as the air and steam combined by their own rapid affinity into the vesicular or cloud form, would be set free (not as heat, as the thermometer proves,) but as free electricity of low tension, and so more easily retained by the vesicles, but in great *quantity*, and productive of a correspondingly great volume and elastic power. In a single acre of fog or vesicular vapor there is, although unfelt, sufficient electricity to kill, if concentrated, every animal that might be gathered within that acre.—See *Faraday's Experimental Researches in Electricity.*

"This, simply, be its properties what they may, is artificial cloud, and the agent by which the 'Cloud-engine' is actuated and from which it derives its name—and to the scientific mind, with these universally established data arranged before it—it will be clear that the phenomenon developed by the Cloud-engine involves neither wonder nor mystery, but, on the contrary, has thus far only made a modest *approach* towards just and soundly founded expectations."

In accordance with this theory, Mr. Storm introduces a portion of air, by means of a forcing-pump, into his cylinder, which combines with the steam and produces the remarkable effects described in the experiments of Mr. Allen and other engineers.

CARE OF CHINA AND GLASS.

The most important thing to do is to "season" either glass or China to sudden change of temperature, so that it will remain sound after exposure to sudden heat and cold. Now, this is best done by placing the articles in cold water, which must gradually be brought to the boiling point, and then allowed to cool very slowly, taking a whole day or more to do it. The commoner the materials the more care in this respect is required. The very best glass and China is always well seasoned, "annealed," as the manufacturers say, before it is sold. If the wares are properly seasoned in this way, they may be "washed up" in boiling water without fear of fracture, except to frosty weather, when, even with best annealed wares, care must be taken not to place them suddenly in too hot water. All China that has any gilding upon it must on no account be rubbed with a cloth of any kind, but merely rinsed, first in hot, and afterwards in cold water, and then left to drain till dry. If the gilding is very dull, and requires polishing, it may now and then be rubbed with a soft wash-leather and a little dry whiting; but, remember, this operation must not be repeated more than once a year, otherwise the gold will most certainly be rubbed off, and the China spoilt. When the plates, etc., are put away in the China closet, a piece of paper should be placed between each to prevent scratches. Whenever they "clatter," the glaze or painting is sustaining some injury, as the bottom of all ware has its particles of sand adhering to it, picked up from the oven where it was glazed. The China closet should be in a dry situation, as a damp closet will soon tarnish the gilding of the best crockery.

In a common dinner service it is a great evil to make the plates "too hot," as it invariably cracks the glaze on the surface, if not the plate itself. We all know the result—it comes apart; "nobody broke it," "it was cracked before," or "cracked a long time ago." The fact is, that when the glaze is injured, every time the "things" are washed the water goes to the interior, swells the porous clay, and makes the whole fabric rotten. In this condition they will absorb grease; and being made too hot again, the grease makes the dishes brown and discolored. If an old, ill-used dish be made very hot indeed, a teaspoonful of fat will be seen to exude from the minute fissures upon its surface. The latter remarks apply more particularly to common wares.

In a general way, warm water and a soft cloth is all that is required to keep glass in a good condition; but water bottles and the decanters, in order to keep them bright, must be rinsed out with a little muriatic acid, which is the only substance which will remove the fur which collects in them; and this acid is far better than ashes, sand, or shot; for the ashes and sand scratch the glass, and if any shot is left in by accident, the lead is poisonous.

Richly cut glass must be cleaned and polished with a brush like plate, occasionally rubbed with chalk; by this means the luster and brilliancy are preserved.—*London paper.*

STEAM STAGE COMPANY.

Mr. Wm. Webster, of Morissania, inventor and patentee of the ingenuous tube-bending machine exhibited at the Crystal Palace, has acquired a prospective interest in Mr. J. K. Fisher's improved steam carriage; and has issued a prospectus for a company, to be called *the New-York and Westchester Steam Stage Co.*, to run from Fordham to the City Hall. If the carriages work as is expected, thirty or more will be run.

We have carefully examined this subject, and are satisfied that it will prove quite practical. On this particular route, however, it will have a railway to contend with, and therefore may not realize the profit which would attend it if opposed only by horse power, for the whole distance; still, as a third of the railway work is done by horses, we have hope of its being able to compete with some advantage.

If railcars could always have full loads, the immense advantage of the track would place them above the competition of common roads, worked by the same power. But on an average, as shown by the report of the State engineer, they carry a dead weight of more than 3000 lbs. per passenger. Steam stages, with the average loads that may be expected, will not have more than 400 lbs. dead weight, or 550 lbs. total weight per passenger;—a difference which, of itself, will half balance the advantage of rails. Add that the wheels will be more than twice the diameter of car wheels, and therefore have less than half the resistance, (for the same road,) we think they have a fair chance on this route.

The New-York business men who live on that line have, as we understand the case, a strong collateral motive to sustain this enterprise, even though it should not pay a large per centage. The railway does not give them satisfaction, but aims to make them pay for the losses sustained on the long line of this road, and for the bad management of it. They have been, and are every season liable to be, required to pay more and more for commutation, and have less and less accommodation, unless they can start an efficient opposition—an opposition that can rival the railway in speed. When machinery of this kind was in its infancy, it was deemed "absolutely a mechanical impossibility to suspend a steam carriage on easy springs." This difficulty is entirely overcome by the improvements of Mr. Fisher.

We have taken no little pains to inform ourselves on this subject, and we do not hesitate to assert our conviction that it is feasible to operate steam carriages successfully, on many routes, and that this or any other company who shall undertake and carry on such an enterprise in an efficient manner, with only a moderate capital, will be successful.

VERMONT VERD ANTIQUE.

We are happy to give space to the subscriber of the following letter to reply to our comments on this new building-stone. It should have appeared in the December number, but was accidentally omitted.

We have no hesitation in attaching to the statements of our friend all the importance that the name of one of thorough business talent and unquestioned and unquestionable integrity can properly claim. We may be proved to be in error. Stranger things have happened. The future will settle the question.—Ed. P. L. & A.

Boston, Oct. 13, 1855.

Gentlemen:—With this I hand you a pamphlet issued by our Verd Antique Marble Co., to the perusal of which I ask your attention. And when you are in this city, I beg you would step into our office, No. 32 City Exchange, and see what you have written about on page 213 of your October No. of *The Plough, the Loom, and the Anvil.*

All that is known of this beautiful material is set forth in the pamphlet alluded to; and the reasons for saying what has been said are drawn from the certificates of the eminently scientific men therein copied.

The quantity of *Lime* in the material, you will notice is very small, its component parts being Silica and Magnesia, which *do not* fuse under an acid.

The pure white lines running through it in every conceivable direction *is not Lime*, but a mineral somewhat new to geologists and chemists, the name of which is not definitely fixed. Dr. Hayes, one of our State assayers, is now thoroughly testing this white material for the purpose of more fully satisfying himself what it really is.

With reference to its being impervious to acids, I would say, that the piece or spot is yet to be found which will show the slightest blemish under the application of the strongest acids. Dr. Jackson's *fire* test is also corroborated as the quarrying deepens in the ledge. Those who do not believe it can test it for themselves.

Our orders from the Capitol at Washington are nearly completed. The intention of Capt. Meiggs is to ornament *inside* and not outside of the building, which, I scarcely think, you would risk your reputation in denouncing as in bad taste at the present day.

A block 20 feet long, and of dimensions otherwise equal to 1200 cubic feet, has just been removed from its bed, and is now being cut up into columns for the Capitol.

If from time to time you wish for further items touching this newly discovered interest, I shall be most happy to communicate them. Meanwhile remaining your friend and ob'd't servant, WM. S. SAMPSON,

Corner of Broad and State Sts.

RUBBER CLEANING.

MUCH of the rubber coming to our market is exceeding filthy. Such is specially the case with the article which reaches us from the countries of southern Asia, where the gum is produced in largest quantities, and when the production is in the localities of the inhabitants. Heretofore, the purest and most valued article has come to us from Peru, whither it is brought from the interior of the country by persons who seek that interior for the sole purpose of gathering the gum. Wherever found, much of it is impure, and is mixed with particles of sand and with bark. It exudes as a milky substance from the trees, and hardens after exuding, so that a large per cent is sometimes found to be a putrid and acrid mass of half-decayed gum, utterly unfit for manufacturing into useful articles. Only Peru rubber of pure quality could be used in making nice articles. This state of things has continued for many years, while efforts were made to discover modes and machinery for cleansing the imperfect mass. Mr. G. Day, late of New-Haven, Ct., now of Seymour, has invented and patented machinery to cleanse rubber; having by many and costly experiments discovered the best manner of doing the work. We have been made acquainted with the rationale of the process of cleansing, and we have minutely examined the newly constructed, and patented, and expensive machinery used in carrying out the process. It is not our purpose to describe the steps of the process nor the apparatus, but only to say, that the labors and researches of Mr. Day have been followed by satisfactory success. The machinery for cleansing is in operation at a factory in Seymour, Ct.; and there the work of cleansing is going rapidly forward. From May 1st to November 1st, 350,000 pounds were cleansed. During the process, the crude conglomerate of gum, sap, sand, bark and acids, costing about eighteen dollars per hundred pounds, was made worth thirty dollars; each pound being almost doubled in value by being made fit for use in the construction of delicate and highly finished goods. Such is the complete success following the experiments and discoveries of Mr. Day in cleansing rubber. As one consequence of his success, the value of crude rubber has greatly increased. Another consequence is, that more articles will be made of rubber and they can be made at less cost. Another result which the discovery will bring about is, that an almost worthless production is made to contribute largely to human happiness and comfort.

Caoutchouc is a purely tropical production. It is sought after on the Amazon far away from the sea-shore and the abodes of men; and it is found and brought to market at great cost of life and money. In this part of the tropical world, the gum seems to be nearly exhausted. In Asiatic regions the gum is found near in districts that are inhabited. But this gum is sent away crude and of greatly inferior quality. A mode of cleansing having been discovered, this easily found and gathered Asiatic gum is made to take the place of that from the Amazon, and an inexhaustible supply for all nations in all times to come is found. The community will be great gainers by the results of Mr. Day's ponderous machinery, and his stringent chemicals, and his monstrous laboratory; and we hope that himself may get cash as well as fame for his fifteen years' patient and expensive experiments.

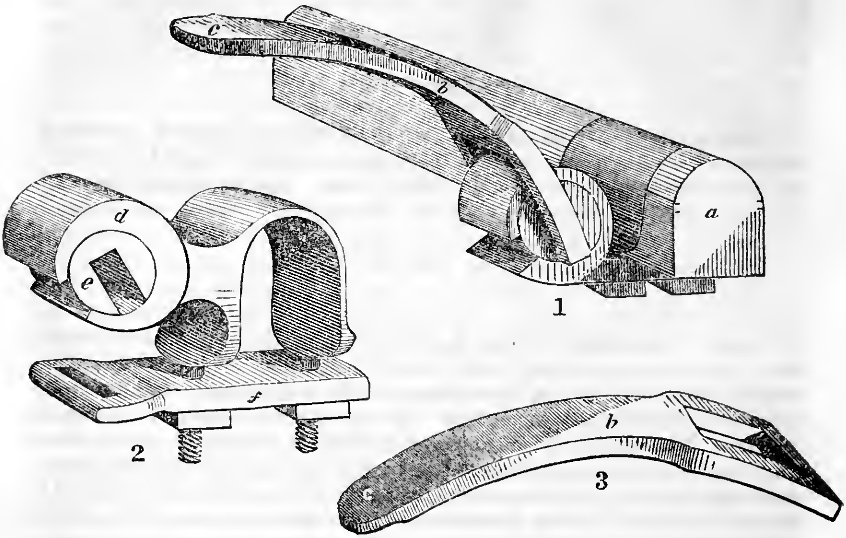
Patent Wash-Tub.—Mr. G. W. Edgecomb, of Lima, Ill., has a patent dated April, 1855, for a wash-tub of peculiar excellence. It is of common size and stands upon its own stool or chair. From the centre of the bottom a spindle is made to rise some 18 or 20 inches perpendicularly. Around the base of the spindle, nailed to the bottom of the tub, are semi-spherical cones, the smaller ends pointing to the base of the spindle, and the larger extending outward. These, made of wood and nailed down, corrugate the bottom of the tub. Above this bottom is a disk, the under side of which is corrugated like the bottom of the tub, making the two corrugated surfaces face each other. In the centre of the disk is a hole, suited to the spindle shooting up from the centre of the bottom. The disk is also furnished with handles applied to its upper surface. The washing is done by putting clothes and water in the tub—putting the disk down upon them, the spindle of the tub entering the hole in the centre of the disk, and then, by means of the handles on the disk, giving it a rotary motion backwards and forwards. The corrugated surface of the disk and bottom do the hand-work of the washing. The cost of the whole aparatus is about *five dollars.* Mr. Ezra Pollard, of Albany, is agent for New-England. It is said that with this machine one person will do as much washing in a given time, as three persons can in the common way.

The Osgood Scale.—The Parker Scale Co., of West Meriden, Ct., of which Mr. H. B. Osgood is the agent, is making scales which have all the essential features of the Fairbank scales with an addition upon which a patent was secured in January, 1852. The patent was taken out in the name of Mr. Osgood, and is used with perfect satisfaction by the company of which he is the acting agent. The patent has reference to an improved mode of making the *lever*, besides which the scales are like those constructed by the Fairbanks.

The Parker Scale Company is making scales of all sizes, from that required to weigh a loaded canal boat or railroad car, down to a letter or a grain of gold.

CARRIAGE SHAFT COUPLING.

BENEDICT'S PATENT.



The foregoing cut gives various views of a carriage shaft coupling, coming rapidly into use in this country. It is made by Messrs. W. J. CLARK & Co., of Southington Ct., who own the patent, secured in the name of Benedict. The cuts are clear pictures of the invention. Fig. 1 is a view of the coupling attached to a section of the axle, which section is denoted by *a*. Fig. 2 is a coupling with clip as it appears ready to apply to the axle. Fig. 3 is the shaft-iron with eye, which is to be welded at *c* to the strap of iron which lines the under side of the end of each shaft. In Fig. 2 *d* is the barrel in which the tumbler *e* revolves, as marked by the circular line between *d* and *e*. The square slot in the tumbler *e*, in Fig. 2, stands as it usually does when the carriage is in use; and to insert the shaft, it is necessary to turn the tumbler round, so as that the opening corresponds with the opening in the barrel, then raising the shafts to a perpendicular position, raise the eyes of the shaft-irons up into the slots, and bring the top of the shafts forward and down to their proper position, and the coupling is accomplished perfectly.

To remove the shafts is but the work of a moment. It is done by elevating them perpendicularly to the point where they were when inserted. In applying the coupling care should be taken to bend the shaft-iron to a proper curve in the vicinity of *b*, fig. 3, so that the shafts cannot be removed until they are elevated to the highest point without striking the body of the carriage.

The excellencies of this coupling are numerous. It is obviously very safe, as no nut or bolt is used about the coupling to be loosening, as nuts and bolts are apt to do sometimes under dangerous circumstances. It is convenient beyond a parallel, for disconnecting the shafts when desired from the axle. It makes little rattle when worn; and also it is very cheap. Additional information may be obtained by inquiring of the manufacturers. D.

MODEL MILL.

During the last few years some fine mills have been built for the manufacture of woolen goods in New-England, and other fine ones have been in successful operation from ten to twenty years. Among those lately built may be named the Glendale Mill, in Pascoag, R. I., which was erected a year or too since under the personal inspection, and by the special direction of Mr. Lyman Copeland of that place, who has been actively engaged in manufacturing for nearly thirty years; and is well acquainted with the early modes of working, as well as with all the improvements of the present day. This mill is constructed of stone, and it is of sufficient size to accommodate easily and very conveniently, eight sets of machinery. It is high enough in stories to give ample room for shafting, pullies, and belting; and it is supplied with windows to give ample light among the machines in common weather. The machinery, from picker to finisher, is made according to the latest and most approved patterns; it having been built and purchased more with reference to perfectness than cheapness. No improvement developed in the past history of woolen manufacturing, is wanting in the mill to make a perfect fabric with the most economy. The foremen, too, in the various departments of sorting, dyeing, carding, spinning, weaving and finishing, are all men in the prime of manhood, having each learned his profession under circumstances and with machinery adapted to give him great skill in labor. Under the superintendence of Mr. Albert B. Copeland, who has been practically engaged in each single department of the whole process of manufacturing from his youth up to manhood, the mill presents a pleasing aspect, and may well be called a model mill. A visitor passing from one room to another, whilst he admires the cleanliness of everything, and the harmony and the symmetry of the whole, cannot fail to feel that he is inspecting an establishment almost without a superior. Other mills may have more ornament, and others still may be larger, and yet others may turn out more strikingly figured goods, yet but few, if any, can be found which combine so many acknowledged modern improvements. The parts by themselves are perfect, and as a whole make a perfect system.

The sample-book is a curiosity in its way. It is so large as to remind the examiner of the Chinese legend, and its pages are adorned with a "thousand and one" samples of cloth made. All ground colors and all fancies of figures, grave and gay, for the lighted-hearted and the sedate, multiform and brilliant as the flowers of spring, are found on those amply clothed pages. Ingenuity and taste will add to this variety still more in the future, for every day some new pattern is invented, and some new sample is fixed on those pages. If any person wishes to see the latest patented or most highly approved machinery, his time and curiosity will not be lost in visiting Glendale Mill, whose agent and superintendent will give him a kind and courteous reception.

COMPANY OF INVENTORS.

We have received several letters in relation to the plan that we presented some two or three months ago for a sort of joint company, to aid inventors without pecuniary means to present before the public their valuable inventions. We invite others, who are disposed to look into this subject, and to assist in devising the details of the plan, to write to us their views at an early day. We will communicate to such the details proposed, or suggested rather, and invite their coöperation in perfecting the system. They may thus do themselves and others a good service. We have reason to believe that the American Institute, if desired, would be both able and willing to grant facilities to such a company of great service to the members. Now is a favorable time for action.

PORTER'S STONE DRESSING MACHINE.

This is a valuable invention. We are always pleased to see the work which is accomplished by machines performed in the same manner as when done by hand. It is this peculiarity which commends to our judgment the sewing machine by Robinson. It does not sew so rapidly as some others, only doing the work of six or eight people; but it takes the same stitches which are made by the living seamstress, and just that stitch which the nature of the work requires. This close imitation of hand labor is witnessed in the operation of Porter's machine. The following is a description of its parts:

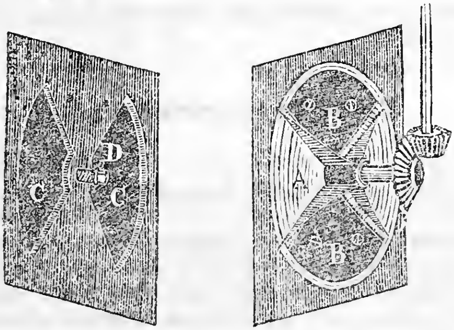
A large iron frame, swinging on a central bolt, contains a cross piece which holds all the chisels and other working apparatus. The position of this frame determines the direction of the chisels, that is, the angle at which they stand in relation to the stone. This central bolt may also easily be raised or lowered, according to the thickness of the stone to be wrought. Above the chisels, and in the same line of direction, are several very large hammers, having a motion of about one inch and a quarter. Behind the hammers are stout spiral springs assisting in confining them in their place. Motion is given to these hammers by cams placed on a cross shaft, just behind the hammers, so arranged as to cause the hammers to strike, not simultaneously, but in succession. The hammers being raised by the cams, strike with great force upon the chisels, each of which has a motion of one tenth of an inch, chipping off the stone to such a depth as may be required.

The chisels are of various patterns, each suited to the nature of the work required. Three hundred revolutions per minute may be given.

The stone rests upon a travelling platform, and admits a stone three feet and four inches wide and twelve or sixteen feet long. Or two such platforms may be fastened together. The whole is simple in its construction. The chisels are changed with great facility, and the workmanship is excellent, the stone being left with a good finish from one end to the other. It usually requires to be passed through a machine three times. When one side is finished, the stone is turned over, and other sides are dressed in such style as may be desired. The machine is estimated to do the work of fifty men, or dress one thousand superficial feet of brown store, or nearly five hundred feet of marble once over in ten hours, allowing the machine to be idle one third of the time.

This machine is now in operation in Fourteenth street, in this city, be tween the Ninth and Tenth avenues. We commend it to the notice of those of our readers who are interested in such kind of work.

IMPROVED BALANCE WATER-GATE.



This figure is a view of an improved Balance Water-Gate, invented by F. S. Coburn, of Ipswich, Ms., and for which he has taken measures to secure a patent. Figure 1 is an inside view. A in figure 2 is a circular gate with two openings B B, when the gate is turned, so that the openings B B are opposite the openings C C the water passes through. When the gate is closed, as the pressure of the water is alike on all the surface of the gate, it is equally balanced on the screw D which can be so adjusted that there shall be just friction enough to keep the gate water-tight and no more. This gate is so sensitive that the governor will readily regulate the flow of water. The inventor will assign his interest in this invention for any State in the Union, Massachusetts excepted, on terms that cannot fail to be satisfactory.

Allen's Stone Saw Frame.—A gentleman of Dorset, Vt., offered not long since a prize of $10,000 for the best invention to saw stone into pyramidal shapes. Among those competing for the prize is Mr. Allen, of South Adams, Mass, who has invented and constructed a machine for sawing, ingenious and peculiar. His mode of doing the work is to have two saw frames; one suspended over and intermatched with the other, each frame holding its saw, so that one saw will saw one side of a pyramid, and the other the same shape the other side, making the pyramid of any degree of obtuseness or acuteness. Each frame is guided by its own separate guidss, placed on its outer side; and each is suspended from its four corners by chains attached to the corners and wound round a windlass above. By this apparatus, a large flat stone, marble or granite, can be placed upon the ways of the mill, and by having a succession of saws in both the upper and under frames, operating upon the stone at the same time, the whole slab can be reduced to pyramidal posts at once. Mr. Allen proposes to apply for patents on various parts of his machine, and will be prepared to supply the community, though he may not handle the prize offered in Dorset, feeling that his mode of hanging the saws is one of practical utility, and which will prove in the long run of great value in the stone business.

English Patents.

Improvements in the Manufacture of Varnish.—This invention is intended to produce a superior quality of copal varnish. It is based upon the discovery that copal gum consists of two constitutive parts or ingredients, one of which is entirely soluble in oil and in essence of turpentine, and the other of which is quite insoluble in the substances employed in making varnish. It is this latter portion of ingredient which deteriorates the pellucidity and whiteness of the varnish, especially by taking a brown tinge, by boiling in a copper or other vessel, on an open fire, as the manufacture of varnish is usually carried on. Hence, the object of the present invention is to purify the gum copal, by extracting from it the insoluble part, either by means of ordinary distillation, or by means of a hot-water bath, or else by means of over-heated steam, by applying either of which, the insoluble part is volatilized and condensed in a suitable receiving vessel. The quantity of insoluble matter, viz.,—from fifteen to thirty per cent. of the gum copal acted upon, having thus been expelled, the remaining portion is left to cool or solidify, and is then ready for use, being perfectly soluble in both warm and cold oil, turpentine, and similar matters, with which it wlll produce a quality of varnish superior to that which is manufactured in the present way.

Improvements in the Manufacture of Soap.—This invention consists in peroxidizing any oxide of iron that may be present in fatty materials, acid or not acid, undergoing the process of saponification by the injection of air or oxygen,—removing the peroxidized iron by means of any vegetable or other acid or principle (such as tannic or gallic acid) capable of combining with it, so as to form an ink or inky solution, and afterwards making soap with the fatty materials thus purified or bleached.

The manner of carrying out this invention is as follows: By means of a force pump or other suitable agent, air or oxygen, in a heated or cold state, is injected into the mass through a perforated coil of pipe in the body of the vessel, which should be made of wood, or lined with sheet-lead; and this injection of air or oxygen is continued so long as may be considered necessary; the time varies according to the degree of oxidation already existing, and can only be ascertained by taking samples and by practice. An infusion or solution of sumach, gall-nuts, or other material capable of combining with the peroxidized iron existing in the materials under operation, is then added to the mass, and the whole is well stirred together; after which the inky solution is drawn off from the vessel, and the materials are boiled, for about two hours, with a like quantity of pure water, which is afterwards drawn off, and with it any of the inky solution that may have remained in the materials. The soap-making is then proceeded with, and the process completed in the ordinary manner.

The purified soap produced by this invention will be found suitable for dyers, scourers, and others who require a soap quite free from iron,—the presence of which is, in many cases, highly injurious to many descriptions of colors.

An Improved Process for Plating or Coating Lead, Iron, or other Metals with Tin, Nickel, or Alumina.—The first part of this invention consists in a mode of preparing a solution of the metal with which the articles are to be coated or plated; for which purpose they proceed as follows:

For tin, metallic tin is dissolved by nitro-muriatic acid, and then precipitated by an alkali or alkaline salt, preferably by the ferro-cyanide of potassium; sulphuric acid or muriatic acid is then mixed with the precipitated oxide of tin, and water is added thereto. The mixture is boiled in an iron vessel, with a small portion of ferro-cyanide of potassium, and the liquor being filtered, the solution is completed.

Another mode of forming a solution of tin is as follows: The precipitated oxide of tin having been obtained as above described, ferro-cyanide of potassium is added to the oxide and boiled; the solution is then set aside to cool, and filtered; and a stream of sulphuric acid gas is subsequently passed through the solution.

For nickel, this metal is dissolved by nitro-muriatic acid, and the oxide is precipitated by ferro-cyanide of potassium; the oxide is then washed, and cyanide of potassium dissolved in distilled water, is added thereto. The mixture is then boiled, and when cool, it is filtered, which completes the solution of nickel.

For alumina, alum is dissolved in water, and ammonia is added until it ceases to precipitate any more; the alumina is then washed and filtered, and distilled water is then added, and the mixture is boiled with cyanide of potassium. When cold, it is filtered, and the solution of alumina is ready.

Having thus obtained either of the foregoing solutions, the patentees suspend the articles to be covered or plated, by copper or brass rods, in a bath of the required solution, and attach them to the zinc pole of a battery, to the positive pole of which is attached, in the case of a tin bath, a piece of platinum or a pole of tin; in the case of a nickel bath, a bag containing oxide of nickel or a pole of nickel; and in the case of a bath of alumina, a bag of alumina, or a pole of aluminum, or a piece of platinum.

Improved Apparatus for the Distillation of Coal and other Bituminous Substances.—This invention relates more particularly to the retorts or vessels in which the distilling process is carried on for the purpose of obtaining gas for illumination; but it is also applicable to retorts for distilling bituminous or resinous substances for other purposes.

The principal object of this invention is to obviate the objections to which earthen retorts are open. This is effected by coating the retorts internally with an enamel or glaze, which will prevent the gas from escaping through the pores of the material of which the retort is composed; and will also, by presenting a smooth surface, prevent the carbon from adhering thereto and forming a crust thereon.

Any of the processes which are well known and in use, or that may hereafter be invented, for glazing or enameling surfaces, may be employed for the purpose of the invention.

In order to prevent carbon from depositing and crusting on the internal surface of iron retorts, the patentees also propose to enamel these surfaces of iron retorts by any of the processes for enameling hollow iron vessels; and, if required, the external as well as the internal surface of earthen or iron retorts may be also glazed or enameled.

Improvements Applicable to Machinery for Printing Fabrics.—The object of these improvements is, first, to obtain greater regularity and uniformity in the supply of color, than can be obtained by the ordinary machinery; and, second, to obviate the necessity of employing the number of children at present required to assist in the operation of printing fabrics. The machine forming the subject of this invention being separate from the printing-press, it will be seen that the improvements are applicable to any machinery for block-printing fabrics.

The color block or table is covered with a cloth of some air-tight and waterproof material, and the required elasticity is imparted to it by means of a collapsible vessel made of India-rubber or other suitable material, provided with a counterbalance weight. This vessel is filled with water or other liquid, and it will, therefore, by means of its counterbalance weight, keep the printing cloth at the required tension. The color is placed in a trough or reservoir, at one end of the cloth; and this latter is supplied with color by means of a horizontal brush or other suitable contrivance, which extends across the table, and is worked backwards and forwards from the color trough over the color cloth by means of a lever; so that at each stroke of the lever fresh color will be supplied from the trough or reservoir at the end,—the apparatus being so arranged, that the cloth and the color which is contained in the reservoir or basin at the end shall be kept together, and when the printing operation is finished and the color is required to be changed, the color cloth can be scraped, and the cover of the color trough or reservoir moved forward by a single stroke of the lever, so as to close the color reservoir, and thus prevent the color from drying by evaporation or exposure to the air, as is the case in the ordinary method of working, in which the color is found to dry in the brushes on the printing frame, or sieve, and in the vessels.

Improvements in Preparing Loaf-Sugar for use, and Certain Apparatus for the Same.—This invention consists in dividing loaf-sugar into systematic, regular, and equal morsels, by means of saws and stamps. To this end the inventor provides a series of straight saws, operating in the ordinary manner, parallel to each other, side by side, at $\frac{3}{4}$-inch or any other required intervals; and he subjects loaf-sugar to these for the purpose of cutting it first into slices or slabs; secondly, cross-wise into square sticks; and, thirdly, crosswise into cubical morsels,—there being thus insured (except in outside pieces) a systematic, equal, and regular division to any size which may be desired. The sugar may be subjected three times to one series of saws; or several series may be employed working in the several directions; or a series may be fixed in a frame and used by hand. Circular saws may be employed, if accurately fixed, and a good deal set, and provided the increased amount of sawdust be not regarded; a series of small circular saws, about six or eight inches in diameter, may be used—the blades being mounted on one spindle, and fixed at the intervals above mentioned.

In some cases the patentee proposes to cast or saw the sugar into slabs one morsel thick, and subject these to pressure between reticulated edged metal stamps or gratings, which cut and crack the slab on both sides to correspond. One grating is made sharper edged than the other, to carry the morsels back with it, to be pushed off in receding, by means of pins fixed behind it; or the slabs are divided by such means, first into sticks, and these again into morsels; or the cast or sawn sticks are divided by such means at once; or they may be divided by the ordinary fixed chopping-knife, with a stop fixed beyond to regulate the size cut off.

The patentee also proposes to cast the loaves of a rectangular form for the above purpose (although this is not essential,) and to cast the sugar in slabs, or in sticks, or in morsels at once.

An Improved Soap called "Saponitoline."—The invention consists in manufacturing a gelatinous soap in the following manner:

"Supposing (says the patentee) that I wish to manufacture one thousand five hundred pounds of the said soap, I proceed as follows: I first pour in a copper boiler about eighty-eight gallons of soft water, and mix with it about one hundred and twelve pounds of crystal soda, or about seventy-nine pounds of salts of soda. Two or three hours after the soda has been in contact with the water, I agitate the mixture, and add to it about one hundred and twelve pounds of common hard or soft soap. The fire being placed under the furnace, I leave the mixture to be heated until the temperature attains forty or forty-five degrees centigrade, when I add to the liquid about seventeen pounds of Russian or American pearlash;—I well mix the whole, and when the soap is nearly dissolved, I suspend in the middle of the copper a white linen bag, containing about seventeen pounds of pounded quick-lime. This linen bag, strongly tied at its upper extremity to avoid any of the matters escaping, must be immersed in the liquid to a depth of about eight inches.

"When ebullition has commenced in the copper, I slowly agitate the liquid mass, and pour therein about five gallons of mucilage of linseed, marshmallow, or pysllium seed—after which, I add seven and a half pounds of borax, or about two and a half pounds of calcined alum. When the whole is well mixed in the copper, and the liquid presents the appearance of being perfectly homogeneous, I leave it to boil on a slow fire during three quarters of an hour. The fire should then be extinguished, and the copper covered over. When the temperature falls to fifty-five or sixty degrees, I pour the liquid into barrels, where it becomes solidified in about twenty-four hours (supposing that hard soap has been used;) if otherwise, it will remain in a gelatinous state."

An Improved Process for Producing Photographic Pictures.—This invention consists, first, in employing a textile or woven fabric instead of paper as the surface on which the picture is to be produced. This tissue or woven fabric must be prepared to receive the ordinary chemical agents used in photographic operations,—and it will be found that it possesses many advantages over paper. For instance—a more even surface may be obtained than when paper is employed; and the liability to tear or become injured while being subjected to the liquid chemical agents, is much diminished.

In operating upon fine linen cloth, or any other kind of fabric which is capable of being rendered transparent, the inventor first cuts the fabric into pieces of suitable size, and coats them with a paste made of rice-flour, which must be allowed to dry perfectly before submitting the fabric to the subsequent operation. He then takes about six parts of virgin wax, two parts of Venice turpentine, and two parts of the best linseed oil, and having melted the wax in a vessel coated inside with silver, adds thereto the turpentine and oil—taking care to incorporate these substances well together. The fabric is then immersed in this mixture, which is maintained at a moderate temperature; a gelatine, rendered insoluble in fixative baths, may be used for this purpose. The required positive photographic pictures are obtained in the ordinary manner, and fixed in baths of ammoniacal hyposulphites, according to the effect desired to be obtained.

In order to remove any alkaline salts which may remain after the ordinary washings, and would, if left, be injurious to the durability of the picture, the patentee immerses it for about ten minutes in a vessel containing pure alcohol, which possesses the property of depriving it of any injurious matters—and, after being washed in hot water, the picture is ready for the reception of color, as hereafter described.

Excellent results are said to be obtained by treating ordinary photographic pictures in the following manner: Having obtained a positive upon a sheet of paper rendered sensitive by nitrate of silver, and perfectly fixed it by means of baths of ammoniacal hyposulphites, it is treated with boiling water, alcohol, and a solution of potass, for the purpose of neutralizing or removing any chemical or other impurities which may have been introduced in the sizing of the paper, and which would affect the durability of the picture. The paper is then treated with starch of greater or less consistency, according to the degree of transparency desired, and passed through a vessel coated with silver, and containing melted white virgin wax or purified mutton fat. The excess of wax or fat is next removed by placing the picture between sheets of blotting paper, and passing a hot iron over it. The pictures having been thus prepared and rendered transparent, suitable colors are applied thereto by hand, in the usual way of coloring portraits or pictures—with this difference, that they are laid on the back of the transparent fabric. The colors applied should be oil colors of superior quality. When the colors are dry, the picture is attached by glue to a flat and even surface. If it be desired to give greater brightness and effect to the picture, mastic varnish or suitable purified gelatine is applied to its surface.

By the above-described process a very superior picture will be produced, combining the truthfulness of photography with the artistic effect of a painting.

Improvements in Preserving Animal and Vegetable Matters.—This invention relates to means for discharging the atmospheric air from vessels constructed to receive animal or vegetable matters, for the purpose of preserving them.

To this end, the patentee employs the vapors of alcohol, or other liquids which vaporize at a lower temperature than boiling water, in the manner following: He employs, by preference, as the holding or retaining means for the animal or vegetable matters to be preserved, cases or vessels of tin or tin-plate, such as have heretofore been employed when preserving animal or vegetable matters; except that, according to one method of carrying out his improvements, he applies to the lid or cover of each case a short piece of tin or other soft metal pipe, for the purpose hereafter explained. The vessels or cases being thus prepared, the animal or vegetable matters to be preserved are introduced thereto in a raw state, and, by preference, suspended in a case or vessel by thread or otherwise. The closing lid or cover is next applied or soldered, so as to make the case air-tight, except through the small pipe. A small quantity of alcohol or other liquid, capable of vaporizing at a temperature below that at which water alone vaporizes, is forced into the case through this small metal pipe,—and the case is then placed in a bath of hot water, or otherwise subjected to heat sufficient to vaporize the alcohol or other liquid employed. The vapor, thus generated, will have the effect of driving out the atmospheric air contained therein through the pipe by which the alcohol was introduced thereto. By the application of a light to the outer end of this pipe, when the whole of the atmospheric air has been expelled, a steady blue flame will be obtained from the ignition of the vapor, which will then alone escape. When this is the case, and it may be thus judged that the whole of the vapor is spent, the pipe is closed by compression, and soldered to keep it air-tight.

Another method is to form each vessel with two of such small pipes, and in place of applying the alcohol or other liquid to be vaporized in the case with the matters to be preserved, it is placed in a separate vessel or boiler, to which suitable heat is applied, to generate the vapor and raise the pressure to a few pounds (say about fifteen pounds) to the square inch. From this boiler a pipe conducts the vapor generated to the vessels or cases to be treated. This pipe is provided with a tap for closing the same when desired, and a piece of prepared, or what is commonly called vulcanized, India-rubber tubing, so as readily to connect this pipe of communication with one of the small pipes in a vessel or case containing animal or vegetable matters to be preserved; but other connecting means may be employed. When a connection is obtained between the boiler in which the vapor is being generated, and the case containing the matters to be preserved, the vapor will drive off the atmospheric air from the case by the second small pipe. By the application to this second pipe of a light, the absence of atmospheric air in the case will be ascertained, as when employing the former method, by a steady bluish flame being obtained. The supply of vapor to the case is then to be stopped, and both pipes closed by pinching and soldering.

In carrying out this second method, the patentee sometimes forms the second or escape pipe from the vessel or case containing the matters to be preserved, sufficiently long to be bent over and dipped into another vessel; and when the vapor has expelled the atmospheric air, as explained, the end of this second pipe is dipped into a vessel containing liquid gravy, or gelatine or other matter, which, from being somewhat heated, is for the time in a fluid state. At the time of applying the second pipe to the gravy, gelatine, or other fluid, the supply of vapor to the case is cut off,—when, by the condensation of that vapor, a vacuum or partial vacuum will be created in the case, and the liquid gravy, gelatine, or other matter will flow in by the second pipe to aid (by covering the matters to be preserved) in excluding the atmospheric air. This method will be found very beneficial when treating cooked meats—as boiled beef, for instance—as well as in the preservation of soups and other liquids.

The patentee claims the employment of alcohol, or other liquids which vaporize at a low temperature—that is, below that of boiling water—as a means for discharging the atmospheric air from vessels or cases containing animal or vegetable matters to be preserved.

An Improvement in Combing Wool and other Fibres.—This invention is applicable to the carrying comb of a machine, in which a circular or endless comb is employed, as is now very commonly the case. The improvement consists in applying a curved or bent plate (of a corresponding radius with the circular or endless comb) to push the wool or fibre on the carrying comb in a curved form towards the circular or endless comb, so that the wool or other fibre may be deposited equally in the circular or endless comb.

The patentee remarks that as the nature of wool-combing machines to which his invention is applicable,—viz., those called Liester and Donisthrope's patent machines—is well known, it will only be necessary to explain the manner of applying a bent plate to the carrying comb of such machines. The carrying comb, he says, is, as heretofore, moved to take a tuft of wool from the nippers, and is then moved to the circular comb, and caused to deliver such tuft of wool into the teeth of the circular comb; and the only change made in the working of these parts is, that by means of the curved plate applied to the side of the carrying comb next the circular comb, the tuft of wool, immediately after it has been taken by the carrying comb, is, by the bent plate, moved into a curved line across the carrying comb,—such curved line corresponding with the curvature of the circular comb. The curved plate is carried by a stem, which enters the rod on which the comb is mounted, which for this purpose is made hollow; and the curved plate is, by a spiral spring acting on its stem, constantly drawn inwards. The curved plate is to be moved outwards by any suitable mechanism, immediately after the tuft of wool has been taken by the carrying comb from the nippers; and the curved plate is immediately afterwards to be released and withdrawn by the spring, so that the curved plate may be out of the way when the tuft of wool is delivered from the carrying comb into the circular comb.

Improvements in the Manufacture of Iron and Steel.—This invention is applicable to the reduction or smelting of the ores of iron, to the smelting and puddling of pig or plate-iron, and to the manufacture of bar, plate, rod, and sheet-iron, and iron intended to be afterwards converted into steel.

For the purposes of this invention the patentee employs a close furnace, instead of the open furnaces hitherto employed in such manufacture; and to the furnace valves are adapted, for regulating the heat required for smelting the ores therein; and the smoke and gases from the furnace are employed for drying purposes (such as the drying of the fuel,) by conducting off the same through a pipe inserted into the side of the furnace near the top thereof. In connection with the closed furnace the patentee employs air chambers, in combination with either hot or cold blast, for the purpose of creating the necessary draught in the furnace, instead of employing a machanical blast only when such furnaces are used for "roasting" or "torrefying" the ores of iron; and when the furnace is not required to be used for this purpose, but only for the smelting of the ores of iron, the air chambers may be closed by dampers, suitably placed and connected therewith. The fuel employed for the reduction or smelting of the ores of iron, and the manufacture of bar, plate, rod, and sheet iron, and steel, is peat or vegetable carbon; either peat in its natural state, or compressed peat, or prepared peat, formed by mixing together about equal proportions of peat and small anthracite coal, and compressing the same together into a solid mass by means of mechanical pressure; or a compound of the refuse turf or peat fuel, heretofore considered as waste, dissolved in a pit into a pulp, and then moulded into "peats" or blocks.

The Application of a new or Improved Material or Substance to the Construction of certain parts of Machinery.—This invention relates, firstly, to the employment of an efficient substitute for the wood and metal ordinarily used in certain moving parts of machinery; which substitute, besides possessing persistent qualities equal to those substances when similarly applied, will, from its lightness and strength (without being subject to crack like wood,) and capability of being moulded into any required shape, offer to the mechanical engineer advantages superior to metal or wood.

It is well known, that in constructing the spindles of roving and spinning machinery, and other parts connected therewith, it is desirable to make them as light as is consistent with strength and durability, in order to obtain great speed with the least possible wear and tear expenditure of motive power. For this purpose the inventor proposes to apply to such use a composition of recent introduction into the arts, and consisting of a preparation of India-rubber and sulphur, with or without shellac, or of gutta-percha and sulphur, subjected to a high degree of heat, and thereby converted into a hard and persistent substance.

In constructing spindles according to this invention, it may be found desirable to cast or mould the warve or pulley with the spindle; and to reduce the elasticity, or rather to give any required amount of rigidity to the spindle, a core of iron or steel wire may be introduced into the mould, and caused to unite with the plastic material. In manufacturing the feeding, drawing, and other rollers of preparing and spinning machinery, the rollers are cast in suitable moulds (with fluted or plain peripheries,—a metal rod, which is to form the axle of the roller, being introduced as a core into the mould.

The employment of this hard compound in the manufacture of shuttles (for looms) will be found to offer many advantages, from the facility with which the ends may be tipped with metal, and the cop or bobbin holder may be attached. These pieces are to be introduced with the compound, in a plastic state, into the shuttle-mould, and a union of the compound with the metal will be readily effected by pressure.

Where great lightness with durability, without the liability of cracking, is desirable, as in the manufacture of bobbins or other such articles, this may be obtained by introducing into the above-mentioned ingredients of the compound, while yet in course of manufacture, cork-dust or chips, sawdust, cotton waste, or other vegetable fibre, in the proportion, say, of about one part, by weight, more or less, to two parts, by weight, of the other combined ingredients.

The articles, when moulded to the required shape, are submitted to about 300° Fahr, for about six hours, after having been packed under pressure in moulds or iron boxes, in a bed of fine plaster or soapstone, ground to an impalpable powder. In making the plastic material for the aforesaid purposes, the following ingredients, in the proportions specified, may be employed indifferently to produce the like result, viz:—One part, by weight, of sulphur, to two parts, by weight, of India-rubber or gutta-percha, or one part, by weight, of India-rubber and of gum-shellac to one part, by weight, of sulphur.

Secondly, this invention relates to the employment of the hard persistent material produced, as above mentioned, as a substitute for the brasses or metal filling of bearings of machinery; and, in order to adapt it the better to this purpose, from seventy-five to one hundred per cent. more or less (by weight) of plumbago or black-lead is added, during the manufacture, to the component parts of the material; and thus a substance incapable of abrasion by friction, but susceptible by that means of a higher polish, is obtained The bearings are moulded in the manner above described, and when moulded are in like manner subjected to heat, under pressure, for the purpose of effecting the conversion of the plastic compound into a hard substance, and that without injury to the form of the moulded article.

An Invention for Preserving Meats.—This invention relates to the preservation of animal and vegetable food and spices by the desiccating process, and consists in first desiccating the meat in small portions, either in a vaccuum or by the aid of heated air. The desiccated portions are then pounded and reduced to a powder, which is again desiccated—thereby effectually removing every particle of moisture therefrom, and consequently rendering it less liable to become decomposed after long keeping.

The preservation of meat by drying it, is a process that has long been known, but it has not been brought into general use, as, in consequence of the meat being dried in pieces, whether the drying be effected in vacuo or by means of hot air, all the conditions necessary to effect a good and long preservation are not obtained, by reason of the drying being imperfect and incomplete. The meat consequently retains a certain amount of moisture internally, which will eventually cause decomposition to take place.

By grating or otherwise reducing the meat, previously dried in small pieces, a powder is obtained, which, by being submitted to a second drying process, is completely deprived of moisture. This mode of preparation, without interfering with the nutritive qualities and original flavor of the meat, has the advantage of considerably reducing its bulk, by the subsequent compression to which it is subjected, whereby it is rendered much more easy of transport. Seasoning of all kinds is also submitted to the same treatment, namely, first drying and then reducing to powder, which powder is again thoroughly dried. The inventors also propose to combine meat powder with vegetable tablets, by means of compression, so as to obtain a single product, which may be termed compound meat and vegetable tablets.

In place of simply preparing the preserved vegetables in combination with the lean portions of meat, it is proposed to combine them with fat in the following manner:—The vegetable tablets having been prepared in the ordinary manner, they are submitted to successive immersions in soup, and allowed to dry after each immersion, either by artificial or natural currents of air. There is thus formed over the tablets a layer of concentrated soup, which layer, of course, varies in thickness, according to the number of immersions to which the tablets have been subjected. This covering, when properly dried, forms an even coat over the entire tablets, and other coverings of lead or paper may be dispensed with. When the tablets are to be used, the covering can be easily dissolved in warm water, which is thus formed into soup. These improvements are of great importance in the preservation of vegetable tablets, as the tablets thus prepared contain in themselves all that is necessary for a meal, and all further cooking is dispensed with. These tablets may be made of any nutritive preserved substance, and of any convenient size.

An Improved Method of Preventing the Alteration of Bank-bills.—One of the most common methods of counterfeiting bank-notes or bills consists in erasing the figures which indicate the denomination of the note, by rubbing with the hand or otherwise, and reprinting or pasting upon the surface so prepared, other figures indicating a higher denomination. Thus, the word or figure "five" may be erased, and upon the surface which it occupied "fifty" or "one hundred" may be printed. Alterations of this description easily deceive the public, as, when well executed, they can be detected only by the initiated, and upon very close examination. To render this species of alteration impossible, by affording to the uninitiated a ready means of instantly detecting it if practiced, is the object of the present invention, which consists, in so imprinting into the body of the paper, the character or words which indicate the denomination of the note or bill, that it can only be erased by the total destruction of the paper, and cannot be replaced or imitated even if it were found possible to erase it. This is accomplished, either by a process analogous to that which is known in the manufacture of paper as "water-lining," or by printing the paper as it is manufactured, with the required characters or figures, by a peculiar process, which causes the color to penetrate entirely through the body of the bill or note, so that it cannot be removed without destroying the texture of the paper itself.

During the process of manufacturing the paper, and while yet in a soft pulpy state, it is imprinted with characters or letters indicating the denomination of the bill, "five" for a five pound note, "ten" for a ten pound note, and so on, for notes of other denominations. This may be accomplished in various ways, as follows:—First, by water-lining in the ordinary way, with wire secured to the vellum, so arranged as to impress the required characters upon the paper; or the same effect may be produced by means of types, slightly raised upon the surface of a cylinder, which is caused to bear upon the web of paper while it is still soft and impressible, and thus indent the required characters into the body of the paper,—the velocity of the surface of the cylinder being exactly equal to that of the web of paper as it passes through the machine. To render the characters thus produced more apparent and striking they may be imprinted upon the soft pulpy paper in colors, and in such a manner as will insure the color sinking deep into and entirely penetrating the body of the paper. This is readily accomplished by means of a cylinder, similar to that above described, having upon its surface points set close to each other in lines forming the desired figures, and sufficiently elevated to penetrate the paper whilst it is yet in a soft pulpy state. These points are charged with ink of the required color, which is transferred (as the cylinder revolves) to the paper, into the body of which it penetrates. The holes made by the points are instantly closed by the pressure rollers, to which the paper is afterwards subjected, and the coloring is thus caused to penetrate entirely through the note, and consequently cannot be removed for the fraudulent purpose before mentioned.

NEW BOOKS.

State Society's Transactions.

We ought ere this to have rendered our thanks to Mr. B. P. Johnson, of Albany, for the volume of The Transactions of the State Agricultural Society, received in November. It is a very valuable book. Our friend, Wm. Bacon, Esq., has also sent us the Second Annual Report of the Secretary of the Massachusetts Board of Agriculture.

Robert Merry's Museum and Parley's Magazine.

We have a vivid recollection of the enthusiasm produced among juveniles of all ages, by the first appearance of the story-books of Peter Parley, and the periodicals which soon after followed them, from the same popular writer. These publications have not yet ceased to make their regular appearance before the public, and though they have ceased to attract by their novelty, Gilbert Go-Ahead and Uncle Hiram, etc., still present themselves as long ago. We do not see that they have at all deteriorated. In these well-illustrated pages, we still see the peculiar characteristics which then so widely distinguished them from anything before published. May they long continue to please and instruct the youth of this country!

A Complete Pronouncing Gazetteer or Geographical Dictionary of the World. Edited by J. Thomas, M.D., and T. Baldwin, assisted by several other gentlemen. Philadelphia: J. B. Lippincott & Co. 1855, 2177 pages.

We have given this great work a careful examination, and see nothing in it that does not commend itself to general approval.

It is a pronouncing Dictionary, and the pronunciation of the names of places in the several countries is determined by eminent scholars, natives of each, or practically familiar with them, and is therefore quite reliable. The introduction, extending over 22 pages, is a concise, but yet full statement of the sounds of the letters of different modern European languages, and proves them to have come from hands quite competent to the task. This adds very much to the value of the work, and may be applied to the determination of sounds of words not found in this volume.

Under the different States, we have not only the natural and political features of the country, and other matters usually treated in such works, but objects of interest to tourists—forest trees, animals, history, etc.

In its statistics, the most recent information is given. Peale's Museum has disappeared from Philadelphia, and other stereotyped descriptions of divers places long since out of date, are omitted. We have looked in vain for a single error in those sections of country with which we are familiar. We are satisfied that no Dictionary so extensive as this, has been published in any country more worthy of general confidence; and we hope the enterprising publishers will receive as liberal a reward in their sphere, as we are sure has been earned by the learned and accomplished editors and assistants.

The Constitutional Text-Book; a Practical and Familiar Exposition of the Constitution of the United States, and of portions of the Public and Administrative Law of the Federal Government. Designed chiefly for the use of Schools, Academies and Colleges. By Furman Sheppard. Philadelphia: Child & Peterson. 1855, 324 pages.

This volume contains a short history of the discovery and sentiment of the colonies, the articles of confederation, the constitution, etc., as described in the title. Its object is to instruct the youth of the country in this important branch of education. No one can doubt the great dearth of such books, and the consequent ignorance of the masses on all these topics. To meet this want, this volume has been carefully prepared, and it is offered to the public in a form which strongly recommends it to a favorable reception.

STRAY LEAVES FROM THE BOOK OF NATURE. By M. SCHELE DE VERE, of the University of Virginia. New-York: G. P. Putnam & Co., 1855; 291 pages.

An entertaining, tasteful, sprightly, truthful, instructive volume, from the pen of a scholar. It opens with "Only a Pebble," and traces the pebble through various transformations into vegetable and animal life and beauty, in chapters, distinct and yet continuous. Its place is in every school library, Sunday-school and family, and in eac it will be read.

DICKENS' LITTLE FOLKS. 6 vols. New-York: Redfield.

These little volumes are selected from the larger books of this popular writer, and are got up especially for the young. The series consists of The Child-wife from David Copperfield, Little Nell from the Old Curiosity Shop, Little Paul and Florence Dombey from Dombey & Son, Oliver and the Jew Fagin from Oliver Twist, and Smike from Nicholas Nickleby. They form a capital series.

SABBATH EVENING READINGS OF THE NEW TESTAMENT; ST. JOHN. By REV. JOHN CUMMING, D.D., etc., etc. Boston: John P. Jewett & Co.; New-York: Sheldon, Lamport & Co. 1856. 464 pages.

Our opinion of Mr. Cumming is well known to our readers. The more we read of him, the more highly we regard his sound judgment and discrimination. His style is a model for works of this description.

A VISIT TO JUDEA, CHINA AND JAPAN, IN THE YEAR 1853. By BAYARD TAYLOR. New-York: G. P. Putnam & Co. 1855. 539 pages.

This writer is too well known and too highly appreciated to need any editorial notices. Those who can get these books of Mr. Taylor will of course have them. The present volume is not behind its predecessors in its style and topics, nor in its execution.

THE STABLE BOOK. Being a Treatise on the Management of Horses, in relation to Stabling, Grooming, Feeding, Watering, and Working; Construction of Stables, Ventilation, Stable Appendages, Management of the Feet, Management of Diseased and Defective Horses. By JOHN STEWART, Veterinary Surgeon, Professor of Veterinary Medicine in the Andersonian University, Glasgow. With Notes and Additions, applying it to American Food and Climate. By A. B. ALLEN, Editor of the *American Agriculturist.* With Illustrations. C. M. Saxton, New-York. 1856. 369 pages.

The author of this book was formerly a Professor of the Andersonian University of Glasgow. This institution and that of King's College, in London, are the only colleges in Great Britain, giving general instruction in science and literature, that support a professorship of veterinary science. Such instruction is given elsewhere only in special institutions. Some years since, Professor Stewart emigrated to Australia and devotes himself extensively to the rearing and caring for horses, cattle, and sheep. He has the reputation of a well-qualified and practical veterinarian, and his book has taken a high rank in his native country,as a plain, practical, and judicious treatise.

We regret that we have not in this country an institution for the thorough training of veterinary practitioners. Our Boston friends are making an effort of this kind under Dr. Dadd, who received his veterinary education abroad. We know of none educated in this country. The mode in which Mr. Allen was taught is given us by himself:—"The horse, both theoretically and practically, has been a favorite study with me from childhood, and for the past ten years I have been more or less engaged in breeding and rearing them on my farm, and in breaking and fitting them for market. I had also, in early life, during a residence of nearly two years in the north of Europe, the advantage of studying the stable economy of large military establishments." But the making of surgical instruments does not qualify one to use them, nor the compounding of medicines enable one to administer the proper remedies to the sick. The best groom and the best rider may know nothing of veterinary science. Anatomy, physiology, pathology, skill in surgery, etc., do not come by instinct, nor even by mere study. Dissections, practical surgery, etc., are essential. Hence we receive with caution all inexperience, as we do the absence of professional instruction, and especially when accompanied with personal assurance.

As to the book before us, we confess we do not quite like the tone of the few short comments of the American editor. In certain departments, none stand higher in our estimation than Mr. Allen. But in this department we doubt. The character of many of these short notes increases our doubt. The first specimen of editing that arrested our attention (page 24) did not strike us favorably. Mr. Stewart says that plank floors are objectionable in stables, because they are decomposed by the urine, and thus produce injurious gases, and also are made slippery, and because they are liable to get misplaced. Mr. Allen says that these objections do not exist to such floors here, because the climate is drier! Mr. Stewart recommends for horses having flat feet and kept in a straw-yard much exposed to wet, that they should be shod with leather soles, etc. Mr. Allen, assuming to know better than Mr. Stewart, says, page 131: "All this is of more than doubtful utility; and experience shows it to be at least useless in all cases and dangerous in many." Many of the American notes are of this description. Still, as nearly half the entire matter added in this American edition, consists of some four and a quarter pages of description of the stables of Mr. Gibbons and Mr. Pell, quite worthy of attention, and which add to the value of the work, we ought not to be too difficult. The work is a valuable one, and its reprint here is a service to humanity.

Heathen Religion, in its Popular and Symbolical Development. By Rev. Joseph B. Gross. Boston, John P. Jewett & Co.; New-York, Sheldon, Lamport & Blakeman. 1856. 372 pp.

Mr. Gross has expended a vast deal of research in preparing this volume, and has collected together an amount of information in respect to mythology and idol worship, which exceeds that of any similar work within our knowledge. This renders the book very valuable. Another portion of the volume consists of the author's philosophy of religion, and this we do not consider of so great value. It furnishes abundant food for thought, but we do not always agree with his conclusions. He exalts idol worship too much, in our judgment, and attaches quite too little importance to any departure from the religion of the Bible. The author may not intend this—probably he does not—and yet we cannot but think there is such an influence over the mind of a confiding reader. Still we regard this as a very valuable work.

The Onyx Ring. By John Sterling. With a Biographical Preface, by Charles Hale.

St. Gildas and the Three Paths. By Julia Kavanagh, Author of "Nathalie," etc.

The Blue Ribbons. By Annie Harriet Drury.

These three small volumes are published by Whittemore, Niles & Hall, of Boston. They are all capital books for our young friends—books they would read with great interest, and not without an indirect but strong influence in favor of honesty, truth, and integrity. We heartily commend them.

Wager of Battle. A Tale of Saxon Slavery in Sherwood Forest. By Henry W. Herbert, Author of "Henry VIII. and his Six Wives," etc., etc. New-York: Mason Brothers. 1855.

This volume is descriptive of the manners, customs, and institutions of our ancestors, the Saxons and the Normans. It is, of course, a tale of chivalry, and stories of this class no man can write better than Herbert. It is beautiful in style, and is one of the most entertaining volumes ever published.

THE WONDERFUL PHIALS, and other Stories. Translated from the French. By ANNIE. New-York: M. W. Dodd. 1855. 323 pp.

This is a capital story-book. Twenty-one short stories are given, and they are very entertaining. It deserves a place in every good juvenile library, and will be highly prized by our young friends.

PLAIN TALK AND FRIENDLY ADVICE TO DOMESTICS, with Counsel on Home Matters. Boston: Phillips & Sampson. 1855. 214 pp.

This little work is somewhat akin to the preceding, turning its attention to persons rather than things, and illustrates the proper manner of preventing or curing many evils, and how, by good manners, fidelity, etc., to rise in the esteem of others, and to secure a more desirable station in society.

THE COMPLETE WORKS OF WILLIAM SHAKESPEARE. Martin & Johnson, New-York.

Two more double numbers of this beautiful edition of Shakespeare have been laid on our table. They are illustrated with four admirable engravings. This is the most splendid edition of this work which has appeared in this country, while it costs less than several other editions. Price, 25 cents a number; 50 cents a double number. It is to be complete in 40 numbers.

CROTCHETS AND QUAVERS; or Revelations of an Opera Manager in America. By MAX MARETZEK. New-York: S. French. 1855. 346 pp.

Mr. Maretzek has a high reputation as a conductor of an orchestra, and this book entitles him to a reputation as a letter-writer that many an experienced author might look up to with a fond but hopeless gaze. The letters are admirably done. The exposures of the secrets of the opera house, as curious if not as dreadful as those of the prison house, are just the thing for after-dinner, or any hour when one needs something to keep him awake. It is one of the most entertaining of books. It paints men —living men—not the imaginary beings of the novelist, but the men we meet every day, here in New-York, on Broadway; and there is about it an air of good humor, even when ill blood might easily be pardoned, which is really refreshing. We shall henceforth be inclined to take off our hat to Mr. Maretzek, every time we meet him.

MRS. FOLLEN'S FIRELIGHT STORIES.

Whittemore, Niles & Hall have laid on our table a beautiful set of these popular books for youth. They are put up in a beautiful form, containing six volumes, square 16mo. Price $1 50, or 25 cents each.

MRS. CROWEN'S AMERICAN LADY'S SYSTEM OF COOKERY; Comprising every variety of Information for Ordinary and Holiday Occasions. By Mrs. T. J. CROWEN, Author of "Every Lady's Book," of which over two hundred thousand copies have been sold. New-York: Thos. J. Crowen. 1855. 450 pp.

This is a subject that comes home to every household, and to all ages and sexes. He who improves the culinary processes of any family, promotes health and improves the temper, and therefore materially affects the amount of domestic happiness. Mrs. Crowen knows well how to do this, and in this volume she tells others how to do so fully and in very appropriate terms. We commend the book to the attention of all our readers.

NEW MUSIC.

We have from E. H. WADE, of Boston, the following vocal pieces, all good of this class, and several much above the average degree of merit: "Poor Old Jake;" "The

Happy Muleteer;" "There's Nought in Life;" "Shylie A'Vourneen;" "The Sea Nymph's Invitation;" and "Elsie, the Maid of the Mill."

Wm. Hall & Son have among their recent publications the Opera of William Tell, capitally arranged, but requiring some skill in the pianist. They have also a very simple arrangement of many of the airs.

Boardman & Gray's Pianos.—We have an instrument made by this enterprising house, capital in tone and beautiful in finish. "The Attachment" produces a very smooth and sweet subdued tone, with very protracted vibration.

List of Patents Issued

FROM TERMINATION OF PREVIOUS LIST TO DEC. 11.

G. W. Bishop, Brooklyn, improvement in marble sawing machines.

Ansel W. Porter, Little Falls, N. Y., improvement in hanging carriage bodies.

Hiram Abbott, Wakeman, O., improved method of upsetting tire, &c.

Chas. Rice, Boston, and S. H. Whorf, Roxbury, Mass., improvement in lasting and applying soles to shoes.

Sylvanus Sawyer, Fitchburgh, Mass., compound projectile.

Job Brown, Lawn Ridge, Ill., improvement in weighing attachment for faucets.

J. C. Day, Hackettstown, N. J., improved ring and gudgeons for bottle fastenings.

John Fouser, Philadelphia, improvement in supporting jacks.

L. B. Fisher, Branch Co., Mich., improvement in marble sawing.

Thaddeus Fowler, Waterbury, Ct., new method of separating pins.

John B. Hathaway, Millbury, Mass., improved rotary engines.

Eli Horton, Windsor Locks, Ct., improved lathe chuck.

W. B. Kimball, Peterborough, N. H., improved marble sawing machine.

Jean Pierrie Mollierre, Lyons, France, improved method of cutting boot and shoe uppers. Patented in France, Aug. 10.

V. P. Corbett, New-York, excluding dust from railroad cars.

Ransom Cook, Shelburne Falls, Mass., new method of boring implements.

Samuel Krauser and Christian Ritter, Reading, Pa., improved water meter.

Wm. C. Chipman, Sandwich, Mass., improvement in marble sawing.

Michael Bomberger, Hummelstown, Pa., new method of hanging window shades.

R. L. Nelson, Ocala, Florida, self-feathering adjusting tide wheel.

T. B. Markillie, Winchester, Ill., improvement in corn planters.

Joseph Morse, Woonsocket, R. I., improvement in throstle machines.

E. D. Curtis, Mt. Morris, N. Y., improvement in seeding machines.

Cornelius R. Wortendyke, New-York, raising ice from rivers, etc.

Nath. S. Saxton, Riverhead, N. Y., improved machines for adding numbers.

Barclay A. Satterthwait, Lima, O., new method of preparing artificial teeth.

Thos. Chope, Detroit, Mich., improvement in attaching shafts to axles.

D. W. C. Sanford, Cincinnati, O., improvement in refrigerators.

Loren J. Wicks, Paterson, N. J., improvement in straw cutters.

H. N. Sherman, Birmingham, Conn., new method of forming heads on bedstead screws.

Alfred E. Smith, Bronxville, N. Y., improvement in securing shafts to axles.

Geo. W. Hubbard, Middleton, Ct., improvement in marble sawing machines.

Chas. H. Johnson, Boston, improvement in Argand-gas burners.

Rudolphus Kinsley, Lynchburgh, Va., improved tobacco presses.

James A. Woodbury, Winchester, Mass., improvement in planing machines.

Chas. F. Warren, Malden, Mass., improvement in marble sawing machines.

Samuel Wetherill, Bethlehem. Pa., improved processes for making zinc white.

G. W. Bigelow, New-Haven, Conn., improvement in cutting teeth of gear wheels.

J. H. A. Blackmann, Ronsdorf, Prussia, improvement in locks.

L. S. Chichester, New-York, improvement in cotton gins.

D. W. Clark, Bridgeport, improvement in double acting pumps.

Edward Pierre Fraissinett and Henri Emile Roboul, of Route d'Orleans, Montrouge, Paris, France, for ticket holders. Patented in France Feb. 2, 1855.

T. Henderson, Lowell, machine for printing yarns and cloths.

T. P. Howell and N. F. Blanchard, Newark, improvement in treating leather for enameling.

D. W. Hughes, New-London, Mo., improved method of attaching tops to seats of carriages.

A. A. Marcellus, New-York, improvement in potato diggers.

Jos. McCord, Philadelphia, policemen's rattles.

C. A. McEvoy, Richmond, Va., improvement in railroad station indicators.

John Phin, Rochester, improvement in gun locks.

Wm. F. & Chas. J. Provost, Selma, Ala., improvement in cotton presses.

C. Rice, Boston, and S. H. Whorp, Roxbury, Mass., improved machine for preparing leather for the manufacture of boots and shoes.

J. Reilly, Hart Prairie, Wis., improvement in harvesting machines.

F. Noette and A. Schmidt, Brooklyn, improved marble sawing machines.

M. W. St. John and I Brown, Leonardsville, N. Y., improved street-sweeping machines.

Gerard Sickles, Brooklyn, improvement in coal sifters.

G. H. Thomas, Kingston, Mass, improved method of inserting tubes in evaporating pans, etc.

L. Young, New-York, improvement in revolving measuring wheels.

H. Carsley, Lynn, assignor to himself and E. Brown, of same place, improvement in nutmeg graters.

F. Drew, South Boston, assignor to himself and S. S. Gray, of same place, improvement in lifting jacks.

L. Fingor, Boston, assignor to himself and L. Schell, of same place, filtering faucet.

C. W. Van Vilet, Fishkill Landing, assignor to C. Parker, Meriden, Conn., improvement in mill grinding coffee, etc.

E. Harmon, Washington, D. C., improved envelopes.

W. O. Hickok, Harrisburgh, improvement in mills for grinding apples.

Reuben W. Oliver, East Aurora, N. Y., improvement in road scraper.

John Allender, of New-London, Ct., for balance for detecting spurious coin.

Dennis S. Blue, of Fort Seneca, Ohio, for improvement in blacksmith's striker.

Pliny E. Chase, of Philadelphia, Pa., for improvement in steam heating apparatus.

Thomas H. Corbett, of Brooklyn, N. Y., for improvement in belt coupling.

H. H. Dennis, of Steam Mill, Pa., for improvement in fences.

Joel P. Heacock, of Marlborough, Ohio, for improvent in drilling and screw cutting machines.

Joel P. Heacock, of Marlborough, Ohio, for improvement in cooper's tools.

Peter H. Jackson, of New-York, for improvement in cat head anchor stoppers.

L. B. Jillson and George Sparhawk, of Lewiston Me., for improvement in bag looms.

John A. Krake, of Alden, N. Y., for improvement in the method of hanging the screens of winnowing machines.

Joseph Kleeman, of the city of Meissen, Germany, for improvement in the preparation of umbrella sticks, &c., of rattan.

Alfred Krupp, of Essen, Prussia, for improvement in cannon. Patented in France, December 16, 1847.

John S. Lewis, of Athol, Mass., for improvement in the mode of cutting the uppers of boots.

Leonard S. Maring of Fall River, Mass., for improvement in attaching casters to trunks.

Jean Pierre Molliere, of Lyons, France, for improvement in machines for rasping and dressing the heels and soles of boots and shoes. Patented in France, January 5, 1855.

Jean Louis Rolland, of Paris, France, for improvement in ovens for baking bread and other ailments. Patented in France, June 30, 1851.

George W. Stedham, of Vienna, N. J., for improvement in sewing machines.

Cyrus A. Swett, of Boston, Mass., for improved printing press.

Samuel E. Tomkins, of New-York, for improvement in metalic saddle trees for harness.

Nathaniel Waterman, of Boston, Mass., for improvement in feet-warmers.

Wm. Bennett, of Brooklyn, N. Y., assignor to the Union Indian Rubber Lamp Company, of New-York, for improvement in fluid lamps.

Design.—James O. Morse, of New-York, and J. W. Adams, of Lexington, Kentucky, for design for steam tube and hot air covers.

Thomas Batty, of Brooklyn, N. Y., for improvement in suspending ship yards.

Erastus B. Bigelow, of Boston, Mass., for improvement in cutting pile fabrics.

E. W. Bullord, of Hardwick, Mass., for improved mode of hanging window sashes.

Daniel Campbell, of Washington, D. C., for improvement in military saddles.

Thomas A. Chandler, of Rockford, Ill., for improvement in making plow mould boards.

John A. Cole, of Washington, D. C., for improvement in machines for sawing out tapering blocks of marble.

Alonzo R. Dinsmoor, and Levi J. Bartlett, of Salisbury, N. H., for improved instrument for chamfering the edges of shoe soles, &c.

Thomas A. Elden, of Westbrook, Me., and Wm. Thorn, of Hollisten, Mass., for improvement in the arrangement of flues and dampers of cooking apparatus.

Joseph T. England of Baltimore, Md., for improvement in railroad car coupling.

Peter Fairbain, of Leeds, and John Hargrave, of Kirkstall, in the county of York, for improvement in wool-combing machines. Patented in England, Nov. 6, 1852.

Henry Forncrook, of Elbridge, N. Y., for improvement in feet warmers.

Joseph Francis, of New-York, for improvement in military wagons.

Samuel H. Gilman, of New-Orleans, La., for improvement in bagasse furnaces.

Samuel Hamilton jr., of Tolland, Mass., for improved burglar's alarm.

Jesse W. Hatch, of Rochester, N. Y., for improvement in the machine for cutting out boot and shoe soles.

Horace L. Hervey, of Quincy, Ill., for improved burglar's alarm.

George A. Howe, of Worcester, Mass., for improvment in hand cotton pickers.

Matthias Keller, of Philadelphia, Pa., for improvement in cutting the fronts and back of violins.

Edward N. Kent, of New-York, for improvement in amalgamators.

Edward Kershaw, of Boston, Mass., for improvement in locks.

Hosea Lindsay, of Ashville, N. C., for improvement in pumps.

Timothy Bailey, Ballston Spa, improvement in knitting machines.

Alexander Barns, Ashtabula, improvement in mop heads.

Thos. R. Markillie, of Winchester, Ill., for improvement in spoke machines.

G. M. Moore and J. Newton, of Watertown, Ct., for improvement in machines for scouring knives.

J. H. Pomery, of Bloomington, Ill., for improvement in locks.

Isaac Rehn, of Philadelphia, Pa., for improved photographic bath.

James H. Sampson, of Grafton, Mass., for improvement in boot trees.

Charles Schinz, of Camden, N. J., for self-regulating hot blast for furnaces.

Nathan Simons, of Providence, R. I., for improvement in cloth stretching rollers.

John Tremper, of Philadelphia, Pa., for improved means of connection between regulator valve and governor's stem.

Daniel E. True, of Lake Village, N. H., for improved blind fastener.

Levi Van Hoeson, of New-Haven, Ct., for improvement in machines for paring and slicing apples.

Richard Vose, of New-York, for improvement in quartz crushing machines.

Moses D. Wells, of Morgantown, Va., for improvement in hand seed sowers.

R. C. Wrenn, of Covington, Ky., for improvement in machines for preparing cotton seed for planting.

John H. Gatiss, of Franklinville, Pa., assignor to Abraham Edwards, of Towanda, Pa., for improvement in water wheels.

John Taggart, of Roxbury, Mass., assignor to himself, and Vernon Brown, of Boston, Mass., for improved machines for channeling stone.

Charles C. Tolman, of Shelburne Falls, Mass., assignor to James Sargent and Dan P. Tucker, of same place., for gimblet.

Major B. Clarke, of Newman, Ga., for improvement in machinery for opening and feeding cotton to the gin.

Israel Amiss, of Philadelphia, Pa., for improved application of embossed veneers.

James Baxendale, of Providence, R. I., for improvement in machinery for folding and measuring cloth.

Henry E. Chapman, of Albany, N. Y., for improvement in boot and shoe peg cutters.

Charles T. Close, of New-York, N. Y., for improved fountain ink-stand.

Josephus Echols, of Columbus, Ga., for improvement in water gauges for steam boilers.

John S. Gallaher, Jr., and John W. Smith, of Washington, D. C., for improvement in gas apparatus.

P. G. Gardiner, of New-York, N. Y., for improvement in railroad car springs.

Gottlieb Graessle, of Hamilton, O., for improvement in tile roofing.

Sheldon S. Hartshorn, of Allensville, Ind., for improvement in buckles.

Jno. K. Harris, of Orange, Conn., for improvement in machines for raking and loading hay.

Benj. Hinkley, of Troy, N. Y., for improvement in bedsteads.

F. A. Jewett, of Abington, Mass., for improvement in the mode of attaching extinguishers to lamps.

Henry C. Jones, of Newark, N. J., for improvement in locks for freight cars.

James J. Johnson, of Alleghany City, Pa., for improvement in corn-shellers.

Gilbert D. Jones, of Jersey City, N. J., for improvement in sand-paper making machines.

Jean Pierre Molliere, of Lyons, France, for improvement in machines for cutting out, punching and stamping the soles and heels of boots and shoes. Patented in France, July 22, 1853.

Robert Prince, of Lowell, Mass., and Ambrose Lovis, of Boston, Mass., for improvement in processes for calico printings.

Geo. T. Pearsall, of Apalachin, N. Y., for improvement in sawing marble, etc., in taper form.

Joel W. Pettis, of Hillsdale, Mich., for improvement in packing pistons for steam-engines.

Atchison Queal, of Plymouth, N. Y., for impact water wheel.

Shepherd W. Reed, of Berkshire, N. Y., for improvement in carriage hubs.

Charles Rice, of Boston, Mass., and Sylvanus H. Whorf, of Roxbury, Mass., for improvement in machines for cutting articles from leather.

Isaac M. Singer, of New-York, N. Y., for improved machine for carving wood, etc.

Jeremiah P. Smith, of Hummelstown, Pa., for improvement in corn-shellers.

E. D. Leavitt, Jr., of Lowell, Mass., for improvement in slide valve for steam engines.

Francis Taylor, of New-York, N. Y., for improved piano-forte action.

Guilliame Henri Talbot, of Boston, Mass., for improvement in auger handles. Patented in England, Aug. 25, 1855.

Amasa S. Thompson, of Albion, Pa., for improvement in cutting cloaks.

Daniel Treadwell, of London, England, for improved manufacture of cannon.

Wm. M. Welling, of Brooklyn, N. Y., for improvement in devices for bleaching ivory.

Edward Weissenborn, of New-York, N. Y., for improvement in chain-making machines.

C. D. Wright, of Fort Atkinson, Wis., for improvement in rotary pumps.

John S. Martin, of Boston, Mass., for improvement in mosquito curtains.

Amos D. Highfield, of Philadelphia, assignor to himself and Wm. H. Harrison, of the same place, for method of adjusting circular saws obliquely to their shafts.

Jno. W. Haggard and Geo. Bull, of Bloomington, Ill., assignors to Bull, Haggard and Newsteter, of same place, for improvement in harvester rakes.

Wm. W. Wade, of Springfield, Mass., assignor to Wade and Burnham, of same place, for improvement in variable cut-off gear for steam engines.

Daniel Moore, assignor to Geo. S. Cameron, o Charleston, S. C., James H. McWilliams, of New-York, N. Y., and Daniel Moore, aforesaid, for improved machine for rubbing types.

Re-issues.—Jos. Guild, of Cincinnati, Ohio, for improvement in mortising machines; Patented Nov. 30, 1852.

Samuel Rockafellow, of Coatsville, Pa., for improvement in reaping and mowing machines. Patented July 3, 1855.

Designs.—Conrad Harris and Paul W. Zoiner, of Cincinnati, O., for design for parlor stoves to burn wood.

Conrad Harris and Paul W. Zoiner, of Cincinnati, O., for design for parlor stoves to burn coal.

Conrad Harris and Paul W. Zoiner, of Cincinnati, O., for designs for six-plate box stoves.

Conrad Harris and Paul W. Zoiner, of Cincinnati, O., for designs for cooking stoves.

Jonathan C. Brown, of Bristol, Conn., for design for clock frames.

Enoch Woolman, of Damaskville, O., for design for strap hinges.

The Plough, the Loom, and the Anvil.

Vol. VIII. FEBRUARY, 1856. No. 8.

AGRICULTURAL PRODUCTS AND PRICES.

The cause of the present high prices has been a subject of discussion in many quarters and by various interests. As many different conclusions have been drawn as the various prejudices or sympathies or whims of the writer would suggest. We do not purpose to assume the position of a disputant with any of these, except so far as the elucidation of the truth on this subject may place us in that position. We shall chiefly confine ourself to facts that cannot be well controverted. If the statements are not reliable, and can be shown to be incorrect, we shall be happy to furnish facilities for making known the mistake as extensively as possible.

We rely chiefly on the returns of the census. Our opinion of the correctness of these, so far as they are made up of thousands of details, often "contradictory and irreconcilable," our readers well know. So far as large and comparatively permanent operations are involved, we should not hesitate to abide by their authority. The returns with which we are here interested are partly of each of these classes.

Certain statements in relation to the production of grain crops in some of the States we cannot doubt are erroneous. For example: By the census of 1840, Kentucky produced more than 4,800,000 bushels of wheat, while by that of 1850 she grew only 2,142,000. Could there have been so much difference in the growth of wheat in these years? By the census of 1840 Ohio raised 16½ millions, and by that of 1850 only 14½ millions of bushels. Maine, by the former, grew 848,666 bushels, and by that of 1850 only 296,259 bushels of wheat. In some other States we find differences that cannot be regarded as probable. They may, however, be essentially correct, and the presumption no doubt is that, on the whole, the errors nearly balance each other, so as to give a sum total that is comparatively reliable.

We only add a single suggestion, before we exhibit our tables of the production of the chief articles of food. The community that does not produce more than it consumes is not prosperous. It must deteriorate. We have recently presented statements of the products of several States, per acre, and the inference is inevitable, from the facts elicited, that some sections of the country are actually and essentially impoverished by such cultivation. We now purpose to give a more extensive view in regard to the edible products of this country. Such statements will furnish a basis for important conclusions in reference to very grave discussions which are often presented to the public in periodicals and in speeches.

It is often said that present high prices are the result of an actual deficiency in the production of food. "The crops are not grown," and of course cannot be furnished. We shall see how much propriety there is in this supposition. With this intent, we first present a comparative view of the number of bushels of the chief crops of the kind described raised in the United States, as given in the returns of the census of 1840 and of 1850, and also of the amount of some others of the principal crops of the country:

	1840.	1850.
Corn,	377,531,875	592,071,104
Wheat,	84,823,272	100,485,944
Rye,	18,645,567	14,188,813
Buckwheat,	7,291,743	8,956,912
Barley,	4,161,504	5,167,015
Oats,	123,071,341	146,584,179
Total, bushels,	615,525,302	867,453,967
Potatoes,	108,298,060	104,066,044
Hay, tons,	10,248,108	13,838,642
Total No. of neat Cattle,	14,971,586	18,378,907
" " Sheep,	19,311,374	21,723,220
Bales of Cotton,	1,976,198	2,445,793

In estimating the relative sufficiency of these crops, as returned in 1840 and 1850, it must be borne in mind that during this period the population increased in the ratio of 35.87 per cent.

A comparison of these columns shows that there is an immense increase in the amount of Indian corn, being an excess of about 57 per cent., and a decrease in the quantity of rye and of potatoes. Of the general accuracy of these returns we have no doubt. But now we must descend to a few particulars, and learn other results that may have an important bearing in all these discussions.

We add also a statement of the production of the same crop in the different territorial divisions of the United States:

	Indian Corn or Maize. 1840.	1850.	Increase of population from 1840 to 1850.
New-England,	6,992,909	10,175,856	22.07
Middle States,	39,946,213	60,413,948	29.44
Southern "	94,998,255	117,572,608	18.58
S. Western "	89,893,973	122,637,135	47.89
Western, "	145,700,525	280,864,368	54.43
	377,531,875	591,663,915	

The tables which follow show the different quantities of grains raised in the six States most productive of the several kinds, by the census of 1840 and of 1850, the amount of the crop of 1840 to each person, and the increase of population in each State during that time. These tables will show how the production compares with the increased numbers to be fed.

The amount allowed by Tucker and others for the support of our population, including that required for seed and for domestic animals, is as follows: 85 bushels of corn, 28 bushels of wheat, and 25 bushels of other grains, to a family of five persons. These furnish the means for judging of the deficiency or surplus in any given State:

CORN.

	1840.	1850.	Amount of crop of 1840 to each person.	Increase of population.
Illinois,	22,634,211	57,646,984	47½	78.81
Kentucky,	39,047,120	58,672,591	50	25.98
Missouri,	17,332,524	36,214,537	4½	77.75
Indiana,	28,155,887	52,964,363	41	44.11
Tennessee,	44,986,188	52,276,223	54	20.92
Ohio,	33,668,144	59,078,695	22	30.33
	185,824,074	316,853,393		

WHEAT.

	1840.	1850.	Amount of crop of 1840 to each person.	Increase of population.
Ohio,	16,571,661	14,487,351	11	30.33
Pennsylvania,	13,213,077	15,367,691	7½	34.09
Indiana,	4,049,375	6,214,458	6	44.11
New-York,	12,286,418	13,121,498	5	27.52
Illinois,	3,335,393	9,414,595	7	78.81
Virginia,	10,109,716	11,212,616	8	14.67
	59,565,640	69,818,189		

OATS.

	1840.	1850.	Increase of population.
New-York,	20,675,847	26,552,814	27.52
Pennsylvania,	20,641,819	21,538,156	34.09
Ohio,	14,393,103	13,472,742	30.33
Virginia,	13,451,062	10,179,144	14.67
Illinois,	4,988,008	10,087,241	78.81
Kentucky,	7,155,974	8,201,311	25.98
	81,305,813	90,031,408	

IRISH AND SWEET POTATOES.

	1840.	1850.	Increase of population.
New-York,	30,123,614	15,403,997	27.52
Georgia,	1,291,366	7,217,807	31.07
Pennsylvania,	9,535,663	6,032,904	34.09
Alabama,	1,708,356	5,721,205	30.62
N. Carolina,	2,609,239	5,716,027	15.35
Ohio,	5,805,021	5,245,760	30.33
Mississippi,	1,630,100	5,003,277	61.46
	52,703,359	50,336,977	

HAY (TONS.)

	1840.	1850.	Increase of population.
Vermont,	836,739	866,153	7.59
New-York,	3,127,647	3,728,797	27.52
Pennsylvania,	1,311,643	1,842,970	34.09
Maine,	691,358	755,889	16.22
Ohio,	1,022,037	1,443'142	30.33
Massachusetts,	569,395	651,847	34.81
	7,558,219	9,288,598	

Taking the usual estimate, already stated, for the supply of the entire population of the country, we find an excess of 196,109,229 bushels of corn and 16,700,674 bushels of other grains, and a deficiency of 12,393,356 bushels of potatoes. Hence it is obvious that much more than sufficient is grown for the food of the country. For this allowance appropriates not only the necessary amount of seed and a due proportion for domestic animals, but also one-sixteenth of the crop for exportation. Now what amount has been exported, and what has been destroyed in the still? We are under no special obligation to inquire into these matters, so far as the question of short supply is concerned; for this is a matter of choice and not of necessity and were half the country dying of famine, distillers would buy and convert into these noxious beverages as much as they could with a decent profit, without regard to any other consideration. Some distillers and some exporters might be restrained by humane considerations, but we think this number in either class would be a very small proportion of the whole.

We have already shown that food enough is raised to supply all the people. The crops of the present year are much larger than in 1850.

Since the preceding was written we have seen the following estimate of the crops of 1855, by Mr. D. Jay Browne, the experienced and accomplished Superintendent of the Agricultural Bureau at Washington. No one has better facilities than he, and no one will be likely to be more accurate. He regards these estimates rather within than over the truth, both as to quantity and value:

VEGETABLE PRODUCTS OF 1855.

	Valuation.	Total value.
Indian corn,	600,000,000 bushels, at 60 cts,	$360,300,000
Wheat	165,000,000 bushels, at $1.50,	247,500,000
Rye	14,000,000 bushels, at $1.00,	14,000,000
Barley	6,600,000 bushels, at 90 cts.,	5,940,000
Oats	170,000,000 bushels, at 40 cts,	68,000,000
Buckwheat	10,000,000 bushels, at 50 cts,	5,000,000
Potatoes (all sorts)	110,000,000 bushels, at 37 cts.,	41,250,000
Flaxseed	58,000 bushels, at $1.25,	72,500
Beans aud peas	9,500,000 bushels, at $2.00,	10,000,000
Clover and grass seed	1,000,000 bushels, at $3.00,	3,000,000
Rice	250,000,000 pounds, at 4 cts.,	19,000,000
Sugar (cane)	505,000,000 pounds, at 7 cts.,	35,350,000
Sugar (maple)	34,000,000 pounds, at 8 cts.,	2,720,000
Molasses	14,000,000 gallons, at 30 cts.,	4,200,000
Wine	2,500,000 gallons, at $1.00,	2,500,000
Hops	3,500,000 pounds, at 15 cts.,	525,000
Orchard products		25,000,000
Garden products		50,000,000
Tobacco	190,000,000 pounds, at 10 cts.,	19,000,000
Cotton	1,700,000,000 pounds, at 8 cts.,	136,000,000
Hemp	34,500 tons, at $100,	3,450,000
Flax	800,000 pounds, at 10 cts.,	80,000
Hay and fodder	16,000,000 tons, at $10,	160,000,000
Pasturage		143,000,000

DOMESTIC ANIMALS AND ANIMAL PRODUCTS.

	Valuation.	Total value.
Horned cattle	21,000,000, at $20 each,	$420,000,000
Horses, asses and mules	5,100,000, at $60 each,	306,600,000
Sheep	23,500,000, at $2 each,	47,000,000
Swine	32,000,000, at $5 each,	160,000,000
Poultry		20,000,000
Slaughtered animals		200,000,000
Butter and cheese	500,000,000 pounds, at 15 cts.,	75,000,000
Milk (exclusive of that used for butter and cheese	1,000,000,000 gallons, at 10 cts.,	100,000,000
Wool	60,000,000 pounds, at 35 cts.,	21,000,000
Beeswax and honey	16,000,000 pounds, at 15 cts.,	2,400,000
Silk cocoons	5,000 pounds, at $1,	5,000

A deficiency of supply is not, then, the cause of extravagant prices. We must look a little further for this cause. With this view let us make the following inquiry:

When will a merchant export our domestic productions? The answer, as already intimated, is, When he can buy at prices which, with the cost of freight, insurance, commissions, exchanges, &c., &c., will give him a handsome net profit. In other words, the price abroad, compared with the price at home, determines this.

But prices "at home" are not uniform. When corn is worth a dollar in New-York it is worth only half a dollar, perhaps, in Tennessee or North Carolina, and so on. Under such circumstances the cost of transportation is a controlling item, both as to price and as to its direction. The quantity exported will be affected by the amount of these various items of cost, and not merely by the amount in the country. It is nonsense to pretend that there is not an excess of all kinds of provision except potatoes; and this deficiency is the result of disease, and not the consequence of any peculiar condition of the markets of the world. Besides, the people have become accustomed to substitutes for this crop, so that the want of this is not sensibly felt. This view shows the importance of our railroads and other internal communications which tend to equalize prices even in distant parts of the country.

Nor is it true that foreign crops are less than the average, but the reverse. The crop of Great Britain will be found on another page. The grain crop of France is sufficient not only for their own population, but for an additional population of 600,000. An estimate we have lately seen is 8¼ bushels of wheat to each inhabitant. In Germany and other countries there is no unusual scarcity.

Hence we might infer that there is not an excessive amount of exportation now going on, except so far as prices are affected by the Eastern War. The year 1854 was somewhat remarkable for the amount of wheat exported. Official returns give us the following amount of exports of this grain:

1851	13,948,499	bushels.
1852	18,680,686	"
1853	18,958,993	"
1854	27,000,000	"

This excessive exportation no doubt affected in some degree the price of flour and wheat through the past year. But with the supposed product of 1855, even that amount of wheat may be exported, without leaving a short supply at home.

But there is another part to this story. We are so much accustomed to the use of various kinds of grain that if wheat or any other crop is excessively high, substitutes can be easily found quite satisfactory to the most fastidious. How various are the modes of preparing the flour of maize; and he who cannot relish these kinds of food, when properly prepared, must have a very singular taste. This substitution diminishes the demand and affects the price.

But we again repeat, in this connection, that there has not been a lack of wheat during the year 1855, and that so large quantities have been in the control of speculators that they have had very hard work to satisfy the people that the country was in a starving condition, so as to secure such exorbitant prices.

In this connection we may refer to the record for evidence that our merchant princes are somewhat reckless in the extent of their speculations, venturing very great risks in the hope of a fortunate turn of the wheel; and the presumption is that ere long the tide must turn against them, or—the only alternative—importations must cease for a time. Since the warehouse system went into operation, the amount of goods in the several warehouses has been constantly increasing—a conclusive proof that importations are excessive. More goods are imported than the market requires. The importer is not obliged to pay the duties, which amount to many millions, till they are removed from the warehouse, but he does lose the interest of his money. Thus the following are the amounts in warehouses in certain years:

1849	$47,970,658
1850	57,052,157
1851	67,516,888
1852	70,901,028
1853	96,916,080
1854	105,762,014

Our exports of domestic goods and manufactures have also increased, but not to the extent of the increase of imports here indicated.

Our conclusion from this extensive view is that prices are high from the wild spirit of speculation. Under ordinary circumstances this might not be possible. But the "famine" not quite forgotten, the Crimean war, the "drought," "half a crop," &c., &c., a terrible array of horrid things have been made to play upon the intelligence of the people, who knew that all these things did really exist somewhere, and to some extent, and they were led to believe the whole story.

But even under all this pressure it has been in the power of any community to buy at very reduced rates, simply by excusing one or two middle men from playing their part in this great game on the credulity of the people. Have not unions furnished their members with flour at greatly reduced prices? Have not producers every day of the year sold at rates quite as low as in the average of the last ten years? We know that this is true. To undertake, therefore, to refer the effects of all this reckless trade to European wars, or droughts, or any other natural cause, is only to play into the hands of monopolists and gamblers. The game is a great one, involving millions. It is for the people to say when it shall terminate.

To Prevent Trees from Splitting.—For preventing forked trees from splitting under weight of fruit, Isaac Lewis, of Hopkinsville, Kentucky, has given us his plan. "My plan," he writes, "which I have followed for thirty years, is this: When I find a forked tree that is likely to split, I look for a small limb on each fork, and clean them of leaves and lateral branches for most of their length. I then carefully bring them together, and wind them round each other. In twelve months they will have united, and in two years the ends can be cut off. The brace will grow as fast as any other part of the tree, and is a perfect security from splitting. I have them now of all sizes, and I scarcely ever knew one to fail to grow."

AGRICULTURAL STATISTICS OF THE UNITED KINGDOM.

THE following table, which we compile from the Belfast (Ireland) *Mercantile Journal and Statistical Register*, is an estimate of the extent of land in the United Kingdom under the principal description of crops in 1850–'54. It exhibits the acres in crop, total produce, produce under deduction of seed, and total value of crops:

ENGLAND.

Crop.	Acres in crop.	Total produce. Quarters.	Produce under deduction of seed. Quarters.	Total value.	
Wheat	3,000,000	11,250,000	9,642,857	£20,696,428	5
Barley	1,000,000	5,400,000	4,628,572	6,248,572	4
Oats and Rye	2,000,000	9,000,000	7,714,286	7,714,286	0
Beans and Peas	500,000	1,875,000	1,607,143	2,250,000	4
Potatoes, turnips, rape,	2,500,000	....	.....	26,000,000	0
Clover	1,300,000	....	....	....	
Fallow	800,000	....	....	....	
Hops	50,000	....	....	780,000	0
Gardens	250,000	....	... .	3,750,000	0
Total	11,400,000	27,525,000	23,592,858	£67,439,826	13

SCOTLAND.

Crop.	Acres in crop.	Total produce. Quarters.	Produce under deduction of seed. Quarters.	Total value.	
Wheat	350,000	1,137,500	947,917	£2,038,021	11
Barley	450,000	1,800,000	1,500,000	1,950,000	0
Oats	1,200,000	6,000,000	5,000,000	5,000,000	0
Beans and peas	50,000	150,000	125,000	175,000	0
Fallow	100,000	....	....	....	
Potatoes	200,000	....	....	....	
Turnips	450,000	....	....	7,700,000	0
Clover	450,000	....	....	....	
Flax	5,000	....	....	75,000	0
Gardens	35,000	....	....	525,000	0
Total	3,290,000	9,087,500	7,572,917	£17,463,021	11

IRELAND.

Crop.	Acres in crop.	Total produce. Quarters.	Produce under deduction of seed. Quarters.	Total value.	
Wheat	400,000	1,200,000	1,000,000	£2,000,000	0
Barley	320,000	1,120,000	933,334	1,119,999	12
Oats	2,200,000	11,000,000	9,165,667	9,166,667	0
Potatoes	1,400,000	....	....	11,200,000	9
Fallow	300,000	....	....	....	
Flax	140,000	....	....	2,100,000	0
Gardens	25,000	....	....	300,000	0
Total	4,785,000	13,320,000	11,100,001	£25,886,666	12
Grand total	19,475,000	49,932,500	42,265,776	£110,788,974	16

1. CONSUMED BY MAN.—Wheat, 15,500,000 quarters; oats, rye, and maslin, (a mixture of rye and wheat), 10,650,000 quarters; barley for malting, food, etc., 6,000,000 quarters; beans and peas as meal, 700,000 quarters: total quarters, 32,850,000.

2. CONSUMED BY THE LOWER ANIMALS.—Corn, principally oats, used in the feeding of horses and other animals, in distillation, manufactories, etc., 16,320,000 quarters; total consumed by man and the lower animals, etc., 49,200,000 quarters.

It is seen from the former estimate that the corn produced in the United

Kingdom, applicable to consumption, amounts to only 42,265,770 quarters. But to this has to be added foreign corn annually entered for consumption at an average of the seven years ending with 1852, viz.: wheat and wheat flour, 4,231,185 quarters; barley, 870,786 quarters; oats and oat-meal, 1,162,546 quarters; rye, 99,510 quarters; peas and beans, 565,759 quarters; total quarters, 6,929,786; total consumption, 49,196,556 quarters.—*Merchants' Magazine.*

THE TRUE POLICY OF THE SOUTH.

[The sentiments we expressed in our last issue, as in former numbers, are powerfully sustained by the following extract from the Austin (Texas) *State Gazette*, and which is copied into *De Bow's Review.* We cannot see how the South can be ignorant of their possibilities, or knowing them, neglect them much longer.—Ed. P. L. & A.]

"In our issues of the past two weeks we endeavored to show that the population and wealth of the Northern States have resulted from their manufactures and internal improvements, and that the comparative weakness of the South has resulted from the want of them. We believe that our readers who have read those articles have come to our conclusions upon the subject. Who believes that the State of Massachusetts would have, on the small extent of 7,500 square miles, one million of population; that her real estate would, in 1850, have been valued at $349,129,932, but for her manufactures, which, at that time, gave employment to 162,928 of her people, and her railroads penetrating into every part and portion of the State? In consequence of the demand for the necessaries of life, created by this aggregation of people, engaged in manufacturing, internal improvements, and the various pursuits incidental to and dependent upon them, the Massachusetts farmer will spend three hundred dollars in removing the rock and stones from a single acre of land in order to cultivate it, and finds it a profitable investment.

Reasoning, from cause to effect, of the future by the past, it will be easy to demonstrate the consequences of an extensive system of manufactures and internal improvements in the South, not only upon our own section of the Union, but upon the North and also upon Europe.

As in the Northern States, manufacturing towns and villages would spring up on all our streams capable of running a mill; employment would be given to millions of operatives, cities would grow up at the termini of our railroads, and every depot would become a considerable town or village; hundreds of other occupations and pursuits would result, giving profitable employment. These things would again act upon the agricultural interests of the country, by affording a demand for the necessaries of life, and a home market for our great staples, and the facilities for cheap and rapid transportation; the products of the farmer and the value of real estate would be immensely increased.

Our commerce would undergo a perfect revolution. We now export the raw material, which is manufactured in New-England and Europe, and enters into the clothing of a large proportion of the world. We would then export the manufactured fabric, having in our own hands a complete monopoly. We now furnish two-thirds of the exports of the United States, and have permitted northern capitalists, factors, and brokers, to subject us to tribute, in forcing those exports through their hands, instead of allowing them to pursue a direct and natural course. Our exports form the basis of two-thirds of the imports of the Union, which are landed in northern cities, and enriching them at our expense. We would, then, by exporting the manufactured article, and manufacturing a large amount of what we now import, redeem ourselves from our present vassalage and thraldom.

The millions now paid by the importing merchant by way of tariff, and which is repaid to him with a per cent. by the Southern consumer, would be cut off, and cease to be an everlasting drain upon the currency of the South.

The tide of European emigration would be diverted from the North to the South, and the millions of money and thousands of operatives now annually arriving there would be invested and employed here.

Let the South but adopt a system of manufactures and internal improvements to the extent which her interests require, her danger demands, and her ability is able to accomplish, and in a few years Northern fanaticism and abolitionism may rave, gnash their teeth, and howl in vain.

The effects upon the North would be equally striking. The South can manufacture cheaper than the North, as we design to show hereafter. We would then produce those articles of home consumption which she now sends us. Southern manufactures would be able to enter the markets of the world, and undersell those of New-England and Great Britain; and that fact once demonstrated, the increase of our production would be commensurate with the wants of the world. The millions which the North annually receives from the South would be cut off. She would no longer be able to levy tribute upon us.

The whole revenues of our government now paid by the Southern consumer, but collected and disbursed at the North, would be levied more justly and distributed more equally.

Let northern folly, bigotry, and intolerance drive the foreign emigrant, the naturalized citizen, and the Roman Catholic from amongst them, it is the true policy of the South to receive them, granting them all the privileges extended to them by the Constitution and laws of our country. They will swell our population and increase our ability to defend ourselves against abolitionism and free soilism, which are but the correlatives of Northern Know-Nothingism.

The effects upon Europe, and particularly upon Great Britain, would be equally striking. Our Northern manufacturers are now able to enter into the markets of the world, and undersell those of Great Britain. The Southern manufacturer could do it with more ease. In time, instead of shipping three millions of bales of cotton to Europe to supply her manufactures, as would ship that amount of fabrics. Our facilities for manufacturing cheaper would enable us to undersell and monopolize the market; this would draw the European operatives here, who could not be as profitably employed there. The consequences to European, and particularly to British manufacturers, can easily be perceived; they would be crippled, if not prostrated."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

SOUTHERN PRODUCTIONS.

COTTON PATCH, Dec. 21, 1855.

DEAR SIR:—With many thanks for your kind notice of me on page 259 in your leader for November, which I have only this night cut the leaves and hastily glanced over, I beg to say a little.

I do not like comparisons. I less love that spirit that leads to bring one portion of our country antagonistic to the other. Some one said long ago, "Comparisons are odious." Certainly they lead to unkind feelings. What matters it if the little State of Rhode Island does make more than South Carolina? I very much query whether anybody in that dear old State sleeps less or eats less if knowing or not knowing this to be true.

My own opinion is, that no country does wisely when it relies upon any one article, or even is bound to trade at any one point. I therefore advocate some diversity, and urge manufactures as a part of our business. Had I to choose agriculture for my brethren of this State, or manufactures, or trading, I should unquestionably, without a moment's hesitation, choose agriculture. I speak, nor write, nor act as will please the mass; I give my opinions not intending offense, but I know many will shrug the shoulder. I hope that agriculture will ever be the leading business in the South. I hope before other pursuits become paramount that my day will have been long past. If the South would diversify labor to a greater extent, we would certainly be more independent. As to the matter of dollars and cents, it comes not into my calculation, farther than as secondary, in providing necessaries, comforts, luxuries in a small way and improvement in its best phase.

But, sir, I advocate fostering our own mechanics and artizans, schoolmasters and preachers, make a part of our clothing, and shoes, and hats, and so on to the end of the chapter, even if it includes making "rolling-pins" and "axe-handles," raising mules, etc. Should we only do this to an extent of $33\frac{1}{3}$, we will thus be able to withstand pressures and not be driven to the wall. If I make $\frac{1}{2}$ or $\frac{2}{3}$ of the pork I need, I can pick my time to buy the balance, and thus with all else. I contend every country should do this to a greater or less extent. My friends—many of them—have held it unwise to thus enter into competition with those who buy our cotton. They say, if we make everything we want, no one will buy our cotton. Very true, perhaps, but we cannot make all we want; we must have a great deal after we have done all we can.

But, another matter as regards these comparisons. Admit that my land does not p oduce a per acre yield as it did in 1835, does it prove anything in favor of increased cost of production? Suppose some calculator makes cost of production to be 8 cents a pound, does even that prove we are getting beautifully smaller day by day? Cotton costs me 8 cents and I sell at 8 cents, and pay cost of selling, a part at 7 cents and so on,—figures lie not,—yet property is being rapidly accumulated all around me by cotton planting alone.

Let us look at the figures and facts. In 1830 to 1835, a crop of 15 bales per hand never entered into the heart of man to hope for. I know the rich lands of the cotton region. Eight and ten bales was a matter of doubt, many living within 20 or 30 miles of the "Swamp" did not believe it. Now we can turn out our 10, 12, 15 and 18 bale planters. Suppose my lands make only now an average of 1000, whereas in 1830 they made 1500, what does it prove? In 1830, I planted 6 and seldom 8 acres, worked as hard, aye, harder, than now with my 10 to 12. A full crop then was 6 or 7 bales, now I do not regard 8 bales a full crop, and more corn made too. Again, my friend, Dr. M. or Dr. B. or Col. D., etc., who make 1000 to 2000 bales, they make at 8 cents and sell at 7, losing 4 to 8 or 10,000 per year, yet with proceeds of crop invest 10 or 20 or 30 or 40,000 per year. I have cyphered up the cost of raising a hog or a colt, and lo! the hog or colt would eat its head off every year. I have cyphered up the cost of raising a negro from babydom up to 21 years, and find doctor's bills—they are longer and sharper than musquitoes—and clothing, and nursing, and feeding will eat up a dozen babies; but when I see my woman seamstress—who has been with me since my boyhood, and count up her children, worth in cash say $3000, with her service for some thirty years,* I come to the conclusion that I am a badly broke man, even with enough around me. It matters not to me what Rhode Island, or Illinois, or Connecticut, or anywhere else makes. I only ask of one and of all to let us be. I hope for them as much happiness as I know I enjoy. I am a Southerner by birth and attachment. "I would not live elsewhere," yet I have no desire to injure, or see injured, any part of our country. If we are not so rich, we are as content.

Yours, as an American, P.

Errata 27th page, 4th line from bottom,—on an *old* settled plantation. Last line in paragraph before last—long *shaves*. Commission merchants charge 10 per cent. interest—7½ for accepting, and 2½ for advancing; they pay 6 or 7 perhaps—this is long, rough and tough shaving, but all our own fault.

Note.—The object we have in view in setting before one section of country what is done in another, in the way of valuable products, is for the purpose of showing that there is a better way. If a section of a hundred square miles makes more money than another of a thousand, the best way that we know of to bring up the latter to proper effort is to show them how much better others do than they, while they can do as well as anybody. We have yet to learn why this is not a legitimate and effective kind of argument.—Ed. P. L. & A.

SOUTHERN PICTURE—CROPS—POAGUE'S WATER PIPES.

Near Brownsburg, Rockbridge Co., Va.,
25th December, 1855.

To the Editor of the Plough, the Loom and the Anvil:

Dear Sir:—The numbers of your valuable agricultural journal for October and November did not come to hand, and I supposed it to be discontinued.* The December number reached me a few days since, and I now suppose it to be maladministration in the post-office, as our Post-Master General has been often, no doubt, imposed on, and many good post-masters have been turned out for daring to think for themselves and vote like freemen, and

* A few of my first years, when she was 17 to 25, she was a field-hand, and made her 6 bales.

their places filled by men incompetent to discharge the duties of the office. The consequence is confusion, and great irregularity in our mail receipts. I could state a strong case of this kind, where eight or ten individuals succeeded in turning out a most reputable, gentlemanly man, for no other reason than that he voted with the American party, when nineteen-twentieths of the community petitioned that he should be continued in office, after it was known a secret clique were plotting his removal. But enough of this. We are reaping the fruits of maladministration in the distracted proceedings of the members elect to our present Congress.

Permit me to present to you the compliments of the season, and to wish you a merry Christmas and a happy New-Year! If the weather is with you as it is with us, it is gloomy enough. We have had no snow up to this day, with but little cold weather. The 23d of December was almost as balmy as May, the mercury standing 53° at daylight. Yesterday was cloudy and rainy, and to-day no better. It is now noon, and raining fast, with some fog. There has been but little feeding of stock cattle. Sheep require no attention, further than soiling. The season for killing pork and beef for our next year's home consumption has nearly gone round, and with our corned-meat houses well stored, and with a general good supply of money, if not all the comforts of life, we may at the close of another year render up to the Father of our spirits, and the Giver of every good gift, the homage of grateful and thankful hearts, for the many blessings which God in his goodness has vouchsafed unto us as a nation and a people. True, a small portion of our State has been sorely afflicted, but has it not shown and brought forth the sympathies and alms of a great and good people throughout the length and breadth of our land? May God be praised for his goodness unto us for the past year, for his blessings have been many!

This is a high day with our servants. They are as joyous and happy in preparing their Christmas dinner as if they had corn to sell. Could your fanatical zealots see their shining happy faces and white teeth, as they pass around the merry joke and Christmas song, they would be more sparing in their calumnies against the South; and I will venture my reputation on it, a better fed, better clothed, and, as a general thing, a more contented working population than our servants are, does not exist in the United States, or anywhere else, than is to be found in the valley of Virginia.

The corn crop of the season has been very good, and almost every farmer has a surplus. There will be many fine beeves fed in our valley this winter. The crop of wheat was short, and is pretty well ground out. The quality was good, but in many places did not reach half a crop. The oats and rye crops were not abundant, but will be quite ample for home consumption. Pork was not plenty, but was well fatted, and will be of fine quality. All culinary vegetables plenty. Apples a fair crop, but fell off early, and incline to rot.

I made a fine crop of corn this year from a piece of up-land of medium quality. It was a clover bog of three years standing, the clover pastured off; the soil a sandy loam; the land was ploughed in the winter; the ground was harrowed in April, laid out four feet wide, and planted two to three grains in the hill, two feet apart. (It would have been better to have had one stalk at a place, nine inches apart.) The stand was pretty good, but in some places was too thick. As soon as the corn was well up, a coulter was run next the plants, to the depth of ten inches. The cultivators followed the coulter, giving the field two dressings; and a part of field was gone over the third time with cultivators. The wet season now set in, and two-thirds of the field received no further work than going over twice with the cultivators. The field (about twenty acres) averaged about fifty bushels per acre. This was a fine crop for the labor bestowed on it, the corn being ten to twelve feet high.

I will now give you some account of a cheap, and, as I conceive, most excellent water-pipe, introduced in our County a few years since by I. B. & W. F. Poague, of Rockbridge Co., Va.

I had the water conveyed to my house last spring, a distance of four hundred yards. The ditch was cleaned out by my hands in April, at a depth of two feet, where rock did not interfere. I procured one hundred bushels of cement, which was furnished by Messrs. Poague at the kilns for twenty cents per bushel; transportation by my team worth about twelve cents per bushel. Messrs. Poague's hands commenced work on Monday, and in four days the pipe was laid, four hands laying one hundred feet each day. The pipe was moulded in the ditch, and is composed of one-half hydraulic cement and one-half pure sand. About half-bushel of each is mixed together by two men, and as soon as properly worked, is laid down in the mould with trowels. If the weather is warm, and the water used from a branch, it will set in ten to twenty minutes. The rod, seven feet long, is turned in the cement before it sets, to keep it from sticking, and as soon as the mortar becomes hard is drawn out, the moulds uncased, and removed for another joint.

My spring-house adjoins my house, and we have not to go out of doors to get water in bad weather, but go from the kitchen, under a covered way five feet, into the spring-house. Here the water falls about two feet into hydraulic cement troughs, built across one end and one side of my spring-house, the depth of water being six inches where it enters, and ten inches where it discharges through the wall into a beautiful basin or pool, holding six or seven hundred gallons; thence passing across my yard in a ditch into my orchard. Messrs. Poague's bill for troughs and four hundred feet pipes, $1\frac{1}{4}$-inch calibre, was $100. Cost of spring-house $125; and I have what I would not be deprived of for $1000.

Messrs. Poague having sent me one of their handbills, I enclose it to you, and entirely concur in what is therein stated.

Your obedient servant, &c., Henry B. Jones.

Sanitary Effects of Charcoal.—As an illustration of the sanitary powers of charcoal, and the extraordinary energy with which it acts upon the gases, thus furnishing a new power for removing the agents of disease, etc., Dr. Stenhouse has exhibited in London a machine showing extraordinary deodorizing and disinfective powers. An atmosphere rendered highly offensive by putrefactive decomposition going on within the chamber in which it is confined, is drawn through charcoal filters, by means of a rotating fan machine, and is passed into an apartment adjoining. Although this air is disgustingly fœtid, it flows out into the room perfectly free from smell. This experiment, though it exhibits no new property of the charcoal, places the fact in a strong light, and may lead to most important usefulness.—*Horticulturist.*

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* Our friend's name will be one of the last we shall voluntarily "discontinue," and if any number is not received, he, and others also, are requested to make it known to us. We can generally supply them forthwith.—Ed. P. L. A.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PLANTATIONS IN THE SOUTH.

[The writer begins by some suggestions in reference to the "M. D." of the tourist author of "Inside View of Slavery," and considers it very properly of little value in such a connection, and then proceeds to speak of the actual condition of the industry of the South, as follows.]

——, Miss., Dec. 24, 1855.

As to "inferior tools," "rotation," or the culture pursued, we ask the thoughtful readers of the Northern States, if we could not point to farms even in the great and improving States of New-York or Massachusetts where there is the very worst sort of economy pursued. There are men who realize more money to capital than in most portions of our land who have poor implements and know nothing of rotation. They laugh at "modern improvements." Is this not so everywhere? We in the South do not manage as economically, as wisely, on the whole, as do our Northern brethren, we acknowledge. We would have the South as liberal in good implements, as generous in feeding her soil, as she is kind and hospitable to her visitors. We dare not put in any plea of abatement when our dear native land is in fault. All thinking people will know that the time must come when we must attend to our planting matters more systematically, artistically and scientifically. It is necessity forces men to labor, to improve. We are, by the fiat of the Most High, to earn our bread by the sweat of our brow; yet when land will produce such by but little sweat, depend on it man will not sweat much.

When traveling west, some twenty years ago, we saw so many of the population in bed in the coolest part of the houses, that we thought it "dreadful sickly," and spoke of it. Our journey was in June and July, and we were told that the people were only taking a comfortable nap in the hot weather. There is felt the same necessity of economy, toil and management in many portions of the South that is said to be in former days among the island planters of the Gulf. The day of action, of progress, is even *now*—not at hand, nor near at hand. Many are forced to attend to drains, horizontalizing, ditching, manuring, rotation, etc. And when the spirit is up as in New-York and Massachusetts, you will see deeds as worthy of the South as at Chepultepec, Cerro Gordo, Buena Vista, in the Halls of Congress, or elsewhere.

We do not compare our talent, or riches, or worth, or anything with any other people. We complain of none. There are some of us here whose great grand-sires, (or, perhaps, as in one case, g. g. g. grand-sire,) came from Wales, or England, or Ireland, or France, and settled in the South, but there are many here from the North and East and West and abroad, as well as the South, and we soon fall into the same way. All that we claim, being of similar origin, is,—give us the same objects, and we can evince talent and energy and zeal. The time has been when savans held that the South would depreciate wool, color of skin, intellect and so on; but that day is past. The South has sent out proof to the contrary.

Send a practical man to a well-ordered cotton or sugar or rice plantation, give him time to examine the internal economy, and let him examine the best. Go West and examine the best hemp farms and stock farms. Then visit the best at the East or North, and you will see not much difference after all.

To-day we can show you white single hyacinths, tea-roses, spirea, etc., in bloom, cotton leaves green, and our mules not yet housed for the winter. An M.D., who would be traveling through in the cars, or otherwise, would pronounce it bad economy, because horses in Dutchess Co., N.Y., must be paired on the 24th of December.

Our houses have no preparation for winters, they are for summer. If the South could be entreated to arouse herself we would entreat; if she could be abused to it, we would abuse, though we had to affix two rattles to our

P.

[We are disposed to add a word to the preceding expressions of opinion by our valued correspondent. We are quite certain he is right when he says, "it is necessity that forces men to labor to improve." But we doubt not our friend also would have added, had his object led his thoughts in that direction, that when present necessity does not urge us to effort, the offer of valuable profits will be efficient in exciting us to labor diligently and wisely. Give the North or the South a convenient and ready market for her agricultural products, and those products will be raised. The best and only way of introducing wholesome improvements is to satisfy the landowner that those products will pay for the exertion and the expense. Hence the necessity of variety of employment, that all kinds of producers may find, near at hand, consumers who will buy. It is in vain to preach modern improvements to those who cannot produce without great effort and at the same time know not what they could do with their products, or what they would sell for, when ready for the market.—Ed. P. L. & A.]

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

AGRICULTURE IS KING.

TO THE EDITOR:

In your periodical for December last is an article, the first in that number, with the title "Commerce is King,"—a title to which, with all due deference to other opinions, it must be allowed by many it has no claim. This idea, like many others, is a sort of modern adage, which the history of the past and present proves to be false.

That commerce has its advantages we are willing to admit, but that it ever has been, or can be the basis, the pristine cause of national prosperity, is a fallacious impression. It may with greater propriety be termed the handmaid, the attendant upon agriculture, for the disposal or removal of a surplus produce. Wise legislators have given it their protection. It is the only means by which a nation can repair the waste and ruin of war. Yea, far better that a whole fleet should rot in the harbors than our acres of land should lay unbroken and unsown.

In reviewing the history of ancient nations, it is evident, their most prosperous periods were when agriculture was carried to its highest pitch of improvement. We wonder at the vastness of the area of space enclosed within the walls of Ninevah and Babylon; but it should be understood, the ground thus not occupied by buildings was tilled, whereby the annual produce could sustain the inhabitants when besieged by an outward foe; its rulers being well aware that the strength of ramparts and walls was useless if the means of sustenance could not be obtained. The fruitful valley of the Nile was the source of the greatness and the wealth of Egypt; nor is it strange that this people, with no divine relation, should regard this river the chief among their divinities.

During the long civil wars of Rome, agriculture was neglected. For a time, the victories of the arms of the republic brought the fruits of their conquests into Italy, which for a time prevented the evils of neglected husbandry being felt. But when Augustus was peaceably settled upon the imperial throne, and Virgil was known at court, the poet was requested by Macænas to write a work upon agriculture, that his melodious numbers might rouse the spirit and enkindle a taste for rural occupation. The result was the production of the Georgics, in four books, entitled, "The Cultivation of Lands, Raising Vines and Trees, Rearing Cattle, and the Management of Trees." It is said, that soon after the publication of this work, the improvement of the lands in Italy was such as fully to repay the labors of the poet, and met the highest expectation of the government.

Again, when God promised a country to the descendents of Abraham, it was not to be a land of ships, commerce, merchandise and metals, but a land flowing with milk and honey; and the happiness of the people is portrayed by the phrase, "Every man under his vine and under his fig-tree." When that kingdom was in its zenith under Salomon, the royal table for one day's supply only was thirty measures of fine flour, sixty measures of meal, ten fat oxen, and twenty others taken from the pastures, one hundred sheep, besides harts and roebucks, fallow deer and fatted fowl. This abundance demonstrating the richness of the soil, as the source whence their prosperity flowed.

The panic sometimes felt in European States plainly shows what branch of industry sits as king. Let a battle be lost, a city consumed by fire, pestilence desolate a section of the country,—the money-market becomes stringent. These are but short evils in comparison with the failure of an harvest; for the common but good adage will ever hold good—"Stop the plough and you starve the world."

The stability and security of governments often depend more upon the yield of the soil than upon all the laws and edicts of rulers. The bloody acts of the French Revolution were hastened by the dearness and scarcity of bread. France had at that period her shops and her commerce, and her manufactures *then* as *now*, were unrivaled; but all failed to arrest the storm of crime and murder, as long as the agricultural products fell short of a sufficient supply.

We used to hear a great deal of the corn-laws of England, the object of which was to give the farmer a remunerating price for the crops he raised; and although the policy might be a mistaken one, it arose from the conviction that if the farmer could not live no other branch of the community could prosper; thus awarding to agriculture the legal appellation of king, not as a name of empty pageantry, but one by divine right.

But while thus elevating agriculture, we are every way willing to allow to commerce every means of usefulness to which it is entitled. Tyre, Sidon and Venice are names immortalized by it. Their once-active and widely-extended commerce, and latterly the discoveries and trading pursuits of Spain and Portugal in the 17th century, for a while gave a sort of spasmodic elevation to these countries, but inasmuch as the tillage and improvement of the soil was not the basis of their prosperity, their high station among the nations was brief and transient.

The great and useful idea advocated by your periodical, viz., that where the article is produced it should be manufactured, is an obvious truth; and yet how unwilling communities are practically to act upon it. The South has often been reproached for her slow progress, compared with that of the Northern States; yet would the grower of cotton pursue the same plan a neighboring farmer did near me, that reproach would soon cease. This wise tiller of the soil finding the price of wool low took his fleece to the manufacturer near by and had it made into cloth, and thus realized a much better market than if he had sold the raw material.

In the words commerce, ships, princely merchants, there is a bewitching, false idea that captivates the mind. Napoleon said he must have ships, colonies and commerce, but failed in them all. Had he turned his active and mighty genius to the internal prosperity of France, and permitted agriculture rather than war to be king, he might perhaps even to this day have swayed the scepter of the French nation.

It is these false ideas by which such numbers of our youth are influenced to speculate in trade and commerce rather than follow the less esteemed, more slow, but safer and more useful method of gaining a competency with pursuits of agriculture. There is a false scale of respectability often applied by the merchant, who is doing business upon a large scale, with borrowed capital. His appearance and standing in society, his capacious rooms for business, his large and imposing stock, all elevate him in the eyes of the community. Yet the indivitual who earns his bread by the sweat of his brow, who buys of this merchant a single article and pays for the same, is often in reality the owner of more dollars.

It is not a rare thing for young men to commence business as merchants with no capital of their own, do a great business for a time, and then fail,—offering to their creditors a few cents upon the dollar. Such persons lose nothing because they never had anything; but others, deceived by a false appearance, trusted them, and became the sufferers.

Communities, like individuals, should endeavor to do their work at home. An extensive exportation never enriches a nation unless an equally valuable return is brought home, especially when the same article has to be sent back with all the expense of freight, manufacture, etc. But by bringing the hands to us, the farmer is benefitted by the increase in the number of the consumers of their produce. The manufacturer is also placed in a position to add to this wealth, and both parties mutually depending upon each other, the whole community is bound together. R. S.

FULTON, Wis.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

"COMMERCE IS KING."

WHO makes it king? The Farmer. Who feeds and clothes the world? The Farmer. Who are the subjects of the commercial king? The Farmers.

In whose power does it lie to dethrone this king? The Farmer's.

We constitute ourselves one of the "jury of doctors" called for in the

December number, not to give the pathology and diagnosis of the "ruinous evil," but we will prognosticate a cure, and propose a remedy, so that the sufferers may be relieved.

The remedy consists in a revolution, and a new declaration of independence, to be signed by every farmer in the Union.

Let there be formed, without delay, an Agricultural Society in every County in each State, and State societies, composed of delegates from the County Societies. When these are formed, let there be a general assembly, composed of a delegate from each State society. Let the general assembly enact laws to govern each and all, and fix a standard permanent value on each staple production; the value to be reasonable, and at the same time remunerative. For instance, wheat $1.25 per bushel; corn 60 cts.; wool from 30 to 60 cts., as to quality; cotton 10 to 15, etc.

Let the general assembly also cause reports to be made by each State Society, these reports to contain accurate statistics of the amount of each staple raised in every State.

This scheme may at first sight appear visionary, but we think we can meet every objection, except such as may be brought by the courtiers of the commercial king. For example, they will say that it will prevent their pocketing all the profits made on farmers' produce; but we do not care a straw if it does.

It is high time that the farmers were waking from their Rip Van Winkle sleep; it is high time their eyes were opened and their energies taxed, to overthrow the monster who has fattened to such huge proportions on the profits of their toil.

Is it not absurd and cowardly for the farmers to allow merchants, who depend on them for their food and living, to set the price on their produce, and at the same time fix the value of their own merchandise? Why not trade fairly; at least allow the farmer to price his own commodities? Or, if they will not *allow* them to do it, we say, Farmers, charge a just price, and starve them into subjection. Yes, it is in the farmers' power, if they will unite in one harmonious whole, to control those merchants and manufacturers who are doing all in their power to crush them to the earth. See the effort being made by the manufacturers to annihilate the tariff on wools.

The "wool grower" asks, "What is to be done?" We say, Let a new party of American patriots be formed, to be composed of the honest farmers and mechanics, and let their motto be, *Union* and our own *rights*. Let them crush the factions and isms of the day; let them elect such men to Congress as will bind themselves to protect American industry, whether mechanical or agricultural.

Our country will never be superlatively prosperous until a high tariff is imposed on all foreign articles. We are independent of England and the rest of the world; therefore let us make our own iron and cloths, and protect them, so that the foreign cannot compete with the domestic; and we will guarantee that the farmers will thrive, the mechanics will thrive, and we will permit the merchants and manufacturers to thrive too, although they want to rob us of everything we raise. It is to our interest to let them thrive, for the more we have to feed and clothe, the more profitable our manly calling. What would the farmer do with his surplus wheat and corn, if all were farmers? We want as many mechanics as we can get; the more the better. What if we do have to pay more for manufactured articles? Why, we can afford to, if we have a pocket full of "rocks!"

Farmers! wake up, and keep awake. Do not let this plan fail for the want of energy. Do not read, and then forget, but go to work. Now is the time. Form societies as fast as you can; make your resolutions, and let it no longer be said that you are blind and asleep, and slaves of the rest of mankind.

This is a charitable plan, as well as a plan to secure your own rights; for it will prevent that monopoly which starves the poor. If merchants wish to speculate on our grain, let them do so in foreign lands, but not in this.

We request other agricultural journals to copy this for the benefit of their patrons, and that the ball may be kept in motion.

Respectfully, etc., G. W. Varnum

Wayne, Lafayette Co., Wis., Dec. 22, 1855.

Note.—The object of the writer of the above is most praiseworthy, and his plan worth careful attention. The formation of unions, in counties or other convenient districts, who shall advance a given sum on all marketable products not perishable, and who should sell them only at limited prices, would be a very efficient antagonism to the system of private speculation now so efficiently and extensively carried on by middle men, all of whose profits ought to go into the hands of the producer.

Merchants and manufacturers are very much, we suppose, like "other men," securing all the profits they can honestly get, whether the producer is paid or not. They have regard too often for half only of the maxim "live and let live." We cannot doubt that some plan may be devised which shall secure a much larger share of the profits now actually made by traders, for the benefit of the producers.—Ed. P. L. & A.

MANURES—THEIR APPRROPRIATE USES, ETC.

Manure is indispensable to the farmer, to ameliorate the soil and increase its profits. But he should understand the nature of the manure which he uses, and have due regard to the quality of the land to which it is applied.

Manures vary in character, as bone-charcoal, lime, clay, ashes, poudrette, &c.

Manures are divisible into two classes; cooling and fertilizing, and heating and fertilizing. The first includes the excrements of neat cattle and sheep; the second those of the horse, the goat, the hog and domestic birds. Arranging manures according to their heat, beginning with those of the highest temperature and descending, we have the dung of pigeons, hens, turkeys, ducks, geese; then that of the hog, goat, horse, mule, ass, and neat cattle. These ought to be used on light soils, and for pulses and the like, as cabbages, &c. Argillaceous soils require mixed manures, as those with that of the horse, but they should be well made. Sandy soils need the dung of cattle mixed with that of the horse. That of the mule or the ass is not suited for such, nor that of birds. It is not well to mix the dung of hogs with that of other animals, as it tends to propagate nettles; but this should be reserved for marshy lands. It tends to dry them and renders them productive.

1. Manures may be prepared by the farmer in the following manner:—The dung of cattle and the horse may be carried during the winter into a field and laid in a heap; and if near large villages he may also bring horses unfit for use, and dead horses, and if still living they may be killed upon the heap by cutting their throats, their blood being soaked in the heap. After they are skinned, they should be cut in pieces, and being placed on the pile, be covered with it, or with straw, &c. The heap may remain thus till it is

wanted. Thus prepared, not more than a third part will be required, of what would be necessary when used in the common way. This is not an expensive process; any sort of dead animals, cattle &c., might be used in a similar manner. This manure is suited for sandy and gravelly soils, and renders them productive of rye and oats.

2. *Bone-Charcoal.* It is well-known that when the bones of animals are burned in a heap, the result is bone-charcoal, but thus produced it could not be employed to enrich the earth. It is necessary that it should first pass through the hands of the refiner of sugar, who requires it, and it then becomes very valuable to the farmer. But he must be careful not to place it in grounds designed for potatoes the same season, since, according to my experience, by its remarkable absorbent properties, and its resistance of decomposition, it retards the growth of the tubers and tends to produce the disease called the potato cholera. In France, where great use is made of it, and it has an extensive commerce, as in Brittany, I have seen several vessels from Riga every year arriving, loaded only with this bone-charcoal.

3. *Marl* is a kind of soil, composed essentially of lime mingled with clay or sand. It is used for sandy, or low or marshy grounds; but for the first (sandy) it is necessary to choose marl which is composed of lime or clay. For there are two kinds of marl, one composed of lime mixed with sand, and the other with clay.

4. *Ashes.* This is used to enrich prairie ground and all moist or wet soils, which it tends to make dry and suited for vegetation.

5. *Human Excrements.* These are more rich in nutricious properties than other kinds, but it is not convenient to use them in their ordinary state. The vegetation produced by them, used in that manner, is apt to retain their odor, and they have a bad taste. Hence in France it is the custom to reduce them to the form of Poudrette. The manipulation of this is laborious and disagreeable. I have assisted, near Paris, beyond the faubourg of St. Denis in this labor, and am able to give an accurate description of it.

At a distance of 500 yards from the road leading from Paris to Brussells, is a spot devoted to this work. Carts which convey the excrements from privies drop them into a pit dug in the earth; water is then poured upon them and they are thoroughly stirred. Those who perform this service are clothed from head to foot in India rubber, without any openings except for respiration, and for seeing and hearing. Thus muffled, they walk into this putrid matter and mix it with their hands and feet. This service is very laborious, and the man who is employed in it is allowed occasionally a glass of brandy. When the mass is properly worked, it is suffered to remain at rest, and the water is drawn off. From this wet mass, small quantities are separated, and are dried in the sun or by the fire, and is afterwards converted into powder, is done up in papers and is called poudrette. A Kilogramme costs four francs; and, according to the nature of the soil, serves for one, two, three, or four acres.

It is necessary to add that it is not proper to mix with these matters any other liquid except urine, since other impurities are injurious in their effects; and contractors for this work, in such case, demand pay for their service, while, if the contents are free from other impurities, they do the work gratis.

Among other means used to enrich the soil, in Poland the following is practised. Upon good land, suitable for wheat and far from their dwellings, to diminish the expense of transporting manures, the ground is ploughed and sowed with buckwheat, and when this is in flower, the plough is passed through it and buries it. In the autumn the ground is cultivated in the usual manner. Saniewski Felix.

[Translated from the French manuscript, by the editor of the P. L. & A.]

THE "FIRST PREMIUM" FARM.

The Committee on Farm Management awarded $50 in plate to Wm. P. Ottley, of Phelps, Ontario Co., for the best managed farm. But two applications were made for this premium, though we think there are many farms which would have stood an equal chance with those which were presented.

The soil of Mr. Ottley's farm is a gravelly loam, and muck with a tincture of clay, the subsoil about the same, lighter colored and porous. Limestone scarce, the rocks found are granite and quartz. The farm contains 100 acres, 85 in cultivation. Mr. O. considers ploughing in clover the best means of enriching his ground. A three years' lay turned under in June for wheat, or the 1st of May with barnyard manure, for the corn crop succeeds well.

He ploughs from seven to ten inches deep, Deep ploughing in his case has a good effect in giving great room for the roots of plants, in its action as an underdrain, in preventing the effects of drouth, in making the land easier to work after it, with other advantages too numerous to mention. Some experiments showing this, and also the difference between shallow and deep ploughing, were made by Mr. O., and we may refer to them hereafter. In regard to subsoil ploughing, he says the effects were entirely satisfactory after the first year, when the crop was lighter than usual, from the poverty of subsoil before due exposure to atmospheric influence.

Manure receives considerable attention on the farm of Mr. Ottley. His straw, corn-stalks, and hay is all fed out in the stables and yards, where his cattle are kept through the foddering season. The straw serves for litter, and having an abundance, also about 65 head of horses, cattle and sheep, he makes about 200 loads of manure annually. This he draws out in a green state to his corn field, (usually planting 12 acres,) putting from 30 to 40 loads per acre, according to its value. It is dropped in similar heaps about one rod apart, and generally as fast as it can be ploughed in. He has a manure cellar, but keeps a part under cover, and finds it a decided benefit. For barley he thinks rotted manure an essential application; it is of such quick growth that it receives little benefit from long manure.

Mr. Ottley has from seventy to seventy-five acres annually under tillage. His fields contain about twelve acres each, and the different crops follow in rotation and culture as follows: For corn he takes a three-year lay of clover, covers it with manure, and breaks up immediately before planting with a double plough, eight inches deep, harrows with a light harrow to avoid breaking the turf, then drills three and a half feet in rows, dropping one kernel at eight inches in a row together with ashes and plaster; and then rolls the whole field.

As soon as the corn is up, he passes through with the one horse cultivator, continues to cultivate until the middle of June,—product usually 50 bushels per acre. Usually plants one acre of potatoes in the same lot. One potato in each hill, split; plant as early as possible,—product light, owing to prevalent disease.

Barley follows corn. He drills in two and a half bushels per acre, in April if possible, ploughing in the spring—product from 25 to 50 bushels per acre. Oats are also sown after corn, three bushels seed, product 75 bushels per acre.

Wheat is sown after barley, two bushels per acre, drilled in the first September. Plows the stubble eight to ten inches deep, with double plough, in two rod lands; harrows fine immediately before sowing, product from 25 to 35 bushels per acre. Seeds down to clover and timothy in September, soon after sowing, and uses for meadow or pasture till its turn in the rotation, usually three years, when it is taken up as above described.

Mr. O. has been particular in growing and saving seeds for growing. He has improved white Soules wheat, starting it from a handful, and saving the first ripened for seed, so as to shorten the time of maturing from six to eight days, he has made like experiments, with like results, in barley, oats and corn. His grains and roots were all trained up in this way, and he thinks it essential that seeds of all kinds should be saved from the first ripening and largest ears. His profits for 1854 are \$754, or \$8 87½ per acre for the improved land. His total receipts amount to nearly \$2000. His principal attention is given to grain growing, which he makes a profitable business, as these figures show.

A regular account is kept, together with a memorandum of farm matter. Mr. O. says he can state the annual expense of improving his farm, and the income of it, and at the end of the year can strike a balance of debt and credit. We join with him in thinking the practice very much conducive to close observation and careful farming; one which in the end would very much improve our system, as well as better our fortunes. It is little more than guess work to farm without some guide—without some means of knowing what crops pay at the end of the year, and what prove a losing speculation.—*Rural New-Yorker.*

COTTON GINS.

Messrs. Editors:—In a recent number of the *Scientific American*, page 49, in the article "Saw Cotton Gin," your correspondent has fallen into some errors, I think. I have been engaged for the last twenty-five years in manufacturing the saw gin, and in all that time have watched closely the operation of my own machines, and others, on the fiber of cotton, with the view of improvement wherever it could be done. I make this statement for those who may differ with me in regard to the operation of the gin. It is hardly possible to overrate the importance of this machine. The saw gin, as it came from the hand of Whitney, admitted of but few improvements, and though many have been attempted, they have mainly aimed at (and accomplished) the making a fairer article of cotton, but always at the expense of the fiber. In proof of this there is in Georgia a gin which was made in Whitney's time, and under his patent,—it has iron saws, and very coarse teeth, but the cotton ginned by it brings from one to two cents per lb. more than from the best improved gins.

Your correspondent, Mr. Du Bois, is right in saying that no two saws catch the same fiber, but I cannot think he has investigated closely when he decides that the saws never break the cotton. Let Mr. Du Bois examine samples under a magnifying glass, from different gins, and he will change his views; let him examine carefully the fiber or the seed, and he will find but a very little difference in the length, and none quite short. But the best proof that the saw cuts cotton, is Fultz's improved feeder, which he says separates the long from the short cotton, thus making two qualities, the long being delivered at the end where it enters, and the short at the other, showing conclusively that the cotton which is first taken from the seed is but little cut, while that which runs the gauntlet of fifty saws, comes out a low quality. I have no hesitation in saying that there is no machine which approaches to a saw that can clean the upland cotton without injury to the fiber, to say nothing of the Sea-Island cotton, which has a much finer and more tender fiber; indeed, the only perfect operation in ginning cotton is the roller principle; therefore, whoever will invent a roller gin that can compete in speed with the saw gin, will increase the value of the upland crop ten per cent., or ten millions of dollars annually, to say nothing of the advantage to the inventor.—H. Clark, in *Scientific American.*

New-Port, Fla., Dec. 4th, 1855.

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

CORN CROP IN TENNESSEE—EFFECT OF DROUGHT.

A beneficent Providence has awarded to Eastern Tennessee one of the most abundant crops of Indian corn, just now gathered, probably ever known to have been made in the district. Your readers will remember the complaints made in your journal of the drought in 1854 and '5. The *anomalous drought*, so-called, and indeed the continuous dry weather did seem out of rule. It was truly disastrous to grasses. Root crops and vegetation generally seemed to suffer; but the fall of 1854 being one so dry and so favorable for field work, our farmers ploughed up their fallows early in the fall for spring planting, which by the freezes of winter were mellowed into a light mould. The corn was early planted, the weather favorable, and it grew rapidly off, stood well, and the drought had, it seemed, the balancing property to restrain the too rapid growth of the vegetable part, but kept it in equilibrio, so that the cereal should be bountifully supplied with growing matter. Farmers had observed that too much stalk and blade is not best for a good ear, and this drought may have had a good rather than a bad effect in the growing of the corn crop of 1855. One thing I am quite certain of—that the drought has mellowed and pulverized our soils, and consequently enriched them. For example, allow me to state for the eye of my farming friends elsewhere, that I had an old meadow piece of land which I thought had become so poor it would not bring grass, having in 1841 tried in corn, without raising scarcely enough to fill a bushel sack to the acre. In September, 1854, I ploughed it up, and again in April, 1855, and planted in corn the distance four feet each way, with two stalks in the hill, and which was ploughed over only three times and laid by. The yield from six acres of this old, poor, worn-out field was not less than sixty bushels to the acre, besides about thirty-four horse loads of the best of pumpkins, planted intermixed with the corn; and I believe, from the appearance of the soil now, it will bring me as good a crop at any such year hereafter, the whole resuscitation of my old field being attributable to the drought, and the facilities for out-door work it afforded. This old meadow field is imbedded on a stiff clay subsoil, no doubt at all former times full of water. The evaporation from the surface by the rays of the sun created a vacuum of water in the soil, which drew its proper moisture from the probable strata of water in the subsoil. This circulation of water in the earth is the reverse of that which takes place in wet weather. It cannot, however, be the water only which is thus drawn to the soil by the sun, which gives life and vigor to the crop, but also all those enriching substances contained in solution. These qualities are often salts of lime, magnesia of potash, soda, &c., and, indeed, whatever the particular subsoil or under-strata of earth may contain. Professor Higgins, State Agricultural Chemist of Maryland, on this subject says:

"The water in leaving the surface of the soil is evaporated, and leaves behind the mineral salts, which I will here enumerate, viz.; lime, as air-slacked lime, or bone-earth, sulphate of lime or plaster of Paris; carbonate of potash and soda, with silicate of potash and soda; and also chloride of sodium, or common salt—all indispensable to the growth and production of plants which are used for food." Which proves conclusively the beneficial results of drought, and indeed our own observation must teach us that the general abundant crop of 1855 could not of right be attributable to frequent showers. Thus the mystery may be somewhat solved. Farmers are sometimes known to complain of the weather, but a Divine benignity always overlooks and orders all things for their good as a final result. A. L. B.

Mill Bend, Tenn., Jan. 4, 1856.

COMPARATIVE VALUE OF CROPS.

[In our January number, page 410, we published the statements of Mr. Harvey as to the cost of sundry crops. In the second crop described, there was a discrepancy in the figures, which on discovery he corrected in the following letter, which was not received till after that sheet was printed. This correction was made as follows.—Ed. P. L. & A.]

Epping, Dec. 17, 1855.

Dear Sir:—Yours of the 16th is duly received. I made a mistake in the first draft in relation to the statement of that wheat, and did not include the interest on land, or taxes. It should read thus:

Whole expense of cash, interest, etc., - -	$12 50
12 bush. wheat at 13s. 6d. - - - - -	27 00
Profit to land - - - - - -	$14 50

Potatoes, No. 2. Three years ago I received a few from Andover, Mass., with the assurance that they would not rot. I had but little faith in the statement, but for these three years they have been entirely sound when *others have rotted. They are a late potato*, and remain hard for a *year.* They are not of the first quality for the table, as yet. We put them on this piece of land on purpose to try them, to see if they would rot with high manuring and a moist, dark-colored soil. Yours, etc.,

M. P. Parish, Esq. D. L. Harvey.

THE SWEET AND THE IRISH POTATO.

Sweet Potato—Batatus Edulis.—The esteem in which the sweet potato is held may be estimated by the extent to which it is produced, 4,742,000 bushels, worth more than two millions and a quarter of dollars, being the crop of Mississippi of 1840.

In the production of this esculent, Mississippi ranks fourth among the States of the Union; Georgia, North Carolina, and Alabama only excelling her.

Five varieties are cultivated with us, which will be mentioned in the order of their excellence, as generally estimated. First in quality, as in extent of cultivation, stands the Yam, which, if surpassed by some in average size, is approached by but one in delicacy of flavor. Its shape is oval or roundish, with a smooth exterior and yellowish tint. It is as prolific as any other, and keeps remarkably well.

The next in place is the Spanish, or white potato; it is long and crooked, with large veins or nerves running lengthwise on the exterior, by which it is universally characterized. Another characteristic which distinguishes it from all others, is an aptitude of the flesh, or meat, if I may so designate it, when cooked, to divide or separate in layers or flakes lengthwise, the fiber at the same time being destitute of any stringy property.

Early in the season it is rather too milky to suit the taste of many, but when thoroughly cured, it becomes very sweet and rich, differing somewhat in flavor from the yam. It grows to a large size, and singularly enough, notwithstanding its excellence, it seems to be greatly neglected of late, and is not now often met with.

The Bermuda potato has a deep crimson or purple skin; but the interior is very white. In form it is more cylindrical than the yam, somewhat elongated, and is regarded by some as the largest and most prolific variety. Its flavor, however, is coarse and flat.

The Red is the earliest variety introduced here. It was formorly very generally cultivated; it is inferior to the foregoing in size, and not now very much in use.

It is rather dry and mealy, and is best early in the season, when newly dug, and it is perhaps the earliest to mature.

The Poplar Root, which somewhat resembles the yam in outward appearance, but not generally so round, with a smooth skin, and the color rather a deeper yellow, was introduced ten or fifteen years since with high commendations. It proved a watery, insipid kind, however, and is now generally banished.

Up to the period of 1810 or 1815, the yam potato was rarely seen; the old red and white Spanish being altogether cultivated—the former much the more extensively.

The Bermuda is the most recent introduction.

All the varieties of the sweet potato succeed best in a loose sandy soil, although the yam is said to flourish in the prairies of the eastern counties. I have seen one of that variety raised near Macon, which weighed ten pounds.

The proper time for planting is about the 1st of April, and the most approved mode of raising the yam is to *spread* the small roots or potato plantings on a rich bed about the first of March, covering them with three or four inches of loose rich soil. When the sprouts make their appearance above the surface, they are drawn and set out in newly-made ridges after or during a rain.

These beds continue to throw out a succession of sprouts, which may be planted every favorable season as late as the first of August, and if well worked, and the weather be not too dry, will make good potatoes. It is said the red potato does not succeed so well when planted in this way.

At some seasons the sweet potato is sufficiently matured for early use by the first of September; but it is attended with great waste to commence on them so soon, as it is thought the tubers grow more in October after the vine begins to decline than before.

The best time for digging potatoes is the first good dry mild weather succeeding the first frost that kills the vines. They are then better *ripened*, freer from water or sap, and consequently keep better. They should not be suffered to remain undug until the ground freezes, as they will become frost-bitten and rot.

The most approved mode of preserving the sweet potato is to place them in piles or heaps of about twenty-five bushels each, on raised ground, with a flooring of corn stalks and straw, the sides being lined with the same material, the whole covered with three or four inches of earth or sod, a small aperture being left near the apex of the cone for the escape of the moisture which passes off from the potato when undergoing the sweat, which always takes place soon after they are placed in bulk.

Put up properly in this way they will keep perfectly sound and sweet until June or even later.

The potato *patch* affords a good gleaning to the fattening hogs, which are usually turned upon it, and find in the small tubers, cut and waste potatoes, a favorite food on which they thrive rapidly, and is a good preparation for after feeding on corn in the close pen.

Some planters put in a large crop of sweet potatoes for this purpose, and when corn is scarce give no other food. The meat is said, however, to be less firm, and the lard more oily than that of the corn-fattened hog.

THE IRISH POTATO.—SOLANUM TUBEROSUM.—The Irish potato is not extensively cultivated, and seldom beyond the limits of the garden.

Two varieties—the Meshanic and the Purple Eye—are those which seem to be the most approved, the red being rarely planted, under the common belief that the white varieties succeed the best. For what we do plant we are dependent every year almost entirely on those brought down the Mississippi from the Western States.

A course embracing the planting, cultivation, and after treatment, which has been tested many years, may be confidently recommended as one attended with much success.

In suitable weather soon after the first of January, on the even, clean, but unbroken *surface* of the ground appropriated for the purpose, place the cuttings with the eye upwards, three inches apart, in rows two feet distant from each other. Cover *well* with light rich vegetable compost. Well-rotted corn-blades, straw, or leaves from the woods, are well suited for this purpose. Draw over this a moderate ridge of earth. As soon as the tops show themselves generally above the surface an inch or two high, ridge up with earth, again covering the top entirely, and repeat this in ten days or so, when the tops appear the second time. This will give a ridge of sufficient size, and *completes* the cultivation.

About the middle of April the potatoes are fit for use, and are to be dug daily as required.

About the first of June, especially if the season be dry, the tops begin to fail and gradually die; the grass and weeds which spring up between the rows must not afterwards by any means be removed; otherwise, when deprived of the shade afforded by the top, the potato will become partially scorched or baked in the ground by the intense summer heat, which makes them watery and causes them to rot. Protected by the grass and weeds, they remain fresh and sound, and will keep in excellent condition until frost.

It is generally conceded that the Irish potato cannot in our climate be kept through the summer out of the ground. For this reason, and possessing no value for stock, together with the preference which most Southerners give to the sweet potato, it is not more cultivated.

The crop of 1849 was about 260,000 bushels.

There is a considerable consumption of the Irish potato in our cities and towns convenient to the river, which are obtained from the Western States at a price much below what they can be produced for here.—*Wailes' Agricultural Report of Mississippi.*

REMARKS ON FOUNDER, AND THE FOOT OF HORSES AND SHOEING.

PREFACED BY SOME OBSERVATIONS ON THE REPRINT OF STEWART'S TREATISE ON STABLE ECONOMY.

BY CAPTAIN RALSTON, GRAD. ROYL. VET. COLLEGE, AND MEMB. ROYL. COL. VET. SURGEONS, ETC.

It is gratifying to note the reïssue of this treatise of Professor Stewart, for it is a very useful veterinary text-book, either for horse owners or amateurs, grooms or stable helpers. It little boots to be hypercritical on hypercriticism, and the writer is not disposed either to much carp or cavil at the matter or manner of its American editor's adaptations, or those additions he has made to this adoption from British veterinary literature. The additions, however, are but meagre, and add little that is new; and, as to improved adaptations, the book must speak for itself. One or two of the comments, or notes, are calculated to perplex, as for instance where "Founder" is spoken of. The note appended, here, denies the author's professional view, establishes nothing in its room, and is expressed in somewhat oracular phrase. On the subject of "Founder" the writer proposes to submit a few remarks, the result of no inconsiderable experience; but, first, he wishes to premise a few general reflections, farther, upon this reprint of "Stable Economy."

With all respect for the intelligent zeal of the gentleman who has edited this American reprint, the writer ventures to think that the book was one which could very well have stood alone, on its original merits; and this so much the more, inasmuch as additions to and emendations of a professional treatise would ordinarily require to come from professional hands. It is true the subject is "Stable Economy"; but the teaching of this had been based on and derived from trained and experienced attainments in veterinary science. Again, the animadversions of the preface, upon Professor Stewart's lack of chemical knowledge, could have been spared. This question in no way was involved; and, moreover, any inferences of chemistry, throughout the volume, have been made in a popular or practical vein. The editor is perhaps a profound chemist, and, still, it may be no lees true that chemical research sometimes refines in its conclusions too far. As this gentleman has predicated, "sugar" is abundant of "carbon," and deficient of "nitrogen," and nitrogenous aliment seems to be denoted for forming muscle. But this elementary question was hardly germane to the experiment with sugar referred to by Prof. Stewart; and more, it would be difficult to gainsay the fact that the negroes on Southern plantations are found to thrive most, and to prove most vigorous, during the period of their hardest labor, at the harvesting and boiling of the sugar crop. In raising and feeding stock, likewise, the value of sugar, as an article of food, has become well and economically known to agriculturists. Still, it is not intended, nor can this rebut the more accurate chemistry of the editor; only, sometimes, one is inclined to exclaim of animadversions, "Here is too little bread to all this sack!" However, the wish to be acknowledged to *know* besets us all; and let us only tell what we really know, and no more than we do know, and we shall instruct and benefit each other. Violations of this rule have been the fertile parents of no end of errors, equally in science and fact.

Those opportunities of practical information relating to horses and stable economy, by which the editor appears to have so well availed, merit every respectful consideration; yet it is all a long way off from attaining to be the veterinarian. Neither natural talent, however aided by general education, nor the best and shrewdest observation of fact and incident, or of daily intercourse with horses, can confer veterinary knowledge, though assuredly yielding valuable adjunctives. If the theory of any science must be of uncertain value, until tested by application or practice, equally and more so are practices halt and blind—unreliable—until cognate of and grafted on due and proper theory. Only combined principles and practices, each in harmony with the other, can fix laws and establish confidence, in a manner to found a claim to be installed in the temple of science. Any one may take up and foster crude opinions, or follow up certain practices, and plausibly term these medical or surgical; but whether this be in relation to man or horses, it is far more than likely that both opinions and practices may come under a similar category, and the one be erroneous, while the other is hurtful. To become a veterinarian, and entitled to decide on veterinary facts and exigencies, demands a studious and systematised acquaintance with those laws and influences that regulate animal life and structure, and well discriminated investigation of healthy and morbid conditions. A French axiom may not be inapt, and is certainly expressive: "Qui dit Docteur, ne dit pas un homme Docte, mais un homme qui devroit etre Docte," or, "to say doctor, is not always to say a learned man, but who ought always to be a learned man." On an occasion where a young veterinarian was giving evidence in a law case, arising out of lameness of a horse, the opposite evidence was that of an old farrier, erudite in veterinary medicine because he had long shod horses. The judge having summed up on the side of the veterinarian, the jury found accordingly, and greatly to the amazement of old Vulcan. He vowed the verdict was unfair, was a mistake;—what could that young fellow, bred in a college, know? But he—himself—he knew all about horses; had been about them all his life; was born a horse doctor, for his father had been a horse doctor, and his grandfather a horse doctor before him! Neither judge nor jury, however, had any faith in this heritage of veterinary wisdom.

The editor, in his preface, expresses a strong impression of the difference of management required for horses, in consequence of the difference of climate and food of the two countries. The writer from what he has seen of both countries, is unable to recognize any marked difference. The more perfected care and stable discipline, and the improved shoeing of horses in Britain, would be attended with high advantages if introduced here. As to food, except that the British animal never partakes of Indian corn or fodder, there are small differences otherwise. The greater dryness of the climate is much in favor of the horses of this country. In fact, America is qualified to produce the finest horses of the world; for while her varieties of soil fit her for either raising the heavy draft horse or the fleet courser, from the dryness of atmosphere she is peculiarly adapted for raising the latter. In this respect she possesses those advantages which have mainly conferred on the desert Arab his fine form, compacted tissues, speed, and unrivaled hardihood. What this country now exigently wants is a sufficient supply of the right kind of blood sire horses. The mongrels now supplying in every district the place of pure lineaged, or thorough-bred stud horses,are fast deteriorating those other mixed or general breeds, so invaluable to every nation; and this will soon utterly root out the fine foundations laid by the early introduction of English turf horses. That due attention to obtaining the blood horse, of fine form and undoubted purity of race, is so utterly neglected, is a deplorable reflection. Recurring to importations firstly, and gradually, thereafter, raising a supply of this class of horse, for his especial stud purposes, can alone provide a sure remedy; and farmers' clubs and agricultural associations would act wisely by uniting to import a well selected stud horse, or horses, for their own respective districts. It would be an investment which would pay twenty-fold over the employment of an equal fund in any other direction, and would prove an individual, state, and national boon. The writer would have much satisfaction in aiding any such movement, by his experience, or advising, or coöperating.

In regard to the effects of dryness of climate, there is an attendant drawback to shod or stabled horses, which inattention renders serious. In a horse's so artificial state, the horny covering of the foot—the hoof—is apt to become altogether too dry, hard, and inelastic. This evil is augmented by extreme dryness of atmosphere; and the confinement of that needful, but baneful defense, the shoe, greatly aggravates the mischief. Here it is that plank floors, as being bad conductors of heat, are objectionable. But for this, plank flooring (at least for the stalls,) when judiciously arranged for carrying off the urine, etc., is excellent. And if the hoofs are skillfully prepared for the shoe, and the latter is good in form and properly adjusted, and if, at the same time, proper stable care is resorted to, for the purpose of keeping the horn of the fore-feet cool and supple,—then, neither plank floors, stabled life, nor shoeing, need impair the feet, or produce chronic foot lameness. There are, however, more horses suffering from foot lameness in New-York, than in any other part of the globe among three-fold the same aggregate number of horses. It is chronic foot lameness, and the miserable form and fitting of the shoes, that occasion the terrible falls and injuries to horses, daily seen on Broadway. The Russ pavement is very smooth, but still, sound horses, in proper shoes, will never fall on it in the manner now daily done by hundreds. These allusions to the hoofs and shoes lead to a reference to the editor's objection to hoof-ointments. The judicious use of an eligible kind of an ointment for the hoofs, the writer contends, is serviceable. The best is perhaps equal parts of tar and tallow, melted together, and kept for use in a jar. A thin brushing of this over the soles, bars, frogs, and walls, once a week, and for strong feet twice a week, is recommended. On the other days, the fore-feet should be stopped with pads of tow, kept moist, and a spongeful of water should be frequently squeezed over the hoofs. When a horse is to be taken to be re-shod, the tar dressing should be invariably applied over night, and the shoeing smith can then use his drawing-knife in a proper manner, and prepare the hoofs for the shoes as this ought to be done; that is if this operative, who has so much to do with the best value and utility of every horse at work, be in possession of the right knowledge and skill, but which is indeed a rare event.

I now speak of Founder. It is necessary first to ascertain what may be meant by a term, which is a truly absurd one, derived from the horse-doctoring school. Some speak of chest founder, and some of two kinds of foot founder. The former idea is the product of ignorance, which assumes an effect for a cause. The shrunken state of the pectoral muscles, the wired-in shoulders, and contracted cavity of the front of the thorax or chest, which are supposed to constitute the disease, are all, and in every case, effects from long protracted pain in the fore-feet—chronic foot lameness. A horse suffering from this so universal curse of stabling and shoeing, to wit, contraction, coffin-joint lameness, navicular-joint disease, etc., ceases to go free in his action, and bend his knees; does not exert his muscular forces, or give them their full and rounded play; and goes near, or toeing the ground, and short in gait in every way. He may not drop at all in his step, unless the feeling is only in one foot, which is not usually the case; and, hence, does not seem lame to the unpractised eye. The consequence of this is, in not a few cases, that the unexerted muscles, outside and inside the shoulders, fall away; the circulation through the lungs being decreased, the expansion of these organs becomes proportionally diminished, and the chest, at the brisket, falls in; and, in time, the fore-quarters altogether acquire that wasted look to which the sapient term "chest founder" has been applied. In this country it is also called "sweeny," an Irish piece of euphony.

By some, again, the contracted hoof, and attendant chronic foot lameness, have been termed founder. But what is more ordinarily so termed is the permanent result of a very acute disease, viz., "fever in the feet," or more properly "laminitis." It was to the altered condition of the feet, which frequently follows an attack of laminitis, that the term founder appears to have been originally used; and when the veterinarian adopts the phrase, it is in this peculiar sense. In the cases indicated, the animal treads with the toe of the hoof turned up; the horn of the sole is flat or pumiced, and resembling in appearance the outside of an oyster shell; and in front of the hoof seems as if caved in. It was to laminitis and its sequelae, founder, that Professor Stewart was adverting, where the editor so curtly differs in opinion. Reference was made to only one phase of laminitis, and its consequences, founder, viz., where the occasion of the fever might have been indigestion of food, and a gorged stomach. This is not a frequent cause; but if inflammatory action is going on in the coats of the stomach, and there is likewise local congestion from the organ being gorged with food, a revulsion of inflammation to the highly vascular laminated structure of the hoofs is, medically speaking, a probable enough result.

Any one acquainted with the anatomy of the foot and the specific disease which occasions its lapse to the peculiar condition designated founder, would readily comprehend the professor's limited remark, as applicable to his then subject; but which was otherwise hurried and loose. It may not be amiss to seize the present opportunity, and present a brief description of the laminated structure of the foot, together with this acute fever to which the same is liable, and its so frequent consequence, founder.

The external surface of the horse's foot, or, as more usually termed, the coffin-bone, is covered with a half muscular half membranous structure, denominated the sensitive or elastic laminae. This presents a series of leaf-like edges, something like the plaits on the surface of some paper lamp-shades, but far more minute and numerous. This structure is very vascular, and it circulates an extraordinary amount of arterial blood. On the inner surface of the horny covering of the foot—the hoof—there is a reverse series of plaits, of a half horny half ligamentous texture, resembling the inner side of a mushroom. These plaits, on the outer or convex surface of the coffin-bone, are interlaced or locked with those lining the inner or concave surface of the hoof; and on this union, or combination, every horse's weight and action is wholly suspended and hinged. There are about five hundred of these elastic plaits or laminae to each foot, and they may be likened to minute coach-springs. From the numerous blood vessels and nervous sensibility of this structure, and the extraordinary tension it is subjected to in long continued exertion, it is very apt to undergo inflammatory attacks. The smallness of hoof of so large an animal renders any greater influx of blood or inflammatory tendency very dangerous in so confined a cavity, and this is much increased by hard and unyielding states of the horn, and the binding of its iron defense, or shoe. Laminitis, or fever of the feet, is a violent inflammatory attack of the laminae; usually of the fore-feet, but sometimes all round. This usually runs an acute course of from twenty to forty hours, terminating either by resolution (cure), suppuration, or death. Suppuration is a very common result. When this ensues, the union between the sensitive laminae and those of the inner surface of the hoof is dissolved, or relaxes, and the coffin-bone being no longer fully suspended, sinks down on the horny sole. If the violence of the fever now abates, and the animal should survive, lymph is effused between the laminated plaits, and they are retained together; but no longer elastic. The coffin-bone remains resting on the horny sole, and the hoof presents all the appearances described above. This is what has been termed Founder.

The causes of laminitis are most usually long-continued exertion, followed by muscular exhaustion, and attended by excessive excitement of the heart and arterial system. As already observed, in reference to affections of the stomach, it is not unfrequently the result of revulsion or translation of inflammatory action from other organs; or what, in medical language, is technically called "metastasis." The writer has seen it supervene from inflammations of the bowels or lungs, and on occasions from influenzal fever, when this has run high, and threatened to center in the lungs. It is a disease which requires instant and the most active treatment.

JOHN C. RALSTON.

INSECTS INJURIOUS TO VEGETATION.

LEPIDOPTERA.

We now come to this, the fourth natural order of insects. It comprises caterpillars, butterflies, moths, etc., and forms a very numerous and destructive agency. No insects do so much injury as catterpillars. They multiply with great rapidity, and are exceedingly voracious. Each female lays from two hundred to five hundred eggs. There are several hundred varieties, and all subsist on vegetable food.

Caterpillars differ greatly in form, but certain characteristics are common to most of them. The name Lepidoptera means scaly wings, and under a magnifier the floury appearance of these membranes appear to be scales like those of fishes. They are more or less cylindrical, with twelve rings, and from ten to sixteen legs. They have a shelly head. The first three pairs of legs are shelly, jointed, and armed with a claw. The other legs are without joints, but furnished at their extremities with minute hooks. They have six small eyes on each side of the head, two short antennæ, and strong jaws or nippers. The insect spins its web through a little conical tube in the middle of the lower lip. The substance of the web is contained in fluid form in two bags within their bodies.

Some caterpillars are solitary in their habits, and others herd together in great numbers. Some live sheltered on the stems of plants, others on the leaves, concealed by webs or by rolling up the leaf; others live in the ground, issuing from it only for food.

Caterpillars change their skins three or four times while they are growing. Previous to their first transformation they cease eating, and spin a cocoon about themselves, or envelop themselves with bits of leaves, grains of earth or of wood. Some suspend themselves by their web, remaining uncovered. Others go through their transformations under ground.

Escaping from this covering they become a pupa or chrysalis, and are apparently without heads or limbs. But traces of a head, antennæ, wings, legs, etc., may be discovered pressed closely to the body. In this state they take no food, and remain perfectly at rest. After a while the chrysalis begins to contract, and is rent, and a head, antennæ and body of a butterfly or moth issue; and ere long the insect acquires strength and power of flight, etc. Their butterfly life is very short. Flitting from flower to flower, they pair, lay their eggs, and become a prey to other insects or die a natural death.

Lepidoptera are arranged in three classes, called butterflies, hawk-moths, and moths. These terms correspond to the genera *Papilio*, *Spinx* and *Phalæna* of Linnæus. The following characteristics distinguish these genera.

The butterfly has thread-like antennæ, knotted at the end; the fore-wings of a part, and all the wings of others are elevated perpendicularly and turned back to back, when at rest. Their legs are sixteen in number, and on the hind-legs are two little spurs. They fly only by day. The wings of the true butterfly are upright when at rest; the *skippers* carry their fore-wings upright, the hind-wings being nearly horizontal when at rest. *Skippers* fly but a short distance at a time, with a jerking motion. They frequent grassy places, low bushes and thickets.

Hawk-moths (Sphinges) have their antennæ thickened in the middle, tapering at each end, and often hooked. The wings are narrow in proportion to their length, having a bunch of hairs on the shoulder of each hind-wing. All the wings are inclined like a roof, when at rest, the upper ones covering the lower. On the hind-legs are two pair of spurs. Some fly by day, most of them in the morning and evening twilight.

The hawk-moth is so called from their habit of hovering in the air while taking their food. They are sometimes called *sphinges*, or sphinxes, from a fancied resemblance to the Egyptian sphinx. They support themselves by their four or six hind-legs, elevate the forepart of the body, and remain in that position for hours. When they reach the winged state, they are sometimes called humming-bird moths, from the noise which they make in flying.

In the moth (phalænæ) the antennæ are neither knobbed at the end nor thickened in the middle, but taper from the base to the extremity, sometimes naked and sometimes feathered on each side. The wings are confined together by bristles and hooks, the first pair covering the hind-wings, and sloping when at rest. Two pairs of spurs are attached to the hind legs. They fly mostly by night. They are sometimes called millers, and include those pests of the house called moths. They vary very much in size, form, color, and structure. The owl-moth expands eleven inches; others are very minute, especially those with gilded wings.

It is impossible even to enumerate the entire list of species of these insects which are found in this country. We must therefore attempt only a concise description of certain insects of peculiar interest, and some of those which infest particular plants; and even this can be done only in a very imperfect manner.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL

OF THE MATERIALS USED IN THE ARTS.

I. FROM THE VEGETABLE KINGDOM.

There are various kinds of wood used in the arts, consisting of the woody portion of the trunks of trees, which are formed by layers of a hard substance, strengthened by tubular cells between, for the purpose of conveying the *sap*, which is the life of the tree, through its branches. The outer layers are more open, and consequently they are more perishable than the inner layers, which are harder, and are called the heart-wood.

The bark of the tree is used for tanning leather, for coloring, etc.

Oak is the most valuable for timber, and consists in something like twenty species in the United States and Canada. The live oak of the South (*Quercus Virens*) is prized in ship-building beyond any other timber, for durability and strength. The white oak, (*Quercus alba*,) is used for ship-building also, and for mill work, house frames and machinery where strength is required; for wagons, parts of carriages, ploughs, and various other implements of agriculture. The yellow oak, (*Quercus tinctoria*,) is considered next to the white for durability and strength. The bark of this furnishes the *quercitron* used for coloring. The other kinds of oak—red oak, black oak, gray oak, swamp oak, post oak, and chestnut oak, and various other species, are considered valuable for the arts.

Hickory.—There are several kinds. The pignut, (*Juglans porcina*) is considered the best for axe and hammer handles, and all other handles requiring strength, for cogs or teeth for wheels, for wagon and cart-axles, as the grain is close and smooth. The red heart, (*Juglans laciniata,*) the shell bark, (*Juglans squamosa,*) are more open grained; consequently are not so good in the arts, as it decays in the weather very soon.

Ash.—White ash, (*Fraxinus Americana,*) and some other species, are very useful in the arts, the wood being strong and elastic, tough and light, durable and permanent in its dimensions; is commonly used for carriages, wagons, and various kinds of machinery, and of great use for oars, hand-spikes, blocks, etc., for vessels.

Elm, (*Ulmus Americana,*) is of great value for cart and wagon hubs (naves,) as it is tough and not apt to crack or split.

Wild Cherry, (*Prunus Virginia,*) is of a deep color; is very useful in cabinet work. Being stained with a strong alkali renders it almost as dark as mahogany.

Chestnut, (*Castanea vesca B,*) is a large tree of rapid growth, coarse grained and porous, very liable to warp, easy to split. It is used for light timber, for house-frames, such as stud, rafters, and sometimes for sills of buildings. It is very durable in the weather, is valuable for fences and for posts. It should be set top downwards for posts, as it then lasts much longer. It is also charred for charcoal.

Beech, (*Fagus ferruginea,*) is one of our best kinds of wood. It is very hard and smooth, is used for planes and moulding tools, chisel handles, and various uses where hardness and smoothness is required. It is not very durable in the weather.

Basswood, (*Tilia Americana,*) is a very fine grained wood, soft and light, and flexible. It is used by cabinet makers and carriage makers for pannels, etc., for which its flexibility makes it well suited.

Tulip Tree, (*Liriodendron tulipifera.*) This wood generally goes by the name of *white wood*, and sometimes by the name of *poplar*. It is fine grained and smooth, but not durable in the weather. It is very apt to warp, It is mostly used for furniture and wagon bodies, and frequently for joiner work inside of a house. It paints very handsomely.

Maple.—Rock maple, (*Acer Saccharinum,*) also several other species, are hard, smooth, and compact. It is used for gun-stocks, bedsteads, and various kinds of machinery. The curled maple and birdseye make beautiful furniture by staining it with diluted sulphuric acid and a coating of varnish. It makes excellent fuel when dry. The sap of rock maple boiled down makes sugar.

Birch.—The white birch, (*Betula papyracea,*) is similar to maple, only harder. The Indians make their canoes out of the bark of this tree. The lesser white birch, (*B. populifolia,*) is a tree of but little value, except to make charcoal. The bark of the black birch, (*B. lenta,*) is very aromatic; the wood is very firm and compact, of a dark color, of much value for furniture, for screws, and sometimes for joiners' planes. It is very strong. The yellow birch, (*B. lutea*) is very similar to the black except in color.

Black Walnut, (*Juglans nigra,*) is valuable for many uses. Its heart is very dark, resembling the color of the violet, and is frequently used for furniture and for finishing the inside of churches. It is very durable when exposed to the weather. It is very tenacious, and when perfectly seasoned is not liable to crack and warp.

Hornbeam.—There are several species of trees in the United States, under the names of *peperage*, *sweet gum*, and *horn-beam*. Their wood is very smooth grained, and very remarkable for the interweaving of the fibers, which renders it almost impossible to split the logs. It is sometimes used for the naves of wheels, hatters' blocks, and implements requiring lateral tenacity.

ESTABAN.

SAXE-GOTHÆA CONSPICUA.

THIS remarkable plant, to which his Royal Highness Prince Albert has been pleased to permit one of his titles to be given, and which will probably rank among the most highly valued of our hardy evergreen trees, is a native of the mountains of Patagonia, where it was found by Mr. William Lobb, forming a beautiful tree 30 feet high. In the nursery of Messrs. Veitch, of Exeter, it has lived in the open air four years without shelter, and has all the appearance of being well adapted to the climate of England. The country in which it grows is, indeed, more stormy and cold than any part of Great Britain, as is shown by the following account of it, given by Mr. Lobb in one of his letters to Messrs. Veitch:

"During my absence I visited a great part of Chiloe, most of the islands in the Archipelago, and the coast of Patagonia for about 140 miles. I went up the Corcobado, Caylin, Alman, Comau, Reloncavi, and other places on the coast, frequently making excursions from the level of the sea to the line of perpetual snow. These bays generally run to the base of the central ridge of the Andes, and the rivers take their rise much further back in the interior. The whole country, from the Andes to the sea, is formed of a succession of ridges of mountains gradually rising from the sea to the central ridge. The whole is thickly wooded from the base to the snow line. Ascending the Andes of Comau, I observed from the water to a considerable elevation the forest is composed of a variety of trees, and a sort of cane so thickly matted together that it formed almost an impenetrable jungle. Further up, among the melting snows, vegetation becomes so much stunted in growth, that the trees, seen below 100 feet high and 8 feet in diameter, only attain the height of 6 inches.

"On reaching the summit no vegetation exists—nothing but scattered barren rocks which appear to rise among the snow, which is 30 feet in depth, and frozen so hard that on walking over it the foot makes but a slight impression.

"To the east, as far as the eye can command, it appears perfectly level. To the south, one sees the central ridge of the Andes stretching along for an immense distance, and covered with perpetual snow. To the west, the whole of the islands, from the Guaytecas to the extent of the Archipelago, is evenly and distinctly to be seen.

"A little below this elevation the scenery is also singular and grand. Rocky precipices stand like perpendicular walls from 200 to 300 feet in height, over which roll the waters from the melting snows, which appear to the eye like lines of silver. Sometimes these waters rush down with such force that rocks of many tons in weight are precipitated from their lofty stations to the depth of 2000 feet. In the forest below everything appears calm and tranquil; scarcely the sound of an animal is heard; sometimes a few butter-

Fig. A. BRANCH OF SAXE-GOTHÆA CONSPICUA.

flies and beetles meet the eye, but not a house or a human being is seen. On the sandy tracts near the river, the lion or puma is frequently to be met with; but this animal is perfectly harmless if not attacked."

It is from this wild and uninhabited country that many of the fine plants raised by Messrs. Veitch were obtained, and among them the *Saxe-Gothæa*, *Podocarpus nubigena*, *Fitz-Roya Patagonica*, and *Libocedrus tetragona*. Of these he writes thus :

"The two last (*Fitz-Roya* and *Libocedrus*) I never saw below the snow line. The former inhabits the rocky precipices, and the latter the swampy places between the mountains. The first grows to an enormous size, particularly about the winter snow line, where I have seen trees upwards of 100 feet high, and more than eight feet in diameter. It may be traced from this elevation to the perpetual snows, where it is not more than 4 inches in height. With these grow the Yews (*Saxe-Gothœa* and *Podocarpus nubigena*,) which are beautiful evergreen trees, and, as well as the others, afford excellent timber."

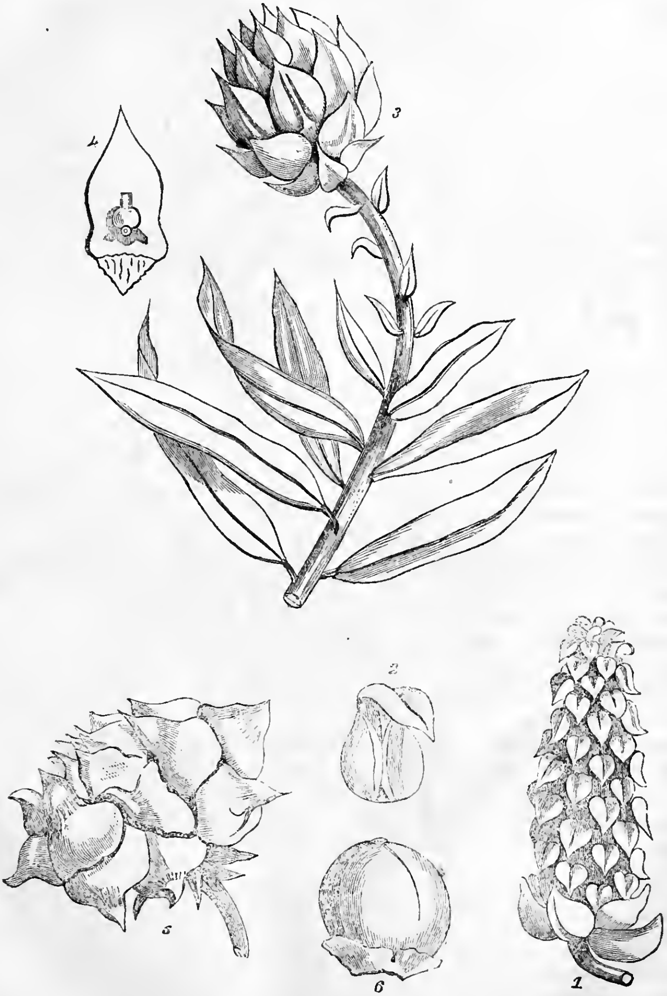


Fig. B. FRUCTIFICATION OF SAXE-GOTHÆA.

Saxe-Gothœa may be described as a genus with the male flowers of a Podocarp, the females of a Dammar, the fruit of a Juniper, the seed of a

Dacrydium, and the habit of a Yew. Its fleshy fruit, composed of consolidated scales, enclosing nut-like seed, and forming what is technically called a Galbulus, places it near Juniperus, from which it more especially differs in not being peltate, nor its fruit composed of a single whorl of perfect scales, and its ovule having two integuments intead of one. In the last respect it approaches Podocarpus, and especially Dacrydium; but the exterior integument of the seed is a ragged abortive membrane, enveloping the base only of the seed, instead of a well-defined cup. In a memorandum in my possession, by Sir William Hooker, I find the distinguished botanist comparing Saxe-Gothæa to a Podocarp with the flowers in a cone—a view which he was probably led to take by the condition of the ovule, and which may be regarded as the most philosophical mode of understanding the nature of this singular genus; to which Nageia may be said to be a slight approach, and which is not distinguishable by habit from a Podocarp.

In its systematic relations Saxe-Gothæa possesses great interest, forming as it does a direct transition from the one-flowered Taxads to the true imbricated Conifers, without, however, breaking down the boundary between those orders, as I understand them, but rather confirming the propriety of limiting the Coniferous orders to those genera which really bear cones instead of single naked seeds. In the language of some naturalists, Saxe-Gothæa would be called an osculant genus between Taxads and Conifers.

The leaves of this plant have altogether the size and general appearance of the English Yew (*Taxas baccata*); but they are glaucous underneath, except the midrib and two narrow stripes within the edges, which are a pale-green. The male flowers consist of spikes appearing at the ends of the branches, in a raceme more or less elongated. These spikes (fig. B, 1) grow from within a few concave acute scales, which form a kind of involucre at the base. Each male is a solitary membraneous anther, with a lanceolate, acuminate, reflexed appendage, and a pair of parallel cells opening longitudinally. The female flowers form a small, roundish, pedunculated, terminal, scaly imbricated cone (fig. B, 3.) The scales are fleshy, firm, lanceolate, and contracted at their base, where they unite into a solid center. All appear to be fertile, and to bear in a niche in the middle, where the contraction is a single inverted ovule (fig. B, 4.) The ovule is globular, with two integuments beyond the nucleus; the outer integument is loose and thin, and wraps round the ovule in such a way that its two edges cannot meet on the underside of the ovule;* the second integument is firm and fleshy; the nucleus is flask-shaped, and protrudes a fungous circular expansion through the foramen. The fruit (fig. B, 5) is formed by the consolidation of the free scales of the cone into a solid fleshy mass of a depressed form and very irregular surface, owing to many of the scales being abortive, and crushed by those whose seeds are able to swell; while the ends of the whole retain their original form somewhat, are free, rather spiny, and constitute so many tough, sharp tubercles. The seed (fig. B, 6) is a pale-brown, shining, ovate, brittle nut, with two very slight elevated lines, and a large irregular hilium;

* Since this was written, Sir W. Hooker has placed in my hands a sketch of the anatomy of the female flowers of Saxe-Gothæa, by Mr. B. Clark, who describes the ovule thus: "Its ovule has the same structure as that of Gnetum, as described by Mr. Griffith, viz.: it has three integuments; the internal protrudes, and forms a sort of stigma, not so obvious as in Gnetum; the external has constantly a fissure on its posterior, or rather inferior surface, which, however, does not close as in Gnetum when the ovule advances in growth, nor yet becomes succulent. Mr. Griffith describes the fissure in the external integument of Gnetum as constantly posterior; and if the ovules of the strobilus were erect, they would agree with Gnetum in this particular."

at the base it is invested with a short, thin, ragged membrane, which is the outer integument to its final condition. The nucleus lies half free in the interior, the fungous apex having shriveled up and disappeared.

Explanation of the Cuts.—A, a branch with male and female flowers, natural size; B, various details of the fructifications, more or less magnified; 1, a spike of male flowers; 2, a male or anther part; 3, a twig and young cone; 4, a scale seen from the inside with the inverted ovule, showing the fungous foramen protruding beyond the primine (outer integument); 5, a ripe fruit; 6, a seed showing the two slight elevations upon the surface, and the remains of the ragged primine at the base.—*Journal London Horticultural Society.*

Machinery and Metals at the Paris Exhibition.—An American iron-master in Paris informs us that the French made a great display of steam-engines, iron planing machines, large tools, marine propellers, etc., and that they were mostly defective—curious, but not like American machinery, which is simple. Some of them were monstrosities. For instance, their fine-finished steam engines were badly proportioned, with a small and large cylinder to do what one would accomplish better than two. Strange to say, their propeller engines are geared, even those used in the 100 gun war-steamers. The same is true of British engines for the same class of vessels. They say that direct action engines have such large journals that the wear of the boxes is too great, and they find it better to gear them. At the same time they admit that there is often a total smash of their cog-wheels.

The show of metals in the Exposition was very extensive. They were wonders in the way of the sizes of masses, bars and sheets of iron. The English seemed to excel here the other Europeans. Yet some French samples were very interesting and nearly equal to the English. I saw bars of railroad iron from 80 to 90 feet long, sheets 30 feet long, 6 feet wide, and half an inch thick. Some of the Prussian works in cast steel were wonderful. One mass weighed 11,000 pounds.

In coals there was no show worthy of an American's attention. The samples were poor and thin. There is no coal in Europe that will compare with ours. There were few ores like our magnetic varieties on exhibition. Ah! if we Americans only appreciated the elements of a national superiority, over all the people of the world, which God has planted in our soil, our climate, deep in our earth, and in our running waters, if we only used them with a wise national economy, how wealthy and how powerful we would be. By-the-by, have I said that neither the English nor the French can, as far as I have observed, teach us anything in the great business of making iron? —*Albany Eve. Jour.*

An Enormous Room.—The largest reading room in the world is now nearly completed, in the British Museum. It is circular, 140 feet in diameter, and 140 feet in height. The tables will accommodate nearly four hundred readers. The wrought iron book-cases will contain 102,000 volumes. The cost of the room will be about $300,000.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

SCYTHE MAKING.

BY DANIEL JAY SPRAGUE.

However much the advancement of mechanical arts may be indebted to the increase of knowledge which characterizes our age, and to its newly developed skill, invention, and application, it is not much less indebted to the comparatively modern institution of Division of Labor.

Every department of business which calls forth human industry, whether mechanical or professional, is subject to this improvement. We do not expect to see the same person officiating both in the capacity of clergyman and lawyer, or astronomer and geologist, philosopher and mechanic, no more in the mechanical than in the mental world, should a single individual be expected to fulfill the duties of all departments. One studies the laws of mechanics, another the application; one forms the surgeon's knife, another puts the same in use.

This is so common and so much in accordance with ones own sense of propriety and economy, that we do not observe in these arrangements of professions, studies, and employments, a division of labor. Yet its existence is none the less true.

The field of knowledge is so rich and boundless that we should esteem a man beside himself did he think to make any profession especially his own and yet to become an adept in every other. Life is too short and art too long for man to make himself master of all the avenues of knowledge. Did he consider this a necessary preparation for the duties of life, he would find his three score years and ten to have passed away long before he was fitted for the arena of action.

I knew of a gentleman who had graduated at two American colleges, and had for several years studied botany in this and foreign countries; yet, notwithstanding he was one of the first scholars of the age, said he did not consider himself competent to take the entire professorship of a single species of bulbous plants.

By division of labor the time which is lost in learning an entire department of manufacture is lessened, and the amount of productive labor which a man in his life may effect much increased.

Division of labor advances the quality of that which is produced, since continued attention to one department gives greater perfection in that department. It also, by confining ones attention to a single portion of manufacture, leads to new inventions to shorten the process, and save time, labor, and expense.

As in philosophical investigations, if one individual gives his whole mind and attention for years to a single department he attains a greater degree of knowledge, delves to a deeper, profounder depth, and brings from the more obscure veins richer thoughts than he who but skims the surface, or turns his mind now to this and now to that study; so in mechanics let a person give his attention to one operation, and he will not only perform that more perfectly, but will also suggest some method to shorten the time, or some invention by which machines shall perform the labor of the hands, and thus, perhaps, will open a new field of employment to other individuals. The adoption of the principles of division of labor has been for years past continually on the increase. The pin, the needle, the lock, and the loom, though formerly each was produced by the labor of a single individual, must now pass through its score or more hands before they are finished and prepared for use.

Thus, by an instrumentality which at first thought may appear comparatively trivial, great results in the mechanical arts are with ease acccomplished, and each new invention or operation becomes a fresh testimonial that ours is an age of progress.

I have been led to these remarks on division of labor by recently noticing a practical application of the principles to the manufacture of scythes, by A. V. Blanchard, of Palmer, Mass. A partial description of the manufactory I will attempt to give:

The first process in scythe making is called the welding process; it consists of two pieces of steel, each of which is about three-fourths of an inch wide and three inches long, the one of cast-steel, for the back, to stiffen and give strength; the other of German steel for the edge. These are placed side by side, and folded in a piece of iron six inches in length and two in width; thus making the metal which constitutes one scythe to be a mass about three inches in length, two in width, and one and a half thick, weighing less than a pound.

Since a mass of these dimensions would be inconvenient and almost impossible to shape under the trip-hammer, which is the only kind used in forging the scythe, it is not cut from the bar of iron in which the steel is folded till it has first been drawn to about two feet in length, and is then in such a shape as can be conveniently handled.

This little rod of iron and steel is then passed in an exceedingly rough state to a second class of hands called the jointers. It is their duty to smooth it in a degree from the indentations of the first process under a lighter hammer and draw to about three feet in length, leaving the whole thickness equal to the back of the instrument when finished.

By the folding of the steel in the iron a twofold advantage is gained, viz., the steel and iron are more readily incorporated in one mass, and the steel is brought into the center of the scythe where it is needed, having the iron on both sides to give it shape and strength. Thus along the edge of the whole rod may be distinctly seen, by the difference of the metal, the steel inclosed by the iron. The upper corner of the rod is then cut off, making it slightly pointed, when it is ready for the third process called plaiting. This consists in drawing to a proper thinness the web, as it is called, which includes all except the back, and in shaping the back giving to it the form and curvature of the instrument, first suggestive of what is being constructed.

There must here be exercised no little skill to properly reduce the thickness of the metal and yet preserve the just relations throughout, since it might easily be distorted so that the steel would be almost entirely exposed, or separated from the iron, and consequently one part of the instrument might cut well and another part possess little of the cutting qualities.

When a proper thinness is attained the fitters curve the blade, which is the fourth process of manufacture, and it is ready for the next class of hands.

After plaiting and fitting, the back is set up. This is done by a singularly-contrived double hammer. It is so formed that the weightier part of the hammer, having its configurations reciprocal to those of the anvil, as it falls gives the particular inclination desired to the middle portion between the edge and the back, while another part, by the elevation of the first and by the motion of the beam to which the hammer is attached is drawn up, as it were, against the anvil, and thus turns up the back nearly at a right angle. By this means, from a flat bar of steel, that which seems to be the most difficult part in the construction of the scythe is accomplished by a single blow. This process in the manufacture is called, from the large share which it performs, the *finishing* process, since it nearly finishes the shape of the part between the heel and point. These yet remain straight.

The sixth process consists in finishing the point, twisting it up or down, as needs be, so that it shall be straight with the edge, and also in turning the heel and claw, by which it is fastened to the snath. The name of the manufacturer and the kind of scythe is then stamped on by the action of a single die. The scythe is now forged, and the shape complete.

Several attempts have been made to diminish the amount of labor and shorten the time required for the construction, but as yet none have proved successful. A gentleman is now studying to invent a machine by which these results shall be accomplished. His success or failure remains yet to be demonstrated.

The next process is hardening and tempering. In common usage these words have the same signification, whereas in reality their meaning is quite different. The hardening is effected by heating the scythe to a red heat, and then suddenly cooling by dropping into water. This makes the metal extremely hard and brittle. It is like glass, which, though much harder than our cutlery, has notwithstanding little of the cutting qualities. Therefore were they prepared for use in this condition, they would be of little value. They must be tempered, or, as the word itself denotes, *toughened*, so that the edge will not so easily break out.

After hardening, and before tempering, I noticed that the workman pounded the edge and broke from each scythe a small piece near the heel and point. The object of this, he said, was to see the steel and examine its quality. I learned also that the fineness of all steel depends not alone on the ore of which it was made, but upon the hammering and proper working of the metal. A good workman may obtain from poor ore as good and perhaps better metal than a poor workman can from the very best.

In manufacturing well-wrought steel, it is first heated to what is called white heat, and then hammered till cold. It is then heated a little more than red, and hammered till cold. Afterward it is heated again to a still lower degree, a cherry red or pink heat, and then hammered as before till cold; the number of different heats and hammerings giving to the metal its finer or coarser quality. Thus, thought I, not unfrequently is it with mankind—the best metal is that which has been the most pounded.

The process of hardening may be performed at any time, and requires comparatively but little skill; but tempering requires not only a good degree of knowledge of the art, for such it may be styled, but also much skill and experience, and is best accomplished in the night-time or in a dark room. Scythes are tempered by drawing them back and forth over a hot fire till the steel assumes a certain reddish tinge, readily discerned by the workman, though it cannot be easily described. They are then permitted gradually to cool, which fixes the temper a little lower than when first taken from the fire. The hardening process leaves the temper too high; the second heating draws down or lowers it.

Color is not the only test of temper, but it may be ascertained in many other ways. Sometimes they are heated to such a degree that when spit upon it will roll off like oil, without noise; or, when a drop of water is let fall upon it, there will be given a peculiar snapping sound. Another method is to heat to such a degree that oil, when poured on them, will just blaze. There are several other different modes, each perhaps peculiar to each mechanic.

The Damascus sword-blades, which have a world-wide celebrity for their temper or toughness, were tempered by heating them to a cherry red heat, and then were taken into the open air and swung around till cold. The quality of the steel, however, was also superior to that of the present day. It is related that the method in which this peculiar temper was first learned was, like very many other discoveries, entirely by accident.

An old commander, who had lost his sword in battle, went to the manufacturer, and in great haste ordered another to be immediately made. It was no sooner forged than he seized it, while yet hot, and mounting his steed, continually flourished the sword over his head till cold. It was afterwards found to possess a temper superior to any before made, and consequently suggested this mode of tempering, which subsequently became of very general use throughout that country.

There are many different kinds of temper, each tool requiring one of its own. To razors and surgical instruments is given the highest, to the axe and chisel a lower, and to springs the lowest. Scythes require a temper nearly as high as that of a razor, but the quality of the steel is inferior; consequently to obtain an even temper through the entire length of so long a cutting instrument is a labor demanding much care, and workmen of superior skill. Scythes also need a different edge from that of a razor. To the latter is given as smooth an edge as possible, while to the former is given a rough edge somewhat like that of a sickle. A fine smooth edge is not suitable for a scythe, since it soon becomes so gummed by the juices from the grass that it cannot cut. It is, however, requisite for all the finer cutlery, and for this reason, together with the fact that they contain but little metal, and are liable to become distorted if thrown into water, some are both hardened and tempered in oil.

A proper temper effects the ease and smoothness with which an instrument cuts. There are two cutting utensils, says the farmer, of which I wish the best quality, namely, a scythe and a razor, for to use a poor one of either kind well-nigh takes a man's life. The one draws the sweat, and the other draws the tears.

After the shaping and tempering of the scythe is finished, the next operation is to grind them. Each scythe is ground three times. They are first rough ground, as the workman terms it, which consists in bringing them to an edge; next they are ground across the edge, the object of which is to straighten it; lastly they are smooth ground, which exposes the steel about a quarter of an inch in width, the entire length of the instrument, and leaves them nearly to an edge, but not sharp enough to cut with careful handling. How many times, when a boy, have we sweated over the little rickety grindstone, and wished scythes might be bought at the stores sharp as razors. Often, too, have we looked at this exposed portion of the steel and remarked how large a proportion of the scythe was nothing but iron, then we moralized for a time on the deceitfulness of mankind, and finally summed up our little-satisfactory discourse with the not altogether pleasing inference that there were cheats in all trades but ours.

After grinding, the scythes are rinsed in lime-water to prevent rusting before they are finished. The stones used in grinding are of immense size, weighing from forty to fifty thousand pounds, and require six or eight men to hang them. When new, the stones just coming from the quarry are exceedingly rough, and therefore are turned off till smooth, after which the edge is filled with grooves about an eighth of an inch deep, crossing each other in every direction, the object of which is to make them wear away the steel more rapidly. When in use, these stones make nearly one hundred and eighty revolutions a minute. They are put in motion and brought to rest very gradually, since from the weight to be moved and the great momentum they acquire, there is danger of bursting. The strength of new stones is tested before they are used by putting them in rapid motion and leaving them for several hours.

With the greatest care and best regulations, stone will sometimes burst and fatal results follow, though the occurrence is by no means as frequent as formerly. This doubtless results in some degree from the exercise of greater care, also from the use of green instead of dry timber in fastening them to the axis, and improvements in the mode of fastening.

The grinding is the most unhealthy part of the manufactory of scythes. It is unhealthy because minute particles, worn from the stones and the steel, are thrown off into the air, which in the vicinity of the operator becomes saturated, as it were, with it, and in breathing they are inhaled and deposited upon the lungs. These particles are deposited so rapidly that it is estimated a man who constantly follows the business would not live more than from four to seven years. Indeed in some sections there is a disease which is called the grind-stone consumption. On the lungs of persons who have died of this disease have been found pieces of grit from the stones as large as a walnut. Many means have been tried, by applying bandages to the mouth and nostrils, and otherwise, to prevent the ingress of these particles, but with little advantage.

In grinding a man is required to have his whole weight upon the scythe, and it is thus liable to become twisted; therefore they are next examined and straightened, after which they are ready for the subsequent process of polishing.

This is done with the common emery-wheel, which is a wooden wheel prepared for the purpose by spreading upon it a coating of glue which is thickened with emery—a dark colored sand—and made to revolve at the rate of two thousand revolutions a minute.

Emery is one of the varieties of corundum, obtained for the most part from Europe, though an inferior quality has been obtained from our own country. It is found in Saxony, in a mountain called Ochsenkopf, near Schneeberg, and also in the islands of the Greek Archipelago.

After polishing, the scythes are painted or oiled, to prevent rusting, put up in dozen bundles, wrapped first in paper and then in straw and are prepared for market.

In this manufactory are annually produced about two thousand dozen of scythes, making use of about thirty tons of iron and one of steel. This iron is all obtained from Norway or Russia, it being thought superior to the American article.

For a time the Salisbury, Conn., iron was used, and considered equal to the imported, but in later years it has become inferior by the mixture of other ore. It is much to be regretted that, while the mines of the United States contain an abundance of superior ore our citizens should be compelled to patronize that of foreign countries, simply because of the frauds and deceits of money-catching producers at home.

In this establishment is annually consumed in carrying on its operations nearly ten thousand bushels of charcoal and fifty tons of anthracite coal

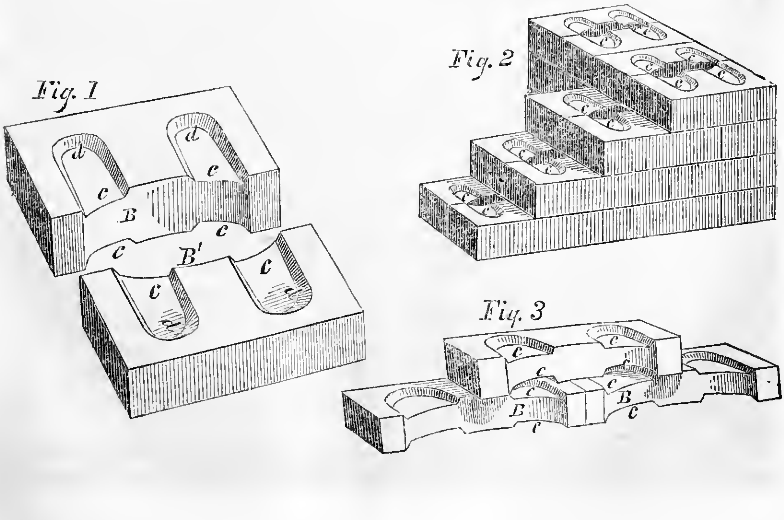
The wind for the five or six forges is supplied through a pipe little more than two inches in diameter, by a simple blow-wheel of only twenty inches driven by water so as to make sixteen hundred revolutions in a minute. Employment is here furnished to fifteen or twenty men, each of whom is paid by the dozen for the amount of labor performed. The welders, platers, and temperers each receive twenty-five cents a dozen, and can finish ten dozen a day, making their daily wages two dollars and a half. The grinders receive the same wages per dozen, but usually cannot finish so large a number as those in other departments.

Upon the whole the receipts of these workmen are even better than those of not a few professional men, and the inducements presented to the mechanic in our country are in a sense superior to those of the scholar. I have drawn at some length, this sketch, illustrative of the principles of division of labor and their application, believing that the time thus spent in the study of the practical to be of infinitely more value than that of mere abstract theories.

It is one thing to know that an article *is* produced and fitly prepared for use, but quite another to know *how* it was produced and rendered thus perfect. Of the latter kind of knowledge our world has far more need than the former.

NEW BUILDING BRICKS.

A PATENT has been secured by Mr. Edgar Conkling, of Cincinnati, Ohio, for a new form of brick. Several plans have been devised of late for securing strength to brick structures. Bricks of the ordinary form have, of necessity, a considerable space between them, filled by mortar, and yet exposed to the weather, and severely acted upon by rains and frosts. These bricks are so constructed, with apertures in the interior of the wall, though upon the surface of the brick, that the mortar is thoroughly defended from the force of storms, while it also gives an increased strength to the wall in resisting lateral



pressure. The wall thus built is perfectly solid, while the bricks are laid close to each other, and yet are firmly bound together by a sufficient quantity of mortar. Models of these bricks may be seen at this office.

In the annexed engravings, fig. 1 shows the form of the improved bricks separately; fig. 2 exhibits their appearance when laid in a wall; fig. 3 is a section of wall.

The inner edges of these bricks, B, are made a little concave. The surfaces are formed with cavities, *c*, the back parts of which are the deepest as at *d*. With these exceptions the surfaces are made flat in the usual manner, and come in contact like ordinary bricks. In laying a wall the top surface of each course is to be washed over, by means of a white-wash brush, with a thin coat of grouting or cement, or covered with a thin stratum of slush mortar. Grouting is then poured into the interstices, which in consequence of the openings formed by the cavities in the brick, has abundant opportunity to circulate among them, and forms the strongest kind of binding. In putting up house fronts, no pointing is required to be done, and no discoloration of the surface is occasioned. No more time is required in laying these bricks than the ordinary form, as Mr. Conkling informs us, while there may be a saving in the mortar. These bricks make a strong wall. It is conceded by some masons that a 12 inch grouted wall is equal to one of 16 inches mortar laid.

We are told also that there is no difficulty either in the molding, pressing or burning of these improved bricks, and no increase of expense. If the usual care is taken in sorting out from the kilns, the proper proportion of bricks that are sufficiently true and even for fronts will generally be found.

We commend this invention to the attention of builders, and shall be happy to aid them in making experiments with them to their satisfaction. We shall probably have more to say of these bricks hereafter.

ENGLISH PATENTS.

An Improved Mode of Preventing the Alteration of Bank Bills from one Denomination to Another.—One of the most common methods of counterfeiting bank notes or bills consists in erasing the figures which indicate the denomination of the note, by rubbing with the hand or otherwise, and reprinting or pasting upon the surface so prepared, other figures indicating a higher denomination. Thus, the word or figure "five" may be erased, and upon the surface which it occupied "fifty" or "one hundred" may be printed. Alterations of this description easily deceive the public, as, when well executed, they can be detected only by the initiated, and upon very close examination. To render this species of alteration impossible, by affording to the initiated a ready means of easily detecting it if practised, is the object of the present invention, which consists, in so imprinting into the body of the paper, the character or words which indicate the denomination of the note or bill, that it can only be erased by the total destruction of the paper, and cannot be replaced or imitated even if it were found possible to erase it. This is accomplished, either by a process analogous to that which is known in the manufacture of paper as "water-lining," or by printing the paper as it is manufactured, with the required characters or figures, by a peculiar process, which causes the color to penetrate entirely through the body of the bill or note, so that it cannot be removed without destroying the texture of the paper itself.

During the process of manufacturing the paper, and while yet in a soft pulpy state, it is imprinted with characters or letters indicating the denomination of the bill, "five" for a five pound note, "ten" for a ten pound note, and so on, for notes of other denominations. This may be accomplished in various ways, as follows: First, by water-lining in the ordinary way, with wire secured to the vellum, so arranged as to impress the required characters upon the paper; or the same effect may be produced by means of types, slightly raised upon the surface of a cylinder, which is caused to bear upon the web of paper while it is still soft and impressible, and thus indent the required characters into the body of the paper,—the velocity of the surface of the cylinder being exactly equal to that of the web of paper as it passes through the machine. To render the characters thus produced more apparent and striking, they may be imprinted upon the soft pulpy paper in colors, and in such a manner as will insure the color sinking deep into and entirely penetrating the body of the paper. This is readily accomplished by means of a cylinder, similar to that above described, having upon its surface points set close to each other in lines forming the desired figures, and sufficiently elevated to penetrate the paper whilst it is yet in a soft pulpy state. These points are charged with ink of the required color, which is transferred (as the cylinder revolves) to the paper, into the body of which it penetrates. The holes made by the points are instantly closed by the pressure rollers, to which the paper is afterwards subjected, and the coloring is thus caused to penetrate entirely through the note, and consequently cannot be removed for the fraudulent purpose before mentioned.

New mode of separating certain vegetable fibres from mixed fabrics for various useful purposes.—This invention, which has reference to the treatment of fabrics composed partly of animal and partly of vegetable fibres, as, for example, any fabrics containing woolen or silken filaments in connection with flax or cotton, has for its object to utilize the refuse of such fabrics, by separating the vegetable fibre therefrom in such manner that either the vegetable fibre or the animal fibre may be obtained in an integral or solid state, or a state of solution; or the nitrogen of the animal fibre may be evolved for any manufacturing purposes for which the fibres or nitrogen respectively have hitherto been or may be found serviceable. To this end the patentee avails himself of the properties of caustic alkalis and alkaline earths, on the one hand, for decomposing the animal matter in the fabrics without affecting the vegetable fibre, and of the property of acids, on the other hand, with which, by the assistance of heat, a disorganization of the vegetable, without injury to the animal fibre, is affected.

To separate the vegetable fibre, in an integral condition, from the mixed fabrics, by dissolving the animal matter, the fabric is simply boiled for a sufficient time in a solution of caustic alkali or alkaline earth; soda or lime is preferred for this purpose; but any other alkali or alkaline earth may be substituted with efficacy.

To separate the nitrogen of the animal fibre in the fabrics in a form available for manufacturing purposes, the material to be operated upon is placed in a close vessel of the kind ordinarily used in the manufacture of ammonia, together with such a quantity of alkali or alkaline earth as may be found sufficient to effect the decomposition of the animal matter. Heat is then applied to the mixture in any convenient manner, but preferably by passing steam, at a high pressure, through the whole mass of fabrics; and the ammoniacal vapor which is evolved by this process is condensed by passing it into an acid, and thus forming a sort of ammonia; or by passing it into water, and thus forming an ammoniacal liquor, from which the nitrogen may be readily separated.

In order to separate the animal matter from the fabrics in the form of a solid, the materials to be operated upon are placed, together with the alkali or alkaline earth, in an open vessel, and heated to about 180° Fahr. The resulting liquor is drawn off and treated with a stream of carbonic acid, or with a sufficient quantity of any other acid, to neutralize the alkali or alkaline earth. By the above process, the animal matter contained in the fabrics will be precipitated in the form of a fine powder, which may be collected in a filter and dried for use. The quantities of alkalis or alkaline earth necessary to effect the decomposition or solution of wool, will vary with the sample of rags to be operated on, because some rags contain more animal matter than others: but when the ordinary stuff-goods are employed, it may be said, in a general way, that from three to four cwts. of soda, or from six to seven cwts. of lime, will be required for the treatment of every ton of goods. When alkalis, in preference to alkaline earths, are employed for the treatment of the mixed fabrics, the said alkalis may be recovered for the purpose of obviating waste, by the process of evaporating the refuse liquor to dryness, and heating the sediment to a red heat, or by boiling the liquors with fat, so as to form the well-known compound soap. When the animal matters in the fabrics are required to be preserved intact, the separation is effected by wetting the material with a solution of an acid—being either a vegetable acid (which the patentee prefers using,) as tartaric or oxalic acid—or a mineral acid, as sulphuric, muriatic, or nitric acid, and heating the wetted mixture in a suitable chamber, by means of a jet of steam, or in any other suitable method, to the temperature of 300° Fahr.; by which process the vegetable fibre will, in a very short time, become disorganized and rotten, so that the animal fibre may readily be separated by any suitable mechanical contrivance; as, for instance, when the said animal fibre is woolen, the wool may be combed out by means of a carding machine, which will refuse the vegetable matter as dust.

Improvements in the Manufacture of Plain and Ornamental woven Fabrics.—This invention consists in constructing plain and ornamental woven fabrics with a warp or weft, or both warp and weft, composed of yarns or threads twisted in contrary directions, that is,—some of such yarns or threads being twisted in one direction, and the others of such yarns or threads in the contrary direction; and in giving to all or some of such yarns or threads more than the usual amount of twist; so that when moisture is applied to the fabrics, the action of such moisture on the yarns, twisted in manner aforesaid, may cause the same to curl, snarl, or shrink, and thereby produce fabrics similar to crape. Except in twisting the yarns or threads in manner aforesaid, they are spun and prepared in the usual way.

In carrying out their invention the patentees prefer to make use of a loom with a drop-box of the ordinary construction. When the weft of the cloth only is intended to consist of threads twisted in contrary directions, a warp made of yarn spun as usual is put into the loom, and two shuttles are required, each containing weft with sufficient twist—so that when moistened the twist shall cause the weft to shrink, snarl, or curl. The weft in one of the shuttles is twisted to the right hand, and that in the other to the left hand. In weaving such a cloth, it is preferred that two shoots of weft, twisted to the right hand, should be put into the cloth, and then two shoots of the weft twisted to the left hand, and so on alternately until the piece of fabric is completed. When the fabric is taken out of the loom it is in appearance like muslin, or any other plain fabric; but on the application of moisture, the curling or snarling of the weft causes the fabric to shrink or contract in width, and to assume an uneven surface, somewhat similar to that of crape. Modifications in the weaving of such cloth may be adopted according to the quality and the object for which the fabric may be required; thus, the proportions of the yarns or threads twisted in opposite directions may be varied, and three shuttles may be used; one containing ordinary weft yarns or threads, and the other two containing weft yarns or threads twisted in contrary directions, and with more than the usual amount of twist, as above described.

In weaving with three shuttles, the three shuttles may be thrown across the shed in any required succession, for the purpose of producing the desired effect. For instance, two picks may be given with the ordinary weft, then two with the right hand twisted weft, and then two with the left hand twisted weft. The warp of a cloth may also be composed of yarns or threads twisted in contrary directions in any desired proportion—the whole or some of them having more than the usual amount of twist. The weft of such a cloth may be composed of ordinary yarns or threads, and woven in the usual manner; or the weft may be composed of any of the combinations of yarns or threads hereinbefore described.

When fabrics have been woven according to this invention, they may be bleached, dyed, or printed in the ordinary manner, and the uneven surface craping or crimping is then produced by the action of the moisture which is necessarily imparted during either of the said processes; but if the yarns or threads of which the improved fabrics are woven have been previously bleached, dyed, or printed, it is evident that the uneven surface craping or crimping must then be produced by the direct application of moisture.

It may be desirable to stretch or distend the fabric, in order to obtain a plain surface for printing upon, and to keep the fabric stretched or distended until the colors printed upon it are dry. The uneven surface may then be produced by the application of moisture; by which means an ornamental fabric of a chené description is obtained. All or some of the warp or weft threads, or of both the warp and weft threads, may be colored or parti-colored before they are woven. The process of printing may also be performed on the uneven surface of the fabric. Fabrics may be woven, having a loose or floating back, or with black-lashed threads, and a crape face produced in the manner before described. The invention may be used in producing fabrics of cotton, silk, wool, worsted, or other fibrous material, or any combination of any two or more of such materials.

The patentees claim constructing the warp or weft, or both warp and weft, of woven textile fabrics, whether plain or ornamented, of yarns or threads twisted in contrary directions—the whole or part of such yarns or threads having more than the usual amount of twist for the purpose of producing fabrics having craped or crimped surfaces, in the manner described.

An Improved Construction of Spurs.—The object of this invention is so to construct spurs as to permit of their being fitted on to boot heels of various diameters. For this purpose the clasp of the spur is constructed of two arms, which are jointed to a central-threaded stem that carries the rowel of the spur. By the pressure on the inner ends of the arms of a nut or button which works upon the thread on this stem, the span of the arms is contracted, and the firm attachment of the spur to the heel of the boot is effected.

Improvements in the Treatment of Rags and other Goods formed partly of Wool and partly of Vegetable Fibres, in order to separate the Vegetable Fibres from them, and obtain the Wool in its pure state.—This invention applies to tissues or other fabrics (whether rags or pieces of new goods) composed partly of wool and partly of vegetable fibres, and consists in a mode of removing the vegetable from the woolen fibres, and thereby obtaining this latter in a suitable state for manufacturing purposes; the same, consequently, offers an easy mode for removing the threads from rags with which the seams, button-holes, or other parts have been sewn. The rags or other goods, after the same have been cleaned to a certain extent, by any of the known means, are put into an acid bath (whether cold or suitably heated,) containing one hundred parts (by measure) of water; from four to five parts of common sulphuric acid of commerce; and about one part of alcohol; and in this bath they are left as long as required for disintegrating sufficiently the vegetable fibres. The goods are then removed from the acid bath; after which, the greatest part of the liquid is pressed out, and the goods are dried by any suitable means—care being taken to spread them out as evenly as possible. When dried, they are submitted to a beating engine, or other contrivance, for removing the woolen fibres from the partly-decomposed vegetable fibres that might still adhere to them; after which the wool is to be thoroughly washed in water, or in a weak alkaline or soap bath, in order to deprive it of acid; it is then again dried, and in this state will be ready to be prepared for spinning or other manufacturing purposes.

The patentee claims the mode of submitting tissues or other fabrics composed partly of woolen and partly of vegetable fibres, to a bath of diluted sulphuric acid, to which a small portion of alcohol is added; by the action of which bath, and of the processes above described, the vegetable fibres are readily removed from the wool, and leave this latter in a state fit for being again employed for spinning or other manufacturing purposes.

An Improved Manufacture of bearings for Carriage Axles and Shafts of Machinery in General.—This invention relates to the manufacture of bearings from leather, to be used in place of brasses and other metallic bearing surfaces; the object being to render the bearing surfaces of blummer blocks and axle-boxes more durable and less costly than heretofore. In carrying out this invention, ox or cow hides are preferred, either tanned, tawed, or otherwise prepared; and for one class of bearing, the hides are cut up into pieces of suitable size for lapping half, or nearly half, round the journals to which they are to be applied. These pieces are compressed in half round moulds to bring them severally to shape; and the required thickness of bearing is obtained by cementing two, three, or more thicknesses of leather together, piling them in layers one above the other, and then submitting the combined thicknesses of leather to pressure in a suitably-shaped mould for the purpose of solidifying the same. These bearing surfaces may be backed or cased with metal.

Improvements in the Construction of Anchors.—This invention consists in forming the shank of the improved anchor of two plates of iron or other metal, kept apart throughout the whole or a portion only of their length, by means of a filling-piece of wood or other suitable material, or by means of suitable enlarged portions of the plates themselves. The shank is united to the arms either by a forelocked pin or pins, or by clinched-bolts or by screw-bolts, according as the arms are intended to be moveable about a center or otherwise. When the filling-piece is used, a metal collar is made to embrace the two plates and the filling-piece, which forms the shank, for the purpose of combining them more effectually at their junction with the arms, which may be made flat and of an uniform thickness, or of any other desired form.

Improvements in the Manufacture of Ornamental Paper and Paper Bands.—This invention relates, first, to the manufacture of paper, showing the pattern of a reticulated or woven fabric upon it. This ornamental appearance is obtained either by the introduction of lace, or other open woven fabric, into the body of the paper, during the process of manufacture, or by subjecting colored paper, either pulp-dyed or surface-colored, or enamelled, to great pressure between metallic-plates or rollers, while a piece of lace, or other fabric, of the pattern desired to be imparted to the paper, lies in contact therewith; whereby an indentation of the threads is produced on the surface of the paper.

The paper ornamented by the introduction of the open textile fabric during its manufacture, is also greatly strengthened thereby, and rendered particularly applicable to the manufacture of bands for wrapping up lace or other articles; its application to which manufacture forms the second part of the invention.

The web of bobbin-net or other open textile fabric, is introduced into the substance of paper, at the time of its manufacture from the pulp, in the following manner: A web of net, of any suitable width, and of any required or convenient length, having been obtained, it is wound upon a reel or cylinder, mounted near the paper-making machine, as hereafter described. The description of paper-making machine employed, is that known as the cylinder or air-paper machine, which was the subject of Letters Patent formerly granted to John Dickinson.

The second part of the invention relates to the production of various patterns, in imitation of lace and other textile fabrics, upon colored papers, whether pulp-dyed, surface-colored, or enamelled. For this purpose, the lace or other fabric, the pattern of which is required to be reproduced upon paper, is cut into pieces of a size rather larger than the sheets of colored paper to be operated upon, and stretched upon open frames, and satur ted with size or animal glue, which will enable them better to withstand the pressure to which they are to be subjected; when dry, they are cut to the size of the colored paper and applied to the surface of the same, and subjected to great pressure between flat or cylindrical metallic surfaces, as is commonly practiced in glazing or milling papers; and, in consequence, those parts of the paper which are in contact with the filaments of the lace or other ornamental textile fabric, are exposed to a greater pressure than those parts where no such filaments intervene between the pressing surfaces, and the coloring matter upon them becomes more condensed, and is consequently rendered darker; so that the pattern of the lace or other ornamental textile fabric is produced in a darker shade of the color with which the paper is tinted; and if the paper be held up to the light, these darker portions, which constitute the pattern, will (owing to their being more condensed) appear less opaque than the ground color. In thus ornamenting enamelled or surface-colored papers, it is preferred to apply the lace or ornamental textile fabric to the side of the paper which has not been colored.

Improvements in Metallic Pistons.—These improvements consist in a method by which the piston-rings of metallic pistons can be tightened up whenever required, without the labor of taking off the cylinder cover and junk-ring of the piston; at the same time insuring equal pressure upon each spring or other power required to force out the piston-rings during the process of tightening; to this end a plug is fitted into a round hole in the center of the piston, and grooved with the same number of grooves as there are springs in the piston. These grooves are not cut parallel with the outside of the plug, but deep at one end and run out to nothing at the other—forming an inclined plane or wedge; the bolts, which are connected to the springs, rest in these grooves. When the piston is first inserted, they are placed in the deepest part of the groove or bottom of the incline. Through the plug a screw is inserted, having a conical collar, which is fitted and ground into the inside of the junk-ring of the piston; a square head to the screw going through and extending about one-and-a-half inches outside of the junk-ring. In the center of the cylinder cover a hole is made for the insertion of a box spanner, which fits the head of the screw that extends out of the junk-ring. When the piston requires tightening up, the plug in the center of the piston is caused, by the spanner, to retire inwards, and the bolts attached to the springs are forced to a greater distance from the center of the piston, by the inclined grooves in the plug; thus tightening up the springs.

In vertical engines, or other machines where the piston is accessible only from the top, a center-screw and plug cannot be placed, but four or more screws, (according to the number of springs in the piston,) working in wedges, are inserted for tightening the rings, upon the same principle.

THE RAIL-BIRD.—ITS MIGRATIONS.

Much discussion has been elicited of late through the medium of the newspaper press in Virginia and elsewhere, in regard to the appearance and disappearance of the Sora, Ortlan, or Rail-bird, to and from the marshes and flats that line the rivers which empty their waters into the Atlantic. Those birds are quite numerous in the months of August and September. As far back as 1822, myself and several other youths conceived it rare sport to push one another about in small skiffs, waist-deep in water, among the reeds on the flats of the Delaware, at high water, to shoot rail, as we called them there. They were an easy prey, even to juvenile marksmen. On dark, cloudy days we found them much fleeter on the wing, requiring more skill in shooting them than on a clear day with bright sunshine.

As late as the year 1840 I found sufficient inducement for many days to follow rail shooting until the 5th of October, at which time they nearly disappeared from our flats, save a few that doubtless had been wounded by the legion of sportsmen constantly seeking their destruction.

A few days after the above period I started on a gunning and fishing excursion, near a hundred miles down the peninsula or eastern shore of Maryland, on the marshes and flats of the streams that empty their waters into the Chesapeake, south of the gunning locality of the Delaware. I was there somewhat surprised to find the rail quite plenty, but for a few days only. After remaining there for a week they were as scarce and hard to find as they were when I left the Delaware.

They take to flight in the night, as they cannot see by daylight. I have heard their cheerful voice in flocks over my head in the night, winging their way southward, no doubt alighting as they approach a suitable place, or as daylight appears, obstructing their vision. They keep down where it is somewhat dark, among the grass and reeds, hunting food, and their continuance in a place is governed by the quantity and quality of food, and the non-appearance of frost, which they appear to dislike and flee from.

Now there is no doubt that if I had continued my journey into the Carolinas, after their disappearance from the Chesapeake, I should have found them there,—migrating still further south as the frost approaches them, till they get beyond the reach of it, where they breed, and where their young are grown.

They commence their annual migrations northward in the night, passing from marsh to marsh along the rivers, and from river to river and bay to bay, reaching the middle States about the 1st of August.

THOMAS CHAMPION.

VOLCANIC ERUPTION

OF MAUNA LOA, IN THE SANDWICH ISLANDS.

[THE account of this eruption is too intensely interesting to be passed in silence. We extract liberal portions of a letter from Hilo, published in the *American Journal of the Arts and Sciences*, from an eye witness, Rev. Mr. Coan. He says:]

"For sixty-five days the great summit furnace on Mauna Loa has been in awful blast. Floods of burning desolation have swept wildly and widely over the top and down the sides of the mountain. The threatening stream has overcome every obstacle, winding its fiery way from its high source to the bases of 'the everlasting hills,' spreading in a molten sea over the plains—penetrating ancient forests—driving the bellowing herds, the wild goats and the affrighted birds before its lurid glare—consuming all vegetable life with its sulphurous breath, and leaving nothing but blackness and ruin in its track.

On the 12th of July I wrote you on the state of old Kilauea, and on the 27th of Sept., I announced to our mutual friend, Mr. Lyman, the fact and the state of our present eruption. Having made my quarterly pastoral tour, I started on the second instant for the scene and the source of the eruption which is the theme of this letter. Our party consisted of Lawrence M'Cully, Esq., a graduate of Yale and our present acting magistrate, four natives and myself. Taking the channel of the Wailuku (the stream which enters Hilo bay) as our track, we advanced with much toil through the thicket along its banks, about twelve miles, the first day. Here we rested at the roots of a large tree during the night. The next day we proceeded about twelve miles farther, for the most part along the bed of the stream, the water being low. During both of these days volcanic smoke had filled the forest and given the rays of the sun a yellow and baleful hue.

At night, when the shades gathered over those deep solitudes, unbroken except by the bellowing of the untamed bull, the barking of the wild dog, the grunt of the forest boar, the wing and the note of the restless bird, the chirping of the insect, the falling of a time-worn tree, the gurgling of the rill and the wild roar of the cataract, we made our little bed of ferns under the trunk of a prostrate tree, and here, for the first time, we found that the molten stream had passed us by, many miles, on its way toward Hilo. But as its track was several miles to the left of us, and as the jungle here was nearly impenetrable, we proceeded the next day up the stream, and at half-past one P. M., found ourselves fairly out of the forest, having been a little more than two and a half days in accomplishing this part of the tour.

I cannot stop to describe the beautiful and romantic scenery along our winding valley gorge, the cascades, basins, caves, and natural bridges of this wild and solitary stream. Nor can I speak of the velvet mosses, luxuriant creepers hanging in festoons, the ancient forest trees and other tropical glories which were mirrored in its limpid waters. We needed an artist and a naturalist to fix the glowing panorama, and to describe its flora and fauna. Wild cattle, dogs and hogs of the mountains have penetrated these forests and have appeared, of late, on the very confines of improvement within five miles of our bay.

But to proceed. When we emerged from the upper skirts of the woods on the third day, a dense fog obstructed our view of all distant objects. We encamped early in a cave, but during the night the stars came out and we could see the play of the volcanic fires from the summit to the base of the mountain and far down in the forest toward Hilo. The next morning, Friday, we left our cavern early, and at half-past seven, A.M. came to the smouldering lava-stream. From this time to ten A.M., we walked on the right border of the stream, when we crossed over to the opposite side. This occupied us an hour and a quarter, and we judged the stream to be three miles wide at this point, which, however, was one of its "*narrows.*" In some places it spread out into wide lakes and seas, apparently from five to eight miles broad, inclosing, as is usually the case, little islands not flooded by the fusion. Passing up the southern verge of the stream we found many trees felled by the igneous current, and lying crisped and half charred upon the stiffened and smoking lava. All this day we passed up the stream, sometimes on it and sometimes along its margin, as the one or the other track was the easier or the more direct. At night we slept upon the lava, above the line of vegetation, with the heavens for our canopy and the stars for our lamps. From this high watch-tower we could see the brilliant fire-works far above and far below us, as the dazzling fusion rushed down its burning duct, revealed here and there by an opening through its rocky roof, serving as a vent for the gases.

Early on Saturday, the 6th, we were ascending our rugged pathway amidst steam and smoke and heat which almost blinded and scathed us. At ten, we came to open orifices down which we looked into the fiery river which rushed furiously beneath our feet. Up to this we had come to no open lake or stream of active fusion. We had seen, in the night, many lights like street lamps glowing along the slope of the mountain at considerable distances from each other, while the stream made its way in a subterranean channel, traced only by these vents. From 10 A.M. and onward, these fiery vents were frequent, some of them measuring ten, twenty, fifty or one hundred feet in diameter. In one place only we saw the river uncovered for thirty rods and rushing down a declivity of from 10° to 25°. The scene was awful, the momentum incredible, the fusion perfect, (a white heat), and the velocity forty miles an hour. The banks on each side of this stream were red-hot, jagged and overhanging, adorned with burning stalactites and festooned with immense quantities of filamentose, or capiltary glass, called "Pele's hair." From this point to the summit crater all was inexpressibly interesting.

Valve after valve opened as we went up, out of which issued "fire and smoke and brimstone," and down which we looked as into the caverns of Pluto. The gases were so pungent that we had to use the greatest caution, approaching a stream or an orifice on the windward side and watching every change or gyration of the breeze. Sometimes whirlwinds would sweep along, loaded with deadly gases, and threatening the unwary traveler. After a hot and weary struggle over smoking masses of jagged scoria and slag, thrown in wild confusion into hills, cones and ridges, and spread out over vast fields, we came at 1 P.M. to the terminal or summit crater.

This we found to be a low, elongated cone, or rather a series of cones, standing over a great fissure in the mountain. Mounting to the crest of the highest cone, we expected to look down into a great sea of raging lavas, but instead of this the throat of the crater at the depth one hundred feet was clogged with scoria, cinders and ashes, through which the smoke and gases rushed up furiously from seams and holes. One orifice within this cone was about twenty feet in diameter, and was constantly sending up a dense column of blue and white smoke which rolled off in masses and spread over all that part of the mountain, darkening the sun and obscuring every object a few rods distant. So toppling was the crest of this cone, so great the heat, and so deadly the gases, that we could find no position where we could look down the throat or orifice; and could we have done so, it is not probable that we should have seen the deep fountain below us, as the lavas were forced up its horrid chimney from the burning bowels of the earth. I have no doubt that the point at which the igneous river flowed off in its lateral duct was at least five hundred, perhaps a thousand feet below us.

The summit cone which we ascended was about one hundred feet high, say five hundred feet long and three hundred broad at base.

Several other cones below us were of the same form and general character, presenting the appearance of smoking tumuli along the upper slope of the mountain. As you descend the mountain these cones become lower and less frequent, but here they are the rims or jagged jaws of those orifices through which we look into that subterranean tube of angry fusion which hurries with such fearful speed down the side of the mountain.

The molten stream first appears some ten miles below the fountain crater, and as we viewed it rushing out from beneath the black rocks, and, in the twinkling of an eye, diving again into its fiery den, it produced indescribable feelings of awe and dread.

This summit crater I estimate at twelve thousand feet elevation; the principal stream (there are many lesser and lateral ones) including all its windings, sixty miles long; average breadth, three miles; depth, from three to three hundred feet, according to the surface over which it flowed.

Late on Saturday afternoon we came a short distance down the mountain, when we encamped on the naked rocks until Monday.

Unwittingly we passed the last watering place in our ascent on Friday morning, at seven o'clock, and having only one quart in our canteen, this was our whole supply until 9 A.M. on Monday. There being six of us, we were soon reduced to a single spoonfull each, and this only at our meals. Our food being dry and hard, we suffered not a little for want of nature's beverage. The dew which fell upon our garments, our food-buckets and the rocks around us congealed and became frost or thin scales of ice, and from our oil-cloth, spread for the purpose, we collected a few spoonsfull of the latter, while our parched lips readily kissed the rocks to obtain a little moisture from the frost. There was snow on another part of the mountain, far below us, but it was not in our track. The fires had melted all in this region.

The present eruption is between those of 1843 and 1852, and from our high tower we could see them both and trace their windings.

Early on Monday we decamped and set our faces for Kilauea, distant some thirty-five miles, hoping by a forced march to reach it at night.

At eight A.M., we passed the seat of the grand eruption of 1852, and traveled for miles in its cinders. A little steam only issues from that cone whose awful throat, in 1852, sent up a column of glowing fusion to the height of a thousand feet.

At the base of this cone, on the opposite side, the ground was thickly powdered with a hoar frost, and so intense was our thirst that our whole party lay down together and eagerly licked it from the rocks and sand.

At nine we found water, for which we gave heartfelt thanks to our great Shepherd. At one P.M., a dense fog obscured our track, our guide lost his way, and we were obliged to encamp.

Early on Tuesday morning we were astir, wandering through jungle and over rough fields of scorie, when fortunately at half-past nine we found the only track which could lead us out of this cruel labyrinth.

At half-past one P.M., we reached old Kilauea, where we regaled ourselves on Ohelo berries, water, and such stores as were left in our larder.

The next day we explored Kilauea, made some measurements, collected specimens, etc., and on Thursday, the 11th inst., we reached Hilo, having been absent ten days. Kilauea is still very active, though not as intensely so as in months past.

On the mountain and in Kilauea I took the angles of several lava streams, one of 49°, another of 60°, and two of 80° each. Several streams on the mountain flowed down banks of scoria twenty-five and thirty feet high.

The fusion was complete—the streams cooled in a perfect state.

I also saw thin strata, say one inch thick or less, which had flowed down the face of perpendicular rocks, adhering to the rocks like paste, and thus cooling. Will you say that I spoil my demonstration by *proving too much*, when I assert that I saw more than on place where the fusion flowed on an angle of 95°—like the Indian's tree which grew so bolt upright that it "leaned the other way,"—thus flowing down a rock or bank until it came to where said rock *retreated*, it would follow the inward curve in a thin layer like molasses, adhering to the rock and thus cooling. It is therefore a fact capable of entire demonstration that our Hawaiian lavas flow freely down every slope, from an angle of 30′ to a perpendicular—in the latter case in a very thin layer of course. At one point we saw the great igneous river flowing like oil down an angle of 35°, and in another place it leaped a precipice, forming a brilliant cascade.

But I lack time and space to tell you half which we saw, and heard, and felt.

Hilo is now in a state of solemn and thoughtful suspense. The great summit fountain is still playing with fearful energy, and the devouring stream rushes madly down towards us. It is now about ten miles distant—nearly through the woods, following the right bank of the Wailuku, and heading directly for our bay.

Some are planning, some packing, many running to and fro, and all talking and conjecturing. Never was Hilo in such a state before. And all is hushed and solemn.

Oct. 22.—I have retained this letter until the present time, to watch the progress of the lava stream and to report more definitely; and I am happy I happy to say that as yet our fears have not been realized. The great summit crater still pours out its burning floods with unabated energy, and the atmosphere of the island is still loaded with smoke; everything looks dingy, often baleful. The stream of fusion still glows and groans in the forest between us and Mauna Loa; but its intensity seems a little abated and its progress retarded. Probably it is partially obstructed or diverted in its subterranean passage, while the basins, ravines, gorges, etc., it fills in the woods, together with the great forest which it must consume, render its progress very slow. Consequently the apprehensions of our people are much abated. There has been nothing like panic from the beginning, either among foreigners or natives; but there was an anxious look, an inquiring tone, a serious concern among all classes. These have greatly subsided; not that the fire is extinct, or that it is not nearer than it was two weeks ago; but simply that its progress for the last week has been almost imperceptible. Still it may come when least expected. Should it succeed in pushing through the woods it will then flow down on an angle of from 1° to 2° with little to obstruct it; or, should it dive into subterranean chambers, it may burst out unexpectedly near our shores.

It is now seventy-two days since the eruption commenced, and, as remarked before, the fountain is in full force. The matter disgorged is of the same general character as in former eruptions. We saw nothing new. Among the salts, sulphur and sulphate of lime, are the most abundant. They are scattered freely at several points along the line of flow.

There are now about a dozen open lakes of raging lavas in Kilauea, extending in two semi-circular-lines from the great fountain lake—*Halemaumau*—along the eastern and western sides of the crater, and evidently forming vents tc igneous subterranean canals which are carrying the incandescent floods from this great active vent to the northern parts of the crater, sometimes overflowing this region and sometimes heaving up the ponderous superincumbent strata, like the surface of an agitated ocean. The great dome over Halemaumau is swept away, and a raised and jagged rim from 20 to 60 feet high, now encircles it. The fusion may be 100 feet below. The movement of the streams northward is distinctly seen through the valves or vents mentioned above. The great central plateau of 200 feet elevation as mentioned in my last letter, is now nearly covered with fresh lava from the overflowing of its fiery zone—or of that half which surrounds it, and to which the recent action has been confined. This belt or lava zone has been raised from 100 to 200 feet since April; 1st, by uplifting forces; 2d, by successive overflowings.

The commencement of this eruption is mentioned in an earlier letter from

Mr. Coan, addressed to Rev. C. S. Lyman, of this place. It is dated Hilo, Sept. 27, 1855. He says:

"On the evening of the 11th of August, a small point, glowing like Sirius, was seen at the height of 12,000 feet on the northwestern slope of Mauna Loa. This radiant point rapidly expanded, throwing off corruscations of light until it looked like a full orbed sun." The sequel is described in the letter above.

The Colossal Washington Monument for America.—The London *Builder* gives the following account of an important step in the progress of this work:

The casting of the horse for this monument at Munich, is one of the great feats of modern foundry, as fifteen tons of bronze had to be melted and kept in a state of fluidity. For several days and nights previously a large fire was at these huge masses, which required to be stirred at times. When the bronze was liquified, an ultimate assay was made in a small trial cast; and to heighten the color some more copper was added. Successively all the chambers through which the metal had to flow in the form were cleared of the coal with which they had been kept warm, and the master examined all the air spiricles and the issues of the metal; the props of the tubes were then placed and every man had his duty and place assigned to him. Finally, the master, amid the intense expectation of the many art amateurs present, pronounced the words, "In the name of God," and then three mighty strokes opened the fiery gulf, out of which the glowing metal flowed in a circuit to the large form. The sight was magnificent, and in the little sea of fire stood the master, and gave his commands about the successive opening of the props. Hot vapor poured from the air spiracles; in the conduits, the metal boiled in waves; still no decision yet, as the influx of the bronze in the very veins of the figure could be but slow. At once flaming showers jumped out of the air conduits, and the master proclaimed the cast to have succeeded. A loud cheer followed, when the master approached Mr. Crawford, the artist of the Washington Monument, to congratulate him on this success. Another cheer was given to M. de Miller, the chief of the royal foundry of Munich, who has personally conducted the work.

Manufacture of Watches.—A watch is no longer, as it was formerly, an object of luxury, destined exclusively for the rich; it has become an article of the first necessity for every class in society, and as, together with the increased perfection of this article, its value has in the same time considerably diminished, it is evident that a common watch, which will exactly indicate the time of the day, is actually, by its low price, within the reach of almost every individual, who will likewise feel anxious to possess one.

For this reason, and in proportion as commercial and maritime relations are extended and emancipated from the trammels in which the great central marts of commerce have involved them, so will distant nations become civilized; and it may be fairly anticipated that the art of watch-making will form part of the great current of improvement.

The number of watches manufactured annually in Neufchatel may be calculated from 100,000 to 120,000, of which about 35,000 are in gold, and the rest in silver.

Now supposing the first on an average to be worth $30, and the others $4, it would represent a capital of $1,390,000, without taking into consideration the sale of clocks and instruments for watch-making, the amount of which is very large.

The United States of America consume the largest quantity of those watches. With the exception of gold and silver for the manufacture of the watch-cases, the other materials for the construction of the works of mechanism of the Neufchatel watches are of little value, consisting merely of a little brass or steel. The steel is imported from England, and is reckoned the best that can be procured; the brass is furnished by France.

With respect to gold and silver the inhabitants of Neufchatel have had for a long time no other resource but to melt current money, until they received gold from England, which the English merchants receive from California.

The number of workmen who are employed in watch making is estimated at from 18,000 to 20,000, but it is difficult to arrive at the exact number, as the population employed carry on the business in their own houses.

The spirit of adventure is very strong among the inhabitants of the Jura Mountains. A great many of them have traveled into very remote countries, whence some have returned with considerable fortunes.—*Merchant's Magazine.*

Ship Building in New-York.—The New-York *Courier & Enquirer* submits its annual statement of the business done in ship building at that port, which shows that the past has been a year of depression in the ship yards unexampled within a generation. Amongst the causes assigned for this are the European war, the falling off in the California and Australian trade, and the overbuilding in the last few years. Many master ship-builders had become bankrupt, owing not so much to the increased wages demanded by their workmen, as by the forfeitures to which they were subject in not getting their work completed in time, from the men not continuing steadily at their work. The following is a comparative return of the new ships launched in the present and past years:

	1854		1855	
	No.	Total Ton.	No.	Total Ton.
Steamships,	19	24,600	4	11,100
Other steam vessels,	23	5,967	4	2,200
Ships,	30	39,380	6	9,130
Barques,	7	3,600	7	3,376
Brigs,	8	2,551	3	1,275
Schooners, etc.,	21	5,292	13	3,786
Total,	108	81,390	37	29,867

There are also now on the stocks 17 vessels of all sorts, with an aggregate tonnage of 21,720 tons.

Experiments with Potatoes.—The question being often asked, which variety of potatoes is most profitable for field cultivation, on the 16th of last May I planted a field with eight kinds, in eight successive plats, the rows running through each successive plat—soil rather thin, manured alike lightly in the hill—crop moderate. On October 10th, dug twelve hills of each kind, counted and weighed. The following is the result:

Peachblow—180 tubers, weight 25 pounds—seed small, 2 tubers to each hill.

California—104 tubers, weight 24 pounds—seed large, cut in 6 to 8 pieces, 2 to each hill.

Torries—138 tubers, weight 23¾ pounds—seed large, cut in 8 pieces, 2 to each hill.

Black Mercers—220 tubers, weight 20 pounds—seed small, 2 to each hill.

English Whites—156 tubers, weight 18¼ pounds—seed small, 2 to each hill.

Merinos—100 tubers, weight 17 pounds—seeds large and cut.

Pinkeyes—116 tubers, weight 16½ pounds—seed small, 2 to each hill.

Lilacs—125 tubers, weight 16 pounds—seed small, 2 to each hill.

This is the result of one trial; other trials may produce different results, that is, lead to further experiments.—A. Yeomans, *in Country Gentleman.*

Iron Yards for Ships.—Some novelties are observable in the fitting out of the Australian Black Ball ship Schomberg. Her 'tween decks are fitted up with iron berths throughout, which have a pretty and light appearance. Her iron tanks are fit to carry either water or provisions, and while they are able to bear any weight placed upon them, they act as permanent ballasts for the ship. The foreyard of the vessel is a hollow iron tube, made of quarter inch plates. It is 96 feet in length, 23 inches at the slings! greatest circumference, 6¼ feet. It weighs 4 tons—a wooden spar same size would weigh 8½ tons—an important advantage in favor of the iron yard, especially when its durability is also taken into consideration. The first cost is a little more than wood.—*Liverpool Mail.*

Portrait of Charles I, by Velasques.—We have seldom been more favorably disappointed than we were on visiting this picture. It is undoubtedly an original. No copyist could make such a representation on canvass. It bears all the tests of a close or distinct view, of inversion and of the magnifier. The last, the magnifier, brings out its excellencies in a most wonderful manner. The eyes are eyes, the hair is hair, and the flesh is flesh. We have seen many of the works of the old masters, but we have never seen a portrait which bore more unequivocal and unquestionable evidence of the hand of a great master than does this. The proprietor is a gentleman not only of courteous manners but thoroughly versed in the history and condition of this department of art.

Products of the Industry of Boston.—The returns to the Secretary of State of the products of the Industry of Boston, for the year ending June 1, 1855, as compiled for the Boston Almanac, shows that iron, exclusive of that for nails, was manufactured to the value of $1,525,000; steam engines and boilers, $1,835,000; iron railing, iron fences, safes, etc., $562,500; glass-ware, $1,190,000; piano-fortes and other musical instruments, $1,984,700; watches, gold and silver ware, and jewelry, $617,000; saddles, trunks, harnesses, etc., $757,200; brushes, $225,000; upholstery, $1,550,800; sails, of American fabric, $431,172; sugar refined, $2,000,000; chair and cabinet ware, $1,068,800; tin ware, $416,500; linseed oil $500,000; camphene and burning fluid, $500,000; flour, $870,000; boots and shoes, $193,000; building stone, $323,000; marble prepared, $311,000; horses, (4,800), $761,625; cows, (132), $5,405; casks, $158,600; distilled liquors, $2,495,000; beer, $238,000; friction matches, $50,000; bakeries, $935,000; clothing, *eight million five hundred thousand dollars!*

Dentistry.—We have had occasion to notice several specimens of workmanship of this description, by Dr. A C. Castle, of 296 Fourth street, opposite Washington Square. He has great experience and practical skill, and there is no dentist for whose fidelity we should be more ready to indorse than his. Services of this kind are so difficult, and often expensive, and for a life-time, that it is of the greatest importance that they should be done well.

NEW BOOKS.

Our Cousin Veronica, or Scenes and Adventures over the Blue Ridge. By Mary Elizabeth Wormley. New-York: Bunce & Brother. 12mo. $1 25.

The author of "Amabel" has already the very highest of recommendations. This book is a fit companion for its predecessor. It is less highly wrought, but by no means dull or tame. The scene is principally in Virginia, partly in England. The descriptions are graphic and natural, and the story is capital. Miss Wormley must be set down, unquestionably, among the most gifted writers of fiction.

A Year Book of Agriculture; or, the Annual Agricultural Progress and Discovery for 1855 and 1856. By David H. Wells. 1856. Philadelphia: Childs & Peterson. 400 pages, 8vo.

This book is just what we anticipated on its announcement—a concise, clear statement and pescription of the various improvements in agriculture and its kindred sciences during the year, fully and well illustrated. It should be on every farmer's table, and carefully studied, for it is a work of great practical value.

Woodworth's Youth's Cabinet and Uncle Frank's Dollar Magazine. Edited by Francis C. Woodworth, assisted by "Francis Forrester" and "Aunt Sue."

The external appearance of this popular magazine is much in its favor. It is well printed on good paper, well stitched, etc. This encourages us to look inside, for we do like to see books well printed, especially those for children and youth. It aids in forming a good taste and neat habits. Mr. Woodworth is just the man to publish a journal of this sort. He has just the right bumps for it; and as he gives much time and careful attention to it, always interests his readers. He is well sustained also by assistants, and those who wish for a youth's magazine cannot do better than to order this forthwith.

$1 a year; 4 copies, $3 50; 5 copies, $4; 8 copies, $6. 118 Nassau st.

Sense and Sensibility. A Novel. By Miss Austen, author of Pride and Prejudice, etc. New-York: Bunce & Brother. 1856. 309 pages.

A novel of no little interest, of the fashion published in our youthful days, by a pleasant writer.

Camp Fires of the Red Men; or, a Hundred Years Ago. By R. Orton. Illustrated by Walcutt. New-York: J. C. Derby. 1855.

In this volume Mr. Orton takes some of the exciting scenes of Indian life in the last century to form the web of a curious romance. Those who are fond of this style of excitement will be entertained by it. It is well written and well executed.

Lanmere. By Mrs. Julia C. Dorr, author of "Farmingdale." New-York: Mason Brothers. 1856. 447 pages.

Those familiar with "Farmingdale" are not disappointed in this work. They expected a good book, and they have one of the very best stories we have ever seen. Little Bessie is brim full of interest, nothing exaggerated or disproportioned, but natural to the life. Mrs. Allison vexes us, while she is perfectly consistent throughout, and unhappily represents too many of great pretension. Debby is worth her weight in gold, while several other characters are drawn with great ability. The plot is intricate and ingenious, yet almost developes itself, and the work cannot fail to be read very extensively.

Jackson and New-Orleans; an Authentic Narrative of Memorable Achievements of the American Army under Gen. Jackson before New-Orleans in the winter of 1814 and 15. By Alexander Walker. New-York; J. C. Derby. 1856. 411 pages.

The campaigns of Gen. Jackson are brilliant specimens of generalship; and the Battle of New-Orleans is prominent over all others. This effort to extend the knowledge of this chapter of our history cannot fail to interest a multitude of readers, and will assist in disseminating a true understanding of the events of this period through the community. The volume is well executed.

NEW MUSIC.

Wm. Hall & Son have the following choice pieces among their extensive recent publications, viz.:

"The Dreams of Youth." Ballad by W. J. Robson. Composed by J. W. Cherry. Simple and very pretty.

"Florence Vane"—ballad. Composed by W. Vincent Wallace. Good of course, and not difficult.

Quadrilles for the piano-forte. Composed by Alphonse Leduc. These include "Fall of Sevastopol," "Battle of Inkerman," "Expedition to the Sea of Azoff," "Battle of Schernaya," and "Capture of the Malakoff." Good, and characteristic, but requiring a strong hand to do them justice.

List of Patents Issued

FROM TERMINATION OF PREVIOUS LIST TO JAN. 8.

Erastus Bigelow, Boston, improvement in looms for weaving pile fabrics.

Jonathan L. Booth, Cuyahoga Falls, O., improvement in grain-cleaning machines.

T. C. Bush, New-London, Conn., improved saw set.

Wm. E. Cooper, Dunkirk, improved nozzle for exhaust pipes of locomotives.

Frederic W. Capen, Newton, Mass., for improvement in paddle wheels.

Joseph C. Day, Hackettstown, N. J., improvement in fire-arms.

Spencer B. Driggs, Detroit, improvement in piano-fortes; dated December 11, 1855; patented in England, November 1, 1855.

John Gourlay, Ogdensburg, for adjustable crank-brace for augers.

Henry C. Green, Clarence, Wisconsin, improved automatic feed motion for saw-mills.

A. M George, New-York, for improvement in spike machines.

H. B. Horton, Akron, O., machine for registering music.

Wm. W. Johnson, Clifford, Pa., machine for planing felloes.

Eber Jones, Troy, improvement in mould for casting bells.

S. B. McCorkle, Greenville, Tenn., for improvement in machines for stuffing horse collars.

Thomas Danforth, Roxbury, for improvement in window shades.

Isaac Davis, Mechanicsburg, Ohio, for improvement in machinery for whipping hair.

Soranus Dunham, North Bridgewater, Mass., for improved method of hanging saws.

Henry F. and Louis A. Gossin, Thibodeaux, La., for improvement in steam boiler furnaces.

John Griffen, Safe Harbor, Pa., for improved manufacture of wrought iron cannon.

Bishop J. Harris, Auburn, Pa., for improved mode of dressing mill-stones for scouring and hulling buckwheat.

Reuben Hurd, Spring Hill, Ill., for improvement in seeding machines.

Jno. P. Hale, Kanawha Court House, Va., for improvement in apparatus for making salt.

Benj. Hill, Rochester, for improvement in paddle-wheels.

Westel W. Hurlbut, Boonville, for improved method of hanging circular saws.

Alexander Lightheiser, Reading, for improvement in machines for mincing meat.

Wm. H. Merrill, of Taunton, for improvement in hoisting blocks.

Charles Miller, Carroll Township, Pa., for improvement in hulling machines.

Henry M. Parkhurst, Perth Amboy, for improvement in proportional dividers.

Adolphe Pecoul, Marseilles, France, for combined log and sounding line.

Newell A. Prince, Brooklyn, for improvement in fountain pens.

Ezra Ripley, Troy, for improvement in mills for grinding grain, &c.

James Robb, Lewiston, Pa., for improvement in corn-shellers.

John P. Rollins, Boston, for improved extension bit.

E. K. Root, Hartford, Conn., for improvement in revolving fire-arms.

Geo. W. Smith, Mauch Chunk, for improvement in looms for weaving wire.

Gilbert Smith, Buttermilk Falls, for improvement in breach-loading fire-arms.

Thos. B. Stout, Keyport, N. J., for improvement in corn and cob mills.

Ancil Stickney, Concord, N. H., for improvement in hand seed planters.

Isaac D. Wheelock, Maysville, Wis., for improvement in sad iron heaters.

Wm. Wilber, New-Orleans, for improvement in hydraulic oil presses.

Charles H. Butterfield, Nashua, assignor to Amory Houghton, Boston, for improvement in guards for lanterns.

Charles Evans, Charleston, Mass., assignor to himself and George K. Goodwin, Roxbury, Mass., for improvement in revolving grates.

Issued from the United States Patent Office, for the week ending Jan. 1, 1856 each bearing that date.

Philo Brown, Waterbury, Conn., for improvement in furnace for soldering.

Nathan Chapman, Mystic River, Conn., for improved chain for power press.

James Cochrane, New-York, for improved method of operating and lubricating slide valves.

Richard M. Cole, Reading, Pa., for improvement in brick presses.

Geo. W. Cooper, Ogeechee, Ga., for improvement in ploughs.

Jean Pierre Molliere, Lyons, France, for improvement in machines for polishing and burnishing the edges of soles and heels of boots and shoes; dated Dec. 11, 1855; patented in France, Jan. 5, 1855.

Jean Pierre Molliere, Lyons, France, for improvement in machines for mounting the "uppers" of boots and shoes on lasts; dated Dec. 18, 1855; patented in France, August 19, 1854.

Oldin Nichols, Lowell, and Amni M. George, Nashua, for improvement in stone-dressing machines.

Daniel Parish, New-York, for improvement in instruments for modifying focal length of the eye.

Isaac N. Parker, Lewiston, Me., for improvement in mill spindle steps.

Samuel Pelton, New-Windsor, Md., for improvement in horse powers.

George B. Pullinger, Philadelphia, for improvement in automatic gate for railroad crossings.

John P. Robinson, Mattawan, for plane for finishing grooves in patterns, &c.

Joel Tiffany and Milo Harris, Painesville, Ohio, for shingle machine.

Thomas F. Thornton, Buffalo, for improvement in organ melodeons.

Hubert Schonacker, Detroit, for improved piano-fortes.

Julius E. Schwabe, New-York, for improvement in treating Galena or lead ore.

Eliphalet S. Scripture, Green Point, N. Y., for improvement in attaching hubs to axles.

Isaac Searles, Newark, for improvement in felting hat bodies.

Isaac Spaulding, Saratoga Springs, for improved saw set.

Samuel Shattuc, Henrietta, O., improved horse collar.

Isaac N. Singer, N. Y., improvement in sewing machines.

Jos. Weis, Bordentown, for improvement in suckers for pumps.

Thomas Bowles, New-York, assignor to Robert M. Patrick, of same place, for improvement in locks.

Jeremiah Burnite, Puseyville, Pa., assignor to himself and James Clark, of same place, for improved arrangements and combinations of machinery for regulating velocity of wind wheels.

John Healy, Bolton-le-Moors, England, assignor to James Bishop, New-Brunswick, N. J., for improvement in woven fabrics; dated Dec. 18, 1855; patented in England, Nov. 17, 1846.

Joseph B. Lancaster, administrator of John R. Lancaster, deceased, of Tampa, Florida, for improvement in cooking stoves.

Elijah Richmond, Abington, Mass., assignor to Ira Noyes, of same place, for improvement in lamp extinguishers.

Lewis C. Ashley, Troy, for improvement in candy mould apparatus.

Joseph Buhler, M.D., of New-York, for improvement in the pipes of a vapor bath.

Joseph Buhler, M.D., New-York, for improvement in the combination of injecting syringes,

Benijah J. Burnett, New-York, improvement in cranes.

George Byington, Rochester, for improvement in time indicators.

Bobert L. Currey, Philadelphia, improvement in double-acting steam brake.

Thomas Crane, Fort Atkinson, for improvement in rotary pumps.

Lebbeus Barnes, Islip Township, N. Y., for improvement in harvesters.

Chas. E. Brown, New-York, N. Y., for improved mode of hanging double doors.

Samuel W. Brown, Lowell, Mass., for improvement in constructing the bottoms of ships and other vessels.

Reuben Brady, New-York, N. Y., for improved machine for sheet metal bending.

Irah Chase, Jr., Boston, Mass., for improvement in coal scuttle covers.

Geo. St. Clarke, East Washington, N. H., for improvement in bee-hives.

Edgar Conkling, Cincinnati, O., for improvement in the form of building bricks.

Dominique Emile Coutaret, Boston, Mass., for improvement in disinfecting fecal matter.

Thos. Davidson, Jr., Kensington, Pa., for improvement in street paving machines.

Jacob Erdle, West Broomfield, N. Y., for improvement in filing saws.

Morris Falkeman, New-York, N. Y., Morris Pollak and Solomon Weiner, Hoboken, N. J., for improved watch key.

L. H. Gibbs, Troy, New-York, for improvement in breech-loading fire-arms.

Chas. Hammond, Philadelphia, Pa., for improvement in attaching hammer heads to shafts.

James Harrison, Jr., Milwaukie, Wis., for improvement in padlocks.

Samuel R. Jones, Baltimore, Md., for improvement in peg-cutters for boots and shoes.

Geo. L. Jenks, Providence, R. I., for improvement in machinery for making weavers' harness.

Jos. Johnson, New-Orleans, La., for improvement in manufacture of hats.

John F. Manahan, Lowell, Mass., for improved mode of burning wet fuel.

Hiram B. Musgrave, Cincinnati, Ohio, for improvement in gas cooking stoves.

Wm. C. Pancost, Geneva Township, Ohio, for improvement in cheese presses.

Chas. Phillips, Detroit, Mich., for improved machine for loading dirt cars.

Randal Pratt, Marple Township, Pa., for improvement in horse hay-rakes.

J. J. Savage, New-York, N. Y., for improvement in excavating machines.

Christopher D. Scropyan, New-Haven, Conn., for method of preventing bank notes, &c., from being counterfeited.

Gustavus Stone, Beloit, Wis., for improvement in blades of mowing machines.

Wm. Stoddard, Lowell, Mass., for mortising machine.

Abraham Straub, Milton, Pa., for improvement in machines for sawing marble obelisks.

John G. Snyder, Wheatfield, Pa., for improvement in seeding machines.

Abner Whitely, Springfield, Ohio, for improvement in candlesticks.

Wm. E. Wyche, Brookville, N. C., for improvement in cultivating ploughs.

Geo. W. N. Yost, Port Gibson, Miss., for improvement in corn harvesters.

James H. Merrill, Baltimore, Md., for improvement in fire-arms.

Henry Pease, Brockport, N. Y., assignor to himself and James Roby, of same place, for improvement in mowing machines.

John Reily, Hart Prairie, Wis., assignor to Talbot C. Doneman, Ottowa, Wis., John Heath, Sullivan, Wis., and John Reily, aforesaid, for improvement in harvesters.

John J. Crocker, Utica, for improvement in safety guard for railroad cars.

Benjamin Fenn, of Hartford, Ohio, for windmill.

Geo. P. Gordon, New-York, for improved printing press.

Benj. Groomes, Cumberland township, Pa., for improvement in repeating fire-arms.

Elijah Holmes, Lynn, Mass., for spoke shave.

Walter Hunt, New-York, for improvement in shirt collars.

Waterman B. Johnson, Sandwich, N. H., for improvement in machines for pegging boots and shoes.

Moses W. S. Kendall, Cincinnati, for improvement in smoke houses.

Phineas L. Slayton, Madison, Ind., for improvement in sewing machines.

Daniel Leibee, Middletown, Ohio, for improved gold amalgamator.

Charles N. Lewis, Seneca Falls, for improved pumps.

Orson E. Mallory, Castile, N. Y., for improved machine for making eave troughs.

John H. Manny, Brockford, Illinois, for improvement in harvesters.

Thomas R. Markillie, Winchester, Ill., for improved bed for lath sawing machines.

Joseph Marsh, Rochester, for improved sash-lock.

James Neal and Charles W. Emery, Boston, for pumps.

I. J. Oldis, Wheeler, N. Y., for improved pad-lock.

Jos. Peevy, Passadumbeag, Me., for improvement in hay and cotton presses.

Charles Robinson and Charles T. Chester, New-York, for improvement in automatic electrical circuit breakers.

Thomas Stubblefield, Columbus, Ga., for improvement in steam boiler alarms.

John C. Smith, Camden, N. J., for improvement in repeating magazine fire-arms.

Ira F. Thompson, New-York, for improvement in velocimeters for vessels.

Geo. W. N. Yost, of Port Gibson, for improvement in grain binders for harvesters.

Andrew H. Ward, Jr., Boston, for improvement in compositions for treating wool.

Hiram C. Wight, Worcester, for improved arrangement of feed rollers for planing machines.

Geo. Williamson, Brooklyn, for hydro-pneumatic pump for diving bells.

Joshua Turner, Jr., Charlestown, Mass., assignor to Warren Covell, Dedham, Mass., for improvement in the manufacture of leather shoe bindings.

Cullen Whipple, Providence, assignor to the New-England screw company, of same place, for improvement in screw machines.

Philo Marsh, South Adams, Mass., assignor to himself, and Shubael W. Howland, South Acton, Mass., for improvement in treating oils.

George A. Clarke, Philadelphia, assignor to Wm. Clarke of same place, for improvement in harvester raking apparatus.

RE-ISSUES.

Samuel Hurlbert, Ogdensburg, N. Y., for improvement in plows. Patented Sept. 20, 1853. Patented in Canada, Sept. 20, 1852.

Benj. F. Avery, Louisville, Ky., for improvement in plows.

N. Aubin, Albany, N. Y., for improvement in making illuminating gas.

The Plough, the Loom, and the Anvil.

Vol. VIII. MARCH, 1856. No. 9.

UNITED STATES AGRICULTURAL SOCIETY.

FOURTH ANNUAL MEETING.

The Society met at Washington in the Smithsonian Building at 10 o'clock on Wednesday morning, January 9th.

Hon. Marshal P. Wilder, of Massachusetts, the President, called the Society to order. Delegates presented their credentials from the Agricultural Societies of eighteen States and Territories. Between sixty and seventy delegates were present.

President Wilder then rose and delivered his annual address. He closed with an announcement of his intention to retire from the post of President.

B. B. French, Esq., Treasurer of the Society, made the following report:

Immediately on his election he had an interview with Wm. Selden, Esq., the former Treasurer, who handed over to him the books and papers of his office, and informed him that the only money in his hands was on deposit in the Bank of Selden, Withers & Co., then in the hands of Trustees, and consequently the funds were unavailable.

The sum on deposit is $2,149 42.

To secure to the Society the ultimate payment of the sum on deposit, Mr. Selden has placed in my hands, under the direction of the Society, three one-thousand dollar bonds of the "Allisonia Manufacturing Company," in Tennessee, as collateral security, for which I gave him a receipt, approved by the Executive Committee of the Society.

The Trustees of Selden, Withers & Co., have as yet made no dividend, although it is understood that they now have a considerable sum of money on hand subject to dividend, which but for a claim set up by the United States to be preferred over all other creditors, would be divided.

The only money that has come into my hands, except that received in Boston, amounts to $37 90.

During the five days of the Boston Exhibition I received as Treasurer $31,808 58. The amount paid out in premiums was $10,205 98. The other expenses amounted to $8,773 76; which, with the premiums, amounted to $19,069 74. Necessity compelling me to return to Washington, I passed over to the Pcesident all the money in my hands, who paid the remaining bills, amounting to $16,280 78, for which he has returned me vouchers.

In addition to the moneys paid over to the President by me, he received on account of sales, etc., $5,363 94, which, added to the sum received by me, makes an aggregate of $37,172 54; and, after deducting all the money paid out, leaves a balance of $1,822 12, which the President has paid over to me.

The entire available means now in my hands are $1,868 02.

I submit herewith my accounts current and all the vouchers.

I am informed by the President that there is still against the Society some bills for printing, and perhaps a few others, and there are premiums to the amount of $200 still unpaid, which, by the terms of the printed conditions, are forfeited, and probably will never be demanded.

The principal portion of the money in the Treasurer's hands is now on deposit in the "New-England Bank," Boston.

On motion, B. Perley Poore, of Massachusetts, D. Jay Browne, of the Patent-Office, and C. H. McCormick, of Illinois, were appointed Auditing Committee of the Treasurer's accounts.

On motion of Anthony Kimball, Esq., the President appointed a Nominating Committee, consisting of one from each State and Territory represented.

The President read a letter from Mayor Conrad, of Philadelphia, inclosing resolutions of the City Council, and requesting that the next annual exhibition of the Society be held in that city.

The proposition was accepted, and referred to the Executive Committee for the proper arrangement.

Discussion then ensued upon the expediency of holding exhibitions in those cities which would contribute the most to the treasury of the Society.

The President read a series of resolutions from the Illinois Legislature, asking appropriations from Congress for agricultural purposes.

After discussion these resolutions were referred to a select committee, consisting of Professor Henry, J. B. D. DeBow, Esq., and A. H. Byington, with authority to lay the subject before Congress.

D. Jay Browne, Esq., of the Patent-Office, then read the following paper:

ON THE IMPROVEMENT OF THE HORSE IN THE UNITED STATES.

The *Atlas Statique de la Production des Chevaux* gives some interesting details respecting the method of the "Administration" for obtaining the most correct information with regard to the number and quality of the various races of horses to be found in France. The Society or Administration for breeding this animal has divided that country into twenty-seven districts, which comprise two breeding establishments, twenty-four depots for stallions, and one for army horses. In order to arrive at an exact estimate of the equine population, persons especially chosen for the purpose were employed in 1850 to visit every stable, village, and canton in each arrondisement and department. The result of this census of horses demonstrates with sufficient clearness the progress and utility of these establishments. The advantages they afford in improving the breeds generally, as well as in giving increased value to the animals in a commercial point of view, are already appreciated by the French, and naturally lead to the suggestion of adopting a similar system in the United States for the improvement of the horses in our army, as well as for other purposes. If a depot for stallions of approved breeds were established by Government in each State and Territory in the Union for public use, free of charge, incalculable benefit would doubtless accrue to the country, and in less than ten years the improvement and increased value of the horse would be immense.

The question arises, how shall this change be brought about? Where are the horses to be obtained? At whose expense? And by whom shall it be accomplished? It has been suggested that it would very properly come under the direction of the War Department, with the view of providing for the future wants of the army, and that an adequate appropriation should be made by Congress for that purpose. With equal propriety it has been asserted that it could be done by the States themselves through their Agricultural Societies, Boards of Agriculture, etc. The breeding horses of one or both sexes could be imported in sufficient numbers and varieties from various parts of Europe, Northern Africa, and South America. In the selection of breeds, as to their adaptation to the economy, uses, and climate of the different sections of our country, it would require much investigation, practical knowledge, science, and discrimination. Whether such an enterprise can ever be brought about remains only for the public to decide.

The work referred to in the commencement was laid on the Secretary's table for inspection.

On motion the paper just read was ordered to be printed in the Secretary's transactions.

Capt. Van Vleit, United States Army, read a paper upon the Rocky Mountain Sheep.

Prof. Baird, of the Smithson Institution, exhibited specimens of the horns, hoofs, head, and hair of the Rocky Mountain sheep, and urged several reasons why the animal should be domesticated, stating that an appropriation of from $100 to $200 would induce some hunters about Fort Laramie to persevere in their efforts until several pairs of these animals could be obtained, which would be sufficient to warrant an attempt at their domestication.

Mr. D. Jay Browne spoke of the attempt to domesticate the buffalo and cross the breed with that of the tame cattle, and went into some details showing the doubtful success of the attempt. He moved to refer the whole subject to the Executive Committee.

Mr. B. P. Poore gave a description of an attempt his father made to domesticate imported sheep of a fine breed among the hills of Georgia. The result of the experiment was that most of the sheep died, and the shepherds who had been brought over to take care of them insisted that the reason of their death was that the country was too wild for them. Mr. Poore thought that if this country was too wild for the European sheep, it must be the very place in which the experiment of domesticating the mountain sheep would meet with the greatest success.

The paper of Capt. Van Vleit was ordered to be published, and Prof. Baird was requested to furnish a copy of his remarks on the subject for publication.

The project of the domestication of the Rocky Mountain sheep was referred to the Executive Committee.

D. Jay Browne, Esq., gave an account of a plan submitted to the Commissioner of Patents by a gentleman from Ohio to import for distribution large quantities of a superior kind Mediterranean wheat. This proposition could not be entertained, as the appropriation of Congress for that purpose had been exhausted. Mr. Browne therefore laid it before the Society, with the hope that some plan might be devised by which wheat might be imported by the Society and distributed all over the country in small quantities as an experiment, a report of the results to be forwarded to the Society.

A. Kimmel, Esq., thought that no subject was more important at this time than improvement in the quality of seed wheat and the selection of that kind that would yield the largest supply. The following resolutions were offered:

Whereas it has been represented that the wheat seed, procured from the shores of the Mediterranean and Black Seas, when cultivated in various sections of the United States, matures several days earlier than the ordinary varieties in use, and that said wheat not only proves to be more prolific in its yield, for the first few years at least, but possesses other valuable properties: Therefore, be it

Resolved, That the Executive Committee be empowered to import such quantities and varieties of said wheat as they may deem expedient, to be placed in proper hands for experiment, at least one bushel in a place, in every State and Territory, making it obligatory on the part of each experimentor to duly report to this Society the result.

Resolved, That said Committee be empowered, if thought expedient, to issue proposals for the importation of a cargo of wheat seed for the use of agricultural societies or individuals, on such terms or conditions as they may see fit to prescribe.

Mr. Kimmel enumerated the different kinds of foreign wheat of fine quality, and the ports at which they could be obtained with the greatest care and of the best quality. For a factor to travel to all these places would involve too much expense; and yet the different kinds of wheat could not be obtained at any other place. He therefore suggested that efforts be made to obtain these different kinds through the American Consuls residing in the countries in which the several kinds grow. In the course of his remarks he described an attempt he had made to domesticate a kind from a part of Europe ten degrees further north than the place in America where it was planted. The result was that in the course of a few years it had the same appearance as native wheat. Mr. Browne thought wheat should be brought from a warmer climate than that of the place where it was planted.

After some further discussion on this point by Mr. Kimmel, the whole subject was referred to the Executive Committee, and Mr. Browne was requested to reduce to writing the plan he had suggested for the use of the committee. The same request was made of Mr. Kimmel.

Prof. Jos. Henry laid upon the Secretary's table a very large crystal of rock salt, which had been sent to him from Salt Lake City. Its chief value was the power of transmitting all kinds of light like a prism. The specimen was received, and the Professor requested to reduce his remarks on the subject to writing, and hand them to the Secretary for publication.

The President then read a letter from Salt Lake City upon the capabilities of the surrounding soil, which letter was also ordered to be printed.

Reaper Case.—In the great reaper trial of McCormick against Manny, in the U. S. Circuit Court at Washington, Judge McLean has delivered the opinion of the Court in favor of Manny, and refused the injunction sought by McCormick for infringement of his patent.

NEW-HAMPSHIRE AGRICULTURAL SOCIETY—A GOOD MOVEMENT.

The State Society of New-Hampshire has commenced a capital plan of asking important questions of a selected correspondent in every town. In this, though they but follow the usage of the Patent-Office, they modify the inquiry to suit the latitude. The following is a list of the interrogatories:

I.

1. Are farmers in your town improving their farms, and their own social condition?
2. If so, in what respects, and by what agencies?
3. If not, what prevents?

II.

1. What amount of woodland is there in the town?
2. In what ratio is it diminishing?

III.

1. How much swamp land, in town, has been reclaimed within five years?
2. At what cost per acre?

IV.

1. What is the condition of pasture land?
2. What measures are adopted for the improvement of such land?

V.

1. What price, per month, is paid for farm labor through the year?
2. What during the summer and autumn—say for six months?
3. What per day, in haying and harvesting?
4. What per week, for domestic help?
5. Is it easy to obtain such help?
6. If not, why?
7. Is American or foreign help employed?
8. What proportion of each?

VI.

1. Is much attention given to the breeding of stock?
2. Who are some of the best stock-breeders in town?
3. Give such hints as may occur, in relation to the breeding of stock of all kinds?

VII.

1. What breeds of neat cattle are most common?
2. What are best for labor?
3. What for beef?
4. What for milk?
5. What breed combines the most desirable qualities, and is most profitable?
6. What crosses are most preferred?

VIII.

1. What breeds of sheep are kept?
2. What is their value per head?
3. How much wool do they yield annually?
4. What breed is most valuable?

IX.

1. What breeds of swine are most common?
2. Which is preferred, and why?
3. Can pork be raised with profit?

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

EDUCATION.

"FOREIGN commerce requires capital, and wealth gives power. Theorize as we will about the matter; it is so, and will be so. When wealth is controlled by a few, the few control the many. Wealth secures, or may secure, education; and knowledge is power. Nor is this all; "*for being educated they are naturally the associates of the members of the learned professions, and there is a common sympathy between them growing out of this state of things. Here is reason enough for the influence exerted in many communities by these classes.*"—*P., L. & A.* p. 322.

"The mission" of an agricultural paper is essentially to aid in educating the masses; not education as is too commonly comprehended in that term, for the mass deem being taught the elementaries, to be education. Could the writer believe "the mission" of an agricultural paper to be the mere increase of a crop, how to fatten a hog or a beef, to increase quantity or quality of wool—to make money; or comparisons between members of a family who should have a common hope, a common good at heart, he would at once cease the labors of a quarter of a century, break his pen, demolish his inkstand, and turn over this missionary work to Wall street and the Shylocks whose whole study in life is cent per cent.

The merchant who owns a large capital, educated in head, and heart, and hands, who had a pious and devoted mother to pour into his infant heart "love to God and love to man" is bound to wield an influence little short of a king, and thus would show forth that "commerce is king." But unfortunately for the cause of true human progress, acquisition of property is regarded as the beaux ideal; the economy, the close trading, and the shaving of the millionaire is the picture set before young men; the education, if any, the comprehensive mind, far-seeing eye of these men are taken into count; the thousands who fell by the wayside whilst struggling to mount up to the height of Crœsus are not seen, but those only who have amassed are pointed to, and the young disciple of Mammon is bid God-speed.

If mothers were thoroughly educated, if parents and guardians would point to youth the bright examples who have secured the prize, we would soon have better days. Mothers having the care of the infant heart when it can be molded to high and holy aspirations should be eminently fitted to their task; by a thorough drilling, even as thorough as if they were to fill the sphere that God has alloted to man, because they prepare the material for the work. Parents and guardians who manage youth would do their duty better to put an example before their young charges—our future men—whom by following they could not err. For instance, Mr. ———, who at his home is a kind father, husband, friend, neighbor, one who spends his evenings with his family or in study; one who is ready to aid the needy, has a heart open to the wants of our race, one who is faithful in the discharge of all duties whether to God, his country, or himself. Such an example may not all suit of his accumulating vast property, but it will be more certain.

If every business man would resolve, on setting out in life, to do his whole duty, we would have ninety-nine out of every hundred *well doing in the world*, instead of one to accumulate a Girard estate, and ninety-nine to fall by the wayside. The great point is, lay a foundation broad, strong and deep, by educating woman. Leave all the mere show and glitter to such of our race, whether those who have beards or not, who prefer such to the development of our race. With such a foundation, America may build a reputation that will be a lever to move the world. Labor as you will to educate man, and make of woman a mere machine to stitch silk and lace upon, a mere automaton to be wound up at the pleasure of a man, and to rattle away on wood, metal and ivory some times, and you can never place man in his proper position. The female sex educated for companions, associates, would so soften the harshness of man's nature that you would soon see more influence from education than for these hundred years past altogether. With respect, your fellow-citizen from the

SOUTHWARD.

THE SPIRIT OF SPECULATION—HOW TO CHECK IT.

THE more we look into the subject, the more enormous appears to us the wild and reckless spirit of speculation. It seems to pervade every department of trade. A recent exchange from the South asserts that speculators are controlling the prices of sugar in their first market. They buy up large quantities and withdraw most of it from the market, and then raise a hue and cry of scarcity, accomplishing their object throughout, as other gamblers do, by falsehood and fraud.

Another mode in which those men operate is set forth in the following paragraph, which occurs in a memorial of the sugar dealers of New-Orleans, under the date of Nov., 1855:

"Our market," say they, "is at all times liable to be influenced by combinations, got up in other cities as well as in New-Orleans. Mr. Champpnier has informed us, in his circular of the 16th inst., that in New-York, on the 3d inst., Refiners 'were scarcely in the market at all; some of them having lately sold refined sugars at the cost price of raw, and in same instances less.'

"Refiners do not make such sales without an object. Being made at that particular juncture, it is not unfair to suppose they were made for the purpose of influencing the market, to depress the price of raw sugar, of which they now have to purchase so largely. Had the crop been a large one they would no doubt have succeeded. But no system of misrepresentation can blind people to the diminution of the present crop. Speculators were prompt in taking all the sugars offered by those refiners, and prices went up again."

We are perfectly aware of the great difficulty of defending the public against such depredators. The enactment of special statutes to meet such necessities, is both hazardous and unpopular. But we are not quite sure that common law does not give us means of defense well worth attention. Different modes of operation have received appropriate names, while the end and aim may be the same. Thus:

Under the common law, *Forestalling the market* is an indictable offense. It consists "in buying or in contracting for any merchandise or victual coming in the way to market; or dissuading persons from bringing their goods or provisions there; or persuading them to enhance the price, when there; any of which practices make the market dearer to the fair trader."

Another form of a similar offence is *Regrating*, which is defined to be "the buying of corn or other dead victual, in any market, and selling again in the same market, or within four miles of the place." The gist of this offense consists in an intent to speculate on the price of food. Nor does it require any actual corrupt motive beyond this increase of price, by the mere purchase for making money and re-selling in the same market; indeed the reason assigned by Blackstone, why such purchase and re-sale is unlawful is because "every successive seller must have a successive profit."

But a third form of carrying on trade unlawfully describes more exactly that very form which is so extensively practised in this country at the present time. It is called *Engrossing*. This is described to be "the getting into one's possession or buying up large quantities of corn, or other dead victual with intent to sell them again." "This," says Blackstone, "must of course be injurious to the public, by putting it in the power of one or two rich men to raise the price of provisions at their own discretion."

This offense differs from monoplies, a fourth form of offense, inasmuch as monopolies extend to all branches of trade.

The penalty for violating the laws in these several modes, was by discretionary fine and imprisonment as a misdemeanor.

Nor is it marvellous that our ancestors should enact such laws. There is work enough for all without being obliged to filch from the pockets of the poor, as does every such speculator. Such middle men as enter into this business in the manner described, ought to be regarded as dishonest, fradulent, disreputable, like any other gamblers. They are gamblers. They do nothing to increase the value of the merchandise. They merely get possession, and oblige others, who might buy as well as they, and without their help, to pay them an exorbitant commission for doing what benefits no one. Why can not our butchers buy of the drovers without the interference of middle men? Why cannot our grocers buy flour without supporting expensive establishments for the benefit of those who buy only to make a great profit by selling to the grocer? Why is a class of men tolerated who make a great hue and cry through the country of "high prices and short supplies," merely to bring in a surplus and buy it up at a low rate, because there is a more liberal supply, and then keep out of the market those same supplies, except as they can sell them at the same excessive prices, while the poor go hungry?

We know not the suffering that results from this single operation, and the community are fleeced out of thousands and tens of thousands of dollars to feed luxuriously these lazy middle men, who will not earn an honest living. *Nine-tenths* of all the middle men of this city might be dispensed with, and the community suffer nothing, but save much.

Pomeroy, Ohio.—Within the past year, over 10,000,000 bushels of coal, 1,000,000 bushels of salt, and manufactured iron to the value of $150,000, have been shipped from Pomeroy and towns adjacent, to points below. The value of these mineral products is over $1,000,000, to say nothing of the agricultural productions.—*Meigs Co. Telegraph.*

THE CITY OF ST. PAUL.

A correspondent of the Chicago *Democrat* furnishes that paper an interesting account of this thriving city.

The city of St. Paul (not St. Paul's) is built on a series of tables or benches which run parallel with the river, the one rising above the other to a height of from forty to sixty feet, and extending probably two miles along the river, running back about the same distance. In early times the place went under the name of "Pig's Eye;" but a missionary came here and built a small church dedicated to St. Paul, and from that the city has been named. This "church," a little log house, is still standing, and was pointed out to me yesterday by Judge Tullis of this city. There it stands, a rude, rough log house, where first the red man of these regions heard preached the tidings of salvation. This is called the "nucleus" of St. Paul, and I observed that not a few chunks had been cut out of the logs by relic hunters who have visited this region.

The town plan of St. Paul was laid out in 1847, up to which time it could only claim to be a wilderness. In 1850 the population amounted to 1035, since which time it has rapidly increased, till now it numbers upwards of 7000. The business, however, transacted at St. Paul, is far greater in proportion than its population would justify. Situated as at present it virtually is, at the head of navigation, St. Paul is not only the Territorial capital, but the commercial center of Minnesota Territory. Everything for the back or upper country must of necessity pass through it, and that of itself gives it an advantage over any other city or town site in the Territory. True, there may and doubtless will be other large cities in Minnesota, but St. Paul has the lead at present, and there is no reason why it should not keep it.

There are several fair looking buildings in St. Paul, considering its age. The capitol is an imposing structure, built of brick manufactured here. There is also a well built hotel—the Winlow House—which has a commanding appearance. The majority of the houses, however, are built of wood.

There are three grist mills in operation, capable of turning out 1,500 bushels a day. There are also six or seven saw mills, all of which at present are running night and day.

The Forwarding and Commission business is very extensive, and likely to continue increasing. At present there are about a dozen houses devoted almost exclusively to it, who jointly do a yearly business amounting probably to half a million of dollars.

St. Paul has seven churches—First and Second Presbyterian, Methodist, Episcopal, Catholic, German, Methodist and Scandinavian—all of whom have stated pastors, with good congregations. The erections are not by any means extravagant or graceful in their appearance, but for a young city they are tolerably fair. The Catholics intend to commence a splendid Cathedral next year, one of their clergymen being at the present time in Europe collecting money for that purpose.

In educational matters, St. Paul is pretty fairly advanced. They have a charter for a college, to be called "The University of St. Paul," the preparatory department of which will commence soon. Besides this, there is the Baldwin school, founded by a gentleman of that name in Philadelphia. It was incorporated and commenced operations early in June, 1853. The

Female Department alone has 100 pupils. There are also three district schools, all of which I believe are well patronized.

Real estate is not so high proportionately as it is farther up the river. Property in the best business street may be had at from $90 to $125 per foot, and good residence lots may be had at from $500 to $1000, and before the boundary of the city limits is approached, they may be got at $150 or thereabouts. Within the last month more than $200,000 worth of property has changed hands. There are some nice little bargains made here occasionally by real estate operators.

St. Paul, as your readers are probably aware, is virtually at the head of navigation on the Mississippi. When the river is properly cleared of rocks above St. Paul, vessels will be able in high water to reach St. Anthony; but at all times navigation will be such a matter of uncertainty, that the latter place must, in my opinion, content itself to be the second or third city in the Territory. Whenever railroads get started here, then some other place may possibly rise up and complete with St. Paul; but even that is not likely.

The people of St. Paul are a reading people, if we were to judge from the number of newspapers published here. There are in this city four daily and five weekly papers; one having just been started in the German language.

What Railroads are doing for the West.—The official returns of the new census of Illinois have just been received. The entire population is over 1,300,000, which is a gain of about 50 per cent. upon the census of 1850. By comparing the increase through the several decades and semi-decades since the census has been taken, it will be seen that the gain has been much larger during the last five years than any former period:

From 1810 to 1820	the increase was	42,923
" 1820 to 1830	" "	102,234
" 1830 to 1835	" "	114,982
" 1835 to 1840	" "	204,756
" 1840 to 1845	" "	185,942
" 1845 to 1850	" "	189,345
" 1850 to 1855	" "	448,781

The railroad system has been developed in Illinois within the last five years, and one of the fruits, we see, has been to double the population. Add to this the improved society, the multiplied educational and moral influences, such as the newspapers, cheap books, etc., which follow population, and take advantage of all cheap methods of communication, and then one may begin to appreciate the advantages of the modern railway system as an engine of civilization.—*Exchange.*

Use of Railroads.—The Beloit *Journal* says that during the past week, red and white winter wheat sold in that village for $1 87 and $1 88. It adds: "We have conversed with men who say in Beloit in years gone by, *a bushel of wheat exchanged for a pound of saleratus!* Where now are the croakers who say that 'railroads do not benefit the farmer?'"

INDUSTRIAL STATISTICS.

Essex County, Massachusetts.—This is the most densely populated county in the State, except Suffolk, and this results from the variety of their pursuits. The Newburyport *Herald* publishes the following statements in reference to certain forms of industry.

The Boot and Shoe Business.—The following table shows the state of this interest in the several towns of this county:

Towns.	No. of males employed.	No. of females employed.	No. of pairs manufactured.	Value of manufactures.
Amesbury,	54	40	52,820	29,136
Andover,	76	34	80,736	55,787
Beverly,	511	300	288,600	171,000
Boxford,	50	47	61,550	52,550
Bradford,	12	11	20,075	1,000
Danvers,	1300	1500	1,330,000	1,000,000
Essex,	15	7	4,850	7,470
Georgetown,	356	239	339,540	336,320
Gloucester,	89	110	24,100	21,375
Groveland,	261	193	161,414	152,039
Hamilton,	93	56	23,000	8,200
Haverhill,	4087	2257	4,332,015	2,782,930
Ipswich,	78	60	42,000	69,000
Lawrence,	31	30	24,183	24,925
Lynn,	4545	11,021	9,275,593	4,165,529
Lynnfield,	41	39	33,000	31,200
Manchester,	1	2	2,500	1,200
Marblehead,	1080	1485	2,835,724	1,020,373
Methuen,	280	210	304,500	300,500
Middleton,	165	140	180,000	117,000
Nahant,				
Newbury,				
Newburyport,	361	268	428,400	398,600
N. Andover,	60	25	50,000	36,000
Rockport,	17		14,900	8,000
Rowley,	209	114	164,800	195,600
Salem,	128	148	139,250	96,000
Salisbury,	33	48	18,164	15,019
Saugus,	152	120	134,000	96,000
S. Danvers,	562	481	747,600	597,259
Swampscott,	76	141	20,600	49,300
Topsfield,	105	121	98,350	90,260
Wenham,	46	20	29,200	20,000
W. Newbury,	231	138	275,200	231,138
	15,105	19,395	21,540,664	$12,180,810

It will be seen from the above that the census returns more than 35,000 workers upon boots and shoes, manufacturing over 21,000,000 pairs, at a value exceeding $12,000 annually; and as large as that seems, it is not up to the facts. The census was taken in summer, when many of the shoemakers were fishing or farming who were enumerated as fishermen and farmers. The city of Newburyport would have given a hundred more in January than June; and Marblehead would have made a greater difference, and so would Beverly, of the fishing towns, to say nothing of the agricultural.

Two of the towns, it will be seen, have not been enumerated; one of them is Newbury, where probably there are two hundred males and females because they did not manufacture for themselves in the town. The valuation, too, we believe is much below the mark; everybody knows that valuation has to do with taxation, and they never state above but often below the actual worth.

Carriage Manufacturing in West Amesbury.—There are twenty establishments in West Amesbury for the manufacturing of carriages, that have an invested capital of a quarter of a million dollars and give constant employment to 280 hands. That business has within a few years built up one of the most thrifty villages there to be found in the country; and the turning out of $300,000 value in chaises, carriages, etc., places it first in that manufacture.

Nearly all the tanning and currying is done in Salem and Danvers, the comb-making in West Newbury, the shipbuilding in Newburyport, the construction of small vessels at Essex, the cod fishery in Beverly and Marblehead, the African trade in Salem, the freighting ships in Newburyport, and mackerel catching from Gloucester. People of the same business, modes of life and habits of thought, congregate together.

Shipbuilding.—Newburyport employs a large number of men in this form of trade. The statistics given are as follows:

Men employed, 270; daily wages average $1 50; about 35 men are employed in the joiner work, who receive $1 75 per day; 33 caulkers get $1 50 per day; 33 smiths average $1 50; ship's painters, about 20 hands, get $1 33 per day.

DIFFERENT KINDS OF FOWLS.

The following statements are from extensive raisers of poultry, and are worthy of the consideration of all interested in the subject:

The *Dorking* fowl, which some still attempt to bring forward as the best, has been found to be tender, and unfit for a general barn-yard fowl. The *Polands*, and *Black Spanish* are the same—good layers, but unfit for the table, when compared with some other breeds, and their young so tender as to be very troublesome to raise them. The *Creoles* or *Bolton Greys* are excellent layers; but owing to their small size can never be anything but a *fancy* fowl. "*Cochin China*" fowls are a humbug. There is no such breed, and those that were said to have been imported from Cochin China came from the city of Shanghai in China. They are a *Shanghai* fowl, with smooth legs. There are but few Shanghai fowls now existing in this country in a pure state; but those that have short legs, plump bodies, short tails, and weigh, hens, 8 lbs., and cocks 10 lbs., are a valuable fowl. Cinnamon colored hens, and red cocks are marks of genuine stock. There are some beautiful black Shanghais that are quite as valuable as those of a cinnamon color. The white Shanghais are a good fowl, but not as hardy as those of other colors. The *Chittagong* fowl is a great, unsightly bird; cocks of a mixed hue of black and white, hens grey, mottled, brown, etc. Indeed, it is difficult to find two fowls of the same color of this breed, and they have been crossed so extensively with the Brahma and other fowls, that the original stock is mostly merged in some other breed. This is the reason why so many ill-shaped, long-legged "*Brahma*" fowls are in the market, which in fact are generally one-half, or three-fourths Chittagongs. The pure *Brahma* fowl, we believe, has no superior in the world, in all that constitutes a hardy fowl, one of great size, yet not too large, with short legs, compact bodies, and great prolificness in eggs. This is our experience with them, after a trial of four years."—*Rural American.*

A correspondent of the Hartford (Conn.) *Courant* says:

"For several years past I have kept a few hens, and have, during the time, tried several varieties. I now have two varieties which are certainly superior to any other kind of which I have any personal knowledge; one is the Brahma Pootra—a large, handsome fowl—most excellent layers and easy to raise; and the other is a white China fowl, or white Shanghai, as some call them. This variety I value very highly, and do not believe, all things considered, that they can be surpassed, in everything that goes to make a handsome and profitable hen, by any other variety in America. I have had this kind in my possession for fourteen months, and they have laid every month during the time except when setting; and after hatching they would commence laying by the time the chickens were two or three weeks old. The flesh of these fowls is excellent, being much superior to the common Shanghais; their bodies are full and plump as a partridge.

"I have kept during the year ending Oct. 15th, 1855, from twelve to sixteen hens, of different varieties, from which I have had over 1700 eggs.

"I paid out during the year for food, $45. The eggs come to $43, leaving me for profit between 80 and 90 chickens, valued at from 25 to 75 cents each, which shows that there is some profit to be derived from the business, although kept shut up as mine have been.

"Feed.—Their food should be corn, or corn and oats, kept where they can have access to it all times; also fresh water daily. When cooped up they should have pulverized oyster shells and gravel, where they can obtain them when they require, and occasionally fresh meat; with the meat, bones and other scrapings from the table; and two or three times a week they should have raw vegetables, chopped fine, such as cabbage, onions, turnips, carrots, etc.; and in summer a daily supply of grass. It will be found beneficial to feed once a day with meal, wet up with warm water, especially in the winter season. It is useless to expect a large supply of eggs unless you feed well.

"Vermin.—The greatest nuisance to contend with, and which is the cause of more failures in the management of poultry than all other causes combined, are the vermin or hen lice that infest their roosts in warm weather. It is useless to expect profit or pleasure while these pests are allowed to increase. I have succeeded in keeping the roosts comparatively clear of them by once or twice a week smearing the roosts with a mixture of poor oil and spirits of turpentine. The nests should be cleared out quite often and kept clean, and a box of ashes or dry sand kept where the hens can roll in it. Use these means, and we can warrant comparative immunity from the vermin.

The Roup is often very fatal to poultry, more particularly where they are kept in large numbers, often 25 per cent. of the flock dying of this disease. It is very similar to malignant erysipelas, with congestion of the lungs in the human subject, the wind-pipe closing up, causing suffocation. The only effectual remedy we know of is, on the first appearance of the disease, to close all the doors and windows of the poultry house at night, when the fowls are on the roost, then burn within the building a few corn cobs, the smoke from which will fill the building, causing a constant snuffing or sneezing, which affords relief. Smoke from corn-cobs is recommended for chronic laryngitis in the human subject, and cases are given of persons being cured by being in the smoke watching its effects upon their poultry."

THE BEST CATTLE.

The following extracts are from the correspondents of the Report of the Patent-Office for 1854.

Mr. Lane, of Connecticut:—"I have considerable experience in raising both the imported and common breeds; and I think a given amount of food will produce more meat in the Durham than in the common animal, or any other."

Mr. Mondy, of Vermillion, Illinois:—"We have the Durhams in considerable numbers, and pure blood. In my opinion, a cross of three-quarters Durham and one-quarter ordinary blood makes the best stock. Our common stock is best for the Dairy."

Mr. Boone, of Lebanon, Iowa:—"Crosses of the Durham with the common cattle have proved advantageous for beef, milk and labor.

S. D. Martin, Pine Grove, Kentucky:—"The Short-horned cattle are the best for milk and beef of any I have ever had. I have owned several cows, each of which would give over thirty quarts of milk a day, having an average of ten per cent of cream. I always employ oxen on my farm, and have worked those of every breed we have among us. The Herefords are excellent workers and pull evenly. But they are harder to break in, and are apt to be more vicious than the Short-horned. I prefer the Short-horns for oxen for the following reasons:—they are gentle and docile, easily broken in and managed, strong and true in pulling, are not vicious among other stock, and when they have been worked five or six years are easily fitted for the butcher, who will pay a good price for them."

Mr. Fuller, of Winthrop, Maine:—"We have imported Durham, Hereford and Ayreshire, but grade Durhams have been the most used among us, and have given the best satisfaction for milk, flesh and labor."

Mr. Weston, of Bloomfield, Maine:—"The Herefords, Durhams and Ayreshire have been introduced, and their crosses upon our common stock have succeeded well. Hereford cows are the best milkers of the imported breeds; but our ordinary cows are as good milkers as any.

Mr. Potter, of Manchester, New-Hampshire:—"In the valley of the Merrimack pure Devons are more generally bred than any other blooded stock; but I am inclined to the opinion that they are becoming of less repute than formerly. In our hilly, mountainous region, their size forbids their making suitable oxen for work, and for being profitable for the shambles. So that aside from their capacity as milkers, which is a mooted point, their usefulness for labor, and their value for beef, the Devons must fall behind several other breeds."

Mr. Rouse, Paris Hill, New-York:—"Crosses between the Durham and our common stock are thought by many to make the best milkers; while others think a cross with the Devons fully equal, if not preferable. Cases are by no means rare in which cows of what is usually termed the 'native breed' are found equally as good milkers as any among the various kinds of imported stock. This remark may not be equally true, however, in regard to their aptness to take on fat."

Mr. Collins, of Sodus, New-York:—We prefer the Devons to any other breed; they are hardy and easily kept. The oxen are quick, active and docile, and the cows are excellent milkers, averaging two pounds of butter a day, each, with good feed."

Mr. Franklin, of Cuba, Ohio:—"The first crosses of the Durhams with our common stock are considered best for beef."

Mr. Smoot, Boone Court-House, Va.:—"I am of opinion that the Durhams crossed with the 'scrub cattle' are far better for this mountainous region than the full-blooded."

Mr. Wharton, Egypt, Texas:—"A few Durhams bulls were brought into this vicinity from the Western States. But, from the abundance of food, they soon became so large and strong as to be dangerous to our breeds, and were consequently shot."

PROPAGATION OF FISH;

WITH A DESCRIPTION OF THE CURIOUS OCEAN FISH-POND OF LOGAN, ON THE WEST COAST OF SCOTLAND.

BY CAPTAIN RALSTON.

Mr. Editor:—It is noticeable of fish that, although very polific of themselves, they would seem to be very unprolific of subject-matter, generally, whether as regards your own columns, or those of any others, your compeers. And yet, in relation to rural economics, the cultivation, so to speak, of some kinds of piscatory products can be rendered of no unworthy or unprofitable consideration. The artificial raising of fish, in ponds and streams, has come to attract much attention in Europe, and it may be in some instances, also, in this country, though unknown to the writer. The highly utilitarian objects which the subject embraces, have received new and suggestive features of interest, from the discovery of ready and sure means for the propagation and improvement of the finny tribes, and their multiplication at, well nigh, any one's will and pleasure. This is by collecting, at the proper time and season, the spawn of any desired kind of fish—say of salmon, trout, etc.,—and then netting some males of the same species, from whom the fluid of the milt, or the seminal emission, is to be gently squeezed upon the collected spawn, which is thereupon to be deposited in a protected place,—tank, pond, or stream,—under circumstances favorable to the development of the ova, and until the fry shall have become fitted to be turned into the still or running waters, intended to be stocked, as the case may be.

In France extensive and successful experiments have been made; and to some extent likewise in England. It was in Scotland, however, some twenty years ago, or so, that the germ of this idea had a practical origin, arising out of the circumstance that the salmon were fast diminishing and disappearing from many of those rivers where once they had so valuably abounded. It had long been an uncertain and disputed question how and where this noble fish was bred, and what was its appearance and character previous to its being known and distinguished as the Salmon, on its first return up the streams from the sea, under its piscatorial cognomen of (Scotticē) "grilse," (Hibernicē) "gillaroo," and (Anglicē) "a first year run fish." There was a small fish which swarmed in the salmon rivers of North Britain—the "Tweed," the "Tay," etc.,—called the "Par." It weighed from two or three, to six or seven ounces, and was a beautiful little species, resembling a trout, but having a single row of golden-red spots, evenly studded along each silvery side. As it was lively in the stream, and a delicious morsel on the table, it was angled for by man and boy at all points, and taken in vast numbers. The writer, when an urchin, placed at the grammar-school of an ancient town, situated on the banks of the beautiful Tweed, has caught in that river from ten to twelve dozen of Par with the fly-rod, day after day; and his twenty-nine school confreres were no less active in plying the murderous warfare. Nor he, nor they, nor any one divined that this little fish was assuredly the young salmon, and that every one which should have escaped to the sea would, in all likelihood, have returned again up stream, in a few months, a noble "grilse," of from four to nine lbs. of weight. It is remarkable how undeviatingly these fish return to those streams in which they have been spawned, and the manner in which they will stem currents and ascend falls of water to do so is extraordinary.

The forest or chase, lake or *mere* laws, of the olden times of England and Europe, were terribly and unjustly strained enactments against the rights of the many for the enjoyment of the few. Even the British game-laws of the present time retain objectional features. But the absence of *all* restrictive laws—no protection of those *ferae naturae* which are termed "game"—is a flagrant oversight and error, causing hurtful deprivation and loss to any and every community. In how many districts and regions, already, of this country, has not that magnificent quarry—the deer—disappeared from hill and forest, as has the winged and other smaller game from field and woodland, while trout of any worthy size are scant, or none, in so many streams?

As regards the Par, the poaching havoc, once wont with it, has been largely stayed. Random guesses and surmises of its being the fry of the salmon had long been rife enough, but unattended by assured conviction or knowledge of the fact, until the Duke of Athol caused some experiments to be made in the Tay, which resulted in conclusive evidence. After being taken with the net, numbers of Par were marked, and then again freed in the river; and in a few months afterwards many of the marked fish were caught, on their return up stream from the sea, grown to be "grilses," or young salmon. This experiment was tried on such a scale, and this for several seasons, as to present proofs beyond doubt or cavil by even the most skeptical. Following upon this was, first, the protection of the young fry from former unlimited destruction; and, next, the discovery and resort to artificial incubation, as a means to preserve the spawn itself from its numerous sources of waste and accident. Out of all this has gradually been developed the now eminently practical and successful artificial cultivation of fish, so to call it.

The description of one experiment, made in the Tay, at Perth, in Scotland, will best elucidate what has and can be accomplished in this way. Three hundred boxes were laid down, in twenty-five parallel rows, each box partly filled with clean gravel and pebbles. On the 23d Dec., 1853, 300,000 ova were deposited in these boxes. In June, 1854, the fry were admitted into the prepared pond, their average size being about one and a quarter inch in length. From their admission they were fed, daily, with boiled liver, rubbed small by the hand. By the spring of 1855 they had increased in size to three or four inches. In May they had begun to put on the migratory dress, or appearance, and on the 19th of that month the sluice communicating with the river was opened, and every facility given the piscatory brood to depart. None, however, manifested any disposition to issue forth until the 24th, when the larger or more mature of the smelts, after holding themselves detached from the others for several days, went off in a body. A series of similar emigrations took place, until full half the fry had left the pond and descended the sluice into the Tay. It had long been a subject of controversy whether the fry of the salmon assumed the migratory dress in the second or third year of their existence, and this favorable opportunity to decide the question was not overlooked.

In order to test the matter in the most effective manner, it was determined to mark a portion of the smelts in such a way as that they might easily be distinguished when returning as grilse. A temporary tank was constructed at the junction of the sluice with the Tay, and as the shoals successively left the pond, about one in every hundred was marked by the abscission of the second dorsal fin. A greater number were marked on the 29th of May than on any other day, in all about 1200 or 1300. The result proved equally satisfactory and curious. Within two months of their liberation twenty-two of the young fish so marked were recaptured, on their returning migration up the river, and proved the fact of their becoming grilse in the second year, as well as their rapid growth during their short sojourn in salt water. Those first taken weighed five, to five and a half pounds, increasing progressively to seven or eight pounds; whilst one taken on the 31st of July weighed nine and a half pounds. The wound caused by the process of marking was found to be covered by the skin, and in some there was a coating of scales over the part. This experiment demonstrates the practicability of thus rearing salmon, of marketable value, within twenty months from the deposition of the ova or spawn.

An incidental description of another mode of rearing fish—sea fish—may not, perhaps, be an unacceptable anecdote. An old brother officer of the writer, Colonel McDouall, late in command of the second regiment of Life Guards, is possessed of an estate called "Logan," situated in the Rhinns of Galloway, Wigtonshire, Scotland. It is about half way between Portpatrick and the mull of Galloway, and extends about a mile and a half down to that point of the Atlantic sea-board. Here Colonel McDouall has formed a fish-pond, which is perhaps unique as an adjunct to a gentleman's residence, and some account of it may interest piscatorial readers, and lovers of natural history generally.

This pond was originally a small, rocky basin of the coast, with which the sea communicated by means of a natural tunnel; but as the bottom was very little below the medium sea level, it was nearly dry at low water. It occurred to Colonel McDouall that, by increasing the size and depth of this basin, he might, at all times and seasons of the year, have a constant supply of sea-fish; and he blasted and quarried the rocks, both at the bottom and sides, until he had formed a circular excavation of about fifty feet in diameter, and of depth to give about eight feet of water at low tides, so that fish in the pond should always have an ample allowance of their native element. At flood, the water rises six feet in the pond, or to about fourteen feet in depth, in all, affording a fresh supply with every tide. There is a high wall, built on the upper edge of the rock, around the pond, to prevent poaching in this unusual "game preserve;" and a grating is fixed at the entrance from the tunnel, so as to bar the escape of the fish. Beneath high water mark the sea-weed clings to the rocks, giving them an aspect as picturesque as natural. A cottage, in which the female keeper and her son reside, adjoins the pond.

When the writer first visited this ocean-pond, the keeper unlocked a door, and he was advancing forward, when the appearance of a large eagle—the Osprey, or sea eagle—startled him, for its glaring eyes and outstretched pinions seemed actually to menace the visitant. But the startled arrest of step is only an involuntary tribute to the skill of the artist who has stuffed this air-cleaving fisher of the deep. The door opens on a small landing-place, at the top of a flight of steps, which lead to the water's edge, where there is a platform of rock, about two inches above the level of the water; and, below the ledge of which there is another ledge, some twelve inches or so under water. No sooner is any one's advance descried on the top of the stairs, than a general commotion ensues among the fish, and they rush towards the platform's edge, pushing and jostling in their eagerness to get to the place where they are usually fed, just as barn-door fowls do at the sight of the person who feeds them. A quantity of muscles, scalded for the purpose of getting them more easily from the shell, had been provided to feed the fish. On this kind of food the Cod, and other varieties kept in the pond, thrive amazingly; and after being a few weeks thus "stall-fed," so to term it, they greatly excel in flavor and juiciness their untamed brethren of the open sea. A muscle being held between the fingers, about two inches below the surface of the water, a cod of about ten pounds weight took it, having won the race by about a head from three or four more of its mates of similar dimensions, all of which rushed for the prize at the same time. It required some nerve to prevent oneself from jerking back the hand at the moment the cod, with widely-extended jaws, took the bait. Several attempts to get hold of one of the larger fish failed; but a capture of one of four or five pounds was made, which, after being raised out of the water, and leisurely inspected, was returned to his native element, at which he seemed not a little pleased. It was, again and again, unsuccessfully tried to get hold of one large fellow of twelve or thirteen pounds; but from his size and strength, he always got off; and though unable to throw *dust* in one's eyes, he revenged himself with such a whisk of his tail as sent the *salt water* flying. After taking a short run, he always returned to the ledge, nothing daunted by the several attempts to seize him. The keeper took one of the largest, about ten pounds weight, in her lap, and stroked and petted it, saying, "poor fellow, poor fellow," just as if it had been a child; and she opened its mouth and put in a muscle, which it swallowed with apparent *gusto*—at least a wriggle of the tail might be so interpreted—and she then put her prisoner back again. Several gradations of tameness was observable among the fish; some were quite tame, and came close up to the ledge; while another class kept parading from right to left, keeping about two or three yards off, but readily partaking of some food thrown to them; and a third class kept aloof altogether. Others kept secluded from sight, in the nooks and corners at the bottom of the pond, and these were perhaps the "Johnny Newcombes" of the place.

It is a curious physiological fact—fishiological, if it better please—that fish which remain long in this pond always become blind; and this was ascribed to insufficient shelter from the heat and glare of the sun, owing to the shallowness of the water, when compared to the depths of their ocean haunts. In this state they are fed by hand, being unable to compete for food with those whose sight is unimpaired. One large blind fellow called "Jack" was a great pet, and upon the keeper calling his name, he appeared to both hear and understand, for he came forward slowly, and when she held a muscle to his mouth, swallowed it.

At the time spoken of there were only three kinds of fish in the pond, viz., cod, flounder, and another small species; but salmon and other kinds are frequently preserved. The manner in which the stock is kept up is this: The son of the keeper goes out to sea in a boat having a tub, or well, and when he catches any fish that he thinks will do, he preserves them in the well, from whence he transfers them to the pond; where in due time—from a month to six weeks—they become tame. A curious scene occurred on one occasion when a mackerel was put in; there was a general chase after the unfortunate stranger, which only saved itself from being devoured by the larger and more ferocious of the denizens of the pond by running itself on a ledge of the rock. JOHN C. RALSTON.

INSECTS INJURIOUS TO VEGETATION.

LEPIDOPTERA.—We proceed to describe several individual species of the Papilio, (Butterfly,) of which the characteristics were given in our last number.

Papilio asterias, (of Cramer.) These insects are sometimes called Parsley Worms because they are fond of that plant, being often found on it, and also on the carrot, parsnip, celery, etc., in our gardens, and on those of the hemlock tribe of a wild growth. They appear in the Eastern States in the month of June. When first hatched they are only one-tenth of an inch in length, and are black, except a white band across their middle and a second on the tail. Their backs are covered with small projecting points. But at every successive moulting they change their appearance. The points, bands, and spots, (from which the points spring,) disappear, the skin becomes smooth, green, pale on the sides, and whitish beneath. They also have a pair of horns, (scent organs,) soft, orange colored, and divided from near its origin, like the letter Y. About the 20th of July they come to their full size—one and a half inches long, and are covered with alternate bands of black and yellow spots.

When they are full grown, they spin a little web, which they attach to the surface on which they rest, and entangle the hooks of their hindmost feet in it; and then, fastening themselves still further by a loop, into which they pass their heads, within twenty-four hours the caterpillar becomes a chrysalis, of a pale green or ash-gray color, with two short ear-like projections above the head, and slight prominence on its back. Remaining in this state from nine to fifteen days—(cold and wet weather prolonging the term,) the skin of the chrysalis bursts open, and a butterfly issues from it, of a black color, with a double row of yellow dots on the back. A band of yellow spots extends across the wings, and yellow spots also occur on its hind margin. The hind-wings are tailed. Seven blue spots occur behind the band across their wings, and near the hinder angle an eye-like spot of a yellow color. The female has fewer yellow spots than the male. The wings of these butterflies expand from three to four inches. In the month of July they are seen in great numbers in flower gardens, especially on the Phlox, (sweet scented,) and lay their eggs in July and August on this and other plants, placing them singly on the leaves and stems. They are soon hatched, and the caterpillars come to full size in September or early in October, suspend themselves, as before described—remaining so during the winter, and are transformed in May or June of the following year.

The most effectual mode of destroying these caterpillars is by gathering and crushing them.

Vanessa antiopa, (Linnæus.) This butterfly has wings of a purplish brown above, with a broad buff-yellow margin, and a row of pale blue spots near their inner edge. It is torpid during the winter, and comes out very early in the spring, confining itself to warm and sheltered spots. The caterpillars of this species are found on the poplar, willow, elm, and other early-budding trees. They are black and rough, with small white dots and a row of red dots on the top of the back. On each segment except the first are six or seven black, stiff and branching spines. They are about one and three-quarter inches long. They have been erroneously supposed to be venomous. They are very numerous.

The chrysalis is of a dark brown color, with large, tawny spots on the back. The chrysalis becomes a butterfly after ten or eleven days. In August a second brood is produced.

Vanessa interrogationis, (Fabricius,) Semicolon Butterfly. This first appears in May at the North, with second and third broods in August and September. The name is suggested by a fancied resemblance of a spot of pale gold color, on the middle of the underside of the hind-wings, to the mark which designates a question, but it more nearly resembles a semicolon. The upper side of the wings is a tawny orange, with brown spots on the hinder part, and black spots in the middle. The hind-wings of the male, except their base, are generally black above, and rusty red, or brown, beneath; the edges and the tails are glossed with reddish white.

The caterpillar is brown, variegated with pale yellow, or *vice versa*, with a yellowish line on each side of the body. Head, a rust red, with two black, branched spines. The spines of the body are pale yellow or brown, and tipped with black. It expands two and a half inches or more.

The chrysalis is ashen brown, head deeply notched, with two conical ears, a nose-like prominence on the thorax, and eight silvery spots on the back. The chrysalis period lasts from eleven to fourteen days.

These chrysalis have an enemy within them in the form of little maggots, which become four-winged flies, which make their escape by piercing holes through the sides of the chrysalis. They lay their eggs in the body of the caterpillar. Great numbers of them are destroyed in this manner.

Vanessa comma, Comma Butterfly. This insect is so named by Dr. Harris, who believed that the American butterfly differs materially from the European, with which it has been confounded. The hinder wings of this butterfly are not so deeply indented as those of the European after whom it has been named. The caterpillar lives upon the hop, and resembles the preceding. The chrysalis is a brownish gray, variegated with pale brown and furnished with golden spots.

The butterfly first appears in May, with successive broods in the summer and fall. It expands from two to two and a half inches.

PRODUCTS OF THE DAIRY IN NEW-YORK.

Our attention has been called to the omissions of the last census, in respect to the products of the dairy in this State, and to erroneous inferences that might be drawn from actual facts. It appears that in the State census of 1845 about a million cows were returned, and that the product of one-third was converted into cheese, the whole amount of which was 37,000 000 lbs., or about 110 lbs. to each cow. The other two-thirds were used for the production of butter, the amount of which was 80,000,000 lbs., or about 116 lbs. to each cow.

The number of cows returned in the census of 1850 was less than the number given in the State census by 60,000.

Assuming these returns as correct, the inference would be that the dairy products of this State were falling off, and the interest becoming less important. But look again, and discover that the product of each cow is much greater by the latter than by the former census, that of 1850 increases the amount of butter 264,361 lbs., and of cheese 12,991,437 lbs. Hence the legitimate inference from these figures would be that the quality of the cows was improving, and the interest made more valuable, with less cost of keeping. The value of this increase of products, with a diminished number of cows, was, at the market prices, $1,202,580 27.

But the figures of the census are not correct. It is true that dairymen have greatly increased the value of their cows. In Herkimer county the average of cheese per cow is said to have been 226 lbs., and of butter 350 lbs. per cow; and one dairy had given an average for three years of 680 lbs. per cow.

We have repeatedly stated that the most abundant milkers would not make the most butter, nor the best butter cows necessarily produce the greatest amount of cheese. These are points too much overlooked, but yet beginning to receive more general attention. From the Report of the State Society, from which these facts are gathered, we learn that in Oneida county, some years since, a bull of the Holderness breed was introduced, whose calves generally proved to be extraordinary milkers. One of these, giving from 25 to 32 quarts a day, was kept with a small cow of the Mohawk breed, giving only 12 to 14 quarts. The milk of both was mixed together, and churned with very unsatisfactory results. The milk of the two was then kept separate. The milk of the Mohawk produced the best quality of butter, nearly equal in quantity to that of the mixed milk of both cows, while it was impossible to make good butter from the Holderness. This cow was then placed among those used for the cheese dairy, and proved valuable. Such results wou'd be brought out, beyond controversy, if experiments like that here described were made by our farmers. No two cows, perhaps, produce milk exactly alike, though among many of them the difference may be unimportant. Who will give us further tests of this description?

Artistic Coloring.—With what colors would you paint a storm at sea? The wind *blew* and the waves *rose*. How should a secret be painted? In violet. How would you paint an absent-minded literary friend? In a brown study. Of what shade of white are snow-flakes? Flake-white. How would you paint the melancholy natives of Berlin? In Prussian blue.

SOILS—WHAT, AND HOW PREPARED FOR CROPS.

High authorities teach us that soils consist of the disintegrated particles of rocks. There is little practical importance in discussing the accuracy of this opinion, but it may be well enough, in passing, to inquire whether it is quite certain, after all, that this is not one of those stereotyped errors that truly scientific men have handed down from generation to generation. It may be true; but we are pretty sure that no one has ever proved it so. On the other hand, strong presumptive evidence to the contrary is obvious on all hands.

The earth being designed for the growth of plants, why should it have been necessary that every particle of it should first exist as part of solid rocks? Besides, what changes of any known rock will produce several varieties, such as some of the clays? We can conceive, indeed, of the changes necessary to produce such results, but we can scarcely believe that our soils have all gone through such steps ere they assumed their present condition. Take, for instance, pure pipe clay. Pure silicious rock must first have been disintegrated and dissolved, contemporaneously with precisely the same process with some aluminous rock, from which everything but alumina has been separated by elective affinity or otherwise, and, being quite free, the two are brought at the right moment into contact with each other, and been at least semi-crystalized. No other process occurs to us so simple as this. No rock consisting of clay, so far as we know, has ever been met with. So of other soils. The theory may be true, but it does not command our ready belief, nor has it claim for unqualified respect. Why may not the elements have been disturbed during the process of crystalization, and the cohesion, being thus broken, the cooling or hardening process have resulted in a loose granular substance, essentially as found at the present day? Has every particle of earth been through a grinding and fining process, so vigorous, so protracted as to reduce it to the exceeding minuteness which characterizes several kinds of soil? Besides, the immense amount of animal matter which has from century to century become a part of the superficial soil, by its numberless combinations with the mineral matters with which it has come in contact, must have very materially affected a large portion of the world's surface. Hence, if the position is true, with this exception, which is usually expressed, the exception is almost extensive enough to form the rule.

The soils of a given region are not of necessity of the same character with the rocks which belong to it. In all alluvial regions, for example, the soil may have been brought from very distant places, and hence the rocks of that region are no criterion of the elements of the soil. Even in mountainous districts the soil may have been formed, to some extent, by such processes, ere the surface was heaved up into those lofty eminences. We know not how else to explain the fact that such differences exist between the rocks and the soil, even in its natural state.

The rule, however, is otherwise. Generally soils and rocks each indicate something of the nature of the other.

Soils are fertile or barren, as they contain the elements existing in plants in a soluble state, or are destitute of one or more of them. Those elements may abound in it, but if they are in an insoluble state the soil is still barren.

Soils of the same chemical constituents vary in respect to fertility according to the fineness of their particles. This not only affects its solubility, but its capillary action. Next in importance to fineness of particle is a due degree of lightness or density. Repeated ploughing causes the particles to lie lightly and to favor evaporation. Hence, if too wet, the effect of such culture is favorable. If naturally dry, it may be either good or bad, according as the character of the sub-soil is porous or impervious to water. If the latter, both should be thoroughly opened or neither. We are not convinced that repeated ploughing has a very powerful influence in fining a soil. "Rocks" are not so easily acted upon. We incline rather to attribute the beneficial effects of frequent ploughing and the like to chemical agencies, facilities for increased energy being given by the mere change of its physical condition. We all know that some manures act in both these ways.

The mere absence of moisture may render fertile soils unproductive. Without moisture, solution, and of course germination, is impossible.

The carbonic acid of the atmosphere serves as a solvent to sundry elements that are not acted upon by water, and reduces them to a condition in which they may be dissolved by water. This is the explanation of some of the effects produced by certain mineral manures, and also by suffering lands to lie idle or fallow. The chemical agencies so inherent in the liquid and gaseous substances which abound in the earth and air, are so efficient that, whenever allowed to work without interruption, their effects are quite obvious.

Color, too, has an influence upon the fertility of soils—the darker shades absorbing a much greater amount of heat than the lighter. This has a double influence, the temperature having an intimate connection with the germination of seeds and the growth of plants, and also modifying the amount of moisture (another important agent) held in the soil. On the other hand, light colored soils retain the heat of the sun longer than the dark soils, as a bright tin coffee-pot retains the heat longer than when it is blackened by a coat of japan.

This fact is turned to a practical account by gardeners, in giving to the walls and fences at the foot of which they cultivate or on which they train tender plants, one or the other color, according to the specific effect they wish to produce. If they desire to concentrate the power of the sun to the greatest extent while it is above the horizon upon any such spot, they would paint everything white. If they would retain the heat of the sun to temper the chill of the night, these walls should be black.

These few suggestions may furnish a key to the general system of agriculture. To furnish elements that are wanting, and to render other elements, as yet useless, efficient, manures are applied. The elements that are wanting must be in the manure, or the manure must produce them by a chemical action on the soil. To regulate the amount of moisture, and to secure some other physical advantages, a good system of ploughing must be adopted. Nearly all the culture subsequent to sowing and planting is but the perfection or continuance of the same plan, accommodated to the change in the condition of the crops. The nature of the manures which should be applied, and the extent of culture that may be expedient, will vary with the crop and the conditions of the soil from which it is to be obtained.

A large share of the instruction contained in the books, is but the carrying out of these suggestions in detail, and with a variety of crops. Under such instruction no one would apply plaster to wet clay, for plaster does not contain the elements of which clay is deficient, nor is there anything in clay from which this substance can form them. But it is otherwise with sandy soils. The effect of plaster is favorable, because it furnishes useful elements, and also by its power of absorbing moisture and holding it within reach of the plant. Barn-yard manures contain the elements of plants more generally than any other fertilizer, and are therefore more universally efficient.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CORN—AND ITS FODDER.

Messrs Editors :—In pursuance of a promise made to the late John S. Skinner, Esq., I made the following experiment on corn and its fodder with my best attention in the summer and autumn of 1852. Having mislaid the memorandum of the results, I have been hindered from presenting them at an earlier day.

Stalks and their fodder below the ear per acre, 1502 pounds; stalks and their fodder above the ear, 814 pounds; husks, 407 pounds; cobs, 658 pounds; corn, 47 bushels.

The variety of corn planted was of the medium size, generally produced in the Middle and Southern States. The weight was ascertained in the dry state. Results, however, would be as variant as the varieties planted, and the growth of the corn under the influence of different seasons. If the wishes of my old friend shall subserve any useful purpose, I shall feel myself amply compensated for the trouble of making the experiment.

Respectfully yours, D. W. Naill.

Sams Creek, Md., Jan. 18, 1856.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE SUGAR BEET.

Mr. Editor :—Some years since the sugar beet was highly recommended for its saccharine properties and its great productiveness, and its extensive cultivation in France for sugar. It occurred to me that it might be excellent to raise for stock. I was at no small pains and cost to get some seed direct from France, known to be raised there from the genuine sugar beet. I sowed a pound on a well prepared field, which grew most luxuriantly, but was greatly disappointed on pulling them to find most of the tops had fallen off, and that full two-thirds of the solid part was *above ground*—some were knee-high! *This* part of course was tough, woody, and had little juice. Had I then known enough to have pulled them while growing, leaves and roots together, it would have furnished first rate feed for my cows. As it was, the crop paid well, though minus the leaves. I have since produced a very different article, by selecting, at digging time, those having the longest root *below* and the least above ground, and now I get a heavy crop, nearly all tender and juicy. This induced me to attempt improvement in other crops. My next experiment was made with English turnips. I found imported seed, especially for the garden, early turnips and radishes, far preferable to our own. The growth was more vigorous, plants tender, sweet, and free from worms. My object was to transform those large tops, standing in a *basin*, to a different proportion. For this I selected and set out for seed those turnips having the smallest tops and roots, growing on convex instead of concave extremes. The third year I found, in pulling, one that in shape resembled two tea-saucers put together—having a top covering a space less than a cent, and a single root the size of a pipe-stem more than a foot long, which I preserved with extreme caution, and raised from it nearly an ounce of seed, which I sowed in my potato-field, then sadly affected by the rot. The tops mostly died, and the ground being in good order, the turnips grew admirably, and I pulled seventy-five bushels!—quite uniform in size, few of them less than the admirable specimen, and, to my inexpressible gratification, with only the *one small root and top*,—in shape and flavor all I could wish.

You may be assured I set out a good share for seed, besides giving some to my neighbors to eat and to set out. It is to be regretted that so few are convinced of the importance of taking pains to raise or to procure the seed of improved plants. I have since changed the early June beet from the flat turnip shape to that of the Sweed turnip, yielding now one-third more weight of root, and being improved in its keeping properties. And lately I have much improved the Orange and white Belgian carrots, by selecting for seed only the longest, and such as have long roots of uniform size, (instead of short and tapering roots.) I now get handsome and heavy crops.

LANCASTER, MS., Jan. 26, 1856. Yours truly,

BENJAMIN WILLARD.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

ON THE GROWING OF WHEAT.

THE present high prices of flour give to the subject of wheat-growing peculiar importance. New-England farmers are beginning to inquire whether it is possible for them to produce their own wheat.

When the land was new, very little grain of any kind was imported. The consumption was comparatively small. But little was used for manufacturing purposes. The non-producing class was small, consequently the supply was fully equal to the demand.

But the condition of things is greatly changed. Manufacturing villages have sprung up as if by magic. The old cities have doubled, seven quadrupled, their population within a quarter of a century, and a host of new cities are following hard after them. The town has made rapid advances in wealth and population, while the country has remained almost stationary. While the producers remain about the same, the consumers have been rapidly multiplying. Consequently the demand now greatly exceeds the supply, and the disparity is every year becoming greater.

The manufacturing and commercial interests of New-England are fast getting ahead of her agriculture. No portion of the States has done more for improvement in agriculture than New-England; and no State in New-England more than Massachusetts. Yet Massachusetts does but little towards supplying the wants of her own citizens. The same is true of Connecticut and Rhode Island. The three northern States produce perhaps enough for their own consumption, or what is equivalent to it. Yet there are few families who do not depend upon the West or Canada for flour, and all the cities and large towns are indebted to Ohio or Maryland for corn.

Not only flour, but corn, rye, beef, pork and mutton, and butter and cheese, are now brought in great quantities from the West. Even in the Connecticut Valley, formerly regarded as the Egypt of New-England, where the sons of Jacob from the hill countries might always find grain, corn is now imported for consumption by the farmers themselves. New-Hampshire is emphatically a grazing State. Her granite hills furnish but few arable acres. Formerly she did much towards supplying Boston market with meats and butter and cheese. Now most of her stores are supplied, not only with western flour, but with Ohio pork and New-York butter and cheese.

There is certainly no cause of alarm in the fact that New-England is turning her attention to manufactures, nor that she procures the necessaries of life from her neighbors; provided she is able to pay for them. And if the farmers find it for their interest to buy their grain and devote their grounds to other crops, who is harmed thereby?

As a general rule, however, it is better that the farmer should produce what he needs for home consumption. I doubt not it would be better for the cotton planter to grow bread and meat enough for his own use, rather than devote all his grounds to cotton, and procure these necessaries from abroad. And for the New-England farmer it would be far better to produce as far as possible, the necessaries of life. He may obtain more money from tobacco, hops, or broom-corn, than from bread stuffs, but taking all things into the account, will he be better off?

For what he procures from abroad, he must pay not only the cost of producing, but a profit to the producer, and the expense of transportation, and contribute to the support of a whole troop of commission merchants. Nor is this all. The land is drained by this exchange process.

Tobacco and hops yield nothing to repay the soil; broom-corn but little. It should be a rule with the cultivator to supply the soil each year with a as much nutritive matter, or *pabulum*, as he in the form of crop, takes from it; or, if not every year, every circle of rotation in crop.

But to the question, can wheat be grown advantageously in New-England? I answer, yes. That there are obstacles cannot be denied. So of all crops. In virtue of the curse pronounced upon the earth, briars and thistles and weeds spring up in the path of the cultivator. By the sweat of his brow he is to procure his bread. There are difficulties in procuring the necessaries of life in all their forms and in all climates. The name of the enemies with which we have to contend is legion. In addition to those named to the first tiller of the soil, is the fickleness of the climate, want of adaptedness in the soil, and the myriads of insect tribes, which seem to constitute supernumerary curse, not known or dreamed of by those the cultivators of olden times.

In the best wheat-growing countries, difficulties are met with and overcome. So they may be here.

I know a farmer, living on the banks of the Connecticut, who has raised wheat successfully for more than twenty years in succession, with an average yield of twenty bushels per acre. He thinks there is no insurmountable difficulty in raising wheat; that with proper precautions it is as sure as any crop he raises, and pays as well.

What one man has done, others can do. I believe that every farmer in New-England who has sufficient tillage land, may produce his own wheat, and that it would be for his interest to do so.

In my experiments in wheat growing, I have succeded best, seeding after clover. Let the second crop, or after-math, be turned under, ploughing deep and laying the furrow flat, early in August. The first or second week in September, harrow thoroughly, reducing the surface to a fine tilth, and sow from one and a half to two bushels to the acre. Great care should be used in the selection of seed, to get the best variety and that which is entirely clean. The seed should be soaked in strong brine from twelve to twenty-four hours, and then it is well to roll it in gypsum. After sowing, the land should be harrowed again most thoroughly with a heavy drag, that the seed may be buried deep. Some insist that it should be sown in drills and covered with a plough. It may be well, but I have found no difficulty in covering with a harrow. Lime is indispensable to a healthy development of this plant. Therefore, if not found in the soil, it must be supplied. I think it well to apply a dressing of lime and ashes in about equal quantities, say ten bushels of the mixture to the acre. After another light harrowing, let the roller pass over it, and then leave it till spring.

As soon as the ground is sufficiently dry in spring, let it be again thoroughly harrowed. This spring harrowing I consider very beneficial to all winter grains. The surface of the ground becomes hardened by the rains and snows of autumn and winter to such a degree that the tender fibres of the roots with difficulty make their way in pursuit of nutriment.

No cultivator thinks of leaving his Indian corn without assistance. The ground is disturbed and made light about the plants a number of times during the season. The wheat plant is no less tender, and needs no less the fostering care of the cultivator.

There is no danger of injury by this process. Like the boy who had received a severe flagellation, the young plants seem to be "refreshed." Furthermore, many of the roots are divided, and thus the number is multiplied and more equally distributed.

Wheat may also be sown advantageously after corn, being careful to get it in early in October.

In the northern portion of New-England, farmers are now mostly in the practice of sowing wheat in the spring. The reason assigned is, that fall sown wheat is liable to winter-kill.

In November last I was in Wolfboro, N. H., which by the way is a beautiful village on the eastern shore of Lake Winnepisseogee, one of the most charmingly lovely sheets of water the eye of man ever rested upon, where I learned among other things, the following facts, which may interest your wheat-growing readers.

A. S. Avery, Esq., of Wolfboro, sowed a piece of ground with wheat on the 16th of June last. On the 16th of October he harvested it. Amount of seed per acre, one and a half bushels. Variety, Fife, (Russian.) Yield per acre, twenty-six bushel clean wheat, and about six bushels impure. The ground had been recently broken up from grass. Mr. Avery thinks this variety the best; has sown it four years; not affected by rust, mildew, smut blight, weavil, or any such thing. R. B. H.

POOR FARMERS.—HOW TO IMPROVE.

There are certain points in reference to which a farmer who is obliged to mourn over his poverty and his small crops ought to inquire, and inquire earnestly, for himself and for his family.

The first is, *is it an object to raise good crops?* This is the very first thing to be settled. Nor is it one which can be properly overlooked, even for a single season. The question is not, in fact, settled by one quarter of the farmers of this country. They know that good crops are good things; that large crops make heavy purses, after they have been gathered and sold; but they are equally conscious that it costs more money to cultivate land than to let it yield spontaneous crops. They know that much hard labor is required on many farms; and these and similar thoughts, like idle fancies, run through the brain, and lead to most indefinite and *unproductive* conclusions. These men are very far from being convinced that it is desirable *for them* to raise valuable crops. They would not hesitate, if the question submitted had reference to the harvesting of crops already grown. There is something so satisfactory, so perfectly delightful in standing on the borders of a field burdened with a rich harvest, waiting to be gathered in; there is so much pleasure in the consciousness of entire success in conducting the various processes that must be sought for with toil and patience for months, that even the seven sleepers would rouse themselves long enough to take possession of such a prize. But this is not the inquiry we have propounded.

We would ask such a farmer, addressing him individually, is the conviction clear in your own mind that it is important for you to raise large crops? There is more involved in this than appears on the surface.

Let us present the inquiry, not, as just intimated, while the golden crops are spread out at our feet, waiting only to be gathered by the husbandman, but as he sits around his family hearthstone, and the cold winds are heard without—or when, in the early spring, the coming seed-time reminds us of the conditions that must be fulfilled ere barns and granaries shall be filled with food for man and beast—in such circumstances do you wish, *earnestly*, for such harvests? Has anything more than vague dreams run through your brain in regard to this subject, without especial consideration, or earnest thought, or careful calculation? Have not the labor and the cost overshadowed the rich products? What is, in your case, the actual cause of your want of success? Give us, or rather give yourself, we would say to such persons, an honest confession, the decision of your own candid judgment. Are you persuaded even that you are now in a condition from which it is desirable that you should escape? That it now is, actually and truly, an object of great importance that you should become, in all respects, a successful farmer?

If we are not mistaken, there is no such clear, definite, fixed conviction in the minds of a large portion of our farming population as is required. They pass on in the current, at times discontented, sometimes anxious and perhaps somewhat envious, but seldom in a state of earnest and rational inquiry as to modes and means for essentially improving their own condition.

It is indispensable, in all such cases, to produce a deep and permanent conviction of the importance of the end to be gained. And how can this be done? *Can* these dry bones live?

The power to move these minds must come from within. No external agency is sufficient for this. But there is a process, not now suggested for the first time, but one which we have never drawn out at length, in which we have great confidence as a means of essentially improving the condition of the agricultural interest through the country. Let us illustrate by a story:

We were once a teacher in a select school, with some forty boys before us. Our predecessor, a most excellent man and most successful teacher, we looked up to him as we stood in his shadow, carefully described to us the weaknesses and faults of those whom he supposed would give us the most trouble. One of these we will call John. He had been an idle boy. He was lazy, indoors and out. He was thought stupid, and he certainly was a poor scholar, and "had worn out several pair of shoes," as the boys had it, in going to his teacher's study to learn the lessons he had previously neglected. We, of course, anticipated similar trials with him. But we took especial pains to "get the right side" of John. We treated him very kindly, and showed a disposition to help him whenever he met with any difficulty. He took hold at once and in earnest. He was in good classes, but the first day of our connection he came up with "perfect" in his lessons and his record of deportment. We were delighted. So was John. He went home happy. He had conquered his indolence. The victory was easier on the day following. The third and the fourth and fifth day did not find him careless. On Saturday he had secured the head of his class for the following week. He had triumphed indeed. The Saturday following was the same, and for weeks he did not miss in a lesson, nor get any marks for bad deportment. He had tasted the PLEASURE OF SUCCESS, and it was not to be thrown away for the vapidness and vexation of indolence.

In order to call forth the energies of a man, he must by some means be led to experience the difference between failure and success. Multitudes know the bitterness of the former, but they seem practically to assume that success, at least in this case, is impossible, or that it would not pay. They over-estimate the magnitude of obstacles and very much under-rate the benefits of success. To a considerable extent the obstacles that are conjured up are mere fictions, while the process and the result to which he comes, seem to him, at least, plausible.

A boy is shown a large sack of corn, and is directed to take that corn to a given place. He tugs at it a moment, and cannot move it, and therefore sits down and cries about it. He fails to do his task and gets punished. It never occurred to that boy that he might divide the quantity, carrying only a small part at a time, and by thus dividing the burden, accomplish the task. So our farmers, supposing that it would cost more by a hundred dollars a year to cultivate their small farm properly than they expend, and know that they cannot raise a quarter part of this, they suffer the whole thing to pass by. The hundred dollars cost seems indefinitely large, while the view of the benefits to be gained is very confused, and their value is considered so uncertain and indefinite that no real permanent desire is excited to obtain them.

Were we an agricultural missionary, going round among the unsuccessful of the craft, we would induce such to begin by trying improved processes in a single lot, and we would select one that bore but little, and was yet capable, without excessive labor or cost, of bearing much. Let the farmer see his plan successful; let him see that a different system of cultivation has actually paid its way; and, we believe, in nine cases out of ten, like our John, he would go on, and extend his improved plans till they covered his entire farm. There is nothing like actually tasting of the fruits of success, in any pursuit. Even the pain of broken bones or wounded limbs is stilled by the shout of victory, as the conqueror returns in triumph after a furious battle. So toil, constant, and severe, and protracted, is all forgotten while the rich harvests smile from stored garners, and the signs of coming winter call up no fears of want or suffering. We say therefore to such, *Try this small lot.* Make an experiment that will not cost too much, and learn how well it pays.

" But how shall we try? Our pockets are empty; our heaps of manure, *they are not* to be found; and we are already burdened with debt." Well, this is a hard case; but the snow is just going off, and though it is quite too late for the best preparation for the coming season, we can do something. Let us see.

There are certain fertilizers which are at the command of all, and which pay well for the labor they ordinarily demand. Among these are clay, sand, ashes, broken straw, tops of vegetables, perhaps sea-weed, black swamp mud, shells of some kind, bones, marl, charcoal dust, sawdust, soot from the chimney, rags, decayed vegetables, and, above all, the contents of your privy. For another season this list can be much extended, including dead animals, hair, bits of leather, hides, horns, tan, decayed wood, leaves, weeds, etc. Besides these, you can probably afford to purchase a small quantity of lime, plaster, guano or poudrette, as circumstances may determine. Suppose you thus expend only five dollars, being first assured that you purchase that which is best suited to the condition of your land and to the crop. The materials are at hand, and now let us proceed to apply them.

With the opening of the ground, cover your sandy soil with a coating of clay, or your clayey land with sand. A well-made compost of these materials would be much better, but this is all we can do for this season. Your ashes and lime you can use with the clay on your sandy soil, or use it by itself, if more desirable. This will depend on the quantity at your disposal. With your lime, or elsewhere, you can plough in your broken straw, or your sawdust, rags, marl and shells. Your vegetable matter, swamp mud and charcoal dust, (and sawdust if you please,) and soot, you can plough under, all mingled together. Or better still, if you will take your swamp mud, charcoal, sawdust, ashes, and lime, and mix them with a much larger quantity of sods, and the contents of your privy, and leave them to act upon each other for a few weeks, and then cover them with a shallow furrow, at a second ploughing you will reap the benefit of your labor. Or your marl, and shells, and lime—the whole being reduced to a powder as much as possible—may be applied by themselves, while the other matters are used elsewhere. Charcoal dust is good everywhere and with almost everything. Soot is best as a top-dressing. Shell marls are good on all soils; clayey marl is best on sandy or gravelly soil. The green marls of New-Jersey are suited to sandy soils, being rich in potash, and are efficient either in large or small quantities, from 20 loads to 20 bushels per acre.

For another season, these vegetable matters with weeds, etc., should be mixed with many times their quantity of sods, and with your manure from barn-yard and hog-pen and privy, in a compost, under cover, if possible, and allowed to remain all winter.

It will be more satisfactory to apply the fertilizers you have purchased by themselves, so that their effects can be well understood, and you will probably find that you can manufacture as good a preparation as Mexico or Peru can furnish, and at a much cheaper rate.

But you must be thorough in your treatment of the small parcel of land that you would improve. Leave nothing half done. Manure abundantly, plough and hoe wisely, and take good care of the crop. *If need be*, leave a part of your land entirely untouched. Next year it may pay for the rest which you give it.

Try this. Try it on a single lot—nay on a few rods only; and if you ever regret it, be good enough to describe the condition of your land, and the labor and applications, on the result of which you have been disappointed, and forward to us for publication.

We are thoroughly persuaded that our agricultural societies might do very much for the agriculture of the country by loaning money for such uses. It might be amply secured by a lien on the crops, or otherwise, and many farmers, who are now a reproach to the craft, would become earnest and successful examples and advocates of reform.

THE RASPBERRY.

The following remarks by a writer in the *Horticulturist* for the past month, will be useful to our readers:

From a given amount of money, the raspberry will, I think, return a larger amount of enjoyment and profit than any other fruit—the grape not even excepted—raspberries may be grown in almost every variety of fertile soil with nearly equal productiveness, but with greatly varied luxuriance, two constant requisites being maintained—depth and richness of soil.

In manuring for the raspberry, a deep alluvial soil, rich in vegetable mould, will require a light dressing of well-rotted stable manure, with a top dressing of ashes immediately after planting, employing from ten to thirty bushels to the acre. For a light sand or loam, a liberal dressing of compost will be necessary; to four loads of vegetable muck, add one load of rich barnyard manure, and from four to eight bushels of unleached ashes; and if lime is cheap, it may be advantageously used to twice the amount of the ashes, together with salt lye, which is the best addition to the compost that can be used for this fruit. Mulch the roots well, to keep the ground free from weeds; but the grand point to be insisted on is depth of culture, which leaves a constant supply of moisture, obviates the danger of too much wet, and gives scope for the ever-active roots to hold their revels, which they manifest in a profusion of fruit.

For the growing of good fruit it is not *necessary* that the canes should be supported, though it is advantageous, and also convenient in picking. The most obvious method is to support the canes of each hill with a stake; but a more effective and convenient way would be to stretch a wire along the rows, supported by a firmly-braced post at each end, and at intervals of about thirty feet drive stakes into the ground to support the wire at an elevation of about three feet, or four feet for the most vigorous growers; spun yarn will answer.

The rows should be four feet apart. North of the latitude of Philadelphia (and there also) lay down and cover the canes in winter. When the bearing season is at an end, the old canes should be cut out, and the shoots that have sprung up for next year's bearing should be thinned to the proper number, varying according to the strength from three to five; remembering that the crop is made or marred the year previous to its production. In choosing plants, the root, and ripeness and solidity of wood, not length of canes, should govern the choice; large canes, with small roots, are undesirable.

My first choice as a market fruit is the Hudson River (True Red) Antwerp, for its size, exceeding productiveness, and its firmness, which enables it to bear transportation. The current year one thousand dollars net were realized here from one acre of this variety. For field culture it deserves its celebrity, but for the garden it is much excelled by the seedlings of Dr. Brinkle. Fastolf is nearly equal in productiveness, but a much more vigorous grower, and somewhat more hardy. Its rich berries almost burst with their fine juice, and do not bear carriage well.

Franconia is a vigorous grower, and rather more hardy than either of the above, with large, dark-colored fruit, bearing carriage nearly as well as the Antwerp; it is a late bearer, of high flavor, and especially excellent for cooking.

Knevett's Giant is truly gigantic, excellent for the dessert, and for preserving. Rivers' new large-fruited Monthly had been a disappointment till I determined to thin out offsets, and let no more grow than were required for fruiting, and that had the desired effect; and it has proved the most productive that I have cultivated, more than twofold of the Red Antwerp.

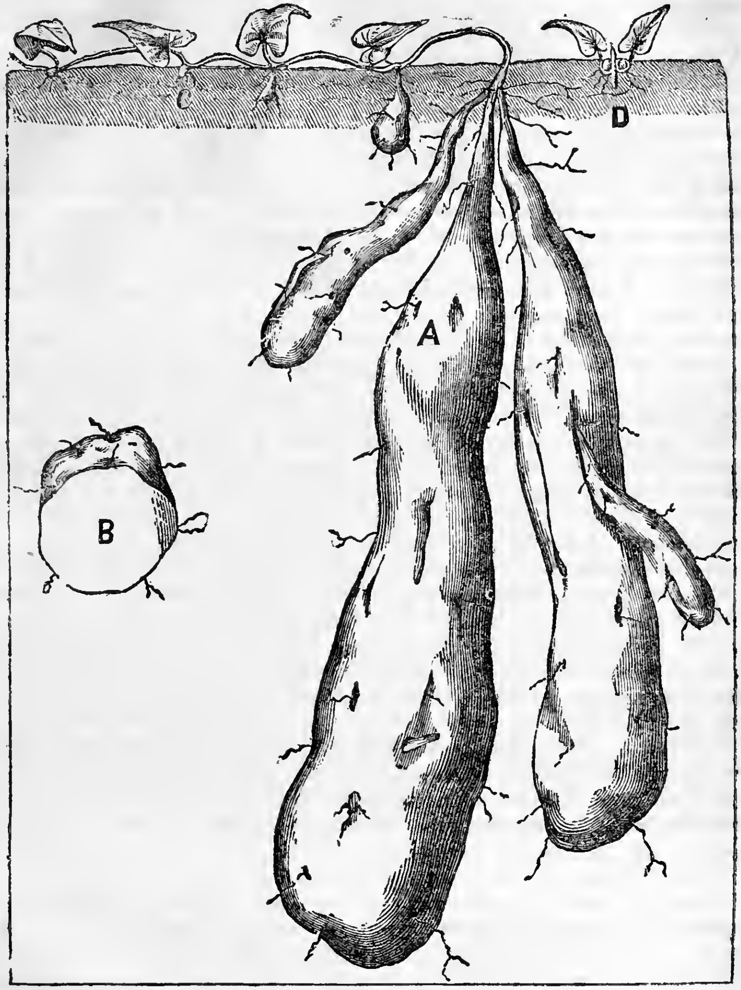
The Yellow Antwerp is a very good variety, but its berries are so much softer than Hudson River, that it is not grown for market. As Elliot remarks in his *Fruit Grower's Guide*, "it will soon give place to Brinckle's Orange and Colonel Wilder, which are far better varieties."

Ohio Ever-bearing, by those who like the black-cap variety, will be greatly prized, bearing as it does profuse clusters. Catawissa has much the habit of the last, but the fruit hitherto has not been comparable to it in flavor.

Col. Wilder is a white berry, of brisk, rich flavor—productive, excellent and hardy. Brinckle's Orange is among raspberries what Newtown Pippin is among apples. In conversation lately with Mr. Charles Downing, who is eminently conservative, he remarked: "This is by far the best raspberry in cultivation." It should have been called Opal instead of Orange, its translucence suggesting the brilliant play of light of that gem, and its beauty is equalled by its excellence; it is very vigorous, hardy, and productive; continues long in bearing; most excellent in every respect for field and garden.

THE SUGAR CROP.—At a convention of those interested in the sugar trade, held in New-Orleans in January last, the Hon J. Moore, President of the meeting, stated the sugar crop of 1854–55 as follows: 346,634 hogsheads of sugar, worth $40 per hogshead, and 577,840 barrels of molasses, worth $7 20 per barrel. The value of the sugar was estimated at $14,000,000, and of the molasses $8,000,000. The convention adopted resolutions in favor of some other place in Louisiana than New-Orleans as a sugar market.

CHINESE OR JAPAN POTATO.



DIOSCOREA BATATAS.

This new esculent is attracting considerable attention, from our journalists at least, and the present condition of the potato gives especial importance to any substitute that is offered. The following description of it is taken from a pamphlet published by Messrs. Wm. R. Prince & Co., Flushing, who have the tubers for sale.

This most important esculent was first introduced to Europe in 1850, it having been sent to France by M. de Montigny, French Consul at Shanghai, in Northern China, who transmitted a few roots to some learned men. It did not however attract their special attention to its great value and immense importance, until the year 1853, when some highly intelligent botanists recognized the great advantages to be derived from its extensive culture, and devoted themselves to its increase, and to the development of its merits.

Finding this root to be superior in its farinaceous properties to either of the cultivated species of potato, and that it was in no case subject to decay, whether in the ground or out of it, and was also of so hardy a character, as to withstand the severest winters uninjured, they have now come to the conclusion, in common with English botanists who have made similar experiments, that the Discorea Batatas is destined to supersede the precarious and uncertain culture of the ordinary Potato, *so liable to rot and other diseases;* and that the grand desideratum, a substitute in itself more valuable than the ordinary Potato, has at length been found. So strongly confirmed is this opinion in Europe, that we find it supported by all their leading Agricultural and Horticultural publications, and even by the "*Mark Lane Express*," the principal representative and expositor of the agriculturists of Great Britain.

Roots of this plant have been produced in Middle and Northern France, weighing two to two and a half pounds, from tubers planted in April and dug in October.

One great point of superiority possessed by it, is that the roots may remain in the ground two or three years, always enlarging in size, and equally nutricious and excellent in flavor. Experiments have proved that when the roots are left for eighteen months in the ground, the yield is more than treble that of roots left but for one summer, and it is also considered that they are improved in quality. . . . . . .

One very peculiar character of this plant is, that its roots run *perpendicularly* into the earth, thereby greatly enlarging its capacity to produce the greatest possible crops from a given space of ground. It has been calculated in the French publications from the experiments there made, that an acre will, in six months, produce 36,000 pounds, and in eighteen months, 120,000 pounds.

It possesses another great advantage:—the roots when placed in a cellar remain firm and perfect, as well as free from sprouts, and they can be kept out of the ground a year, without injury or deterioration of their alimentary qualities, and this property renders them invaluable for use in long sea voyages, and especially as a preventive of scurvy. . . .

The following will serve as a brief description:

Leaves opposite, triangular-cordate, deep green; Flowers, diœcious, composed of six petals, pale yellow, in clusters springing from the axils of the leaves. The male plant only has been introduced to Europe and America. Root fifteen to twenty-five inches long, and two inches in diameter, tapering to the head; the outward appearance similar to the white variety of the sweet potato; skin thin, readily pealing off when cooked; flesh snow white, delicately farinacious, with a slight Almond flavor, exceedingly grateful when used in the same manner as the ordinary potato, and deemed both richer in nutrition and superior in quality. It can be cooked by water or steam, or roasted, and in appearance and taste is like the finest meally varieties of the common potato. It requires but ten minutes boiling, whereas the common potato requires twenty minutes.

This root possesses another great advantage: it produces a fine, pure white flower, which will compare advantageously with the wheat flour of any country, and is equal if not superior in nutriment.

PERIOD OF PLANTING AND PROPAGATION.

As the Dioscorea is perfectly hardy, the tubers, as hereafter described, or small sections or eyes of the root (the same as potato sets) may be planted at the first opening of spring at a depth of about three inches; but during the present scarcity of this root, the course has been adopted of planting the sets closely in an ordinary hot-bed frame to start their growth, and afterward planting them in rows in the garden or field. The same culture as pursued everywhere with the common potato will serve successfully for the Chinese one.

The propagation of tubers for the extension of stock is also very simple. Like the sweet potato, the Dioscorea is a trailing vine. In six weeks from the time of planting the pieces of root, they will have formed shoots five to six feet in length. These shoots may be buried for two-thirds their length in slight furrows, one inch deep, allowing the leaves alone to be out of the earth, and the extremity of the shoots entirely so. Another mode is to take off two-thirds of each shoot and cut it into sections, each having a leaf with a small portion of the stem, (*D. plate*) and planting these in a bed, covering all but the leaf. In either case they will make roots after the first rain, or if watered, and in twenty or thirty days each will form a bulb or tuber at the joint near the leaf or at its axil. These must be carefully preserved when taken up in the fall, and will serve for spring planting the ensuing season; the tubers being as valuable and productive as sections of the roots. Tubers the size of a large pea, planted in the spring, form beautiful regular roots fifteen to twenty inches long by autumn, as has been fully proven *here* the past season, in confirmation of the European statement.

EXPLANATION OF PLATE.

A.—General representation of the root formed from a tuber in one season, one-fourth the natural size linearly, or one-sixteenth the size superficially.

B.—Section of root.

C.—Seed tuber formed by covering the vine.

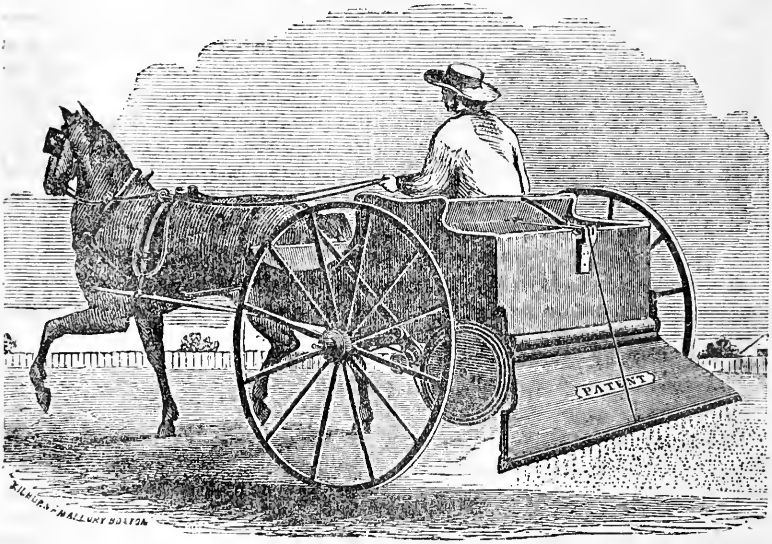
D.—Seed tuber formed from a section of the shoot.

The foregoing is sufficient to show the claims which are made for it. Whether its flavor and its ability of production, etc., will bring it into general use remains to be tested. We have never tasted, nor even seen a specimen of it. If one is sent to us we will pass our judgment on it. If it produces as freely and keeps so long as it is here described to do, large quantities might be imported from China or Japan, at an immense profit, ere it is common through the country. A dollar a root for a potato ought to command a very fine article.

DISTEMPER IN DOGS.—We are a great friend to dogs, if they have sufficient moral character to let the sheep alone; but when they meddle with mutton, our advice is a pill of cold lead or a salutary portion of strychnine. With distemper in young dogs we have had some unlucky experience. The disease is apt to come on when the animal is laying off his puppyhood, and he will droop and pine away, and lose the use of his hind legs, and finally go off into convulsions. We lost a beautiful pet spaniel in that way a few years ago, that we brought all the way from Massillon, wrapped in a pocket handkerchief—a present from our friend Cahill. We believe the best medicine for this distemper is the homœopathic arsenic pills, or if these are not at hand, take arsenic from the druggists, say six grains, to be divided in three doses; give one grain first in the morning, then two grains the next morning, and last three grains the third day. Give it on a small piece of meat.—*Ohio Cultivator.*

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

NEW AND VALUABLE SEED-SOWER.



Boston, Feb. 8, 1856.

M. P. Parish, Esq.:

Dear Sir:—Knowing that a good share of your journal is usually devoted to the interests of *agriculture*, and knowing also that you make it a point to pick up all information which will be of general interest to the farmer, I would undertake to describe to you a simple invention of an ingenious mechanic of this city, which invention, when brought into general use, will work labor-saving wonders in the line for which it was invented. The machinery referred to is a seed-sower, worked broadcast or in drills, and being without valve or geer requires no skill whatever to operate it. It consists of a hopper of any size you choose, at the lower extremity of which is a longitudinal opening, outside of which lies, in the same direction, a pair of elastic surfaced rolls or regulators. These regulators have their surfaces so near to each other as to prevent the escape of seeds between them. On one of the ends of the lower roll is fastened a *cone*, around which runs a belt, passing round a similar cone on the inside end of the hub of one of the wheels. This cone is so made as to allow of sundry changes of speed in order to seed light, medium, or heavy. The seed as it lies in the hopper presents itself directly to the opening between the rolls, and giving the rolls the slightest motion outward, you draw a *mouthful* between them the entire length of the rolls, no one kernel of seed riding another. Turn again slightly in the same direction and the first *mouthful* is discharged into a distributor, and other seeds fill the entire opening as before, and so on until the hopper is exhausted. The distributor into which the seed falls as it comes from the regulators is no more nor less than a seed board with a series of radiating tubes, down which the seed courses until it reaches a point some two inches from the lower edge, where the tubes cease, and the seed is allowed to again mingle and fall over the edge of the distributor in one continuous sheet in immediate vicinity of the ground, if the farmer is sowing in windy weather. If not windy, the distributor, being *hinged*, can be raised to any given height found practicable.

The all-important principle involved in this simple machine is this: The discovery of the successful method of taking all kinds of seeds from a hopper with flexible rollers without injuring the seed, and doing it without the aid of valves, geers, or any other objectionable motion or appliance formerly used. The principle of these flexible rollers can be carried to any extent, so as to sow two rods wide if necessary, and so certain is the movement of them that the farmer can lay his seed upon the ground with mathematical accuracy and in quantity to the acre his soil may require. As a machine for sowing broadcast or in drills, I think it has no rival, for I find upon examination that a man with a hand machine can sow 15 acres daily, and do it in a manner impossible to accomplish by hand. With the use of a horse—a boy driving—thirty to forty acres is a day's work, and with two horses, sowing with a machine distributing twenty five to thirty feet wide, sixty to a hundred acres can be covered every ten hours! A farmer can make his own calculations upon this matter, if the idea of putting down seventy-five acres per day seems fabulous. He will find that his horses walking at the rate of three miles per hour, sowing twenty-five feet wide, will cover but a fraction short of ninety acres in ten hours! Every farmer of however limited means can afford to have a machine either for hand or horse power, for by the use of it he can ordinarily save the price of it in labor in *one year*. There is no kind of grain whatever but what it will sow with accurate rapidity, from corn or cotton seed down to clover and herds grass, also all kinds of dry fertilizers to wit: Guano, lime, plaster, bone-dust and ashes, dusting the ground merely, or laying it on with a perfect coating if desired. The same machine is so constructed as to sow any width you choose, from one foot to the full capacity ot the machine, enabling the farmer to finish out a narrow strip of land in case necessity requires.

For drill sowing the drills are so constructed as to admit of changing the lines of drilling from wide to narrow as the operator chooses, depositing the seed at any desired depth and covering at the same time. The same width of land can be drilled at one and the same time, that can be sown broadcast, there being only the necessity of a change of seed-board. Any quantity of grain can be carried in the machine, and when the boy discovers that his hopper is nearly exhausted, all he has to do is to cut the string of one of the bags carried under his feet and turn the grain into the hopper as the machine moves on.

I believe that this simple piece of agricultural machinery is destined to take an important position in our grain-growing West, and save a vast amount of labor now for the want of it uselessly expended. I have entirely, unsolicited by the inventor, imperfectly described the same, and have to hope that ere long farmers may have the comfort and convenience of seeing this as well as all other labor-saving machinery in their line, relieving the drudgery necessary to their occupation. Respectfully,

W. S. S.

The cost of these machines is as follows: Those sowing from 3 to 5 feet wide, \$7 a foot; from 8 to 10 feet wide, \$6 50 per foot; from 15 to 20 feet wide, \$5 per foot.

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

BROAD-CAST AND TOOTH GRAIN DRILLS.

Mr. Editor:—From private letters received from Mr. Wm. S. Sampson, of Boston, we are led to make some remarks upon Grain Drills. We believe them to be useful implements, but have always expressed ourself in favor of the "Tooth Drill," prefering it to the "Broad-cast," for the plain reason that we are not acquainted with the latter instrument. Mr. Sampson asks us to explain why a "Tooth Drill" will produce more grain to the acre than the "Broadcast" implement. We give this reason in answer to his inquiry: It has been found impossible, it would seem from the experience of others upon the subject, to make a "Broad-cast Drill" so that it can be made to cover grain at a desired depth. In other words, some of the grain is not put into the ground deep enough, while on the other hand some of it, it would seem, is put in too deep. An experiment, tried by a Mr. Bowman of this country, showed that when wheat or other grain was deposited at the depth of *four inches* beneath the surface of the soil it would not grow, but would decay. The same grain, if it had been put two inches below the surface, would, as proven by his experiments, have taken root and grown. Sometimes we have noticed that grain even on the top of the ground has grown, but the straw was of weak organization. Mr. Bowman's experiments proved that grain should be put into the ground generally about *one inch and a half* in depth. In sowing or putting in grain a man must usually be governed by the condition of the soil. If dry, sow or drill in deeper than if the soil were wet.

Now the question is, "Can a 'Broad-cast Drill' be made so that it will sow grain an equal depth?" Mr. Sampson says there is a "Broad-cast Drill" manufactured in Boston, which is very simple in its mechanical construction, that will sow at from thirty-five to one hundred acres per day. We send his letter herewith for your perusal, and for publication in connection with this article.

We cannot say whether a tooth drill would produce more grain per acre than one made like the Boston broad-cast instrument. We always have used the tooth drill, and have been successful in its use. Numerous reasons can be assigned for using the tooth drill, and we do not know but that equally as many reasons could be given in favor of the Boston broad-cast drill. The advantages of a tooth grain drill are these:—*First*, It drills in the grain any desired depth; *Second*, It puts it into rows, and between those rows the sun's rays are admitted; *Third*, It serves as a harrow, and consequently is a substitute for it; *Fourth*, It causes grain to grow a uniform height, and consequently the grain heads are generally about the same size. The yield of grain, after taking into consideration all these things, must, of course, be much greater than if the same ground had been sown broad-cast by hand. At least we are of opinion that such is the fact. Though we are of opinion that the drill of which Mr. Sampson speaks is a very valuable implement, and we wish he would favor the readers of your journal with an idea of the same. We believe in spreading agricultural information. If a broad-cast drill is better than a tooth drill let us hear of its merits through the press.

BALDWISVILLE, N.Y. Very respectfully, W. TAPPAN.

[The following is the letter referred to by Mr. Tappan.—ED.]

BOSTON, Feb. 7, 1856.

W. TAPPAN, ESQ.:

DEAR SIR:—Your favor of the 31st ult. is safe at hand. I am obliged to you for the opinion therein expressed. I still, however, cannot see why *drill* sowing should be preferable to *broad-cast*, provided the latter is *evenly* done, for the reason that I supposed the ground being *entirely* covered would yield much better than when only *partially* covered. I am going upon the supposition of *yield* only, in the one case and in the other. Will you explain?

It has always been presumed by me to be a desideratum with the farmer to have his soil well covered, and, when once done, the crop "did" the best, and the yield was the greatest.

This "seed-sower" of which I spoke in my last is well calculated to scatter the seed uniformly, and cover the ground with a mathematical quantity as the farmer may in the outset choose, and do it so rapidly, that nothing appears to be left for the machine but complete success. I am so little acquainted with the modus operandi of practical farming that I am quite in the dark as to the farmer's necessities in the way of labor-saving machinery, but if allowed to surmise, should judge that the mechanic was fast coming to his relief. The inventor has already entered the field with the *reaper*, the *mower* and the *raker*, and now if I mistake not the *sower* is to be added to the list, not a mere *hand* machine, but a machine doing its work with wonderful accuracy, at a nominal cost, and seeding from *thirty-five* to one *hundred* acres daily! These astonishing results are brought about by a piece of machinery, so simple in its construction, and so certain in its operation, that the wonder is that the method was not thought of before. Always awaiting your advices with pleasure, I remain Your friend, WM. S. SAMPSON.

No. 2 Broad, corner State street.

COAL-BURNING BOILERS.

A BRIEF description of the various forms of coal burning boilers now in experimental and practical use, will be interesting.

Boardman's Boiler.—The fire-box is of the ordinary kind. The waist of the boiler is nearly of the same shape, in section, as a flat-bottomed smoke-box—such as on the Taunton, Rogers or Norris engines. A shaped flue extends from the upper part of the fire-box throughout the length of the boiler. In the flat bottom sheet of this, tubes are set, extending down to the flat bottom of the boiler. Under this is a pan or bottom, serving as a flue for the smoke. This flue or pan continues for the whole length of the bottom and enters an ordinary smoke-box at the front end. It is seen that the fire goes through the tubes, while the water is around them, as in the ordinary boiler.

Phleger's Boiler.—We are not quite sure but that Mr. Phleger's later improvements may have dispensed with some features contained in his boiler, as seen by us last winter. But presuming there has been no change, the following will answer:

The water space around the fire-box extends also under the bottom. The grate is made of tubes filled with water, and opening into the water space of the fire-box. About two feet back of the tube sheet is a diaphragm or water bridge, rising from the water bottom, say three feet high. From the crown of the fire-box, and within perhaps 18 inches of the tube sheet, another diaphragm or water bridge also comes down about one foot—this bridge or water space being inclined toward the tube sheet so as to deflect the flame and sparks downward. Both water bridges, of course, go entirely across the width of the fire-box. They protect the tube sheet from the direct blaze from the coal, and prevent particles of coal from being drawn through the tubes. It is proper to say that in front of the main water bridge, or between that and the tube sheet, there is no water bottom, but only a door through which ashes and cinders can be removed. The fire-box is inclosed, however, practically air-tight, and the draught supplied by a fan, worked by the exhaust steam. The barrel and tubes of the boiler are the same as in any ordinary locomotive.

Dimpfel's Boiler.—The fire-box is of the common kind, except so far as relates to the fixing of the tubes. From the front side of the fire-box, in the usual position of the tube sheet, a large flue opens, and extends nearly through the whole length of the boiler, leaving only an ordinary water space of three or four inches around it, and against its forward end. From near the forward end of this flue, a chimney opens up through the water and steam room above it, and is continued, in the usual form, above the waist of the boiler.

The tubes, which we are now to describe, carry water, and are surrounded by fire. These tubes are set in the *crown* of the fire-box, below which they are bent with a round bend, and thence run horizontally through the main flue or combustion chamber, opening again into the water space at the front end of this flue. These tubes are of iron, $1\frac{1}{4}$ inches in diameter outside.

Winan's Boiler.—This is in the most general use of any for burning both hard and soft coal. The principal peculiarity is in the fire-box. The grate is very long, say seven feet. The grate bars are cast very heavy, two together in one casting, and a shank comes out from each, through the back of the fire-box, and in this shank is a round hole through which a rod or handle is inserted to stir the grate and loosen the coal. All along the width of the furnace, and down to the grate, a wide grated door is fixed. The lower edge of this door swings just even with the top of the grates. The grating or openings through this door are upright slots, say 5 by $1\frac{1}{2}$ inches, quite near together, and for the double purpose of admitting fresh air constantly to the back side of the fire, and for inserting a poker to stir the coal. Above this grating is the common door for firing. The top of the furnace slopes in the length of the boiler, the fire-box being shallow at the back sheet and deepest at the tube sheet. About midway on this slope, an opening is made through the crown of the fire-box, this opening being covered or exposed by a sliding cast-iron door. Around this opening, a hopper or curb is raised up—large enough to hold coal, perhaps, enough for once firing. A loose, swinging cover is placed on top of this curb. When running, the back doors of the fire-box are seldom opened, but this hopper is filled, and its contents then dumped (by withdrawing the sliding door) over the grate.

It will be remembered that the firemen's footboards are on the tender, and that there are two decks or landings, one over the other—from one of which the lower doors may be fed, and from the other of which the coal-hopper may be filled.

The ash pan has a tight bottom, so as to hold three or four inches of water, into which the slag and loose coals drop and are extinguished. In the smoke-box there is a variable exhaust. The chimney is straight, has no deflecting cone, and only a grating over its top. For all the other coal boilers named, the chimney is mostly of this kind.

Millholland's Boiler.—The fire-box, variable exhaust and chimney are estially like Winan's. There is, however, no coal-feeding hopper on the back of the fire-box, as the fire-boxes on these boilers are square, five feet each way. The peculiar feature of these boilers is the combustion chamber. This is a sort of smoke-box, placed within the boiler, surrounded by water, and about five feet from the fire-box tube sheet. One set of the tubes lead from the fire-box into this chamber, and another set lead from this to the smoke-box, there being thus two sets of tubes and four tube sheets. A square leg comes down from this combustion chamber, through the bottom of the boiler, there being a water space around this and a door on the bottom. Through this leg a man may get into the combustion chamber to set and caulk the flues. A few of the stay bolts in this leg are hollow, to admit air to complete the combustion of whatever gases have not been already burned over the grate.

O. W. Bayley's Boiler.—The novel feature is contained in the fire-box. This is divided into three chambers or compartments, a water space, four or five inches thick, passes from near the top of the back side of the fire-box, sloping downwards to below the tubes on the front side, thus dividing the fire-box into an upper and lower chamber. The lower part is again divided in its width by a fore-and-aft vertical water bridge, connecting at top with the water space above described. A square opening is made through the vertical water space, so as to open the two lower chambers into each other. Two openings are also made and covered by sliding doors, in the sloping water space above. The fire doors open, one each into the lower chambers.

The mode of working is this. Fire is first made on the grates on both sides, or in both of the lower chambers, and both of the sliding doors above are opened. After the coal gets well to burning and when fresh coal is applied, the fire-box is managed as follows: The left hand sliding door only, upon the sloping water space, is left opened. The right hand fire door, or feeding door is also opened, and coal applied to the right hand grate. The flame of this coal pass through into the left hand lower chamber, over the burning coal on that side, thence up through into the upper chamber and off to the tubes. The firing is then reversed by shutting the left hand sliding door and opening the right hand one. Coal is then put upon the left hand grate. The gas passes through into the right hand lower chamber, over the hot fire, up into the upper chamber and again off through the tubes. By this means, the coal becomes partly coked before it is finally burned, and the gases are probably quite entirely consumed.

Latta's Boiler.—A recent application of this boiler by the Boston Locomotive Works has attracted some attention. The furnace is a square chamber, seven or eight feet high and with a water space all around it. The water is contained in coils of tubeing. A length of iron pipe, say of two inches diameter, is laid across the furnace above the grate. This pipe has a return coupling on one end, and another length of pipe is brought back, and so on for a few courses in height. Then the return couplings divide or throw out each two return nozzles, thus doubling the area of tubing through which the steam and water circulate. After a few courses of these double tubes, the return couplings again divide and send back four lengths of tube, side by side, and all connected with the original tube. And after a few courses of these quadruple tubes, the couplings again divide and send back eight lengths of the tube with which number the pile is completed. As many separate and complete piles, or courses, of this kind, are laid up, as will occupy the whole width of the fire-box. These piles are connected at top and bottom with the water space of the furnace around them, and the heat of the fire circulates freely through them. The chimney surmounts the whole.

M. W. Baldwin & Co's. Boiler.—Perhaps no other form of boiler in successful use has been made to burn coal with so little change of form and structure from that of the common kind. The fire-box is five or six feet long, the back of the fire-box and fire door the same as for an ordinary wood-burner; the grate is stationary and of the common pattern, only heavier. The boiler has a variable exhaust and open chimney. About the only peculiar feature is a horizontal row of two-inch iron tubes running across the width of the furnace, just under the crown. These give an increase of heating surface and quicken the circulation of the water.

There are many other varieties of boilers now in experimental use, but we are not able to furnish as full particulars of them as we would wish. From those we have mentioned, leading ideas may be had of the forms of boilers already most prominently before the public.—*R. R. Record.*

AGRICULTURE OF MAINE.

The "Preliminary Report" of the Secretary of the State Agricultural Society, Dr. Ezekiel Holmes, gives a statistical account of the Agricultural and Horticultural Societies in Maine. The Bangor *Courier* makes the following abstract:

It appears that the number of farms in Maine is 77,016—comprising 2,039,596 acres of improved land, and 2,515,797 acres of unimproved. The number of farms in New-Hampshire is but 47,408; in Vermont, 43,312; in Massachusetts, 55,082; Connecticut, 31,756; Rhode Island, 8,398.

In 1850 there were bred in Maine 41,721 horses, 133,556 milch cows, 83,933 working oxen, 125,890 other cattle, 451,577 sheep, and 54,588 swine—the aggregate value of which stock is about ten millions of dollars.

Of crops in that year, there were raised 296,259 bushels of wheat, (a little more than a quarter of what had been raised when not troubled with he weevil,) 101,916 bushels of rye, 1,750,056 bushels of corn, 218,107 bushels of oats, 1,364,034 pounds of wool, 205,521 bushels of peas and beans, 3,436,000 bushels of potatoes, 151,731 bushels of barley, 104,532 bushels of buckwheat.

The orchards produced a value of $342,865, as shown by the deficient returns of the census—the market gardens $122,387.

There were 9,243,811 pounds of butter made, and 2,434,454 pounds of cheese.

Of hay 755,889 tons were cut, and 18,000 bushels of different grass seeds raised.

There was also raised 40,000 pounds of hops, 18,000 pounds of flax, 580 bushels of flax seed, and 252 pounds of silk cocoons.

94,000 pounds of maple sugar, 3000 gallons of molasses, and 19,000 pounds of honey and beeswax manufactured.

The home manufactures were worth $500,000—and the value of slaughtered animals was more than $1,500,000.

The Bangor *Courier* says that the census returns give but an approximation of the total amount and value of their agricultural productions.

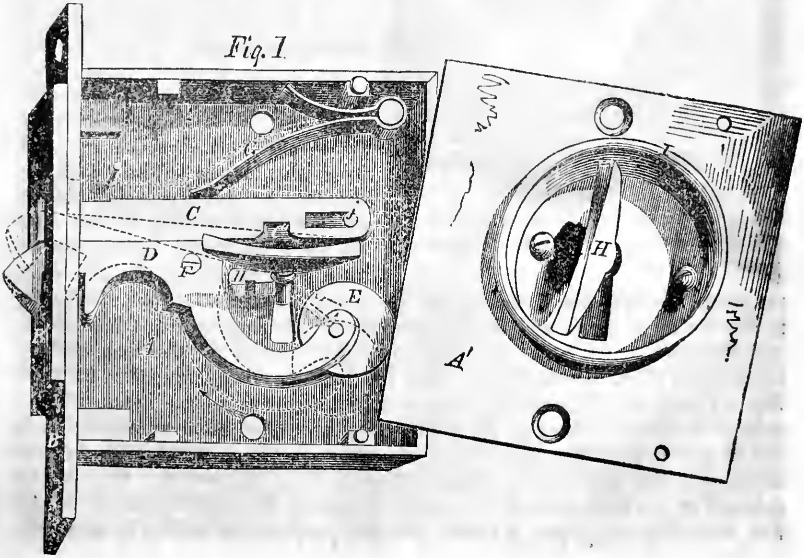
Of dairy products, the 133,556 milch cows produce an average of 69 pounds of butter to the cow. There are seven States which exceed this, viz.: Michigan, 70 pounds to a cow; New-Hampshire, 73; Connecticut, 75; Pennsylvania, 75; New-Jersey, 79; Vermont, 83; New-York, 85.

The amount of cheese made is 18 pounds to a cow—seven States do better—Connecticut taking the lead, at 62 pounds to a cow.

In the number of working oxen only four States in the Union go beyond Maine. These are: New-York, Virginia, Tennessee, and Missouri. "In the *quality* of cattle we challenge the Union."

IMPROVEMENT IN LATCHING LOCKS.

Fig. 1.



The accompanying engravings are illustrative of the improved Latching Lock patented in this country by Mr. Edmund Field, of Greenwich, Ct., July 3, 1855, and in Europe April, 1855.

In common door locks, the latch and locking bolt act independently, the latch serving for convenience by day, and the bolt and key for security by night.

The principal feature of novelty in the present invention consists in an ingenious method of combining the latch and lock, so that by the act of turning the key, the latch is made to unite its strength with the bolt, and thus increase the security of the lock; when the key is turned in the reverse direction, the latch assumes its ordinary uses. These, and other important advantages hereafter described, are obtained without any increase over the price of ordinary locks, and without complication of parts. They may be manufactured even at less cost than ordinary locks.

Fig. 2

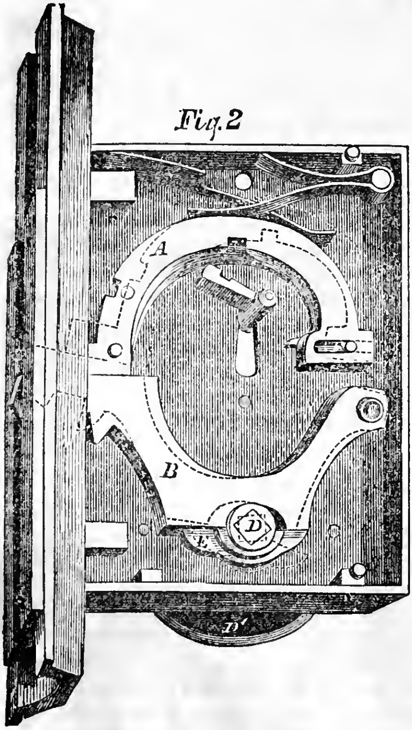


Fig. 1 shows a mortise lock, intended for use on the sliding doors of freight cars, ship doors, churches, banks, arsenals, windows, and wherever a strong, safe, and convenient fastening is wanted. A is the shell of the lock, which is made in the usual manner; A' is portion of the shell removed so as to exhibit the interior parts; B face plate by which the lock is fastened into the mortise; B' catch plate to be fastened to the jamb; C locking bolt which slides in and out in the usual manner; C' tumbler behind the locking bolt; D, latch pivoted at F, and furnished at its inner end with a friction wheel, E. When the bolt, C, is locked, as shown in fig. 1, the latch, D, is fastened down, and holds firmly in catch-piece, B.' Turn key H in direction of the arrow, and bolt C withdraws, and frees the latch. The latch is operated by the key, which presses upon friction wheel, E, and lifts the latch, as shown by the dotted lines, F; the bolt, C, also lifts with the catch, the stop pin, J, serving for its pivot. There is but one spring, G, in this lock; it serves the double purpose of pressing down the bolt, latch, and the tumber. I is a cup attached to the exterior of the lock, and intended as a shield for the key. After the lock has been placed in its mortise, a hole is bored for the cup, which is let in so as to be flush with the side of the door. The key, H, it will be observed is quite small, and does not project beyond the edge of the cup, so that the door, with the key remaining in the lock, may be shoved clear up into its recesses. One of the features of the improvement consists in operating the latch by means of the key, thus dispensing with a knob; for this purpose the lock is so arranged that the key cannot drop or be taken out except when the locking bolt is thrust forward, and the latch fastened down; in other words the lock must be locked before the key can be removed.

Large heavy doors should always be made either to slide or roll, for they last longer, remain in good order, and afford better security than hinged doors; the latter will sag, sooner or later, and become inconvenient. For sliding and rolling doors of every kind, the lock we have described seems admirable adapted. The outer end of the latch is made with double shoulders, which affords additional strength.

Fig. 2 shows another form of lock, in which the same general principles are involved as those contained in the preceding device. The chief difference is that the bolt, A, and latch, B, are operated independently, although both combine, in the act of locking, to increase the security. The latch turns on the pivot, C, and is operated by the knob, D', the shaft of which D, and lifting piece, E, are arranged in the common manner. When the bolt is thrown back the latch becomes freed, and may be lifted by turning the knob, its position when thus raised being indicated by the dotted lines; it will be seen that the lock bolt also lifts with the catch, the pin, F, serving as its pivot. Two springs are used in this lock, one of which presses on the tumbler behind the bolt, the other acting on the bolt, and the bolt pressing down the forward end of the latch. Locks of this description are intended for parlor doors.

We have described the above locks as being specially adapted to the securing of sliding doors, but they may be also applied with equal facility to hinged doors of every description. The invention appears to be one of real utility, and calculated to supply a very general want. For further information address the inventor, Portchester Post-Office, N. Y.

GRAND BRONZE CASTING.

The Springfield *Republican* notices the colossal statue of Washington modelled by H. K. Brown, in process of casting at the great foundry of the "Ames Company" in Chicopee.

The successful termination of their work is now announced. It has been cast in fragments, and that one just finished is the largest and most difficult of the whole, namely, the entire body of the horse. As the preparation of the mould has required considerable time, and great care, and as many hazards attend the execution of such a work, the hour appointed for the trial was one of no small interest to the contractors and those employed upon it. About one hundred persons had gathered from the neighboring shops to witness the scene, wholly unprepared, however, for what followed. Soon after the hot metal began to flow into the mould, and in all directions.

The workmen who stood upon and around it were enveloped in a shower of liquid fire, which burned their hands and faces, and set fire to their garments, while the spectators fled in terror from the building. Mr. Ames, who was near by, ran in at this moment, and was so appalled at the sight that he wished to have the work abandoned. But the foreman of the shop, Mr. Langdon, anticipating some trouble, had agreed with his workmen not to give up the object of their long endeavors if a desperate effort could save it. With courage that deserves great praise, they persevered and filled the mould, escaping with only slight injuries.

The contractors may well congratulate themselves over their work, for it is the first and only achievement of the kind made in this country, and perhaps nowhere else but in Munich, Bavaria, could so large a piece of bronze statuary be cast.

DESCRIPTION OF THE PERSIA.

The following description of the new Cunard steamship Persia, whose arrival we announce elsewhere, is from the Liverpool *Courier*, and will be read with interest:

The dimensions of the ship are as follows:

Length between perpendiculars, - -	360 feet.
Length over all, - - - - -	390 feet.
Breadth of hull, - - - - -	45 feet.
Breadth over paddle-boxes, - - -	71 feet.
Depth, - - - - - - -	32 feet.
Gross tonnage, - - - - -	3000 tons.
Space for engines, - - - -	1221 tons.

The Persia is rigged as a bark, (not ship rig, as stated in most of the papers,) and she will have sufficient spread of canvas to enable her to cross the Atlantic with her sails alone, should necessity require it, which may be judged of from the fact that her main yard is 76 feet long. The vessel sits very slightly on the water, and her symmetry is to be seen in the fact that she looks smaller than she really is when alone, her great proportions only appearing when taken in detail, or when compared with other standards. The Persia has an elliptical stern, neatly gilt, and a half-length female figure-head representing a Persian maiden, with musical instruments and other articles of female occupation. The paddle-boxes are slightly gilt, and in the center of each is a bold carving, representing a lion springing from between two palm trees.

The Persia is the first iron steamship built for the British and North American Royal Mail Steam packet company, her Majesty's government having hitherto required wooden vessels in case they should be wanted for war purposes.

The keel of the Persia is 13 inches deep and 4½ inches thick, scarfed in lengths of 35 feet, and a rabbit in the keel for the garboard streak to fay into. The sternpost is 13 inches broad and 5 inches thick. The rudder stock is 8 inches in diameter. The framing of the ship is of angle iron, placed nominally to the stem, at intervals of 18 inches from center to center midships, and 20 inches from center to center about five feet before and abaft the engine-room bulkhead. Amidships these ribs are 10 inches deep, with double angle iron riveted to each edge, so as to present in section the appearance of a letter H placed sideways, thus, ⌶. The Persia is divided into seven water-tight compartments; and a novelty has been introduced into her framing forward which, in the bow compartment, is laid diagonally, with a view of bearing a collision, should it ever occur, in the strongest arrangement of the structure. The vessel is plated in and out alternately, in accordance with the present custom of building iron ships. The keel-plates are $1\frac{1}{16}$ of an inch in thickness; at the bottom of the ship the plates are $\frac{15}{16}$ of an inch in thickness; from this section to the load water-line they are $\frac{3}{4}$ of an inch; and above this they are $\frac{11}{16}$ of an inch in thickness. The plates round the gunwale are $\frac{7}{8}$ of an inch in thickness.

Everything that care and skill could devise to make the Persia a safe ship has been done by Mr. Napier. In the water-tight compartment, for example, provision has been made, much the same in principle as that adopted by Mr. J. Scott Russell's ship the Great Eastern, namely, the formation of a substantial double ship. The goods carried by the Persia are to be stowed in water-tight compartments, each about 72 feet long, 16 feet wide, and 20 feet deep, which form a species of tanks, sufficient in themselves to float a considerable weight.

The next point to consider is the motive power of the ship, which consists of two side-lever engines, which were constructed by Mr. Napier. We have no standard of computing engine power to which all will agree, hence there is a difference in expressing the power of a steamboat, which Mr. Napier thus applies to the Persia: "According to the strict Government rule of admeasurement her power is equal to that of 900 horses; according to the plan laid down in the Earl of Hardwick's bill, her power is equal to that of 1200 horses; and according to James Watt's old-established rule of 33,000 ft. lbs. to the horse, she is expected to work up to the pith of between 4000 and 5000 horses." As a standard, we adopt the Earl of Hardwick's bill. Let us look, however, at some of the dimensions of the Persia's engines, and other particulars, which are as follows:

Diameter of cylinders,	100 inches.
Length of stroke,	10 feet.
Diameter of paddle-wheels,	40 feet.
Length of floats,	10 feet.
Depths of floats,	3 feet.
Number of boilers,	8
Number of furnaces,	40
Pressure on boilers,	20 pounds.
Length of engine-room,	115 feet.
Breadth of engine-room,	45 feet.
Capacity of coal-bunkers,	1400 tons.
Estimate consumption of coal,	$4\frac{1}{2}$ tons per hour.

The boilers, which are tubular, are placed in two groups, fore and aft, and they are fired amidships. It may also be stated that the ship has been so planned that the weight borne will repose on lines parallel to the keel. The coal-bunkers are placed beyond the boilers, at each extremity of the engine-room. Each boiler has five furnaces, and they are so independent that any one of them can be shut off, should it not be required. In one particular the Persia differs from the Arabia, the steamer which came last on the line, namely, having smaller boilers, but a greater number of them, so as to enable the engineer to follow up the stroke of the engine with a longer pressure of steam. There are, besides, two donkey boilers and engines, for pumping the feed water into the boilers; and in connection with them are eight refrigerators for abstracting the waste heat from the brine as it is blown from the boilers, to heat the feed water.

Nothing can be conceived more striking than the working of the engines. The Scotch papers, in speaking of them, use the terms "wonder," "veneration," "awe" and, indeed, the sight is marvelous. There was a little noise from the engines on the trial trip, as it is usual on these occasions to work them loosely, but when they are screwed up, which they will be for sea, there will be no noise whatever beyond the low singing of the exhausted cylinders. Such ponderous machinery does not elsewhere exist, and to stand in the engine-room and look up at the mighty shafts, cranks, and rods, moving with silent, steady, and solemn, but powerful ease, is a sight which must attract even the most thoughtless observer, and produce respect for the intellect and practical skill of the men who produced them.

From the engine-room to the cabin is a short transition. Here are accommodations for 260 passengers, who will sleep in berths on one deck. There is a passage all round the ship below the main deck, so that no passenger will need to come on deck to get to or from his berth. On the same deck is an elegant cabin for gentlemen who desire to sit in the center of the ship, and adjoining it is the ladies' cabin, which is a gorgeous room, upholstered in a style fit for a queen, and adorned with choice paintings from the pencil of Mr. D. M'Calman, of Glasgow, whose groups of flowers also decorate the main saloon. This cabin is paneled with bird's eye maple, and it is heated by steam, as are also all other parts of the ship. The height between decks in this part of the ship is eight feet six inches, and the berths are amply lighted and ventilated. The berths are supplied with the usual conveniences; and it may be mentioned that there are no less than twenty water-closets in various parts of the lower deck. On the upper deck are the main and fore saloons, the officers berths, and other accommodations. At the extreme after-end of the ship is a large smoking-room, with cabins for the captain and chief officer, from which they can see the entire working of the ship. Next to these is the main saloon, which is 60 feet long, 20 feet wide, and 8 feet high. This saloon will dine about 170 persons. It is paneled in bird's-eye maple, with twisted pilasters, and neatly gilt frieze and ceiling. The upholstery is red velvet, with red satin window curtains, embroidered in gold. The panels are filled with floral paintings similar to the ladies cabin. Elegantly framed mirrors are placed at the fore end of the saloon, as in the other vessels of the line; but at the after-end a difference has been made by the introduction of two beautiful book-cases, and massive folding-doors which open into the smoking-room. The skylight is filled with stained glass, the prominent features being a Persian and a Persian woman, in their native costume. Forward of the saloon are the kitchen and pantry, each of which has an area of 300 feet; the floors of which are beautifully laid with tiles. The fore saloon, and the various store-rooms and officers' apartments, are also placed on the main deck; while the crew are accommodated in the topgallant forecastle.

We might enumerate the conveniences of the Persia to any extent, and speak of her baker's and her butcher's shops, her joiner's and carpenter's workshops, her surgery, ice-houses, lamp-houses, bath-room, and similar arrangements. But it is not necessary to dwell upon these points, as the Persia carries within herself appliances of comfort excelling the first hotels in the country, and she possesses saloons which have not unfitly been compared to the apartments of a baronial residence. But perhaps an allusion to one part of her outfit will be more striking than mere description. The Persia, fitted out on the same scale as the other vessels of the line, will require 400 counterpanes, 1200 blankets, 1600 sheets, 800 pillow-slips, 4600 towels, and 400 table-cloths; all of which, or nearly so, would come into requisition on a current voyage.

The summit of the saloons and officers messrooms forms a hurricane deck, well railed, on which there is an uninterrupted promenade 370 feet in length, and of proportionate width. This deck will form the passengers' promenade, and it will be very seldom that it cannot be used as a dry and comfortable place for walking.

The Persia has two sets of double-steering wheels, so that she can be steered either aft or amidships, as circumstances may require.

The crew of the ship will be made up as follows:

Engineers Department—Engineers, 8; firemen, 54.

Stewards Department—Cooks, 8, stewards, 36.

Sailing Department—Officers, 6; able-bodied seamen, 54; doctor, 1; purser, 1; carpenter 1; joiner, 1. Total, 170.

The Persia will accommodate 260 passengers, and carry 1200 tons of measurement goods, and 1400 tons of coal, at a draft of 22 feet, the weight of herself, cargo, and stores being then 5400 tons.

SPEED OF THE PERSIA ON HER TRIAL TRIP.

The distances run by the ship on her trial trip from Greenock to Liverpool were as follows:

		Knots.
From Cloch Lighthouse	to Ailsa Craig,	43
	to Corseill Point,	15
	to Mull of Galloway,	27
	to Point of Ayre,	22
	to Bell Buoy,	68
	Total,	175

which is equal to 203 statute miles, so that the vessel steamed 16 knots, or 19 statute miles per hour, which was the actual speed through the water. It might be supposed that this high rate of speed would have been dangerous, but engineers will understand how distant that fear was when we state that the preparation of tallow and white lead usually put on the bright work of the engines of sea-going steamers was as hard at the end of the voyage as at the beginning. The slightest heating of the engines would have instantly melted it away wherever it was near a bearing.

The Cunard Line, as it is popularly designated, commenced operations in 1840, with the view of connecting the Eastern and Western hemispheres by the periodical sailings of steamers. The first vessel dispatched was the Unicorn, Capt. Douglas, which sailed from Liverpool on the 16th May, 1840, as a pioneer, for Halifax and Boston, with 25 passengers. The Unicorn was a comparatively small steamer, and when she got out she was placed on the line from Picton to Quebec, as an auxiliary steamer.

The Britannia was the first steamer built for the ocean line, and she was dispatched on the 4th July, 1840, for the same ports, to which she carried 63 passengers.

Substantially, this Company has enlarged the size and power of its steamers six times since the Unicorn went out, as follows:

First, the Britannia, Acadia, Caledonia, Columbia.

Second, the Hibernia, Cambria.

Third, the America, Europa, Niagara, Canada.

Fourth, the Asia, Africa.

Fifth, La Plata, Arabia.

Sixth, the Persia.

These vessels may be classified thus:

The four first of 1200 tons and 440 horse power each.

The Hibernia and Cambria, of 1500 tons and 600 horse power each.

The America, and the vessels named with her, 1840 tons and 700 horse power each.

The Asia and Africa, 2250 tons, and 800 horse power each.

La Plata and Arabia, 2,203 tons and 1000 horse power each.

The Persia, 3600 tons and 1200 horse power.

But perhaps the clearest way of putting the size of this vessel is to compare her side by side with other vessels of the line in length, power and tonnage, and to include in the same comparison some other well known steamers.

	Length. Feet.	Register. Tons.	Nom'l power. Horses.
Britannia, - - - - - -	200	1200	400
Cambria, - - - - - - -	217	1500	600
America, - - - - - -	250	1840	700
Asia, - - - - - - -	300	2250	800
Arabia, - - - - - -	320	2393	1000
Persia, - - - - - - -	390	3600	1200
Atlantic, (Collins line,) - - -	287	2280	800
Great Britain, - - - - - -	330	3500	500
Himalaya, - - - - - -	350	3500	700

Of the above ships, the Britannia, the Acadia, the Caledonia, and Hibernia were sold a few years ago—some of them going into the hands of the Spanish Government, where they still remain. The Columbia was lost in July, 1843. The La Plata was sold to replace the ill-fated Amazon, which was burned three or four years ago on the Spanish coast.

English Patents.

Improvement in Files. By Hiram Powers, sculptor, Florence.—This invention consists in forming perforations or throats to the fin-feather or other cutting surfaces of rasps or files, for the purpose of enabling them to clear themselves of the material cut away by them, and to prevent their filling or choking, or allowing the particles to pass through the perforations or throats.

The improved rasp or file resembles somewhat the ordinary grater in appearance, though entirely different in its operation and effect.

The perforations in the plate of which the instrument is formed, may be round oblong, oval, or angular; and the cutting-edges which partially surround each perforation or throat, may be either curved, straight, or pointed, plain or serrated, as the different purposes to which it is to be applied may require. The cutting-edges do not entirely surround the perforations, but are raised on one side of them only, and are inclined at such an angle as to cut to the best advantage, and at the same time to throw the particles removed by them into and through the perforations or throats.

The files or rasps may have cutting-edges raised on one or both edges, as may be found best, and they may be made of any desired form—whether flat, curved, angular, or hollow; or they may be made in rods or bands, and applied to cylinders or wheels, and in these various forms may be employed for reducing fruit and roots to pulp or dust; and also for reducing the surfaces of wood, stone, ivory, bone, metals, and other substances, and generally for all purposes where the comminution of substances is required.

As the form of cutting-edges, and their position relative to the perforations or throats, which allow the particles to escape and pass through or by the body of the instrument, render filling and clogging almost impossible; this file can be used upon lead, zinc, copper, and tin, or other adhesive substances, as well as upon the harder metals, the perforations serving the same purpose that the throat of a common hand-plane serves in cleaning the file from the shavings removed by it.

IMPROVEMENTS IN GIVING SIGNALS ON RAILWAYS BY ELECTRICITY, AND IN INSTRUMENTS AND APPARATUS CONNECTED THEREWITH. By EDWARD TYER, Dalston.—The first part of this invention relates to improvements in apparatus which are to be so fixed at any required point upon a railway that the wheels of an engine or train, or other moving body, passing over such apparatus, shall impart motion to certain instruments called "connectors," whereby electric currents or circuits are closed, broken, reversed, or coupled up, which electric currents actuating or operating upon other electro-magnetic instruments (included in the same circuit) shall serve to point out, register, or otherwise record the position of any engine or train that may be passing or has passed over such apparatus.

In order to transmit signals from one part of the line to any other part, it will be necessary to place suitable instruments (in conjunction with the spring lever) in such a position, that whenever a downward motion is given to it by the wheels of a moving engine or train, such motion shall be imparted to the instrument in connection therewith, and the electric current will thereby be set in motion.

The current from the voltaic battery can at once pass along the wires, which being in connection with one or more electro-magnetic indicating instruments, fixed at one or more distant stations upon the railway, signals can be transmitted from the place where this apparatus is fixed, to the distant instruments in connection, and thereby indicate the passage of a train over the place where this connector and spring lever is fixed.

In order to prevent any stones, dirt, or mud from interfering with the correct action of this form of connector, the whole may be inclosed in a suitable case provided with a stuffing box for the axle of the lever to pass through.

Another method of closing, breaking, or coupling up electric circuits or currents, which can be sometimes used with considerable advantage, is to place a small elastic bag, partially filled with mercury, under the spring lever before described; a tube, closed at one end, and having one or more wires passing into this closed end, is caused to dip into the mercury contained in the elastic bag; the whole is then rendered air tight with cement or by any other suitable means; and the wires, so entering the tube, form part of the electric circuit. The use and action of this instrument is as follows: So long as the lever fixed in close proximity to the rail remains in a quiescent position, the mercury in the lower part of the elastic bag does not come into metallic contact with the wires in the upper part of the tube; but whenever the spring lever is depressed, the air in the bag forces the mercury up the tube, which, coming into contact with the wires at the upper end, immediately completes the circuit, and the required signal is given to the distant station. By combining one or more of these tubes in the same bag, or by using any number of bags and tubes, any arrangement of connector can be constructed, as the nature of the case may require, in order to close, break, reserve, or couple up electric circuits or currents. Instead of having the tube closed at one end it is preferred to have a bulb or cylinder at the upper end, so as to receive any superfluous amount of the compressed air.

The second part of the invention relates to the adjustment of connectors with one or more of the rails of a railway in any required part thereof, in such a manner that the weight of a passing engine or train, in causing a small deflection of the rail from its natural position, shall bring the connector into action.

The third part of this invention consists in the application of magneto-electric machines in combination with the before-described spring levers, in such a manner that whenever the wheels of an engine or train pass over any of these contrivances, the downward motion imparted thereto shall be rendered available to set in motion the coils of a magneto-electric machine; and, as is well known, during the brief period such coils are in motion, currents of electricity are induced in those coils, which electricity, by suitable insulated conducting wires, may be transmitted to any required point or place, and if there are any electro magnetic instruments included in the same circuit that this induced electricty is traversing, such instruments will be operated upon or set in motion, and any required signal can be given.

The fourth part of the invention relates to certain improvements in the electro-magnetic instruments termed "indicators," which are for the purpose of indicating the position of an engine or train upon any part of the line.

The pointer is caused to assume one of two distinct positions, for the purpose of indicating two distinct signals; and the pointer having assumed one of such two positions, remains fixed there until operated upon a second time by another electric current. The improvement consists in thus obtaining two distinct and permanent beats or deflections of the pointer, and differs from the plans usually employed for giving or receiving signals, inasmuch as that in the latter case the magnetic pointer is generally made to assume a vertical position, and the deflections, either to the right or to the left, are caused by the influence of electric currents passing in close proximity to such magnetic needle of the telegraphic instruments; but so soon as the electric current ceases to flow, then the needle or magnet again returns to its vertical position, and points to zero. Now this kind of instrument is not applicable to the plans adopted, and which have been previously described, for closing, breaking, or coupling up the electric current, because it will at once be manifest that during the rapid passage of the wheels of a train over the connector and spring lever, the vibrations of a magnetic pointer, if placed in a vertical position, would be too rapid and uncertain, and, not being permanent, they might, during the instant they were taking place, escape the attention of the signal man in charge. In order to obviate those difficulties, the patentee constructs the magnetic needles or pointers of his instruments so that their centers of suspension are below their centers of gravity; consequently, if suitable stops are placed for the needles to rest against, the needles will always remain against either of these stops, and never point to the vertical, and a permanent deflection will be obtained.

The fifth part of the invention consists of improvements in the arrangements of electro-magnetic apparatus, for the purpose of calling into action local batteries; the object being to enable any great resistance to be overcome, and also to perform any electro-magnetic effect that requires considerable force. It is well known that a current of electricity in passing along a wire of any great length, has to overcome the resistance offered by such wire, and the electro motive force actually available is very much weakened thereby, and in some cases is not sufficient to accomplish the desired amount of work. Now, in order to obviate these difficulties, it has been the practice to use various arrangements of apparatus to call into action local batteries, and thereby to obtain any amount of electro-magnetic force that may be desired. It sometimes happens that in giving signals on railways by the instruments and connectors before described, a local battery is found very advantageous.

The sixth part of the invention relates to improvements in those instruments used for the purpose of reversing or changing the direction of electrical currents, and termed "pole-changers" or "commutators." They are used for giving signals on railways, in order to transmit a signal to an approaching engine or train from any part of the railway; so that whenever the train arrives at certain points upon the line where an apparatus, hereinafter to be described, is fixed, the electrical current being turned on (or reversed in direction, as the case may require), such engine or train shall receive the signal from these pole changers or reversers.

The seventh part of the invention relates to improvements in giving signals from any point or place upon a railway to an engine or train in motion, and *vice versa*, from an engine or train in motion to any other point or place upon the railway. This is accomplished by fixing upon the line, at any required distances, metal bars, having inclined planes at each end, so adjusted that if two springs or other levers be placed in an inverted position upon an engine or carriage, the levers will, on the engine or carriage coming up to the points where these metal bars are fixed, strike the lower end of the inclined planes of the metal bars, and, gliding up them, form metallic contact with such bars; and these being in communication with a voltaic battery, the electric current will have a tendency to pass from the bars to the metal spring levers fixed upon the engine or carriage; and if an insulated wire were carried from the spring levers to any electro-magnetic instrument, likewise fixed upon the engine or carriage, such instrument would be operated upon by the electricity flowing from the bars in communication with the voltaic battery, and every time the engine or carriage glided over these metal bars, a signal could be given to and received from an engine or carriage and a station, or the *vice versa*.

The eighth part of the invention relates to improvements in electro-magnetic instruments, to be fixed upon a locomotive engine, either to sound a whistle or to turn the "regulator" of such locomotive, and bring the train to a standstill.

IMPROVEMENTS IN ELECTRIC TELEGRAPH INSTRUMENTS. By JOHN SANDYS, St. Luke's.—This invention consists in a peculiar combination of parts into an instrument suitable for communicating by electricity. For this purpose a curved or bent magnetic needle is used, which moves on a suitable axis. This needle is hung on its axis in such manner as to bring its poles on either side of the end or one pole of the soft metal interior of an electro-magnet; hence, when a current of electricity is passed in one or other direction, the poles of the magnetic needle will be attracted or repelled accordingly, and the pointer fixed to the axis will be moved in one or other direction. The magnetic needle has a projection, which, by stops, prevents the magnetic needles being moved too far in either direction. It is preferred, in constructing the electro-magnet, that the soft metal interior should be composed of a bundle or cluster of soft wires in place of a solid piece of soft metal.

A Mode of Transmitting Telegraphic Messages across bodies of Water. By James Bowman Lindsay, Dundee.—This invention consists in a mode of transmitting telegraphic messages or communications, by means of electricity or magnetism, through and across water, without submarine cables, water being made available as the connecting and conducting medium for the electric fluid.

On the shore from which a message is to be sent, a battery and telegraph are set up, to which are attached two or more wires terminating in metal balls, tubes, or plates placed in the water, or in moist ground adjacent to the water, at a certain distance apart, according to the width of the water across which the message is to be transmitted, (the distance between the two balls, plates, or tubes connected with one battery, to be greater than across the water, or to the balls, plates, or tubes of the opposite battery when practicable). At the opposite side of the water, or that to which the message is to be conveyed, two other similar metal balls, plates, or tubes are placed, the same being either immersed in the water or in the earth, as above stated. These balls, tubes, or plates have wires also attached to them, which lead to and are in connection with another similar battery, with which the needle or other suitable indicator or telegraphic instrument is put into connection, and messages are then transmitted in the usual way.

As regards the power or primary agent employed for transmitting telegraphic messages, the patentee remarks that it may be either voltaic, galvanic, or magnetic electricity, and the battery for evolving the same such as is used for telegraphic purposes. And with respect to the telegraph or instrument for transmitting messages, he proposes to employ any of the instruments in known use which are most efficient for that purpose, observing that the needle or indicator may be arranged or disposed in the instrument, either in a vertical or in a horizontal position, and the coil of wire necessary to the movement of the needle may also be increased or diminished, according to circumstances.

In any suitable part of the course of the wire or wires, a coil of wire is arranged in connection with the needle or indicator of the telegraph, as a medium of communication between the needle or indicator and the battery, in the manner usually practised.

The patentee remarks that he does not confine himself to the use of plates or balls of metal immersed in the water, as the same result may be obtained by inserting metal, charcoal, or other suitable terminal poles in the earth, communicating with the water by the moisture which the earth contains. It is important also, to the proper performance of the above mode of transmitting messages, that the distance between the terminal poles on one side of the water be greater than the distance between the plates or other terminators situated respectively on opposite sides of the water, otherwise the circuit will not be complete, and the current will therefore fail to operate upon the needle of the receiving telegraph.

Improvements in the Arrangement of Electric Telegraphs. By John Henry Johnson, Lincoln's-inn-fields.—This invention relates to the construction of portable electric telegraph apparatus, which may be placed in connection, when desired, with any part of the line wires of a railway telegraph, or employed in mines, manufactories, private houses, public or government offices, and colleges. The improvements consist in so arranging the whole of the apparatus necessary for receiving and transmitting intelligence, that it may be contained in a box or case, which may be carried about with facility.

Without confining himself to details, the following is the arrangement preferred by the inventor: A battery of eighteen or more elements is contained in the bottom of a shallow mahogany or other box, fitted with suitable handles, for the facility of transport. On the top of this box is fixed a small wooden case, opening by a hinge-joint, containing an alarum, manipulator, and receiver. The hinged portion of this case, which opens back, contains a nautical compass, two coils of wire, and a lightning conductor. The battery, which is of sulphate of copper, is (for the purpose of transport) necessarily of a different construction to the ordinary batteries.

In place of using water in a liquid state, sand, moistened with water for the zinc, and with sulphate of copper for the porous cells, is employed. When the apparatus is required for use, the hinged cover is turned back, and the operator attaches the end of the wire from one of the two coils to a rod or chain, which is then suspended from, or otherwise connected to, the line wires of a railway or other telegraph. The circuit is then established by connecting the wire of the second coil or bobbin to a conductor (either wire or earth). The operator then works the handle of the manipulator, bringing it over a contact point, and observes, from the deviation of the magnetic needle in the compass, whether the current is passing; whereupon he may transmit and receive messages to or from any desired station on the line with as great certainty and facility as by the fixed apparatus at present in use.

Improved Implement for Digging Turnips, etc. By Wm. Lister, near Richmond.—This invention relates to a novel construction of implement which will facilitate the operation of removing turnips and other bulbous roots from the ground in which they are growing. For this purpose the patentee mounts in a suitable frame (which runs on wheels and is drawn by animal power) adjustable blades, which will enter the ground and make a horizontal cut therein, somewhat below the bulb of the turnips, thereby removing the tails of the turnips, and loosening their hold in the ground.

In operating with this implement, the blades are caused to enter the ground at a depth that will just clear the bulb of the turnip; and this level is retained as nearly as possible during the operation of tailing. The action o the implement will be not only to cut off the tails, but also to raise the bulb slightly out of the ground, and render it unnecessary for the laborer to use any great muscular exertion in gathering up the turnips. It will be understood that this implement may be applied to facilitate the gathering up of mangold-wurzel and other roots, if thought desirable.

The patentee claims the construction of implement as above described, which, although possessing some of the characteristics of the horse hoe, is capable of performing work essentially different from that for which it is designed.

Miscellaneous.

TO THE FRIENDS OF COL. J. S. SKINNER.

The Skinner Monument.—Our readers will remember one or two occasions in which the plan of a monument to Mr. Skinner and a fund for his widow, has been laid before them, and appeals made on behalf of the object. Circulars were also sent to a large number of individuals, requesting donations. This was done at a season when the finances of the country were in a most embarrassed condition, and perhaps this is the reason why the call was so coldly received. We should be exceedingly sorry to believe that there were not thousands of his personal friends and others who were familiar with his valuable services in behalf of the industry of this country, who would freely give their five dollars each in behalf of such a cause. But the efforts hitherto made reveal a sad deficiency, the whole amount received scarcely exceeding the expenses incident to the effort; and those, with a half score of exceptions, are only donations of two dollars, which payment was offset by a three dollar publication. We are intending to make a renewed effort the present season, and hope the readers of this journal and others who will be addressed in another form will respond without delay, and the effort prove in a good degree successful. There will be very little expended hereafter in any preparatory operations, so that the donations made will *tell* in the nett results, almost to the entire amount of the sums received. Please send in your donations to this office.

Portmonnaies, Reticules, etc., etc.—We have recently visited the establishment of our friends, Messrs. Zurn & Rantfle, and have been exceedingly pleased with the excellent style of their manufactures. They have a salesroom at No. 60 Nassau street, where a good assortment of the finest style of goods in this line—pocket-books, portmonnaies, dressing-cases, etc., etc., are constantly on hand, and at reasonable prices. Their manufactory is in an upper story, and is extensive and convenient. We do not hesitate to commend these gentlemen to our friends as quite worthy of their confidence, and assure them they will have no occasion to be disappointed by ordering anything which they manufacture. We shall be happy to act for them in these matters if they will send to us. They took the premium at the World's Fair.

A New Expansive Valve Motion.—The London *Railway Gazette* speaks of a new Expansive Valve Motion for Steam Engines, described at the Institution of Mechanical Engineers, by G. M. Miller, of Dublin. In this motion a single eccentric only is used on the driving axle; this works the rod of one of the valves direct, and the rod of the second valve is worked by the eccentric through the intervention of a loose ring on the driving axle, having two arms projecting at right angles to each other, to one of which the second valve-rod is attached, the other arm being connected with the eccentric. By this means a similar motion is given to both valves, but corresponding to the relative positions of the two cranks at right angles to each other. The eccentric is molded upon a transverse slide, which is capable of being moved backwards and forwards across the axle by means of a handle, answering to the ordinary reversing handle or lever, and acting through the medium of a pair of racks and pinions. By moving the transverse slides the throw of the eccentric is altered or reversed, thereby enabling the engine to be worked expansively or reversed. A model of the new motion was exhibited, showing it as applied to a locomotive engine; and the particulars were given of the successful working of the new motion in two engines upon the Great Southern and Western Railway of Ireland.

Manna Sugar.—The following interesting letter was handed over to the Commissioner of Patents by Dr. Bernhisel. It is from Mr. Aaron Daniels, who resides in Provo City, Utah Territory, and is dated August 11, 1855:

"According to agreement, I send you a small cake of the sugar made from the syrup or honey found on cotton-wood trees, and, as you requested, will give you a few particulars concerning the manner in which I discovered it. As I passed along to and from my corn-field, (which is situated about one mile from town,) I discovered a white substance on the cotton-wood trees, which, upon examination, I found to be a sweet substance, somewhat resembling the honey-dew in the States, but in far greater abundance, and possessing other properties, some of the cakes being as thick as a knife-blade or window-glass. I thought, from the quantity there was on the trees, that sugar might be made of it, and signified the same to a number of my neighbors, who all ridiculed the idea; so I thought I would try and see what I could do with it. I took home two bushels, and washed the twigs, and then strained and boiled down the water, which made one and a quarter pound of sugar. Since that time most of the town have been at work. Some families have made as high as one hundred pounds of sugar. It makes excellent molasses, and as good vinegar as I ever saw. I averaged about eighteen pounds per day with two three-gallon kettles."

Although the quantity of sugar made from this syrup is small, yet we are assured that it is still profitable, from the fact that sugar in that region of country is worth *forty cents* a pound.—*Union.*

Paper Bag Manufactory.—In Beach street, above Hanover, (Eighteenth Ward,) Messrs. Lewars & Corbon have successfully commenced the manufacture of paper bags, for druggists, grocers, bakers, confectioners, and other dealers, with machinery driven by steam. There are six machines now in operation, which produce an average of 60,000 bags per day, of sizes to contain quantities varying from one to twenty-five pounds. There is an apparatus also for spooling and cutting the paper the required width, and a press for cutting the bags after they are manufactured. After this process of spooling, the paper is taken to the machine, which cuts the paper in the shape desired, folds it, applies the paste, and turns the edges required to be pasted, and then passes off the bags, on tapes and rollers, into a drying room, in which steam pipes are introduced. Through this the bags are conducted by continuous tapes and rollers over a surface of about fifty feet, and when thrown ot on piles, the bags are dry and ready for packing. The firm now employs eighteen hands, and use nearly one and a half tons of paper per week. The manufactory is a great curiosity to persons who have never seen the operation of making bags by steam.—*Phila. Ledger.*

Salt Manufacture of 1855.—The Superintendent of the Onondaga Salt Springs, V. W. Smith, Esq., has communicated his annual report to the Legislature.

From the report we learn that the total amount of revenue the past year is $61,065 59, and the total expenses same year, $50,198 13; showing the net revenue for 1855 to be, $10,867 46. The whole amount of salt inspected during the year is 6,082,885 bushels.

The quantity of salt inspected in 1855, exceeds the inspection of 1854, by 279,538 bushels. This, says the report, is less than may have been anticipated, but the deficiency will be found in the item of coarse salt. The increase in fine salt for the year 1855 is 515,888 bushels over 1854. Had the coarse salt works yielded an ordinary return, the increase in the manufacture for 1855 would have exceeded 500,000 bushels.

The production for 1856 is estimated at 6,800,000 bushels; and within a period of five years it is believed the manufacture will be extended to 10,000,000 bushels.—*Syracuse Journal.*

Baltimore—Wholesale Watches and Jewelers.—Baltimore since 1833 has been celebrated for this branch of the wholesale trade. It was during that year that the Messrs. Canfield, Bro. & Co., No. 229 Baltimore street, established their firm. Since that time they have been engaged almost exclusively in the Southern and Western trade. They import extensively of watches, diamonds, pearls and other precious stones; jewelry, fancy goods, bronzes, clocks—and manufacturers of silver-ware and jewelry. We believe their stock of goods are unequalled in the United States. One of the partners residing in Europe gives them advantages over most other houses engaged in the same business. Their reputation for manufacturing elegant silver-ware is well known throughout the country. We understand that the sales of watches alone in this establishment exceeds $175,000 per annum.—*Cotton Plant.*

Sligo Marble Manufacturing Company.—This is the style of another Company that has commenced operations at their quarry, two miles east of Knoxville. The Company, we understand, is organized with a capital of $200,000, and it is their purpose to seek the Northern and Eastern markets with their marble, and to direct the attention of the people in those sections to the marble of East Tennessee, which, for ornamental purposes, without doubt surpasses that of any other portion of the Union. The management of the Sligo Company is in the hands of Mr. James Sloan, of Nashville, who is a practical man, and has much experience in the working of marble. We trust other companies of the same kind may be attracted to this region, and that they will succeed in giving to East Tennessee marble, what it deserves, the character of a staple.—*Knoxville Register.*

Mineral Wealth of England.—The following is the estimate of the London *Mining Journal* of the mineral wealth of England for the current year:

Coals at pits,	£23,000,000
Iron ore,	3,000,000
Copper ore,	1,300,000
Lead ore,	1,500,000
Tin ore,	700,000
Silver,	200,000
Zinc ores,	15,000
Salt, earth, sulphur, building stones, etc.,	8,000,000
Total,	£32,715,000

The Paper Plant in Wisconsin.—Under this head (says the Boston *Post*) we have before us a description of a plant discovered in this country by Mrs. A. L. Beaumont, of Arena. She has furnished us with a fine sample of cotton, and also of flax, from the same plant which she describes as follows:

"I discovered, two years ago, a plant that yields both cotton and flax from the same root, and believe I am the first person that ever cultivated, spun, or knit from it. I am persuaded that any article that will make as good cloth as can be made from this plant will make good paper; hence I call it the paper plant. It can be planted in the spring, and cut in the fall or winter. It bleaches itself white as it stands, and will yield at least three or four tons to the acre. From a single root that I transplanted last spring, there grew twenty large stalks, with three hundred and five pods, (containing the cotton,) with at least sixty seeds in each. From this root I obtained seven ounces of pure cotton and over half a pound of flax. It is a very heavy plant, and grows from six to seven feet high."

NEW BOOKS.

The Works of Charles Lamb; with a Sketch of his Life and Final Memorials. By Sir Thos. Noon Talfourd, one of his executors. In two volumes. New-York: Harper & Brothers. 1855. 12mo, 555 and 611 pages.

Charles Lamb needs no introduction to the readers of *The Plough, the Loom, and the Anvil.* His peculiarities and his abilities are equally familiar to them. They know him as a man of wonderful genius, and one of the most pleasing of the writers of recent times. With the announcement of a new edition of his works it is therefore only necessary to say that these volumes contain a biographical sketch, his published letters to Coleridge, Southey, Wordsworth, Field, Manning, Wilson, Barton, Hazlitt, etc., his controversy with Southey, and final memorials.

The second volume contains the Essays of Elia, Rosamund Gray, Recollections of Christ Hospital, Essays on Shakspeare, and cotemporaries, and on Fuller, Hogarth, and Geo. Wither, sundry letters, poems, sonnets, blank verse, album verses, etc.

The volumes are well printed, and would form a valuable addition to any library.

A Journey in the sea-board Slave States; with Remarks on their Economy. By Frederick Law Olmsted, author of "Walks and Talks of an American Farmer in England." New-York: Dix & Edwards. 1856. 723 pages, 12mo.

Mr. Olmsted is well able to criticise the agricultural usages of any country. His former volumes contain abundant evidence of this. He is also a very pleasant writer. He knows how to tell a story, and is excellent in descriptions. In this volume he has little compassion for the victims whom he condemns, though he commends many farms and plantations as models of their kind. There is, however, no mistaking his disapproval of slavery, though he exhibits an unusual amount of candor and coolness in his remarks on that subject. He seems to act upon the motto which he cites from Macaulay, that "Men are never so likely to settle a question rightly as when they discuss it freely." The volume comprises what he saw and heard "during the first three of fourteen months' travel in the Slave States." He says many very pleasant things of the persons he saw, of incidents in his experience, and scenes which he met with.

He says in his preface, "As a democrat he went to study the South, its institutions and its people; more than ever a democrat, he has returned from this labor and written the pages which follow." He visited Virginia, North Carolina, South Carolina, Georgia, Alabama, and Louisiana.

Letters from the United States, Cuba and Canada. By the Hon. Amelia M. Murray. Two vols. complete in one. New-York: G. P. Putnam & Co., 321 Broadway. 1856. 12mo, 402 pages.

Miss Murray has written a very peculiar book. It might be supposed to be her private diary, intended to remind herself years to come of incidents, novel or amusing, but too unimportant to be retained in the memory. All her movements are set down with remarkable minuteness. The character of our hotels is too important to a traveler to be overlooked, and her favorable judgment, as at Cleveland, Ohio, in the Weddell House, where she says "the accommodation is excellent," is, comparatively, quite worthy of note. Our railroads are sometimes commended, but at Dover, N.H., she "entered a branch railroad" which "was very slow, as it stopped at several stations for mercantile purposes." Of the people she says, "My impression of the American people has been hitherto more favorable than I expected," and yet she says further on, "Only the fear of starvation would induce a English man or woman to fix themselves for life in America." Miss Murray is a zealous, possibly a good botanist, and her reader is made acquainted with the localities of many plants, most of which are very common, although when she speaks of "Hemlock Spruce," as she does repeatedly, she certainly departs from the system of such botanists as we are familiar with. The book is written quite too carelessly, as may be discovered in passages already cited, and also where she says, failing to receive expected letters, "This is very disappointing;" and again, in her visit to the Supreme Court, "A counsel spoke," etc. Such errors abound. But this book adds one amusing volume to that kind of light literature which, though ever so unintellectual, is much in demand.

Familiar Science; or, the Scientific Explanation of the principles of Natural and Physical Science, and their practical and familiar applications to the employments and necessities of common Life. Illustrated with upwards of one hundred and sixty engravings. By David A. Wells. Philadelphia: Childs & Peterson. 1856.

Mr. Wells is a writer of peculiar merit. He is not only a man of science, but what is quite as important, he well knows the wants of the people, and prepares his publications accordingly. His illustrations and demonstrations are simple and lucid. This volume is a fit companion of his previous publications, either of which would do much to establish a good reputation in the departments of science which he has exhibited. The volume before us contains treatises on all the sciences usually denominated "physical or natural," with chapters on the Philosphy of Manufactures, Agricultural and Rural Economy, Geology and Mineralogy. It also gives some explanations of the arts, as weaving, etc.

Edith; or, the Quaker's Daughter. A Tale of Puritan Times. By one of the descendants. New-York: Mason & Brothers; 1856. 12mo, 407 pages.

This story is finely written, and is full of interest. The sympathies of the reader are constantly awake during the progress of the narrative, and the result is pleasing. Many touching scenes are scattered through the volume. In respect to its literary merits this volume is a specimen of the best and of the highest style of its class. As a matter of history we should have many things to say. The Quakers of those times too closely resembled the Abby Folsoms of the present day in their factious opposition to all government, to receive the unqualified sympathies of candid minds.

Le Bon Ton.—Journal des Modes and Monthly Report of London, Paris, and New-York Fashions. S. T. Taylor, 407 Broadway.

The subject of fashions perhaps belongs in the list of topics appropriate to our journal, but it is one in which we should not claim to speak *ex cathedra*. But those ladies in whom we have entire confidence pronounce this to be *the* work in that department. The fashion plates are engraved and colored in Paris, the description of the fashions, also, is written there, and the numbers throughout are brought out in most excellent style, unsurpassed, if equalled elsewhere. Monthly terms, $5 a year. We will forward specimen numbers, *if to be had*, on receiving the price and a postage stamp. The editions are sold rapidly, and circulated extensively.

The Mormons at Home. With some Incidents of Travel from Missouri to California, 1852–53, in a series of letters. By Mrs. B. G. Ferris, wife of the late U. S. Secretary for Utah. New-York: Dix & Brothers. 1856. 12mo, 299 pages.

Mrs. Ferris accompanied her husband, like a faithful and fond wife, to the territory of Utah, and passed the winter there, returning by the way of California. She has here given a description of what she saw and learned. Most of it has appeared in Putnam's Magazine, but it is well worth this form of issue, for it gives what we doubt not deserves entire confidence, and tells a story quite worth general attention.

Annual of Scientific Discovery; or, Year Book of Facts on Science and Art for 1856, etc. By David A. Wells, A.M. Boston: Gould & Lincoln; New-York: G. P. Putnam. 378 pages, 12mo.

Mr. Wells has here given to the public another of his annual volumes describing the progress of science and the arts in the year past. The work is well executed, and, like another volume of his noticed in these pages, it does him much credit as a scientific editor.

NEW MUSIC.

Wm. Hall & Son.—We have received the following among the choice pieces of music neatly published by this extensive house:

"Souvenir d'Ecosse, fantasie de Salon." Par W. Vincent Wallace. A remarkably brilliant and very effective composition.

"Forget me Not, a Romance for the Piano Forte." By W. Vincent Wallace. This is very beautiful and not very difficult.

"The Dreams of Youth." Ballad by W. J. Robson. Composed by J. W. Cherry. Simple and very pretty.

"When the Moon is brightly Shining." Sung by by Mr. Sims Reeves. Composed by B. Molique. A very pretty composition.

"Sleep Mine Eyelids Close." Ballad, words and music by Annie Fricker. Simple and pretty.

"I heard thy Fate without a Tear." Ballad by Lord Byron. Composed by J. W. Hobbs. A very pretty composition.

List of Patents Issued

FROM TERMINATION OF PREVIOUS LIST TO FEB. 12.

John Beattie, of Liverpool, England, for improvement in means for supporting the propeller shaft, and receiving the rudder of stern propellers. Patented in England, Sept. 5, 1850.

Wm. H. Brown, of Worcester, for variable dia for dividing engines.

Jos. S. Brown, of Lowell, for improvement in extension railroad car.

Sam'l J. Chapman, of Charlestown, for machine for feeding sheets of paper to printing presses.

Jos. Cheever, of Boston, for improvement in apparatus for curing varicocele, sterility, impotency, and other diseases of the genital organs.

H. M. Clark, of New-Britain, Conn., for improvement in machines for heading bolts.

Hezekiah Crout, of Baltimore, for improvement in removable flank bar for securing the glasses of lanters.

Elisha H. Gollier, of Scituate, for improvement in heading spikes.

John P. Philo and Geo. Cowing, of Seneca Falls, N.Y., for improved method of operating fire-engine.

C. J. Cowperthwaite, of Philadelphia, for improved hydrant.

Charles A. Cumming and Cortland Douglass, of New-London, Conn., for improvement in gas burners.

Demit C. Cummings, of Fulton, N. Y., for improvement in lock gate valves.

Edw. A. Curley, of Westport, Conn., for improvement in extension tables.

Henry D. P. Cunningham, of Bury Hants, England, for improvement in reefing sails. Patented in England, Nov. 30, 1850.

Joseph C. Day, of Hackettstown, N. J., for improvement in fire-arms.

Allen Green, of Providence, for improved mode of attaching thills to axles.

W. W. Harvy, of Saltville., Va., for improvement in implements for pruning trees.

Caleb S. Hunt, of Bridgewater, Mass, for improvement in cotton press.

Frank G. Johnson, of Brooklyn, for improved method of regulating speed of windmills.

Richard W. Jones, of Green Castle, Ind., for improvement in brick machines.

A. Kendall, of Cleveland, for shingle machine.

Wm. F. Ketchum, of Buffalo, for improvement in grain and grass harvesters.

Sam'l M. King, of Lancaster, Pa., for shingle machine.

Wm. R. Lavender and Atkins Smith, of Provincetown, Mass., for improved steering wheel stopper.

J. A. Merriman, of Hindsdale, Mass., for mortising machine.

F. H. Moore, of Boston, for improvement in safety coal hole covers.

James McNabb and Adam Carr, of New-York, for improvement in steam stop-valves.

R. D. Nesmith, of Lake Village, N. H., for improvement in machines for dressing mill-stones.

Ephraim Parker, of Burlington, Iowa, for machine for making clothes pins.

Ira S. Parker, of Sharon, Vt., for improvement in washing boards.

Reed Peck, of Cortlandville, N. Y., for improvement in door-fastenings.

Charles Perley, of New-York, for improvement in cargo ports for ships and other vessels.

Abiel Pevey, of Lowell, Mass., for improvement in remelting iron scraps.

Ezra Ripley, of Troy, improvement in casting metals.

Samuel T. Sharp, of Danville, Mo., for improvement in straw cutter.

Thomas J. Stratton, of Waterloo, N. Y., for improvement in ditching machines.

Eber T. Starr, of New-York, for improvement in revolving fire-arms.

Francis M. Strong and Thomas Ross, of Vergennes, for improvement in platform scales.

Abner J. Sutherland, of Lowell, for improvement in yarn dressing frames.

James S. Taylor, of Danbury, for improvement in machinery for felting hats.

Joseph H. Tompkins, of Buffalo, for improved box for coating daguerreotype plates.

Lewis White, of Hartford, for improvement in curtain fixtures.

Hugh Wightman and Wm. Warden, of Alleghany, for improvement in oscillating engines.

Charles H. Brown and Chasles Burleigh, of Fitchburgh, Mass., assignors to the Putnam Machine Company, of same place, for improvement in means for regulating and working steam-valves as cut-offs.

John L. Brown, of Indianapolis, assignor to himself and Chas. Learned, of same place, for lath machine.

Gelston Sanford, and Thomas and Stephen Hull, of Poughkeepsie, for improvement in grain and grass harvesters.

David Marsh, of Bridgeport, assignor to Thomas B. Stout, of New-Jersey, Joseph A. Cody, of Ohio, and David Marsh, of Conn., for improvement in hanging mill-stones.

Ari and Asabel Davis, of Lowell, and Charles Cunningham, of Nashua, assignor to Alfred W. Adams, of Lowell, Josiah B. Richardson, and Geo. W. Pettes, of Boston, and Sherburne T. Sanborn, of Winchester, Mass., for improvement in hydrocarbon vapor apparatus.

Benj. F. Avery, of Louisville, Ky., for machine for bending plow handles, &c.

J. A. Ayres, of Hartford, Conn., for method of opening and closing farm gates.

Thos. Crane, of Fort Atkinson, Wis., for improvement in flouring mills.

Wm. W. Hubbell, of Philadelphia, Pa., for improvement in eccentric explosive shells.

John M. Jones, of Palmyra, N. Y., assignor to Newton Foster, of same place, for improvement in cotton seed planters.

David H. Kennedy, of Reading, Pa., for improvement in the arrangement of tan vats.

Jos. W. Killam, of East Wilton, N. H., for machine for dressing sticks to polygnal forms.

Emmons Manley, of Marion, N. Y., for improved riveting machine.

Jos. S. Manning, of Philadelphia, Pa., for improvement in mowing machines.

Wm. H. Medcalfe, of Baltimore, Md., for method of ventilating railroad cars.

Jean Pierre Molliere, of Lyons, France, for improvement in machines for hammering leather for the soles and heels of boots and shoes. Patented in France, July 22, 1856.

John J. Osborn, of New-Orleans, La., for improvement in grate bars.

Francis Peabody, of Salem, Mass., for improved method of regulating velocity of wind wheels.

Freeman Plummer, of Manchester, Ind., for improvement in seed planters.

James P. Ross, of Lewisburg, Pa., for improvement in means for operating the steam valves in blower engines.

Chas. Schmidt, of Union, Mo., for improved method of boxing carriage wheels.

Horace Smith, of Norwich, Conn., and Daniel B. Wesson, of New-Haven, Conn., assignors to "The Volcanic Repeating Arms Company," of New-Haven, Conn., for improved primes for cartridges of fire-arms.

John H. Manny, of Rockford, Ill., for improvement in grain and grass harvesters.

John H. Manny, of Rockford, Ill., for improvement in harvester cutter bars.

Adolph C. Moestue, of Kane County, Ill., for improvement in mastic for covering walls.

Lucius Page, of Cavendish, Vt., for improvement in grinding mills.

Jos. N. Pitts, of Blackstone, Mass., for improvement in machines for cutting flocks and paper stock.

Rufus Porter, of Washington, D. C., for improved punching machines.

Geo. M. Ramsay, of New-York, N. Y., for improved hinge.

H. G. Robertson, of Greenville, Tenn., for improvement in bee hives.

Riley Root & Samuel G. Holyoke, of Galesburg, Ill., for improvement in machines for clearing snow from railroad tracks.

Henry F. Shaw, of South Boston, Mass., for improvement in screw-jacks.

Charles F. Thomas, of Taunton, Mass., for improved chimney cowls.

Philos B. Tyler, of Springfield, Mass., for improved method of attaching teeth to saw plates.

Elbridge Webber, of Gardiner, Me., for improved device in tree-nail machines.

Thos. Winans, of Baltimore, Md., for improvement in buggy wagons.

Geo. D. Yong, of Plymouth, Mass., for improvement in belt and band fastenings.

Daniel Dod, of Brooklyn, N. Y., assignor to himself and Henry F. Read, of same place, for improved soldering iron.

Horace L. Houghton, of Springfield, Vt., assignor to Abel H. Grennell, of same place, for improvement in machines for cutting mouldings on marble.

Edward Kershaw, of Boston, Mass., assignor to himself and Henry M. Hooper & Co., of same place, for improved cell lock.

Jos. Weis, of Bordentown, N. J., for improvement in flouring mills.

Albert Bisbee, of Chelsea, Mass., for improvement in means for operating the throttle valve of steam engines.

Jos. T. Capewell, of Woodbury, Conn., for improvement in shot pouches.

Thomas J. Carleton and Stephen Post, of York, O., for improved field fences.

Geo. R. Comstock, of Manheim, N. Y., for improvment in locomotive furnace grates.

Henry N. Degraw, of Piermont, N. Y., for improvement in machine replacing railroad cars.

Louis T. Delassize, of New-Orleans, La., for improvement in brick machines.

Chas. Foster, of Philadelphia, Pa., for improvement in scaffolds.

Moses G. Farmer, of Salem, Mass., for improvement in telegraphic Registers.

Stephen J. Gold, of New-Haven, Conn., for improvement in apparatus for heating buildings by steam.

John Hinkley, of Huron, O., for improvement in universal joints for connecting shafts, &c.

Hazzard Knowles, of New-York, N. Y., for mortising tool.

Noah W. Kumber, of Cincinnati, O., for improvement in pill-making machines.

Charles H. Bush, of Fall River, Mass., for improvement in the bell stench trap.

Solomon Berheisel, of Tyrone Township, Pa., for improvement in corn dryers.

Wm. Ball, of Chicopee, Mass., for improved ore washer.

A. H. Caryl, of Sandusky, Ohio, for improved raking attachments to harvesters.

Levi Chapman, of New-York, N. Y., for improved photographic plate vise.

John Cook, of Westmoreland, N. Y., for improvement in lugs for cast iron shingles.

Edward N. Dickerson, of New-York, N. Y., and Elisha K. Root, of Hartford, Ct., for improvement in pumps.

Peter S. Elbert, of Chicago, Ill., for improvement in heating-feed-water apparatus for locomotives.

John G. Ernst, of York, Pa., for improved saw set.

Major H. Fisher, of Sing Sing, N. Y., assignor to Jos. A. Hyds, of Bridgewater, Mass., for improvement in cutting files.

Elisha S. French, of Binghamton, N. Y., for improvement in three-wheeled vehicles.

Thomas Frith, of Cincinnati, O., for improved feed-water apparatus to steam boilers.

Samuel Gissinger, of Alleghany, Pa., for improved bench vise.

Elisha Harris, of Providence, R. I., for improvement in machines for bending ship hooks.

Oliver S. Hazard and Isaac Peck, of Coventry, R. I., for improvement in machinery for making rope.

Harvy J. Hughes, of Davenport, Iowa, for improvement in brick presses.

Samuel McFerran, of Philadelphia, Pa., for improvement in hot-air furnaces.

Richard Montgomery, of New-York, N. Y., for improvement in carriage springs.

S. S. Mills & M. Bissell, of Charleston, S. C., for improvement in weighing scales.

Stephen C. Mendenhall, of Richmond, Ind., for improvement in flour bolts.

Geo. R. Moore, of Mount Joy, Pa., for improvement in fire-pokers.

Francis Morandt, of Boston, Mass., for improvement in lanterns.

Sam'l Peck, of New-Haven, Conn., for improved fastenings for the hinges of daguerreotype cases.

Myer Phineas, of New-York, N. Y., for improved metallic pen.

Juan Pattison, of Brooklyn, N. Y., for improvement in oscillating steam engines.

B. F. Ray, of Baltimore, Md., for improvement in harvesters.

John S. Snyder, of Lancaster, O., for improvement in saw mills.

Alfred Swingle, of Boston, Mass., assigner to Elmer Towsend, of same place, for improvement in sewing machines.

Harriet V. Terry, of Boston, Mass., administatrix, of Wm. D Terry, dec'd, for improved mode of constructing cast iron buildings.

S. J. Frask, of Guilford Centre, N. Y., for improved alarm clock.

Otis Tufts, of Boston, Mass., for improvement in making wrought iron shafts.

John B. Wentworth, of Lynn, Mass., for improvement in machines for softening leather.

Abner Whitly, of Springfield, O., for improvement in grain and grass harvesters.

Abner Whitly, of Springfield, O., for improvement in belt fastenings.

John Standing, of Fall River, Mass., assignor to himself and James Baxendale, of Providence, R. I., for improved movement for the doctors of calico printing machines.

Chas. C. Terrell, of Shullsburgh, Wis., assignor nor to himself and Samuel Crawford, of Mineral Point, Wis., for improvement in many-chambered breech loading cannon.

John M. Wimley, of Philadelphia, Pa., assignor to himself and Washington H. Penrose, of same place, for improvement in the mode of attaching composition soles to boots and shoes.

Wm. Adamson, of Philadelphia County, Pa., for improvement in machinery for cutting sand paper. Ante-dated Aug. 12, 1855.

John Allender, of New-London, Conn., for improvement in scissors.

B. J. Barber, of Ballston Spa, N. Y., for improved method of tonguing and grooving tapering boards.

Wm. Baxter, of Newark, N. J., for improved wrench.

Erastus B Bigelow, of Boston Mass., for improvement in power looms.

Felix Brown and Adolph Brown, of New-York, N. Y., machine for boring and tenoning wood.

John Clark, of Washington, D. C., and G. W. N. Yost, of Pittsburg, Pa., for improvement in ploughs.

Chas. W. Copeland, of New-York, N. Y., for improvement in valve and exhaust passages of steam engines.

Waldo P. Craig and Wm. R. Rightor, of Newport, Ky., for improvement in signals for vessels.

Clement Dare, of Cincinnati, Ohio, for improved method of regulating feed gates for mills, etc.

C. H. Denison, of Green River, Vt., for rotary planer for felloes.

Levi S. Enos, of Olean, N. Y., for improvement in oil cans.

Wm. E. Everett and M. M. Thompson, of New-York, N. Y., for improvement in devices for removing incrustations of boilers.

David N. Flanders, of South Royalton, Vt., for improved adjustable carriage seat.

P. G. Gardiner, of New-York, N. Y., for improvement in railroad car-axle.

John S. Gallaher, jr., of Washington, D. C., for improvement in gas and steam cooking apparatus.

Thaddeus Fowler, of Waterbury, Conn., for improvement in sticking pins in paper.

Robt. & Wm. L. Gebby, of New-Richland, O., for improvement in seed planters.

Wm. Gee, of New-York, N. Y., for lubricator.

Ejijah Hall, of Rochester, N. Y., for improvement in power looms.

Anson Hatch, of Forestville, Conn., for improved hand press for stamping letters, &c.

Birdsill Holly, of Seneca Falls, N. Y., for improvement in steam engines, which are used for pumping.

J. L. Horn, of Edgecombe County, N. C., for improvement in cotton seed planters.

Westel W. Hurlbut, of Utica, N. Y., for improved method of hanging and adjusting circular saws.

Solon S. Jackman, of Lock Haven, Pa., for improved elevator for puddlers balls.

Ferdinand Keehnold, of Bridgeport, Conn., for improved wrench.

James T. King, of New-York, N. Y., for improvement in steam condensers.

R. W. Lewis, of Honesdale, Pa., for improvement in sealing preserve cans.

Edward Lindner and Conrad Hoffman, of New-York, N. Y., for improvement in porte-monnaies.

John L. McPherson, of New-Vienna, O., and Jacob O. Joyce, of Cincinnati, O., for improvement in diaphragm pumps.

Christopher Moeller, of Newark, N. J., for improvement in wick holders for Argand lamps.

Eljsha P. Newton, of Green Island, N. Y., for improved wrench.

Job Phillips, of Harrisburgh, Pa., for improvement in grain harvesters.

John Prime, of Washington, D. C., for improvement in ship compasses.

Lea Pusy, of Philadelphia, Pa., for improved method of extinguishing fires.

Wm. H. Robertson and George W. Simpson, of Hartford Conn., for improvement in breech-loading fire-arms.

Chas. H. Sayre, and George Klinch, of Utica, N. Y., for improvement in cultivator teeth.

John Seithen, of Coblenz, Prussia, for improved envelopes for bottles. Patented in England, August 29, 1854.

Edwin F. Schoenberger, of Marietta, Pa., for improvement in fluxing blast furnaces.

Timothy F. Taft, of Fitchburg, Mass., for improved bolt machine.

Benj. Taylor, of Philadelphia, Pa., for instrument for grating green corn.

Thos. Thompson, of Nickersville, N. Y., for improved machine for folding paper, &c.

Wm. D. Titus, of Brooklyn, N. Y., for improvement in oil box for axles with conical journals.

Wm. H. Powers, of Philadelphia, Pa., for improvement in clothes clamps.

Loison D. Towne, of Worcester, Mass., for cutter heads for planing machines.

James Whitcom, of Detroit, Mich., for improvement in railroad switch.

S. W. Wood, of Washington, D. C., for improvement in railroad car coupling.

Geo. W. N. Yost, of Pittsburgh, Pa., for improvement in grain and grass harvesters.

C. C. Hoff, of Albany, N. Y., assignor to E. P. Russell, of Manlius, N. Y., for improvement in the construction of mastic roofing.

James M. Kern, of Morgantown, Va., assignor to Enoch P. Fitch and Isaac Scott, of same place, for improved method of concaving circular saws.

Alfred Swingle, of Boston, Mass., assignor to Elmer Townsend, of same place, for improvement in pegging boots.

Chas. Morgan, of Philadelphia, Pa., assignor to Sam'l Emlen, of same place, for improvement in potato planters.

Henry Newsham, of Baltimore, Md., for improvement in caldrons.

The Plough, the Loom, and the Anvil.

Vol. VIII. APRIL, 1856. No. 10.

INFLUENCE OF VARIETY OF PURSUITS,

IN PRODUCING INTELLECTUAL AND INDUSTRIAL ACTIVITY THROUGH A COMMUNITY.

Truth is self-sustaining. Separate truths mutually confirm each other. Correct theories and sound principles commend themselves by the benefits which they confer through their indirect and incidental connections. Thus each demonstrates its own excellence.

The policy which we advocate in reference to variety of pursuits commends itself, because it bears the test we have just described. It exerts a happy influence in promoting a general industry, and in a higher development of the popular intellect.

We are quite too far into the nineteenth century to bear patiently the imported idea, not yet quite obsolete, that the masses are not made to think, or even to rule. As long as the memory of a Webster, a Clay, a Franklin, a Jackson, a Zachary Taylor, and scores of others, whose very names, now that their bodies are buried in the dust, are more honored and more beloved, and exert a higher influence than scores even of living public men, aspiring to be leaders in our republic, so long it will be demonstrated that from the people—from the common walks of industry, must come, as they have hitherto, the most beloved and honored, the best, the strongest, the weightiest intellects, the most controlling influence of the country. Whatever, therefore, tends to favorable results in that direction is not only commendable, but of the highest importance.

The Church has produced as many examples of this sort as the State. Henry Martyn was the son of a collier, John Newton was a sailor, Melancthon was educated as a mechanic, and Bunyan served as a tinker and a common soldier. In our own country almost all our eminent clergymen have risen from the ranks of the comparatively poor. Nor is this all. The few very rich men have nearly all commenced without any capital. Several have first entered the city where they triumphed over the most discouraging outward circumstances, with all their possessions in the bundle which was hung at their back.

It is true, in one sense, that agriculture is established by our Creator, as man's first and highest work, and that all other forms of industry are to be regarded only as its handmaids. But this is true only in a single and limited sense. If the art of agriculture is neglected, and the annual harvest is not gathered, man must starve. Animal life, in many regions of the globe, must become extinct. This thought was most eloquently presented by

Mr. Everett in his speech at the banquet in Boston, as reported in a recent number of this journal. This work is therefore indispensable.

"In the morning sow thy seed and in the evening withhold not thy hand," is not an arbitrary decree, but the fundamental law of life. If essentially violated, famine will consume our very being. This, then, is, in one sense, our first duty.

But it is equally true that if men do not build for themselves habitations and contrive other means of defense against the elements, they must perish. So these too appear as primary duties, and architecture and other arts also, rise, like agriculture, by parity of reasoning, to the dignity of "divine institutions."

A careful view of the subject will prove that in countries where the whole of man's work is merely or chiefly the tilling of the soil, there will be, comparatively, but little physical or mental activity among the masses of the people. We have recently been reminded that "comparisons are odious," but we scarcely know how to urge any sort of progress or of reform without this kind of illustration. We therefore beg our reader's candid judgment, while he follows us, for a few moments only, in the examination of this matter. If he will then give us his ideas of it, either in confirmation or negation, we will furnish him as extensive a platform on which to exhibit his views as our pages can furnish.

We shall find that in communities engaged in a variety of industrial pursuits, mere manual labor is performed with more energy; that more physical activity is there put forth, than in those where agriculture is the sole occupation of the people. If our readers are familiar with the habits of our border settlements, as one region after another comes under the dominion of the hardy pioneer, they know that as soon as the land is once subdued and prepared for cultivation, only a portion of the time is occupied in any kind of labor. Three days's work in the week will usually furnish all that is necessary for domestic uses, and no motive urges them to more constant occupation. As we recede from the outer limits of civilization, toward the older settlements, a greater variety of crops is produced, flowers and shrubbery, and fruits, etc., begin to receive more careful and more extensive culture, and various additional inducements are presented for new forms of labor. As population becomes more dense, and new trades and professions occupy attention, markets spring up, consumers multiply, and everything conspires to induce habits of increased industry.

Look at the condition of other and older countries, and they too bear us out in asserting that physical energy and activity is displayed in the highest degree wherever the various trades and manufactures are liberally sustained. The examples to which we have referred, be it remembered, are not of those who are indolent because they are laboring for the benefit of another, without reward, or for half pay, or because the same award is given them whether they are industrious or not, but of men working their own soil, for their own advantage, and precisely according to the dictates of their own free will.

The *ingenuity* of men is more effectually called into action in communities engaged in a variety of pursuits. Under such circumstances it becomes important to do everything under the most favorable circumstances. Each man is anxious to avail himself of every new facility for carrying on his own craft. Every ingenious man may devote himself to the invention of new contrivances, under the assurance that every valuable thought he shall evolve will pay liberally for the time he may devote to it.

Facts easily determined leave no room for doubt on this point. The number of patented inventions in these *industrial* communities, (we use this term for its conciseness,) is vastly greater than in those where all are occupied in agriculture, while the number of those not patented, but which are originated, often by more than one, without any knowledge that the same thought has been suggested by others, greatly exceeds the number of patents actually issued. Probably the number of these non-patented contrivances of useful mechanical combinations greatly exceeds the number of those patented, and the excess of those non-patented in industrial communities over the same class of inventions among agriculturists, is still greater than that of inventions which are secured by law. Our own country does not furnish the only evidence of this sort. What is true here is true over all the world.

A modified form of this statement is equally certain, to wit: There is more general intellectual activity in these industrial communities than elsewhere. The mechanical inventions to which we have referred present but a partial view of the general action of the popular mind, but it is scarcely possible that such vigor and efficiency should be unaccompanied with a general activity of mind, habituated to careful analysis, and possessing a wholesome constitution.

Nor are these activities concerned only with industrial topics. How often do we see such a people manifesting a deep interest in general education, or even in liberal sciences? Sometimes, indeed, they become enthusiastic in the pursuit of some theory or abstraction, or of some fancied good. Nor is our inference drawn from these facts to be set down as unworthy of consideration, because such developments are sometimes foolish and positively harmful. No community of vigorous, but depraved mind, and especially if imperfectly educated, can fail to evolve monstrous errors. As well might a steam engine be expected to exert its tremendous power only for useful purposes, avoiding collisions and saving the lives and limbs of those who fall under its wheels. As well may a forge or furnace keep itself clear of smut and smoke. Our manufacturing machinery, *when in action*, sometimes proves destructive to the lives and limbs of operatives. It is indeed quite harmless when at rest. Nevertheless life is better than death, and occasional discords to universal deafness or perpetual silence. It is desirable that chemical agencies should exert their attractions and repulsions, though they do sometimes result in offensive decompositions. Valuable results are usually achieved at a great expense. This is equally true in morals and in physics.

We do not intend to assert that the general average of intellectual endowment, in any community, is graduated by the amount of physical machinery it employs, or that the highest intellects are confined within certain industrial boundaries. But we do maintain that under the circumstances described, the mass of mind is not called into action. It lies dormant and becomes inefficient and useless to itself and to others. Motives to effort are not presented to them, or when presented are either unheeded or result only in fitful efforts. Where the circumstances of a people are opposite to these, where the rivalries and strifes of commercial and trading industry are in their flood tide, there we always find intellectual energy to meet the demand. In every large community an opportunity is constantly afforded for the exercise of talent and skill in the learned professions, and hence we find a much greater uniformity in the endowments and capacities of men of these classes, in all communities, than we do in the condition of the people whom they serve. The tastes and prejudices of a people exert no little influence upon the peculiar mental characteristics and the amount of acquirements among professional men, but there is far less diversity arising from these causes in these professions than is displayed in other more private stations.

Where the mental powers of the masses are not habitually called into action, the few control the many. All public measures are originated and carried through, not by the people, nor at their bidding. So all improvements, as the construction of railroads and the like, are first suggested, planned, and executed by the few educated and perhaps professional men, who are regarded and who regard themselves, as in some sense, the guardians of the people, the patrons and guides of the many. The latter are the pupils, they are their instructors.

These thoughts lead to an inquiry on a kindred topic. Among what communities do we find the greatest number of learned authors and ablewriters rising up from all classes and from every kind of pursuit? Where the most numerous readers? Where the most enterprising tradesmen? Where the most efficient craftsmen? Evidently, where active competition and diversity of occupation call forth the energies of the common mind, leading to the exercise of vigorous thought, and diligent study, and resulting in a spirit of self-reliance, and an appreciation of beauty and excellence in conception and ability in execution.

It does not follow from this reasoning, that agricultural districts are always and of necessity inferior in mental vigor to those communities which are engaged in the mechanic arts and manufactures and the various trades. Often they are not so far separated from the workshops or manufactories as not to be materially affected by them. They are indeed little less than the outer covering of the Leyden jar, while those other departments of industry form the inner coat. These intelligent yeomen do not confine their thoughts nor their sympathies with the boundaries of their own broad acres. Not a day passes that they do not look out upon the busy world and listen to the tidings which are brought from it as they would listen to a message from absent friends. The newspaper is valued by them next to their Bibles. They identify their own interests with these distant movements. That they may have the most recent intelligence of important changes, the most speedy conveyances are brought into requisition. The electric wire connects them at once with the busiest scenes and most exciting conflicts of the great world. The two sides of the jar are in frequent connection. The passion of one section is mingled constantly with the more quiet thoughtful habits of the other. But a mere agricultural community, scattered sparsely over wide territories could never impress upon distant places such deep and earnest convictions, nor such intense sympathies, by their own peculiar agencies. Such a thing has never been known, unless under the most peculiar circumstances. The well deserved reputation of many rural districts in our country, the like of which is not seen elsewhere, for sound judgment, strong common sense, and ardent patriotism, are no doubt, to a great extent, the peculiar products of our own revolution, or of the influence of those matchless minds which then and for years after gave a tone to the tastes and the habits of the people. The stirring scenes of the present day, with which all these men are as familiar as they are with the transactions of their own families, have also a prevailing and controlling effect in perpetuating or modifying these habits and characteristics, as their sympathies are associated with one or another of the prominent doctrines and theories of the day.

But we need not extend this discussion. We do not see how any one can doubt that a variety of industrial occupations tends to develop the popular mind

And if the power of combination, and of invention, and of skillful analysis, of quick conception, nice perception, logical deduction, and kindred processes, are of vital importance to a people who essentially control their own destinies, the conclusion is unavoidable, that mechanical and manufacturing interests ought to be carefully protected wherever republican principles are to prevail, or democratic institutions permanently established.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

METEOROLOGICAL.

NEAR BROWNSBURG, Rockbridge County, Va.
26th February, 1856.

GENTLEMEN:—Your February number of the P. L. & A., reached me on the 18th inst. The January number did not come to hand. Please send it.

There are one or two slight typographical errors in my article of the 25th December. Second paragraph, 10th line, for corned meat, read meat, and for money read many; and 8th paragraph, 7th line, for feet read *yards*.

Since last writing you, we have had quite a Northern winter, such a one as is rarely experienced in this latitude. Indeed I may with propriety say, we have not had such continuous cold weather for 30 years. We have done nothing since the holidays but cut wood and feed the stock; and I learn by a letter just received that the James River is yet frozen up at Richmond, on the 23d. Since that day, however, the weather has been more mild, and I suppose the ice has given way by this time, as the snow has gone pretty much from the south sides, so as to give us a rise in the river without a flood. The nights freezing slightly. If our snow had gone off with a warm rain, immense damage would have been done, and we are not yet entirely out of danger, as there is much snow still in the mountains and on the north sides of the hills.

The wheat, where the snow is off, looks well. There was much seed sown last fall, and, should the season prove favorable, a large harvest may be expected. The spring frosts, and the insect tribe may yet do us much injury.

There has been less out-door work done this winter than I have ever known, and there was very little land ploughed last fall; as a consequence we will be backward this spring. The weather was too cold to make rails or fence, and this work will have to be done when we should be ploughing. From our fine crops of corn last year, our stock has been well kept, our teams will be in good order, and when the spring fairly opens we can push ahead.

For two months we have had clean nice feeding. I have never had my milch cows and stock cattle winter better. But with beef cattle, where not housed, they have not fattened as well as if the winter had been warmer. There is a good stock of beef cattle on hand, and prices have been rather depressed. Feeders not getting more than paid for their corn at 50 cents per bushel, at which corn is selling in my neighborhood.

Pork was scarce last fall, and sold at $7 to $8, and is now worth at Richmond $9. Beef commands from $6 to $10, as in quality. But little real fine beef to be had.

Annexed I send you the state of the weather for the last two months, and I hope after a while to find leisure to write you more at length.

Date.			Mercury.		Weather.
Dec.	26,	1855,	16 deg.		Wind high and from North.
"	27,	"	15 "		
"	28,	"	28 "		
"	29,	"	29 "		Cloudy, sleet and rain.
"	30,	"	27 "		Wind clouds.
"	31,	"	20 "		Hazy.
Jan.	1,	1856,	22 "		"
"	2,	"	27 "		Cloudy.
"	3,	"	35 "		Rain and sleet.
"	4,	"	20 "		
"	5,	"	18 "		Snowing, wind North.
"	6,	"	10 "		
"	7,	"	10 "		
"	8,	"	22 "		Clear.
"	9,	"	0 "	rose to 16°	
"	10,	"	3 "	below Zero.	
"	11,	"	2 "	above "	Wind North.
"	12,	"	24 "		Stormy day, snow.
"	13,	"	30 "		
"	14,	"	25 "		
"	15,	"	25 "		
"	16,	"	24 "		
"	17,	"	24 "		Bright day.
"	18,	"	31 "		
"	19,	"	38 "		
"	20,	"	24 "		Snow storm, wind East by North.
"	21,	"	14 "		
"	22,	"	14 "		Clear.
"	23,	"	15 "		"
"	24,	"	12 "		"
"	25,	"	15 "		"
"	26,	"	10 "		
"	27,	"	18 "		Snow storm, wind North.
"	28,	"	27 "		Cloudy.
"	29,	"	28 "		"
"	30,	"	27 "		"
"	31,	"	22 "		"
Feb.	1,	"	34 "		Wind West.
"	2,	"	28 "		" " high.
"	3,	"	13 "		Cold, windy night.
"	4,	"	2 "	bel. Z., rose to 14°	
"	5,	"	3 "	above Zero.	
"	6,	"	13 "		Hazy.
"	7,	"	34 "		Snow.
"	8,	"	37 "		Sleet.
"	9,	"	30 "		Windy.
"	10,	"	24 "		
"	11,	"	26 "		Clear, high wind.
"	12,	"	36 "		High wind, North-west.
"	13,	"	16 "		Snow.
"	14,	"	3 "	below Zero.	
"	15,	"	18 "	above "	Snow.
"	16,	"	38 "		
"	17,	"	13 "		Very windy.
"	18,	"	25 "		
"	19,	"	15 "		Clear.
"	20,	"	30 "		Cloudy.
"	21,	"	26 "		Clear.
"	22,	"	25 "		" Wind North-west.
"	23,	"	39 "		" " "
"	24,	"	32 "		" " "
"	25,	"	36 "		" " "
"	26,	"	38 "		" " "
"	27,	"	35 "		Snow and rain.

I would remark that for near two months the mercury rarely rose to 40 degrees, with generally cold North-west or North-east winds, blowing almost a hurricane at times. I often thought of the poor weather-beaten mariner, who must have suffered intensely, and I fear this branch of trade has been sadly disastrous. Your ob'd'nt servant,

Feb. 26, 1856. Henry B. Jones.

SPEECH OF MR. McMICHAEL.

[We are happy to give even a tardy report of the beautiful speech of Mr. McMichael at the recent agricultural banquet in Boston. It does honor t· the editorial corps of which he is a member, and to the city which he has chosen as the place of his residence.—Ed. P. L. A.]

Mr. President:—From the land of the Quaker to the land of the Puritan —from the city where our National Independence was first proclaimed, to the city where its first great labor was performed—we, who have just been honored by the toast you have proposed, may come, not as once we might have come, in awe of brandings, and stripes, and imprisonment, nor as again we might have come, burdened with the weight of a gloomy foreboding, to share in the perils of a doubtful conflict. No sir. Happier in this than our forefathers, whether of the earlier or later time, we have come, assured of hospitable welcome and bounteous entertainment, to witness the generous rivalries of friendly contestants, and to mingle in the rejoicings which properly belong to the triumphs of peace.

And sir, we feel that it is good for us to be here—we feel, now that the bitterness of intolerance, as between you and us, has forever ceased, now that the trials and dangers of revolutionary struggles for you and for us are forever over, recalling, as we may, with a smile, the follies of the fanaticism by which we were separated, remembering, as we must, with a sigh, the trials of the patriotism by which we were united—that it is good for us, men of Pennsylvania to be here with you, men of Massachusetts; to engage with you in a common effort to promote an important interest of our common country; to admire with you the rapid development of that interest; to exult with you over the unexampled prosperity of that country.

Missionaries from our heaped-up granaries, from our prolific mines, from our teeming furnaces, we have entered your industrial establishments—those great reservoirs of life, and of motion in its seeming intelligence resembling life—and having seen with our own eyes and measured with our own judgments the men and the means, that by consuming our grain and our coal and our iron, and replacing them with fabrics that supply the staple of a busy commerce, have made our interests and yours complete and identical, we are ready to cry "Woe, woe, woe," unto him that would sever us. Bound together as we are, it was not possible we could meet as strangers, but you have received us as favored brethren; and in behalf of my colleagues, and in the name of those we represent, I cordially thank you; I thank you for the courtesy which has been extended to us; I thank you for the privilege we have enjoyed of being partakers at the same time, of your pleasing duties and your grateful cheer; I thank you for the opportunity you have furnished of joining our hands and our hearts and our voices with yours, in the fulfillment of mutial service, in the recognition of mutial kindness, in the utterance of sentiment of mutual good-will.

Mr. President:—As I looked, yesterday on the gratifing exhibition made among the triple hills of your beautiful Boston, like his Excellency, the Governor, I too was reminded of those ancient days, when from all the isles of Greece, the people gathered to a periodical festival, foremost among whose attractions were the achievements of the race-course and the ring. It is true, sir, contrasting the present with the past, that in your curriculum no gaudy and glittering chariots, urged by filleted tyrants, have flashed their useless splendor in our eyes; but in their stead you have shown us troops of gallent steeds, stronger of sinew, fleeter of foot, and lither of limb than ever champed a bit or struck a hoof in Elian circle; and backed by hard-handed men who live in the daily practice of a liberty beyond any of which the Greek had ever dreamed.

It is true, sir, that within your enclosures no naked wrestlers or sturdy athletes have tortured their supple joints in degrading encounters; but better far than these, you have set before us whole droves of cattle preëminently fitted for the dairy, the shambles, or the yoke; whole flocks of sheep, rich in the wool that gives activity to our looms, and the flesh that ministers to the healthy, and tempts even the sated appetite; whole droves of swine, suggestive of that abundance which, out of our surplus, enables us to feed the hungry of the earth; and all these you have presented so cared for and provided, so pampered and fattened, that, while on the one hand you have avoided whatever might lower the condition of man, on the other, for his use, and convenience, and enjoyment, you have elevated the condition of the brute.

And, Mr. President, if in all things else this anniversary celebration of the United States Agricultural Society had fallen short of the far-famed games of old; if, sir, instead of surpassing them, as it has, in all the manifestations of material superiority connected with the multiplication of human comforts, it had failed to match their meanest efforts; if, instead of the unassailable demonstration of progress which every incident of the display has contributed to strengthen, there had been equally unmistakable proofs of stagnation and retrogression; there is one thing in which it has gone so immeasureably before them that for that and that alone, it would be a thousand-fold more entitled to our praise.

Mr. President, the Greek, with all his elegance and refinement, with all his philosophy and learning, with all his exquisite appreciation of poetry, and music, and painting, and sculpture, and statuary, had no adequate conception of the true value and just position of woman, and admitted her to no participation, unless in exceptional cases, in his higher pursuits and graver occupations. As part of his general system, she was prohibited, on pain of death, from being present at the ceremonies of the sacred island; and the reservation in favor of the free love priestesses of Ceres only attested more significantly the dishonoring character of the exclusion.

You, sir, have been guided by a wiser and better spirit, and recognizing that social equality of the sexes which reason and revelation alike teach us, you have thrown your gates wide open to the maids and matrons of the community, you have given them due precedence as well in the spectacles as at the banquet; and in the bright, the thoughtful, the eloquent faces which turn towards me, I recognize visible tokens of the illimitable advance which our Christian has made over heathen civilization.

Mr. President: In the most glorious era of Greecian art under the administration of the manificent Pericles, the wealth and power of that accomplished statesman were directed to the construction of such works as, being immortal themselves, might confer immortality on their authors and projectors. First among these, as you well know, in grandeur, in beauty, in costliness, was the colossal statue of Jupiter by Phidias. Towering in its pride of place in the temple of Mount Olympus, gorgeous with gold and ivory, and all manner of precious stones, that transcendent result of genius drew to it all the visitors of the Olympic games, who offered their devotion rather to the spiritual presence of a divine art, than to the imaged incarnation of the potent Thunderer, who sat in cold and stately majesty before them.

Nearly fourteen centuries have rolled by since that statue—the faith it typified having long before perished—was buried beneath its own smouldering embers at Constantinople, then the brilliant seat of the Imperial Cæsars. And not alone have the faith and its emblem perished. The classis traveler gropes in vain among the obliterated landmarks of Antilla for traces of the Hippodrome, or vestige of the Prytaneum. Constantinople, smitten with the plague—a spot of corrupt religion, and emaciated by the long exhaustion of a feeble dynasty, writhes in the death-grasp of inevitable dissolution.

The Greek himself, his language and his morality alike enervated, resembles his fathers only in name. But, Mr. President, in a new land, under a new dispensation, and a new polity, professors of a purer creed, the possessors of a surer heritage, we have to-day commemorated a new Olympiad. From all parts of a republic, mightier in its infancy than Athens in its prime, there have crowded earnest candidates for the honors, valiant strugglers for the prizes you have had to bestow. Nor have the statue and the temple been wanting.

Beneath the dome of your capitol we have marked the placid dignity of our Pater Patria, whose deeds and whose virtues shall survive in the affections of distant generations, when the old mythology, father—god and all, with its vanities and vices, have sunk into utter oblivion. From the foot of a neighboring eminence, we have gazed on the simple column which crowns the spot consecrated by the blood of the first martyrs of American freedom—a column which, simple though it be, is dearer in the associations which cluster around it, than any hoary pile, no matter how venerable in its antiquity, nobler than any modern trophies,

"Built with the riches of a spoiled world."

And, Mr. President, whatever of pride the cultivated Greek may have felt in contemplating the master-piece of Greecian skill—whatever of reverence the pious Greek may have felt in contemplating the master-deity of the Grecian Pantheon—we who are here, whether from the north or the south, or the east or the west, have felt a loftier pride, a holier reverence than ever Olympian statue or Olympic temple inspired, as, filled with solemn memories of the past and jubilant hopes of the future, we have stood in the presence of the marbled form of our own Washington, or the granite monument that records the story of Bunker Hill.

At the close of the eloquent gentleman's remark, six hearty cheers were given, and at each allusion to him by subsequent speakers, the audience testified their appreciation of his eloquence and genius by hearty applause.

GEOLOGICAL SURVEY OF KENTUCKY—ITS MINERALS.

The State Geologist of Kentucky, Mr. D. D. Owen, has published a synopsis of his report, from which we take the following valuable information:

As the Geological Report for 1854 and 1855 cannot appear before the adjournment of the legislature, I have been requested to prepare a synopsis of some of the principal results of the geological survey up to the present time, to set forth the objects to be obtained by its further prosecution, and lay before the members of the legislature some of the advantages which the Commonwealth of Kentucky must derive from developing its mineral resources, and publishing these to the world in the reports of the geological survey.

A reconnoisance has been made of sixty-three counties, embracing those of the Jackson purchase, most of the counties lying between Green and Tennessee rivers and the southern boundary of the State; the southeastern mountain counties; together with the counties bordering on the Ohio river below its falls; also the counties of Greenup, Lawrence, Carter, and Lewis.

The detailed geologico-topographical survey of Union county has developed, beyond all anticipation, the mineral resources of that county. In the lower 1000 feet of the coal measures of Union county, nine to ten workable beds of coal have been discovered, the thickness of which is over thirty feet, and capable of yielding under each acre of ground over 1,000,000 bushels of coal, after throwing off an ample allowance for waste and slack, worth more than $80,000 if all worked out; which, after deducting the expenses of mining and transportation to market, will yield a clear profit of $30,000.

Besides this, there are valuable beds of iron-stone associated with the coal, which, at a low estimate, will produce from every acre when smelted, 1350 tons, worth, at the lowest price, over $25,000.

Is it, then, to be wondered at that lands *now known* to be underlaid by these rich beds of coal and iron ore should have doubled their value since the commencement of the geological survey.

Kentucky is the only State that has within its limits *two* rich coal fields, occupying more than one-fourth the area of the State, with a depth of 25,000 to 35,000 feet, embracing at least eighteen workable beds; while the coal measures of Missouri, as reported by the geological survey of that State, are only 650 feet in thickness on the Missouri river, embracing two workable beds, as represented in the sections of the coal measures embraced in the report on that State just issued. The lower 1000 feet of the coal measures, over a very great area, will undoubtedly afford in many sections of the State valuable beds of iron-stones, which can be converted into iron at great profit.

Up to the present time the operations of the geological corps have been chiefly directed to develop the mineral resources of the State in coal and iron ore, as these are considered of the first importance.

A few facts in regard to the consumption, cost of production, and demand for iron, together with the profits that can be derived from its manufacture, will serve to exhibit the value of the raw material, and where it is situated so as to be mined with facility, and produce iron at a cheap rate.

	Tons.
The consumption of iron in the United States for 1853 was - - - - - - -	1,200,000
Production, - - - - - - - - -	800,000
Wastage, - - - - - - - - -	100,000
Leaving to be imported, - - - - -	500,000
This is mostly railroad iron, which costs—	
English manufacturers' cost per ton, - -	$42 00
Commission, - - - - - - - - -	2 80
Government duties, - - - - - -	16 00
Freight, - - - - - - - - - -	8 00
Discount of bond, - - - - - -	4 00
	$72 80

This would take out of the country $36,500,000 per annum for an article which the United States, and especially the *Western States*, have the means of producing at one-half the cost, and which the manufacturer could afford to sell at $50 per ton at a profit of 30 to 40 per cent.

It can be demonstrated that in the Western States, where coal can be mined for $3 per 100 bushels, and ore for $1 50 per ton, that pig iron can be smelted for $12 per ton, and bar iron produced at $35 to $40 per ton; and after adding to this commission and carriage for a distance of 300 miles, the Western iron manufacturer can deliver his railroad iron at a profit of 15 to 25 per cent., and still undersell the lowest price at which English iron can be delivered in the Western States.

According to the statistics of the iron trade of the United States, the increased demand in the next four years for iron may be calculated at 500,000 tons a year; while the increased production of iron in the United States, at the present rate of increase for the last few years, will not be over 1,260,000 tons to meet that demand; leaving 740,000 to be imported, if the rate of production in the United States be not increased.

The reconnoissance of Greenup and Carter counties has disclosed, in 740 feet of the lower coal measures, fourteen distinct beds of excellent iron ore, varying from four inches to four or five feet in thickness, associated with coals of superior quality; and there is reason to believe that, in the belt of the same formation, stretching thence in a southward course across the entire State, abundance of iron ore and coal will be discovered in prosecuting a detailed geological survey of the mountain counties, since at various localities along its southwestern confines in Pulaski county and elsewhere, important deposits of these minerals present themselves.

The bases of both the Eastern and Western coal-fields are reservoirs of productive brines, wherever they form synclinal folds or troughs or abut on impervious vaults of the adjacent limestones; such as are worked with profit on Goose creek, in Clay county, and at Brashear's salt well, on the north fork of the Kentucky river.

The Eastern coal-field, occupying the mountain counties, lies higher above the superficial drainage than the Western. It is a prolongation of the Pennsylvania coal measures, which includes the country watered by the Big Sandy; the Kentucky river above its forks; the heads of the Licking, and the Cumberland river above its shoals, embracing some twenty-four of the mountain counties. The coals of this coal-field are, for the most part, of excellent quality, rich in fixed carbon. The main coals which have been analyzed from Big Sandy, the forks of the Kentucky river, and the shoals of the Cumberland river yielding from 58 to 63 per cent of fixed carbon, while they are free from earthy impurities.

In Greenup and Carter counties, from six to eight distinct beds of iron ore exist, sometimes in the same hill, with an average united thickness of six to eight feet; capable, therefore, of supplying under each acre, when mined and smelted, 8000 tons of iron, worth $200,000. The same hills contain, at least, good beds of workable coal, which may be safely estimated to have a united thickness of six feet of solid coal; which will afford in addition, over the same tracts, 10,000 tons per acre, worth, at a low estimate, $20,000, after throwing off an ample allowance for waste and slack.

The upper coal measure of the Eastern coal-field in the counties of Lawrence, Johnson, Floyd, Harlan and Knox, embraces very thick beds of coal, containing 60 to 63 per cent. of fixed carbon, with a very small ash, lying from fifty to two hundred feet above the superficial drainage. In Lawrence, Johnson, and Floyd, these crop out in the hills bordering on Big Sandy, and therefore easily accessible and convenient for transportation to market.

Fine workable coals, containing 60 to 62 per cent. of fixed carbon lie under the conglomerate in some of the mountain counties, as, for instance, in Pulaski county, above the shoals of the Cumberland river, conveniently situated for transportation down that river.

These few illustrations will suffice to demonstrate the great natural mineral wealth of Kentucky, which seeks only active capital to convert this raw material into articles of commerce, which next to the products of agriculture, are most essential to civilized man, but which, without that active capital must lie comparatively dormant.

Over a large part of Europe, the soil derived from the coal measures that contain their mineral wealth is for the most part an unproductive soil, or at least far below the average of soil in fertility. This is not the case with a great portion of the coal region lying towards the center of the Mississippi valley; because the soil of that region is derived more from the finely comminuted loams and calcareous marls of the quarternary deposits than from the materials of the coal measures themselves over which it has spread, and, to a certain extent, intermingled. Union county, for instance, which is based in its whole extent on the coal formation, is a very rich agricultural region, capable of supporting more than a hundred inhabitants to the square-mile, or or a population in the whole county of 50,000 to 60,000.

As one of the principal ulterior objects of the geological survey of the State will be to define the limits of the coal fields, and develop the rich mineral wealth lying adjacent to its confines, and, since the reconnoissance which has been made proved that the lower 1,000 feet of coal measures and the circumscribing belt of underlying limestone are emphatically the mineral regions of the State, it is evident that the proper plan to be pursued in the prosecution of the detailed geological survey is to carry the work at first around the confines of the coal-fields, then fill the interior from the circumference on the same plan that has been followed in Union county.

The most economical and expeditious plan would be to put an equal force on the western and eastern divisions of the State, and thus carry forward the survey simultaneously around the eastern and western margins of the two coal-fields.

PRICES OF FOOD IN EUROPE.

Food Not Scarce in Europe.—A correspondent of the New-York *Post* writing from Italy thus disposes of the idea that there is a scarcity of food in Europe :

"Having traversed a considerable part of Western and Southern Europe, in the last four months, I have observed every where the abundance, variety and moderate prices of good food, and the general uniformity of prices.

He also gives a table showing the market prices, at retail, of some leading articles, which is the best criterion of the state of the food market. It is compiled chiefly from telegraphic reports collected in the office of the Minister of the Interior, from the principal food markets of Europe, and may be relied on as a correct report of the markets about the 15th of November, when prices were the highest. The quantity of each article is one pound, avoirdupois, and the price in cents and hundredths of a cent American weight and money.

	Wheat Bread.	Beef.	Veal.	Mutton.
Rome,	5,53	7,23	7,49	6,84
London,	5,70	11,74	19,63	15,58
Paris,	4,94	11,38	15,04	13,62
Glasgow,	5,36	13,62	13,52	12,58
Liverpool,	4,68	12,90	15,91	12,90
Dublin,	5,08	12,58	15,57	12,68
Antwerp,	5,44	12,90	13,62	15,40
Brussels,	4,63	12,76	12,76	12,76
Ostend,	5,36	11,49	12,34	14,04
Armsterdam,	7,49	14,33	27,24	14,33
Rostook,	5,70	9,78	11,00	8,34
Dantzic,	6,63	10,04	13,62	9,10
Settin,	9,36	10,04	11,23	10,03
Meneil,	3,42	10,21	10,62	10,21
Oporto,	5,44	8,78	12,96	9,70
Santador,	4,44	6,89	8,00	8,00
Nice,	8,68	11,05	11,92	11,82
Port Maurice,	5,08	8,51	8,51	10,21
Milan,	5,92	10,30	10,30	7,15
Constantinople,	8,76	8,17	8,17	0,00
Smyrna,	5,08	6,55	0,00	0,00

Death of Dr. Harris.—We record with deep regret the recent death of Dr. Thaddeus W. Harris, Labrarian of Harvard University. Dr. Harris was well known as a naturalist, of great eminence, and in the department of entomology occupied a position which probably no other man in this country is qualified to fill. His valuable work on Insects Injurious to Vegetation, and his frequent contributions to the agricultural press in this important department of science, have rendered his name familiar throughout the country, and his loss will be widely felt. His disease was dropsy on the chest.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE PROPER INCENTIVE TO ACTIVE INDUSTRY.

Miss., Feb. 25, 1856.

My dear Sir:—There are many men to whom an argument—to the pocket—will have an effect, and perhaps they are the masses; therefore you was right and I wrong. The remark was made in my presence a few years ago, that it was ridiculous for a doctor, who had not made money by planting, to offer his advice to planters,—that for such men as A, or B, or C, to write for an agricultural paper would do,—such advice would be of the right sort,—they were sensible men. Aye, and many hold that to accumulate property is an evidence of talent, a *weighty consideration.* This, to me, is a knock-down argument. I acknowledge all the weight, yet I can never profit thereby. Why, sir, I can name the men who have their laborers up and waiting *in the field* for daylight,—work wet or dry, cold or hot, before day, after dark,—for the almighty dollar. Aye, sir, there are such everywhere. Grow a fruit-tree! a rose-bush! a dahlia! have a comfortable house!—"all, all is vanity,"—no, sir, these cost dollars. Improvement costs money and time, the profit is not immediate. Upon this place we use about 500 lbs. of nais yearly, of course plank, and of course labor. The value of property is enhanced, at least in the comforts provided for man and beast. Lumber account for plank alone was over $100 in 1855. And so it has been. Again, Mr. A. cuts logs, rives four foot boards, puts up his log-cabin, and there lives till he is worth $50,000 or $100,000. Dr. B., having lived in a city for say only a year or so, feels as if he must live while he breathes, when he buys a piece of land, builds at say only $1,000. He lives accordingly. Both these persons start in life as a babe, the same year; marry the same year. A, in twenty-five years, owns $150,000, and his house and furniture worth $500. B has perhaps $20,000, and his house, etc., though plain, is worth $3,000 or $4,000; his books alone will pay for the house and fixings of the other. A is the talented man; no man owes him a dollar, and when he moves nobody puts a black cloth on arm or hat. Whereas B, the imprudent one, is always called on for a small loan for a few days or weeks, and often sees no interest. He has troops of well-wishers.

As for myself, I prefer to provide well for my household, on principle, but not to be its slave. I can enjoy a beautiful span of horses, though not my own, but I cannot admire a colossal fortune, made as it is sometimes. I can enjoy the society of a reading man, but never the company of a money-making man,—such I mean as cannot aid a friend without looking to deeds and rents—such as never becomes intimate lest it would create a sort of compulsion to help.

As to one country making more than others, this must ever be. Just so of individuals. Within my memory at least, one portion was ahead, now another, and in thirty more years another will wear the golden crown. Make intellect or education the king, not dollars. Any aristocracy but money. I prefer, though a plebeian, the aristocracy of family.

As to my country, there are more educated men of our wealthiest than in any country I ever knew, very many of them being the architects of their own fortunes. I dare not name a few of the doctors and lawyers and graduates, that are five hundred to twenty hundred bale planters, and many of whom I know are gentlemen of noble bearing. But still this class of men belong not to what are understood by money-making men. They make money, not by nigh cuts.

Stimulate men to inform their minds, to feed their land, take due and proper care of everything in their trust, from a sense of duty to God, their country, their fellow men, and themselves. Place anything before "because you will make money." The spirit of making money has become so prevalent, that one can hardly get a man to stand still long enough to direct him to your office.—Why, sir, I am afraid my old wife will catch the complaint, and the paper I write upon will be *wasted.* Perhaps others think so now.

Why, sir, I know the man who teaches his toddling boys "stick in that cutting, it will sell next fall for two bits." The consequence is, the young man inquires how rich is Miss Seraphine, or Miss Angelina, etc.; or he receives fifty cents at the door of a spunky young Miss of seventeen—the cost of examination, in a clerk's office, of her father's will,—he wanted to see what she was worth. If "the love of money is the root of all evil," that root is spreading; but I hope never to reach it. P.

AGRICULTURAL IMPLEMENTS—LIVING TABLEAU.

Those who assert that little improvement has been witnessed in the art of agriculture within the last twenty-five years must be quite unacquainted with the great number of new inventions designed to give increased facility to agricultural operations. It is true that this period is eminent for progress in almost every department of manufactures and of handicraft. But a very cursory view of the list of patents will show very conclusively that genius has not been unmindful of the tillers of the soil. The attempt to meet their wants in these respects has occupied a great deal of time and has demanded continuous effort, and it has not been unsuccessful. A single one of the many threshing-machines is a boon of great value. But array the whole list of modern implements—improved ploughs, planters, drills, corn-shellers, mowers, reapers, threshers, feed-cutters, etc., what an exhbition they would make!

It would be an occasion of very great interest if our United States Agricultural Societies could feel justified in departi ngfrom the exact sphere they designed to occupy if they could collect these great machines, to the exclusion of all other inventions, at their next show in Philadelphia. Though opportunity could not be afforded for examining them all at work, they might be seen in motion, and a tolerable judgment be formed of their probable action in the field. The object would not be so much to test the comparative merits of the different inventions as to show how much has been done for the agriculturist by the inventive genius of our own age. We could portray a vision illustrating this point, which, without a large draft upon one's fancy, might afford full scope for the best efforts of the painter. We will contribute our humble mite by presenting the following

Grand Tableau.

With the first rosy light of morning the world of living animals, including every variety of age and condition, present themselves before the goddess of agriculture. The whole human race, male and female, alike dependent with inferior species, stand in the immense throng, waiting upon the husbandmen, her servants, while they produce and prepare for these millions their daily sustenance.

Among the multitudes of men and animals, all alike dependent upon the success of this one petition, are the great generals who have been borne in triumph at the head of their victorious armies, and none are louder in their supplications for immediate relief. Kings come down from their thrones and join with the poorest in their realm asking for their daily bread. Men of science and men of letters all do homage alike to the lord of the harvest. Fathers and mothers, sons and daughters, brothers and sisters, magistrates and people, rulers and subjects, all occupy common ground at this hour, and on this one point, alone, perhaps, of all the subjects ever presented to the consideration of the whole world, there is no dissenting voice. Not one is silent, for even the sick and dying supplicate for their friends. All, at this hour, confess themselves the dependents of him who plants and nurtures and gathers the fruits of the earth. The bondmen labor on in their arduous work. The severity of the task compels many of them, one by one, overcome by weariness, to give up their task, and all labor "in the sweat of their brow."

But ere long Genius, who had stood for a while looking upon the busy scene before him, with his eye upturned to heaven as if giving thanks that hence had descended upon him the inspiration which qualified him for so beneficent a service, steps forward attended by a throng of intelligent artists, each delighted to perform his own appropriate work. With a smile of satisfaction at the scene which is about to be opened, he invites them to proceed. Each is at once eager to present an offering, the result of his inventive skill, the use of which will alleviate the burden of those whose lot it is to provide for these immense numbers. The grateful laborers express their great obligations for so useful implements, while the waiting throng, in their turn, offer their tribute of gratitude for so timely and so valuable a service. All alike rejoice in the possession of those means which tend to the mutual good of all concerned, and aid even the poor and the friendless to a participation in the bounties of their common Father.

Though our picture is imaginative in form, it is real in its substance. The cultivators of the soil owe a debt of gratitude to the inventive spirit of the age, the magnitude of which they cannot easily comprehend, and it is well that every suitable opportunity should be made an occasion for illustrating the connection between these various pursuits, and the benefits bestowed by each upon the rest, and for deepening and widening the common sympathy which ought to pervade the entire circle of industrial pursuits.

Prunes.—Prunes have been very successfully cultivated in Pennsylvania. Among the economists in Beaver county, they have been grafted on plums. Mr. Pfeiffer, of Indiana, raised prune trees in large numbers, and sold them at exorbitant prices, some as high as \$5 and \$10. He had some of the fruit at the Pennsylvania State Agricultural Fair, held at Pittsburg, which sold readily at 50c. a quart.

EXPERIMENTS IN FARMING.

Experience is one of the best teachers and of logicians. Hence we value reliable statements of what has been done, with the conditions attending it. The following statements from the Hampshire County (Mass.) Reports, will be read with interest.

EXPERIMENTS BY ALBERT MONTAGUE.

"I present, for consideration, a statement of the effect of subsoil ploughing upon three pieces of land of similiar soil, and in about the same state of cultivation. I ploughed the land seven to eight inches deep and subsoiled six to seven inches.

No. 1 was a piece upon which a crop of corn was taken last year. It contained one acre. One half of it was subsoiled. The whole piece was equally manured and treated alike for a number of years. Upon this piece I sowed oats and grass seed, and could see no difference in the piece from the time the oats came up until harvested. But, now, the clover upon the subsoiled part is a little the largest, enough to be noticed by persons who pass by the lot.

No. 2 was a piece of green sward, containing two acres. One-half to three-fourth of an acre, through the center, was subsoiled. Upon the whole I spread compost manure and harrowed it in. I spread as evenly as I could over the whole piece; then planted it to broom-corn, using a few ashes in the hill. The piece was cultivated alike through the season, but the broom-corn upon the part subsoiled, was longer, of a better color through the season, and, I judge, will yield from one hundred and fifty to two hundred pounds of brush to the acre, more than that upon each side of it, and the seed is much better.

No. 3 was a piece subsoiled three years since, and planted to corn. Same quantity of manure was used, and it was managed alike through the season, and the corn crop was no better upon the subsoiled, than upon the part not subsoiled. I sowed grass seed at the last hoeing. I have mowed it for two years past, and each crop of grass has been much the best upon the part subsoiled, being I think near a ton more to the acre.

MANURE EXERIMENTS BY ALBERT MONTAGUE.

No. 1. I purchased last spring, superphosphate, poudrette and guano, for the purpose of testing their comparative value with each other and with barnyard manure.

Upon one acre of my best land, I spread eight loads of well rotted manure and harrowed in; then, planted to broom-corn, using $1 44 worth of poudrette in the hill upon one-half of it, and $2 41 worth of superphosphate upon the other half, dropping both poudrette and superphospate at the time of planting, using Woodward's Planter. At the first and second hoeing, the corn, where I used the superphospate, was the most promising; and at harvesting, I should judge, would yield from fifty to one hundred pounds more broom-brush.

No. 2. Upon a piece of green sward, soil rather cold and heavy, I spread fifteen loads of compost to the acre; then, planted to Indian corn, using superphospate upon one-half, and good wood ashes upon the other half, putting quantities of equal value upon each. The corn upon the superphosphate part came up first, grew the fastest, ripened ten days earlier, and will yield ten bushels of corn more than the ashed part. Nearly the same result I found, by experimenting with superphosphate and ashes upon a piece of light, sandy soil. I think the relative difference was about the same, although the piece of corn was much lighter.

No. 3. was with guano and barn-yard manure. I measured one and a half acres of good meadow land, that had been well manured and well cultivated for a long time. Upon one-half of it, I spread and ploughed in eight loads ot good yard manure, for which I paid eight dollars. On the other half, being in the center of the piece, I spread guano at the same cost, as the yard manure (i. e. ., at the first cost—the expense of applying the guano was but little, compared with that of the yard manure). I harrowed in the guano. Then, I planted to broom-corn, using a little superphosphate in the hill upon the whole. The piece was managed alike, during the whole season, after the different manures were applied. Many persons, who have passed, have asked why the middle of this piece looked so much the best. I referred them to the guano. The crop is not yet harvested, but good judges have said there would be two hundred pounds more of broom-brush and a greater excess of seed upon the guanoed half.

No. 4. Believing broom-corn stalks of some value, if ploughed in green, I cut some stalks from a part of a piece, immediately after I had taken off the crop, and placed the stalks in furrows nice and smooth—one hand plowing, while another took care of the stalks. I sowed the piece to oats the following spring, and upon the part where I ploughed in stalks, the oats were one-third heavier, than where none were ploughed in. I obtained eight dollars worth of oats on one acre for the labor of getting rid of my broom-corn stalks in this way. And as to the removing the stalks, it did not cost me one dollar more than to have gathered and burned them in the spring.

EXPERIMENTS BY J. EDWARDS PORTER.

The land on which my trial of guano was made, is situated in Hadley, on the plain. The soil is a sandy loam,—has been frequently cropped with rye—the crop of 1854 yielding only five bushels to the acre. Some four years ago, wishing to try the effects guano upon this land, I purchased and carefully composted the guano with seven parts of earth; applied it to the hill, at the rate of one hundred pounds to the acre, and planted it to corn. At the first hoeing, I was surprised at the healthy appearance of the crop. It continued to grow vigorously, outstripping for a few weeks the corn upon my best land. But a change came, and my corn assumed a sickly appearance. I found that my homœopathic dose of guano, in its haste to produce stalks, had exhausted all its force and there was no virtue left for ears. My crop was a failure. So I concluded that, if I had treated my poor, sandy land more liberally with guano, I should have been amply repaid at harvest. I have since practised on this conclusion, and have had my reward. I have applied four hundred pounds of Peruvian guano to the acre, broadcast, and ploughed the whole under, to the depth of six inches. At one harvest, I gathered from three acres of this poor, sandy plain, three hundred and six bushels of corn in the ear, and realized a net profit of $92.

In a report of the Massachusetts Society Transactions (which contains the preceding) Mr. Francis De Witt makes the following suggestions, in reference to

IMPROVED FARMING TOOLS.

Among the many good results growing out of the formation of agricultural societies, is the rapid improvement in farming tools. In no department of industry are improvements progressing so rapidly, as in agriculture. The fact is noted in the Patent-Office Reports, "that the greatest number of patents applied for and issued, of any one class, are connected with agriculture, and the fewest are those to be used in war;" it is said the proportion is nearly as ten to one. This probably in part arises from the fact that improvements can be made; that agricultural societies stimulate such improvements; and partly because labor-saving tools are necessary, owing to the scarcity of farm laborers and the high price of labor. It is hoped another good may be the result of these exhibitions of skill and industry. Our young men, who in years past, have been disposed to forsake the old homstead, and the tilling of the ground for positions and occupations in cities and large towns, with a *future prospect* of a little more cash, but far less independence, may be enabled to see that there is a scope for the mind, in the science as well as art of farming; and, by the use of the improved and labor-saving machines, the farm work is not all mere drudgery. At the same time, there is more real enjoyment of the gifts of a bountiful Providence than can be obtained in the usual employments of the dense population of a city. The farmer and mechanic are so closely connected in interest, and so dependent upon each other, that it is desirable they should, on an occasion like this, meet on common ground, and together enjoy that interchange that is necessary for mutual improvement. We hope the fairs of this society will increase in interest in this essential department of agriculture.

MODES OF FARMING.

We are well aware that no two good farmers agree exactly in all their ideas of good farming, and yet there is a principle, the guaranty of success, which runs through all their diverse systems. We are always amused and sometimes instructed by the discussions of the farmers in the State House in Boston. They evidently go upon the principle "semper paratus," which in this case, liberally translated, *may* mean "take no pains to prepare." Hence all manner of positions are taken on almost all branches of the business, and maintained by suggestions that occur to them at the moment.

The following statements are worthy of attention. They are taken from a report of a recent meeting, in the *Ploughman:*

CULTIVATION OF CORN—MODE OF FEEDING.

Hon. R. S. Fay, of Lynn, said he had satisfied himself that corn was a hungry feeder. He makes his land rich. He turns the grass over in autumn, then ploughs once or twice in the spring, puts on twelve cords of manure to the acre and ploughs or harrows it in.

He made no hills, kept the land flat after planting in rows three feet and six inches apart. Not much use was made of the hoe. Not more than ten or fifteen days were allowed to intervene without passing a light cultivator between. This saved labor and left the land cleaner.

Barn-yard manure was ploughed in green in the fall. It was composted in the spring. This supplies the wants of the crop to a full degree. Has no doubt that a hundred pounds of plaster with some leached or unleashed ashes, applied at planting, or after it came up, was beneficial.

He cuts the corn to the ground as soon as the kernel is glazed. It is placed in small shooks and stands till sufficiently dry. The sap is thus stopped and dried in the stalk. Thinks more saccharine matter is thus secured.

The fodder is salted. It is all cut fine before feeding out. A little meal is added. A jet of steam is let on for twenty-four or forty-eight hours. It was the main food of his cattle for two months. He sees no cattle that are kept better. They leave none. The entire crop is utilized. Not a piece was lost.

In China there was a kind of corn valuable for sugar. The inquiry was whether it could be made useful here for corn-fodder?

DE BURG'S PHOSPHATE.

Hon. Amasa Walker, of Brookfield, said the corn crop was not sufficiently valued. The use of it for green fodder was increasing. It came just at the time our pastures were short, and it was just the thing wanted. The culture of it was becoming common.

He used last year De Burg's "Phosphate of Lime" with great success on various crops. There was a great difference where it was used through the season. Its effect was not so striking on potatoes. He used it also on grass lands with a clay substratum. It was natural mowing land, that he did not plough up.

When the grain was cut the crop was twenty-five to thirty-three per cent. more where this phosphate was used. On the second crop the increase was still greater. It was a thing about which there might be much deception. It might often be adulterated. But it would be for the interest of the manufacturer to keep up the quality.

A handful in the hill was safe and simple. In planting with guano all his corn was killed, although five times the bulk of dirt was mixed with it, and the men were directed to cover it with dirt before putting the corn in.

PROFITS OF CORN.

Mr. Cooley, of Conway, finds corn his most profitable crop. He plants same land two years in succession. He manures both seasons. The second year he ploughs in twenty-five loads to the acre, and puts eight loads of compost in the hill and raises seventy bushels to the acre. A strict account was kept, and the cost of his corn was forty-eight cents per bushel. Half the manure only was charged to the corn. The labor was reckoned at one dollar per day. His corn weighs sixty-four pounds to the bushel in January when thoroughly dry.

CORN MAKES THE BEST BUTTER AND CHEESE.

Mr. Osgood, of South Reading, said it had been his business to travel in Massachusetts and New-Hampshire buying butter and cheese. He found the best butter and the best cheese was produced by those farmers who resorted to the use of corn fodder. Their cattle also looked better. He used the Southern white, large flat corn, and planted from the 6th to 13th of June, in a light sandy soil, on which white beans had been raised.

In the drills he placed manure made with night-soil and coal ashes from hard coal. His friend Mr. Sanger, of Danvers, had first used hard coal ashes in this mixture with great success.

His cows increased their amount of milk when he commenced feeding with green corn fodder. They increased for the first four days constantly. There was no trouble with their decreasing afterwards while they had plenty of corn. His cows came nearly up to the best week in July.

PROFITS OF FARMING.

We present below the crops produced by farmers in different parts of Massachusetts, as reported in the transactions of the Agricultural Society of the last year, and intend to follow up this exhibition, not of possible but of actual products, by good farmers, on all kinds of soil, that others may see how far short they come of the profits within their own ability. We have presented such statements from time to time, and we hope to find that the number of those who are just to themselves and to their chosen pursuit will be multipled year by year. Interest on the value of the land is included in the estimate of expenses.

Harvey Dodge, Worcester Co., Mass., farm 93⅓ acres, of which 10 acres were waste, 10 of woodland and 22 of pasture. Cost of cultivation, $1299. Products, $2102 50. Profit, $803 50.

J. C. Merriam, Worcester Co. Farm 60 acres 38 rods, of which 9 acres are woodland, 4 are swamps and 21 pasture. Annual expenses, $446 06. Products, $1147 84. Profit, $698 78.

Austin Smith & Sons, Franklin Co. Farm 64 acres. Annual expense, $1955 60. Products, $3944 90. Profit, $1989 30.

R. Wales Smith, Hampshire Co. Farm 85 acres, of which 39 are pasture and 16 woodland. Annual cost, $759 75. Products, $1324 11. Profits, $564 36.

Dr. Morten, Norfolk Co., reports a profit of $97 52 on a half acre of potatoes, of $14 57 on a half acre of fodder corn, and of $62 02 on a half acre of carrots.

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

COTTON GINS.

Miss., Feb. 23, 1856.

To Mr. H. Clarke, Newport, Fla.:

Dear Sir:—On 470-471 pp. of this work, (current volume) will be found an article of yours from the *Scientific Farmer*, upon the subject of "Cotton Gins."

I am no mechanic, but being the son of one, I am perhaps drawn to the subject of mechanism. Your article upon this matter is like the sound of the horn or the bark of a pack of hounds to an old courser, and should I show the old fogy, I beg you will not think it is done in unkindness. As a planter, I am deeply interested, but really more so as an improving man, as a citizen. Mr. Fultz, to whom you allude, was kind enough to draw my attention to his improvement, before he received a patent, sent me specimens and asked my opinion. I have "stood up to" many gin stands, make it a point to try all I can, I mean to *feed* the stand myself, and strange as it may seem, I delight in it. I have turned out a bale per day, more than any ginner ever averages. I beg to differ with you as to gin stands, saw-gins, being as yet perfect. I have used five different gin-stands, the first made by a Carolina workman, a young man who served his time with McCreight of Winnsboro, S. C., and made me the best cotton, large teeth. All I have seen will nap or twist if cotton be wet. This is caused by the teeth getting full of lint and pressed in so as not to be separated by the brush ; some will nap owing perhaps to teeth being so pointed as to be forced into cotton, or the brush wants velocity, or bristles not enough.

My idea is, to gin 3 to 5 bales, without giving velocity would be to make longer saws and have teeth small and square, give the brush velocity sufficient to clear each tooth so that no cotton pass through the grates the second time. My reasons—Some 15 years ago I took a sample from my gin stand ; some of the seed cotton also, ginned this upon a spinning jenny ; sent both samples to a merchant, he offered some 2 or 3 cents more for the last, and begged the opportunity to buy. Thus the ginning made an increase value of at least 2 cents. I have known an improvement by substituting the best Russia bristles with a little more speed to brush. I have also improved, by making the driver or saw cylinder near two inches larger, so as to increase speed of brush. I am satisfied that shorter teeth will be less liable to nap, and less motion of saw will break fewer fibres. I do not suppose that I have offered a new idea, yet these statements may suggest one to you or others. Yours with respect, P.

SHEEP IN THE VALLEY OF VIRGINIA.

[We have received from a valued correspondent, Mr. S. F. Christian, of Augusta, Va., a copy of his premium essay on the subject of wool-growing. He is not only familiar with the subject but, what is far more rare, he appreciates the difficulties which are imposed by lack of judgment in the owners of sheep, and points out the remedy which should be applied. We give this essay entire, and commend it to all interested in this subject.—Ed. P. L. & A.]

Having given my personal consideration and attention, during the last ten years, to wool-growing as an incident of agriculture, I submit a short, practical essay, treating of my experience and practice in sheep husbandry in the Valley of Virginia.

The Valley possesses important natural advantages for the production of fine wool and mutton. The soil is based principally upon limestone and blue slate, with sufficient admixture of sand to produce in perfection all the cereals and the various grasses best suited to the sustenance and development of stock. The climate is favorable, obtaining a happy medium of temperature throughout the year, and the purest water gushes in copious streams from a thousand hills. The face of the country being well diversified with rolling hills and winding vales, with craggy cliffs and mountain sides, with frequent intervals of forest and field and meadow, presents just that condition most congenial to the habits and nature of the sheep.

In establishing a flock for this locality—wool being the primary object, guided by some experience with Bakewell, Cotswold, Saxon, and Spanish merinos, I preferred the last as best adapted in character and constitution for improvement and profit, under the circumstances of this country. Accordingly, I selected in three different States at the North thirty head of Paular and Guadaloupe merino; choosing them from three distinct families, and since carefully numbering and registering them and their descendants, after the suggestion in Morrell's American Shepherd, page 279.

Selecting one hundred and fifty of the finest ewes from the common breeds of the country, I put with them a fine Cotswold ram, and with the ewes from this cross I put a merino ram; and with all the subsequent female progeny continued to put full blood merinos.

The Cotswold ram, in the first generation, was used to give form and size; though now, for that purpose the Oxford Down (a new breed) would be preferable as having a form still more symmetrical, and a fleece approximating nearer in quality to the merino. All the buck lambs from these several crosses were, as wethers, at the age of two years, fatted and sold for the shambles.

About the last week in October my rams are put with the ewes in the proportion of three rams to one hundred ewes, and remain together until about the middle of December following. They are then separated, the rams and wethers forming one flock, the breeding ewes another, and a third is composed of the young ewes which were taken from their dams during the preceding August. On the approach of winter the several flocks are put in fields, inclosing each a portion of woodland. The forest trees furnish for our climate a sufficient and also the most acceptable shelter to the sheep; to test this I have had good sheds prepared in the fields, but the sheep leaving the sheds invariably sought shelter among the trees from every approaching storm of sleet or snow.

The box rack is the most convenient and economical for feeding. Hay, corn-fodder, and oat-straw, furnish their winter food, and the foddering season usually lasts for four months. Green food occasionally through the winter is of very great advantage. Indeed, could a sufficient supply in any way be obtained for the whole year, it would be far better than any other. In this climate some grain might be sowed with this object. In North Mississippi for several years I kept a flock of Saxon merinos grazing almost the entire winter upon fields of rye, sown in the standing corn and cotton at the last working of the crops. The sheep throve remarkably well, and were wintered with far less trouble and expense than if kept on dry food, and the wool was manifestly finer in fiber and softer to the touch. Of this latter particular I was fully assured by having preserved samples of wool for successive years from several sheep when wintered on green food to compare with samples from the same and similar sheep when fed exclusively on dry food. M. R. Cockrill, Esq., of Tennessee, from whose celebrated flock my sheep had been obtained, also experimented in this matter with similar results.

In the Valley of Virginia, where showers are frequent, and dews and frosts heavy, sheep may do without other water, though they always thrive best and build up better constitutions when having free access to fresh running water. The lambs are dropped through the month of April. About the first week in May is the time in which they should be penned, docked and castrated. This is best done in the mode recommended in Morrell's American Shepherd, p. 174.

The wool I have washed upon the sheep's back about the 20th of May, or as soon thereafter as the weather and water become sufficiently warm. The most convenient plan with me is to drive the flock to a neighboring mill-pond, to be washed in the "trunk" which conveys the water to the mill. From a pen built against the trunk, the sheep are taken by a person standing beside the trunk, and plunged in the water till washed; then being passed up stream to another hand, the wool is rinsed and the sheep given over to the herdsman, who takes them to a clean grass sod, where their fleeces will not be soiled. Three good hands may thus wash about four hundred sheep in one day. After four days of dry weather, the shearing may be commenced. The fleeces should be rolled up separately, inside out, and packed for marketing in sacks holding each about twenty-five fleeces.

At this time I examine the sheep very closely in order to mark and turn out for fattening, all the runts, and those in any way inferior for breeders. Thus the flock is soon and permanently improved. The common course, however, with many farmers in this region, is to keep all their sheep together throughout the year, and when mutton is wanted for the table in the spring, to select the fattest and best formed, which is usually the youngest and best of the ewes; thus leaving the ill-formed and lean kind for the propagation of their flock. Nor is it wonderful, physiologically considered, that in a few years they discover that their flock is "running out," and find it necessary to buy up a new stock for a fresh start. Hence, too, the common fallacy that sheep will not do well if kept long on the same farm.

In grazing through the summer, I very frequently change the sheep from field to field; otherwise, the grass becomes tainted and they will not relish or improve upon it. They should be salted twice a week upon the ground; a little wood ash mixed with the salt is very beneficial. Sheep thrive best upon a variety of herbage, and eat much vegetation that large cattle refuse. Their manure is very valuable as a fertilizer.

It is a common complaint that sheep injure pasture land by grazing too close. Sheep are constituted by nature to graze closer than cattle, and if kept too long upon the same pasture field will of course injure it; they have only to be removed before the grass is cropped too close. The custom with too many farmers is to graze a field with cattle and horses until these can no longer crop enough to support life; then to turn in the sheep, who are thus forced for a living to nip it to the roots, to the serious injury of the proprietor's pasture, and their own disparagement. If sheep were fairly treated and judiciously managed, they will actually improve land more and injure it less than other stock; a fair experiment will so demonstrate.

For several years by grazing both cattle and sheep, I have had opportunity to compare the relative profits. On a fair account kept with each for my own satisfaction, it appeared that the sheep yield about 25 per cent. more profit upon the capital invested than did the cattle—and this without including a large proportional sum from the sale of select rams for breeders.

The average price obtained for my wool during the three last preceding seasons, is forty-nine cents per pound for that sold in Virginia. The average weight of fleece in the entire flock of thorough-bred merinos is something over five pounds per head, washed upon the sheep. The expense of keeping the Spanish merino is astonishingly little.

Sheep are the only domestic animals that yield both food and clothing. Their flesh is very easy of digestion, wholesome and nutricious, and is universally esteemed by epicures. Their wool is an article of prime necessity, used by all classes both by day and by night. The demand for home consumption far exceeds the supply, and many millions of pounds are brought from abroad, while no other country possesses greater facilities for sheep husbandry than our own Valley of Virginia.

INSECTS INJURIOUS TO VEGETATION.

LEPIDOPTERA CONTINUED.

Hesperiadæ, Skippers.—The English name was given to these insects from their habit of flying short distances only. When they alight they keep the wings expanded, the fore-wings being partially raised. Other butterflies close their wings when they are not in use. This is a more obvious distinction than any differences in their organization. Their caterpillars are somewhat spindle shaped, tapering towards each extremity, without spines, naked, or downy only, with a large head and small neck. Their habits are solitary, concealing themselves often when about to undergo transformation within folded leaves or fragments of stubble. Their chrysalids are conical, or tapering at one end, and rounded or pointed at the other, not angular nor ornamented with spots, but often covered with a blue white powder.

Hawkmoths, Sphinges.—These form the second of the three genera into which the Lepidoptera were arranged by Linnæus. The name was suggested by a fancied resemblance to the Epytian sphinx. They support themselves by their four or six hind-legs, elevating the fore part of their body, and retain this position for hours together.

The true sphinges make a sound in flying resembling that of a humming-bird, and hence are sometimes called humming-bird moths. They are also called hawk-moths, from their habit of hovering in the air while taking their food. They may be seen, morning and evening, flying very swiftly from flower to flower. Their wings are long, narrow, and pointed, their bodies thick and robust. They have long tongues with which they extract the honey from blossoms while on the wing. Some sphinges fly only in the daytime, and when the sun shines brightly. Such are the

Sesiæ, which are partial to the phlox. These insects appear in July and August. Their form, size, color, and fan-like tails, and their manner of taking their food, cause them to be mistaken, sometimes, for humming-birds.

Aegeridæ, Aegerians.—These insects resemble wasps or bees in form and color. They fly by day, but usually alight while taking their food. Nor are they so swift of flight as the preceding. Their wings are narrow and mostly transparent; they have a brush or tufts at the end of the body, which they can spread out in the form of a fan. They fly only during the day. They derive their nourishment, while in the caterpillar state, from the wood and pith of plants, keeping themselves concealed within their stems and roots. Hence they are called borers. These caterpillars are whitish, soft, and slightly downy, have sixteen feet, are destitute of any thorn or prominence on the last segment of their body. Their cocoons are oblong-oval, composed of fragments of wood and bark, cemented together. The chrysalids are of a shining bay color, and their different segments are armed with transverse rows of short teeth. Some of this genus are fond of the ash; others, as the *Aegeria Cucurbitæ*, prefer the cucumber, squash, etc., which in August are often destroyed by this insect. It begins its operations near the ground, and perforates the stem, devouring it as they proceed. Its chrysalis is formed in the earth, and appears in the next summer a winged insect, with a body of orange color, spotted with black, its hind-legs fringed with long orange-colored and black hairs. The hind-wings are transparent, the fore-wings expand an inch or an inch and a half. It lays its eggs in the vines near the roots. This insect may be seen flying about during the last half of July and to the middle of August.

The *Aegeria exitiosa* is the insect which has proved so destructive to the peach tree. The eggs are deposited in the summer upon the trunk of the tree, near the roots. The borers, when hatched, penetrate into the bark and devour the inner bark and sap wood. Their presence is marked by the castings and gum which issue from their holes in the tree. When a year old, they make their cocoons under the bark, or about the roots, and come forth as winged insects, and lay their eggs as before. Their last transformation is from July to October. The winged insect is slender, steel-blue color, four-winged, slightly resembling a wasp or ichneumon fly. The two sexes differ in appearance. The male is smaller than the female. Head, with band at base, both above and below a pale yellow; eyes, black brown; antennæ ciliated on the inner side, black, with a tinge of blue. All his wings are transparent and are bordered and veined with steel blue. The feelers, shoulder covers, edges of the collar and of the abdominal rings, are pale yellow. It expands about an inch. The body of the female is dark steel blue, with a tinge of purple, antennæ destitute of fringe. The fore-wings are blue, opaque; hind-wings transparent, bordered and veined like those of the male; and the middle of the abdomen is encircled by a broad, orange-colored belt. It expands an inch and a half or more. Dr. Harris recommends the following mode of defence against this insect, which has proved successful heretofore:

"Remove the earth around the base of the tree, crush and destroy the cocoons and borers which may be found in it and under the bark, cover the wounded parts with the common clay composition, and surround the trunk with a strip of sheathing paper eight or nine inches wide, which should extend two inches below the surface of the soil, and be secured with strings of matting above. Fresh mortar should then be placed around the root, so as to confine the paper and prevent access beneath it, and the remaining cavity may be filled with new and unexhausted loam. This should be done in June. In the winter the strings may be removed, and in the spring search for more borers, and renew the same protecting applications as before."

One means of preventing the ravages of this insect, as described by Say, is as follows:—Examine the trees early in July; take a bricklayer's trowel, and opening the ground around the trunk, the lodgement of the insect will be at once discovered by the appearance of gum, and it can readily be destroyed. One person can thus examine a hundred trees in a half day, and very few insects, if any, will escape. But more effectually to destroy them, early in August take some swingling tow, or a similar thing, six inches or more in width, tie close around the body of the tree, the under edge to be a little covered with earth, so as to prevent any passage beneath. About the middle of September remove the bandage, and give the whole tree a covering of soft-soap or lime-wash or tobacco. Or if the bandage described is dispensed with, use a bandage of tobacco leaves or stems from the first of August to November.

Great advantage has also been derived from the use of anthracite cinders. Open a basin around the trunk of the tree and fill it with the cinders.

See also Mr. Skinner's American Farmer, vol. 6, pp. 14, 37, 334, 401.

The egg of the peach borer is oblong-oval, dull yellow, and so small as to be scarcely visible by the naked eye. The larva is of a white color, the head being reddish brown. In the pupa state each segment has a brush or tuft of spines, except the three terminal ones, which have a single row of spines only. The pupa state continues from about the 10th of July till the end of the month or the beginning of August.

The *Aegeria tupeliformis* infests the leaves of the currant bush. The habits of this genus resemble those of the peach borer. The moth is a blue black color; wings transparent, veined, with a copper-colored band across the tips of the anterior pair; the under side of the feelers, the collar, the edges of the shoulder covers, and three narrow rings of the abdomen are golden yellow.

The *Aegeria Pyri*, of Dr. Harris, attacks the pear tree. Its wings expand more than half an inch, are transparent, veined, bordered and fringed with purple black, and across the tips of the fore-wings is a broad, dark band, glossed with coppery tints. The prevailing color of the upper side of the body is purple black, and of the under side golden yellow; so, also, the edges of the collar, of the shoulder covers, of the fan-shaped brush at the tail are yellow, and a broad yellow band crosses the middle of the abdomen, preceded by two narrow bands of the same color.

The *Smerinthi* are sluggish in their movements, fly during the night only, take no food, apparently, while in the winged state, and have short tongues. Their fore-wings are generally scalloped on the outer edge. Their caterpillars are rough, or granulated, with a stout thorn on the tail; a triangular head, the apex of the triangle corresponding to the crown. This insect is not very common.

The *Glaucopidians* mostly fly by day, and alight while feeding. This genus is distinguished from other spinges by their antennæ, which, in the males at least, and sometimes in both sexes, are *pectinated* as it is termed, that is, are furnished on each side with slender, parallel branches, like the teeth of a comb or the plume of a feather. They devour the leaves of plants. Their cocoons are formed of coarse silk. The caterpillars are green, with black bands, and slightly hairy. They are gregarious, but disperse when about to undergo their transformations. These insects answer to the Procris Vitis or P. Ampelophaga of Europe, which have proved very destructive to the grape vine.

Quinque Maculatus.—This is called the Five-spotted sphinx, from five round, orange-colored spots found on each side of the body. It is about five inches across the wings, of gray color, variegated with blackish bands or lines. Its tongue can be extended five or six inches, and when not in use is coiled up like a watch-spring, and is almost concealed between two feelers. It closely resembles the Carolina sphinx.

The larva of this butterfly is the large green caterpillar, known as the potato worm. It has a thorn upon its tail, and whitish, oblique stripes on its sides. This insect devours the leaves of the potato. After it has attained its full size of about three inches or more, when it has the thickness of a man's finger, which is in August, it descends to the earth and buries itself beneath the surface. After a few days it becomes a chrysalis, of a bright brown color, its long and slender tongue-case bending over so as to touch the breast only at one end, resembling the handle of a pitcher. It remains in the ground below the reach of frost during the winter. The season following it bursts its chrysalis covering, and the moth escapes above ground. It rests upon some plant till evening, and then flies in search of food.

Another species of sphinx infests the elm. It is separated as a distinct group by Dr. Harris, called *Eratomia quadricornis*, from its having four horns on the fore part of the back. They are three and a half inches in length, of a pale green color, with seven oblique white lines on each side of the body, and a row of little notches like saw teeth on the back. Their four horns are also notched. There is a long, stiff spine on their hinder extremity.

Near the end of August they descend from the trees, and soon enter the earth to become chrysalids. Passing the winter within the ground, they come forth in the following June, and may be seen in considerable numbers on the trunks of trees and on fences. Their wings then open nearly five inches, are of a light brown color, variegated with dark brown and white. On the hinder part of the body are five longitudinal lines of a dark brown color.

Another caterpillar, which is very destructive to the leaves of the grape vine, is called by Dr. Harris *Philampelus*. "When young they have a long and slender tail, recurved over the back like that of the dog; but this, after one or two changes of the skin, disappears, and nothing remains of it but a smooth, eye-like raised spot on the top of the last segment of the body. Some of these caterpillars are green, others brown, and the sides of their body are ornamented by six cream-colored spots, of a broad oval shape in the species which produces the *Satellitia* of Linnæus, but narrow, oval and scalloped on that which is transformed into the species called *Achemon* by Drury. They have the power of withdrawing the head and first three segments of the body within the fourth segment, which gives them a short and blunt appearance." They attain the length of three inches or more, are thick in proportion, and are voracious. The come to their growth in August, descend into the earth to undergo transformation, ascend, in the winged or moth state, in June and July.

"The *Satellitia* hawkmoth expands from four to five inches, is of light olive color, variegated with patches of dark olive. The *Achemon* expands from three to four inches, is a reddish ash color, with two triangular patches of deep brown on the thorax, and two square ones on each fore-wing. The hind-wings are pink, a deeper red spot near the middle, and a broad, ash-colored border behind."

Another sphinx, very destructive to the grape vine, is smaller than the preceding, which not only devour the leaves, but nip off the young fruit. They are naked and fleshy like the Achemon and Satellitia, a pale green color, but sometimes brown, a row of orange-colored spots on the back, six or seven oblique lines on each side, and a short spine or horn on the hinder extremity; head very small. The fourth and fifth segments are large and swollen, while the anterior segments taper abruptly towards the head. The fore part of the body presents a resemblance to the head and snout of a hog, and hence it has been named the Chærocampa or hog-caterpillar. It is found on vines and creepers in July and August. It undergoes its transformations on the surface of the ground, concealed under leaves and rubbish, which it draws around it, and appears a winged insect the following summer in July.

The caterpillars of the spinges have sixteen legs, joined in pairs, beneath the first, second, third, sixth, seventh, eighth, ninth and last segments of the body. The last segment is furnished with a horn or tubercle. When at rest they keep the fore part of their body elevated.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

HOPS IN LAMOILLE COUNTY.

Mr. Editor:—The year has again rolled round. It rather becomes my duty to remark somewhat on the hops reared in Lamoille county last season.

The weather was about as much too wet last season as it was too dry in 1844; the frequent rains caused the hop to rust. At the time the strobiles were nearly grown, and quite tender, we had frequent winds, that agitated the vines and bruised the tender buds or cones, which assumed a reddish-brown color, which was injurious to the sale of the hops; in consequence of which many went second sort.

The hops will hardly average $5 00 per hundred. There being many new yards, there have been a few more raised in the county than last year. In Hydepark, in 1855, 75 tons, the amount realized $40,000, and $100,000 in the county; this year the growers in Hydepark will receive about $7,500, and the county about $20,000; not enough to cover the expense of picking and bailing.

Many have contracted debts on the expectation of realizing an abundant crop and fair prices for their hops. The fall of hops has caused a great dearth of money, and much financial distress. Ariel Hunton.

Hydepark, Vt., March 12, 1856.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PROSPECT FOR FRUIT, ETC.

Baldwinsville, N. Y., March 22, 1856.

Mr. Editor:—In consequence of the circulation of reports that the fruit-buds (which I presume is true) are generally killed in the West, people East are apprehensive that they may possibly be dead with us. This, however, is not true, for I find that peach-buds in almost every instance are alive. Some few are black, but generally they are green, and look fine. The conclusion is, therefore, that we shall have a fine crop of this kind of fruit in Jersey and New-York. It has been about eighteen or twenty degrees colder in the West this season than here,—cause not known. In years gone by this, I believe, has not generally been the case. I never experienced more searching or more intensely cold weather than I found in the State of Indiana this winter. The air was amazingly cold—so cold that it was not safe for an individual to face the wind any great length of time. This was on the 10th of February. After arriving home I found a material change in the state of the weather as well as in the atmosphere. I have always noticed that the air, during the winter season in the West, was more severe and searching than with us. I cannot account for this, unless, indeed, it be in consequence of the immense bodies of water which the western people are blessed with. The prairies may have something to do with the severity of the winds. It is very true that it is not safe for an adventurer to make his way across those large prairies during the prevalence of very cold weather; for instances are quite common in which travelers and others have frozen to death in making their tours over them.

I am very confident of another fact with reference to the West, and that is, the country is not so sure for fruit as it is in this eastern world. This, unquestionably, is the effect of the changeableness of the climate, sudden thaws and sudden frosts out of the season, and sudden atmospheric changes through the year. These things cause the western country to be a poor locality for raising fruit successfully during a series of successive years. Yet, Mr. Editor, I have seen as fine apples in the West as I ever saw in any country, both large and fair. Now, I do not believe that the western people will be blessed with many apples or a great quantity of other fruit this coming season. In many parts of the West, say from Cleveland to St. Paul, and in fact we can say this of many other localities in the West, the thermometer has indicated a temperature at from 25° to 31° below zero! This is singular, but nevertheless it is true. While it has been thus cold in the West, the thermometer has been down only about 10° or 12° below zero in the State of New-York and other places in the East. Why is this, Mr. Editor? Will you explain? On the banks of the Mississippi snow has not at all been unusual this winter far below Cairo and within the confines of Tennessee. In many of the Western States the snow has been fifteen inches deep, and I am not certain but its depth may be set down at twenty inches. For many long years the people have not been so abundantly supplied with snow as they have been during the winter of 1856. For instance, to speak about our own country, snow has been measured to the depth of three feet and a half in Oswego Co., N.Y., this season! This depth was found in the woods where the snow was protected from the influence of the wind. Railroads have been blocked up, business has been delayed, men have been greatly incommoded by the quantity of snow; mails have been impeded, and people have been forced to keep within doors, all in consequence of immense deposits of snow, not only on railroads but on other traveled thoroughfares.

From these considerations, Mr. Editor, I conclude we shall have a late spring, though it is to be hoped a fruitful season. It will take some time to produce a change on the ground so that it will really be fit for cultivation.

And there is another thing, farmers, by reason of the general fall in the price of provisions, will not plant nor sow nor raise as much grain and vegetables as they did in the year 1855. The "*one-acre-more*" system, as carried out last season, has seemingly filled the whole country with a surplus of most kinds of food. Hay is at reasonable prices, or at least has been, and so we may say of many other kinds of provender. But the farmer, notwithstanding this state of things, ought not to relax his efforts, but should raise all the products he can, for there are now as many people to eat and feed as there were a year ago. "Wars and rumors of war" do not increase nor diminish the amount of food consumed by the people. This is very evident. Very respectfully, W. TAPPAN.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

DIOSCOREA BATATAS.

I HAVE noticed sundry remarks made by persons at the Farmers' Club, and several squibs in newspapers, regarding the Chinese potato, with the object of underrating its merits. Not one of these remarks has emanated from a man well informed on the subject, or who could give any authority for his effete arguments. Jealousy and spleen have had much to do with these misstatements.

It will be borne in mind that Professor Decaisne stated in the *Revue Horticole* for 1854, that the *Dioscorea Batatas*, which was received from China only in 1850, is an entirely distinct species from the *Dioscorea Japanica*, (Japan potato,) which had been obtained many years previous; and it is the former which he has found to be highly commended in the Chinese agricultural works, and of which they have in that country more than fifty varieties, more or less valuable. In the *Revue Horticole* for 1855 he has most fully confirmed his previous position, and has given us engravings showing the very distinct characters of the two plants, although to a casual observer of these two trailing plants the distinction might not be apparent.

These statements of Professor Decaisne are of the highest importance, as we already find that the two species are being disseminated confusedly, a circumstance calculated to lead to many future disappointments, as the one is so very superior in its qualities to the other, which has hitherto been cultivated only as an object of curiosity. It would be worthy any one's attention to examine pages 69 to 74 of the *Revue Horticole* for the ample delineations of the two plants, with his caution against the apparent confusion that exists in France—a confusion which has now been extended to our own country by the importation of both these species. It appears that Monsieur de Montigny, French consul at Shanghai, in accordance with instructions from the French government to seek out the most appropriate substitute for the common potato, which had become so subject to the rot and other maladies, instituted a thorough investigation of the qualities of the numerous varieties of the Dioscorea Batatas; and after the fullest research he transmitted to the Museum of Agriculture at Paris the *Imperial Rice-white* variety, as far surpassing all others in general excellence, remarkable for the snow-white color of its flesh, and for yielding a beautiful, pure white flour. Being determined to start on the surest ground in my experiments, I took such measures through my Paris correspondents as would insure to me the obtaining of the highly approved variety I have referred to. The result has been most successful. The roots when dug were remarkable for their beauty, and for their pure white flesh, of a delicately farinacious flavor. In view of these facts it is scarcely necessary to add that our importers should exercise the greatest caution and scrutiny in making their selections, and that purchasers of imported roots should demand an inspection of the invoice, as a proof of their being the genuine Dioscorea Batatas (*of Decaisne*,) and not the spurious species.

W. R. PRINCE.

AMERICAN INSTITUTE.

FARMERS' CLUB MEETING OF MARCH 4, 1856.

The Secretary, Henry Meigs, Esq., read extracts translated by him from the *Journal de la Sociéte Imperiale et Centrale d'Horticulture.* Napoleon III., Protecteur. Paris, December, 1855.

Mons. Capp, Chief Gardener of the Useful Plants in the Museum of Natural History, in the name of Professor Decaisne, presented magnificent tubers of the Dioscorea Batatas, (Chinese yam.)

The small pieces of this Dioscorea were planted in April, 1854, and are now of considerable size, and weigh 500 to 1000 grammes, (17½ to 35 ounces,) and ramify much.

Messrs. Chevel, of Montigny, said that they had tasted this Dioscorea last week, and that the flavor rendered them excellent.

Mons. J. Dumas, on the contrary, said that he had tasted some that were *fade*, (insipid,) and looked like mucilage. Some members said that perhaps they were not sufficiently matured.

Mons. Bourgeois said that he had the last year received some of the tubers, which were different in figure from the rest, and that instead of being round they were flattened.

Mons. Remont, of Versailles, presented several specimens of his first crop of the Dioscorea or Ignome. They were raised from the bulbilles, (little bulbs); some were grown on new land in the environs of Dax, department of Landes. Others, near Versailles, in rich and well manured soil, produced an inferior crop to the former. Mons. Remont stated that he had tried panification (bread-making) by adding 20 per cent. of this Dioscorea to wheat flour, and that the bread was excellent. He hopes that 35 per cent. of this root may be added to flour with advantage. Planted in April, a hectare (two and a half acres) may yield 65,000 killogrammes of the tubers—about thirty-five tons to an acre. (This would be 780 bushels per acre.)

Mons. Payen said, that if we can obtain 40,000 killogrammes per hectare, it would be an immense advantage gained for agriculture. He desires of Mons. Remont to dry some of the Ignames and ascertain their proportion of starch. He observed that it was a remarkable circumstance in this elongated root, that the starch was far more abundant near its upper extremity than at its base; that those cultivated in Algeria were more full of starch than any grown in France, and that like differences are found in the starch of the common potatoes, which vary from 14 to 27 per cent. of starch.

Professor Decaisne said, that during the last year some of the tubers produced 17 to 18 per cent. of starch.

Mons. Guerin-Menneville said that Mons. de Montigny has sent from China *bulbilles of several varieties* of the Dioscorea.

Messrs. Decaisne and Remont pointed out a singularity in the cultivation of this plant, quite remarkable, which is that *they hate dung! The Chinese never use it in cultivating the Dioscorea!*

As to the difficulty of getting out the crop, their depth in the ground being so considerable, Mons. Bourgeois said, a plough can be made as well suited to plough them out as the plough used for carrots.

Mons. Remont says, he intends to try the cultivation of this new root in six of the departments of France.

Messrs. Bossin and Louesse presented Dioscorea tubers grown from the bulbilles (little bulbs,) and others from the cuttings of the root.

Professor Decaisne presented small tubers of the Dioscorea Batatas, and also of the Dioscorea *Aroides*, received direct from China. The first are long roots with *truncated ends;* the latter are probably the Colorasse, (species of Arum.)

THE AMERICAN POMOLOGICAL SOCIETY.

SIXTH SESSION.

In conformity with a resolution passed at the last meeting of this National Association, the *Sixth Session* will be held in Corinthian Hall, in the city of Rochester, New-York, commencing on Wednesday, the twenty-fourth day of September next, at 10 o'clock A.M., and will continue for several days.

Among the objects of this meeting are the following: To bring together the most distinguished Pomologists of our land, and, by a free interchange of experience, to collect and diffuse such researches and discoveries as have been recently made in the science of Pomology—to hear the Reports of the various State Committees and other district associations—to revise and enlarge the Society's catalogue of Fruits—to assist in determining the synonymes by which the same fruit is known in America or Europe—to ascertain the relative value of varieties in different parts of our country—what are suitable for peculiar localities—what new sorts give promise of being worthy of dissemination—and, especially, what are adapted to general cultivation.

The remarkable and gratifying progress which has been attained, of late years, in this branch of rural industry, is, in no small degree, attributable to the establishment and salutary influences of Horticultural and Pomological Societies. It is, therefore, desirable that every state and territory of the Union should be represented in this convention, so that the advantages resulting from the meeting may be generally and widely diffused. Held, as it will be, at a convenient point between the Eastern States and the Western, easily accessible from the South, and also from the Canadas, it is anticipated that the attendance will be larger than on any former occasion, and the beneficial results to the American farmer and gardener proportionally increased.

All Pomological, Horticultural, Agricultural, and other kindred associations of the United States, and of the British Provinces, are requested to send such number of delegates as they may deem expedient; and nurserymen, and all other persons interested in the cultivation of fruit, are invited to be present, and to participate in the deliberations of the convention.

In order to increase as much as possible the utility of the occasion, and to facilitate business, members and delegates are requested to forward specimens of fruits grown in their respective districts, and esteemed worthy of notice; also, papers descriptive of their mode of cultivation—of diseases and insects injurious to vegetation—of remedies for the same, and also to communicate whatever may aid in promoting the objects of the meeting. Each contributor is requested to make out a complete list of his specimens, and present the same with his fruit, that a report of all the varieties entered may be submitted to the meeting as soon as practicable after its organization.

Packages of fruits and communications may be addressed as follows: "For the American Pomological Society, care of W. A. Reynolds, Esq., Chairman Com. of Arrangements, Rochester, N. Y."

Delegations will please forward certificates of their appointment, either to the above, or to the undersigned at Boston.

Gentlemen desirous of becoming members of the Society, and of receiving its Transactions, may do so by remitting to the Treasurer, Thomas P. James, Esq., Philadelphia, Penn., the admission fee of two dollars, for *biennial*, or twenty dollars for *life* membership. MARSHAL P. WILDER, *Pres.*

H. W. S. CLEVELAND, *Sec.*

BOSTON, Mass., March 15, 1856.

ON WOOL-GROWING.

TO THE PRESIDENT, VICE-PRESIDENT, AND MEMBERS OF THE WOOL-GROWERS' ASSOCIATION OF WESTERN NEW-YORK.

GENTLEMEN :—I have received a copy of your circular, announcing the intention to hold your second annual Fair at "Penn Yan, Yates County," on the 27th, 28th and 29th days of May next.

Nothing could afford me more pleasure than to attend that meeting, but fearing that I shall be prevented by want of health, I will comply with your request to aid in promoting the objects of the Association. I can send for your inspection

1st. A general collection of *Foreign Fleece*, in which you will find choice specimens from almost every country in the world which has any pretensions to sheep breeding.

2d. Particular specimens of all the best wools of Saxony, presented to me by the King of that fine wool-growing country.

3d. Specimens of the fine wool of Prussia and Prussian Silesia, sent to me by the King of Prussia.

4th. Specimens of some of the most valuable fabrics manufactured from either wool alone or wool mixed with hair, silk, cotton, or other materials.

The only condition I wish to make is, that you will bear the expenses of the conveyance to Penn Yan and back, and see that they receive no injury while there. To these specimens, if you conclude to have them, I beg leave to call your particular attention, for many reasons.

In the first place, to point out to you an error into which your committee of arrangement have, inadvertently, fallen, in retaining the unscientific names of "long and middle-wooled sheep," which were adopted in England before the specific differences between "sheep's *hair*" and "sheep's *wool*" were pointed out by me; and which, since that time, have been disused by the learned in *that* country.

I shall present you with a copy of my *Trichologia Mammalium*, in the front of which you will see drawings of the three species of Men, with specimens of their pile, by which you will perceive that the heads of the two first are covered with *hair*, and that of the third with *wool*.

I also bespeak your attention to page 153, where you will find drawing, of two species of sheep, with specimens of the *hair* and *wool* of each respectively.

I shall next claim your notice to page 8, where I have endeavored to point out the differences between hair and wool, and to page 184, where the most important property of sheep's wool, viz., that of *felting* and *fulling*, and the most important property of sheep's *hair*, viz., that of *not shrinking*, are pointed out. These distinctions being well understood, you will be able to appreciate the importance of the specimens of fleece contained in the above collections, and be better prepared for judging what breeds of sheep should be introduced and propagated in your State.

It is with no small degree of pleasure that I find, from numerous letters received from Europe, (where my work has been circulated,) that the position I have been so long and so ardently laboring to maintain, viz., that "IT IS INDISPENSABLY NECESSARY TO SUCCESSFUL SHEEP-BREEDING NOT ONLY TO COMMENCE WITH A PURE BREED, BUT SCRUPULOUSLY TO AVOID THE CROSSING OF TWO SPECIES," is universally admitted to be correct; but it is any thing but flattering to notice that the respectable committee of arrangements of your highly respectable Association have passed it by unnoticed. In their programme not only is there no allusion whatever made to the all-important subject of *purity of breed*; but premiums have been offered for *hybrids*.

The earliest authentic account we have of the breeding of the *Merino* comes from Spain. In the language of that country the word, as applied to sheep, means "moving from pasture to pasture," from the practice there prevailing of driving the flocks, semi-annually, from one part of the kingdom to another, in search of their natural food. From Spain this invaluable stock was introduced into many parts of Germany and France.* In Saxony, Prussia, Prussian Silesia, &c., they were bred separately from the native sheep of those countries, which is the reason why their fleece is so highly valued; but in France they were mixed with the common sheep of that country, and consequently what are termed "*French Merinos*," and which of late have obtained a pseudo renown in the United States, are HYBRIDS—nothing but hybrids.

That, upon a subject so important to the wool-growers of the United States, there may be left no room for cavil, I ask permission to introduce, here, a few passages from a French author.

Monsieur Roche Lubin, in a work entitled "Manuel de L'eleveur de Bêtes a Laine," published in Paris in 1854, thus expresses himself in regard to the French races of sheep.

"THE MERINO RACE.—Body cylindrical, thick and short; head large and square; forehead almost straight; eye bright; horns almost always spiral; neck short, large and often furnished with a dew-lap; the breast ample, shoulders round; back horizontal and flat; extremities short and strong; testicles large, pendent, and separated by a furrow; fleece weighing, generally, about four kilogrammes; the strands of wool zigzag, tenacious, elastic, strong and soft. At this time a great portion of this wool is fit for carding. Lastly, the merino and the hybrid merinos furnish 56 in the hundred of net meat. This race has formed in France four principal sub-races, viz: (1.) The Rambouillet Race.—They are very vigorous, and produce a fleece, in the yolk, of eight or nine kilogrammes. The fleece is longer, thicker, and less [jarreuse] than that of the pure race; and the flesh weighs more; they are

* In 1786.

much esteemed by the cultivators of the North. (2d.) The race of Naz.—They are smaller than the preceding race, their fleece is generally superfine, and it extends over the whole body; they have large horns, but they are without the dew-lap; for butcher's meat they are inferior to the Rambouillet race. (3d.) The race of Perpignan, the origin of which was formed by Gilbert,) is comprised by M. de Gasparin in "the inferior race;" in fact it is distinguished from the other classes by the denomination of the "short and thick race;" the length of the extremities are almost destitute of wool, and the absence of horns and dew-laps.

(4th.) The Race of Mauchamp.—This race, for which we are indebted to an honorable cultivator of the department of Aisne, M. Graux, is rather a new type of Merino than a sub-race. The fleece is straight, smooth, silky, resembling in form the long English fleece, but infinitely softer and finer; it sells at 8 francs the kilogramme. These sheep, although well fed, furnish but little meat. Generally the raising of Merinos is difficult, as well from the care necessary to be taken of them as from the food they require; they are more diposed to diseases than the native races; they are less prolific; the ewes producing fewer lambs than those of the country, and they are not such good milkers. Thus the pure Merino race, which cannot maintain itself in all its qualities, except by appropriate treatment and by well-understood attentions, is fit only for crossing and perfecting *our races*. It has been proved that hybrids are less troublesome and that they produce as much wool and meat as the pure blood; also, this species, in the actual state of our agriculture, is the most productive of wool-producing animals. Berry, Beauce, Perche, Picardie, Normandie, Bresse, and moreover the province de l'Ain, furnish numerous examples; but it must be observed that the perfecting of the races of these countries has been favored by improvements introduced into French agriculture. It is also necessary to remark that, in order to hope for the improvement of the races of Brittany, of Poiton, of Sain, of Lemoirsin, of Quercy, of Auvergne, of Haute-Loire, of Loire, of Dauphiny, etc., (races which amount to the enormous number of thirteen or fourteen millions individuals, furnishing little meat and wool of medium quality,) it is indispensable that the cultivators of these provinces perfectionate, previously, their forage culture; thus to be able better to maintain the sheepfold.

The Race of Larzac.—This race, which multiplies itself in a remarkable manner, is of a very ancient Spanish origin; it originated on the Larzca, a vast calcareous district situated between the confines of the provinces of Aveyron and Hérault.

Notwithstanding the modifications which it has suffered, the race has always recommended itself by the shape of the head, by its size, by its long structure, by the regular form of its body, by the size of its teats, by its oily and zigzag fleece, and by its great fitness for the production of milk, which is generally used for the making of the Roquefort cheese, which is produced at the present time to the amount of 1,200,000 kilogrammes. The form of the udder is well developed; I have applied the monkey system to this race, of which hereafter I will publish results. Since the extension of artificial meadows every lamb of this precious race produces annually to its owner the moderate profit net of 20 francs; now by the assistance of a better regimen and perfect drainage ought we not to try to improve our woolen goods by the introduction of the long-wooled sheep without the fear of injuring the essential quality of an excellent milkage. Already from notes taken by two distinguished agriculturists, Mm. Rodat d'Olemps and Randon-du-Landre, I feel myself authorized to foretell that with the crossings of the rams of New-Kent our own sheep, without becoming worse milkers, have furnished a fleece more abundant and of double value."

After reading the foregoing extract we presume that no person will deny that the so-called "*French Merinos*" are nothing but hybrids.

In regard to the laws of hybridism the following quotation will be all that is necessary:

"The law of hybridity, as a test of species, is now better understood than it was in the days when Linnæus and Buffon wrote. The latter supposed that all animals that would produce offspring among each other, were of one species; thus he reduced all the mammalia to about thirty-eight families. Rudolphi, Hamilton Smith, Dr. Morton, and others, believed that many opposite species would produce a prolific offspring, which would propagate inter se, and hence they supposed that the varieties of our domesticated animals, and even some among wild species, were the products of two distinct species. That different species of tamed animals placed with each other in confinement will produce offspring is a fact known for centuries, *but that they ever have produced or can perpetuate a race, we deny*, and call for the proofs. All that have hitherto been given are quite unsatisfactory and cannot be sustained. We but recently ascertained that Dr. Morton had collected nearly all his cases of hybridity, published in Silliman's Journal, from Rudolphi. We are indebted to the kindness of some unknown friend in Germany for the book. We find, however, that in addition to its being full of errors that have since been exploded, Rudolphi collected his information from various scraps that had from time to time appeared in print, and some from doubtful sources, without having made a single personal observation on the subject. But if even every fact he stated should be authenticated, it would merely amount to this—*that some hybrids, when mated to a full blood of one or other of the original species, will produce;* but that HYBRIDS WILL NOT BREED WITH HYBRIDS—hence *no new race is propagated.* Our theory is, that in a wild state these associations seldom or never occur. When they do occur among animals placed under constraint, the offspring is either sterile, like the mule, or it must resort, not to a hybrid, but to one or the other of the original species. Dr. Morton was only able to produce two examples among wild breeds to show that hybrids had propagated races. When we proved to him that they were not hybrids but true species, the one described by Yarrell, and the other by Gould, of England, he admitted the mistake, and in this Journal publicly corrected the error. In domesticated animals hybridity occurs, but NO FAMILY OF HYBRIDS CAN INTER-SE PROPAGATE A RACE—thus proving that God alone is the creator of species."—DR. BACKMAN *in the Southern Medical Journal.*

I am, Gentlemen, your obedient servant,

PHILADELPHIA. P. A. BROWNE.

BALTIMORE AND OHIO RAILROAD.—We have prepared an article in reference to the peculiar attractions possessed by this road for all lovers of fine scenery, as well as for those who are disposed to patronize especial liberality and efficiency in the management of railroads. But our printer notifies us that our pages are full, and we are obliged to defer a more extended notice till another month.

THE PENNSYLVANIA RAILROAD, we had also designed to notice, in a similar manner. But this too must also be postponed till our May number.

FEEDING CATTLE.

It is one of the standing questions of the day, in many communities, Will it pay to fatten cattle? and what does it cost to raise or fatten pork, etc.?

Prices vary so much in the same State, that one man's experience can be no test of another's ability, except in relation to quantities consumed. The value of the feed consumed must be calculated by each man for himself. All experience is useful in the matter of the feed used, and hence we give below the experience of a Western (Ohio) drover, Mr. Sears, of Litchfield, Ohio. He writes like a man of good judgment (in the *Ohio Farmer.*) and we copy from that paper his statement of his own debit and credit for the years 1853 and 1854. He modestly says of himself:—"I do not consider myself an extensive operator because I fed sixty head of cattle. My object was to turn my hay and grain to the best advantage." In many sections of the country, if no profit is received from cattle-raising except to get a fair price for hay, it may still be a grand operation to carry on this business extensively. But for the figures:

DEBIT.

1853—Dec. 1st—To 60 head of cattle—average weight, 1,050 lbs.; whole weight 63,000 lbs., at 3 cts. per lb. -	$1,890
To one-half bush. corn per head, for 136 days, making 4,080 bush., at 20 cts. - - - - - - - - -	816
To 15 lbs. of hay per head, for 136 days, making 61 1-5 tons, at $5 per ton, - - - - - - - - - -	306
To pasturing 60 head for eight weeks, at 18 3-4 cts. per week,	90
Cost of cattle, - - - - - - -	$3,102

CREDIT.

By 60 head of cattle—average weight 1,300 lbs.; making 78,000 lbs., at 4 cts., - - - - - - -	$3,120
To balance in pocket, for extra labor, and *no* stabling, - -	$18

DEBIT.

1854—Dec. 1st—To 60 head of cattle, average weight 1,025 lbs., making 61,500 lbs., at 3 cts, - - - -	$1,845 00
To $3\frac{1}{2}$ qts. of corn meal per head, for 136 days, making $892\frac{1}{3}$ bush., at 50 cents per bush., making - - - -	446 25
To 20 lbs. hay per head, for 136 days, making $81\frac{3}{5}$ tons, at $5 per ton, - - - - - - - - - -	408 00
To pasturing 8 weeks, at $18\frac{3}{4}$ cents, - - - - - -	90 00
Total, - - - - - - - - -	$2,789 25

CREDIT.

By 60 head of cattle, weighing 1,400 lbs. each, making 84,000 lbs., at $4\frac{1}{2}$ cents per lb., - - - -	$3,780 00
To balance in pocket for extra labor, *ground fed*, and stabling, - - - - - - - - -	$990 75

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

THE OSIER CULTURE;—PROFITS, AND MACHINE FOR PEELING.

Mr. Editor:—In the spring of 1849 we procured a few plants of the Osier willow, with many other varieties of foreign trees, with a design of testing their adaptation to our *soil* and *climate*. Many of the less hardy kinds died the following winter. The Osier proved perfectly healthy the following spring. Being convinced that it would flourish in this climate, in the spring of 1851 we procured a few hundred cuttings, and stuck them in rows three feet apart, and about seven inches apart in the row. The soil had been cultivated to corn the season previous; but it was rather moist, being a deep loam which never suffered from drouth. We set 500 cuttings in five rows. The rows were sixty feet in length, were well hoed the first summer, and they grew from two to four feet in height. Cut them to within three inches of the ground the next spring, and cultivate them in May. The second season they will average from four to seven feet in height. We cut them again, and the third time, and they grew eight feet, and on the fourth nine feet. Last summer a few grew ten feet, and the whole would average from seven to nine feet. In the fall of 1854 I cut and weighed one row, sixty inches by three, and it weighed when green 180 lbs., which was at the rate of twenty-one tons to the acre. We peeled a portion of them to ascertain what per cent. they would shrink by peeling and drying, and we judged they shrank two-thirds, (or 67 per cent.,) which would leave seven tons of peeled willow to the acre. This, at five cents a pound, would be $700 for the product of one acre. We have not applied any manure to the land, neither have we hoed them since May of the second year.

The ground is perfectly shaded, and grass or weeds cannot grow. I judge the present crop greater than the one of 1854, but have not cut them yet.

This willow is very slim, free from limbs or knots, and very tough. I can tie a knot in it as well as in twine, without breaking it.

I have never seen any willow plantation which flourished better than ours, and judging from reports from various parts of the world, we may compete with any part of it in growing it for manufacturing purposes.

Our variety is known as *Salix viminalis*, and I think it the best variety for baskets. I have never seen any other variety as tough, and so perfectly free from branches, and as small in proportion to its length.

My attention was called to the subject of growing willows for baskets in 1852, by reading an article in the Patent-office report on the cultivation of Osiers, in which the writer says that, "from the best information he can obtain, there are from four to five million dollars worth of willows annually imported into this country from France and Germany." He also informs us that the average price paid for it was from $100 to $140 per ton; that it cost about $30 per ton to peel it; and that the demand was greater than the supply.

A correspondent of the Massachusetts *Ploughman*, in June 1853, spoke very highly of Americans engaging in the willow growing, and all the objection he presented was the cost of peeling.

In a conversation with S. W. Jewett, Esq., of Weybridge, Vt., after he had examined the resources of Europe, he assured me that there was no danger of over supplying the market; that it had not been done in Europe, and there was no danger of its being over supplied here.

Peeling formerly was done by hand, which greatly increased the expense, but recently Mr. Geo. J. Colby, of Janesville, Vt., has invented a machine for peeling, which greatly reduces the expense, a representation of which I send you; also his description of the machine, which you can lay before the readers of your valuable journal if you think it for their benefit.

We can supply persons wishing to purchase cuttings this spring, and Mr. Geo. J. Colby, of Janesville, will furnish them for the extreme low rates of $2 00 per thousand when 50,000 are ordered at one time, and in smaller quantities at a moderate advance from the wholesale prices.

BRAINTREE, Vt., March 12, 1856. LEWIS H. SPEAR.

COPPER SMELTING.

THE *Commercial Gazette* of Cleveland, O., (an excellent paper,) contains the following:

Some months since we published some statistics in reference to Copper smelting, which have been copied by a number of commercial and scientific journals, making some valuable additions to the statement.

We now republish the substance of our previous remarks, with such valuable improvements and additions as the article has gathered in going the rounds.

"There are copper smelting works in the United States, situated at Cleveland, O., Pittsburg, Pa., Baltimore, Md., Detroit, Mich., Boston, Mass., and one in Georgia (the name of the latter place we have not obtained.) At these works the quantity produced last year about 13,000 tons; or the fifth-eenth part of that smelted in the valley of Swansea. The Lake Superior ores are smelted at Detroit, Pittsburg, and Cleveland, and are said to yield a great quantity of silver, which makes the smelting of them profitable. This business has been steadily and rapidly increasing during the past ten years, and it must increase until the United States becomes the great copper smelting country. Two things only are required for this, an abundance of good ores, or native metal, and plenty of cheap coal. The native metal and ores are found in inexhaustless quantities, and our coal fields are the largest on the globe. As there is no coal in the Lake Superior region, ore will have to be exported thence to the nearest navigable point where coal can be obtained cheapest. An improvement in smelting copper ores is said to have lately been introduced into the "Eureka Mining Co.," Georgia, by which from a small furnace, using about five cords wood per day, two tons of pig copper containing 60 per cent of pure metal, are obtained from ores containing only 14 per cent of metal.

East Tennesee is a great copper region; no less than 14,191 tons of rough ore being mined there last year. About two-thirds of the copper used in our country is the product of our mines; the remaining third is imported chiefly in pigs from Chili.

CIRCULAR OF N. Y. HARDWARE DEALERS.

The jobbers of New-York engaged in the hardware business have issued a circular, the importance of which, in its ultimate consequences, we fear they have not sufficiently considered. It is very severely criticised in the *Hardwareman's Newspaper*, with what justice may be judged only by a careful view of the entire subject of home manufacture in its various relations. We have not time, in this number, to go extensively into this matter, as we should like to do, but we are persuaded that it is hasty, (however long the time since it was first contemplated,) ill-judged, and calculated seriously to injure the manufacture of such wares in our country.

The circular is below, to which we annex some of the comments of the journal already named, with some additional suggestions of our own.

"CIRCULAR.

"At a meeting of the Hardware Dealers' Board of Trade, of the city of New-York, it was unanimously *Resolved*. 'That in ordering goods from the Manufacturers of American Hardware, we will, as far as practicable, have the name and residence of the manufacturers left off, both from the articles and labels, or if it be desirable to have the maker's name thereon, that we will in all cases request that the maker's residence be left off, both from the article and label.'

'"*Resolved*, That we will give our patronage in preference to such persons or manufacturers as favor our views, and who decline or discontinue to interfere with the regular course of trade.'"

This circular is thus treated by the editor of the *Hardwareman's Newspaper*.

"The design of these resolutions is of course transparent, and needs neither argument nor illustration. It is simply this: This body aims at the entire control of the hardware manufactures of the country, and therefore insists that American hardware goods shall be made *anonymously*, and sold exclusively through them, and they endeavor to enforce this object by the threat contained in their second resolution, that they will withhold their 'patronage' from manufacturers who decline acquiescence in their views.

"The first part of the plan, then, by which these forty-seven dealers design to secure to themselves the monopoly of the sale of American manufactured hardware, is to have the makers name left off the articles he manufactures. Let us see what would be the practical operation of this, in its effect upon the *quality* of American goods.

"The identification of the manufacturer with the article produced has two effects. It is a stimulus to the maker, to secure a reputation for, and a confidence in, the goods which he manufactures; and it is, at the same time, a guaranty to the merchant, of the quality of the articles he purchases. The ambition for distinction in the superiority and excellence of his productions, is perhaps the strongest, as it is most honorable, incentive to a manufacturer to improve the quality of his wares. He knows that the establishment of a character for himself, is the surest and the shortest method of making his business at once permanent and profitable; and in its earlier stages, if he be a discreet and far-seeing man, he is more desirous to earn a reputation than to make money—knowing that if he does so, his goods will continually secure a larger demand and better prices than those of doubtful or unknown not to say inferior, character. Why have we county and State organizations for the exhibition of industrial skill, if it be not to excite an honorable emulation amongst manufacturers? Why was it that four times within five years past the artizans of the world entered into a contest of friendly rivalry, in the various exhibitions of the industry of all nations, which have been held, if the ambition to excel was not a powerful incitement to improvement in the breast of the manufacturer? But if the hardware manufacturers of the United States would have the '*patronage*' of the forty-seven jobbers of New-York, they must ignore their own individuality, send out their goods *anonymously*, and furnish an article which, however excellent, can bring them no credit, and establish for them no reputation. Suppose (which is impossible) they meanly and foolishly submitted to this imperious dictation, what would be the effect upon the quality of the goods produced? Can any one doubt that it would be to depreciate and lower it? The effort would then naturally be to make goods at as low a price as possible, to meet the views of the jobbers in whose hands they should place themselves; and, as they had no reputation to sustain, they would not hesitate doing so by sacrificing the quality. Thus would the general character of American goods be lowered in the market, and, in the same degree, would the reputation of imported goods be raised—until by a gradual but certain process, American manufactures would be run into the ground, American industry choked out, and American energy cramped and paralyzed. *And this result is the very object aimed at by this measure.* None know better than the forty-seven signers of this document, that the progress of American manufactures is destructive to their business, and that their only hope of perpetuating the Jobbing Trade is by fettering and hindering domestic, and encouraging and promoting foreign manufactures. The first part of their plan, then, is to have American hardware sent into the market without the maker's name, by which they hope to accomplish these two results: First, to keep other merchants ignorant of the names and localities of manufacturers; and, secondly, to *secure the depreciation of home manufactured goods*, by having them sent into the market anonymously, and therefore without the guaranty of the personal responsibility of the producer.

"But the second part of their plan is, to coërce makers into obedience to their wishes, by the threat to withhold their 'patronage' in case of their non-compliance. We don't like to use the language which suggests itself to us at this insolent proposition to the independent manufacturers of the Eastern and Atlantic States; but we confess we are pleased that the matter is now placed upon a plain and straight footing. We hope the forty-seven jobbers will adhere to their resolution, and we have no doubt that many men who have too much and too long succumbed to them, will, under this insulting provocation, give them a manly defiance, and follow the example of their more successful brethren, who have already sought a legitimate and permanent business with the true merchants of the country, and are now entirely independent of these Eastern Middlemen."

We fully agree with the editor in some of the important points he has raised, but there are other considerations also that may have had an influence in securing the passage of these resolutions.

In certain parts of the community there is a foolish, vain hankering after imported goods. If two new bonnets, or hats for men or women, or two pairs of boots, or two pieces of broadcloth, were laid side by side, each having exactly the same merits in all respects, one being labelled *Paris* and the other as American, most probably the *Paris* stamp would be selected by the first purchaser. Such a proof of *merit* might indeed effect the sale of an *inferior* article at the price of the better of American origin.

Hardware goods are no doubt affected by this same silly, childish, vain, foppish conceit—a conceit that often taxes our patience not a little. The ironwares manufactured by our own skillful artists would perhaps sell better ofttimes if an unprincipled salesman could only call them English, just imported, or even wipe out all evidence to the contrary.

But it is true, no doubt, that New-York jobbers are in fact interested in keeping down American manufactures. The reason is obvious. Country retailers can trade directly with the manufacturer, and thus the services of these MIDDLEMEN be dispensed with, while the importer is a necessary link between the foreign maker and the retailer. How far this motive enters into this movement can only be judged by those who know the men and their principles.

Nor would the name be so useful as a means of connecting the retailer and manufacturer, if the residence were not stamped. The inference is certainly very obvious, if it is not just, that this consideration was not overlooked, when they indicate in their circular that the omission of the maker's residence is of still more consequence than that of his name. The latter is essential. Why is this point made by these gentlemen?

But there is something more involved here than the amount of income of some fifty firms. This resolution bears directly upon the great subject of American manufactures, and its influence, undeniably, we think, is unfavorable to their success, and indeed so far as it has any influence, ruinous. Its tendency is to ignore even the existence of this branch of American industry. It is a virtual announcement that manufacturers, if they do live and breathe and act, must do so under cover, or at least in a shadow. They may work, indeed, but the best and most directed evidence that they do is to be blotted out of existence. This is singular ground for a true son of America to occupy. Jonathan has been accustomed to hoist his flag at mast head, and to proclaim to all the world that he himself stands on the deck and is ready to receive company and answer all civil questions. He does so in the presence of all nations, the strongest as well as the weakest. But this circular threatens—we know not what, if any of these men raise their blue buntin in sight of other people.

If it is replied to this that it is not the stamp of *American* which is objected to, but the name and exact location of the maker, then we say this is as bad, and far more mean, for it would then be obvious that the whole object was to secure the trade to themselves, forbidding all direct communication between the maker and the country retailer. It would thus become a security against purchases by the retailer from the manufacturer, which should exclude the agency of these middlemen. These gentlemen will be very slow to admit any such despicable motive as this. But we cannot conceive of any other than one of those we have here suggested.

That the omission of the maker's name would tend to a deterioration of the quality of the wares, is also perfectly obvious. Hence it is beyond question a movement productive of absolute evil, and it becomes its defenders to state what good they hope to effect in offset.

But this suggests another thought. The second resolution says that they will not give their patronage to those "who decline to comply to their demand or will discontinue to interfere with the regular course of trade." This, of course, refers to the demand made in the first resolution, and it is strange to us that these sagacious and clear-sighted men did not perceive that it was themselves who are "interfering with the regular course of trade." Is it not always the case that the makers of good wares append their names to their packages? Does not this custom prevail from the manufacturer of pills to the makers of steam engines? How absurd, how ridiculous it would seem for the owners of steamboats to say "we will patronize no machinist who stamps his name on his engines? Why our boot-makers, hat-makers, and the whole array of producers, one would think, would rise up in throngs like ghosts in a churchyard, and cry out at such an assumption, and would feel in their hearts that some very singular and unworthy motive must have suggested such folly. But we cannot enlarge. We think this circular was hastily, thoughtlessly adopted, and will be most disastrous in its results, if carried out in practice. We may refer again to this subject.

STATISTICS OF THE COD FISHERY AT PROVINCETOWN, MASS.

Total number of vessels employed 84, with an aggregate tonnage of 7605 tons, manned by nearly 800 seaman, and possessing an aggregate value including outfits of $275,000. Compared with the previous year, this return exhibits a diminution of three vessels, with the same amount of tonnage employed; over the year of 1853 it shows an addition of two vessels and 527 tons, and over the year 1852, an increase of nineteen vessels and 2375 tons in the aggregate. The average value of the vessels employed has also constantly increased, by annually substituting larger and more costly vessels for those of an inferior size. The largest vessel engaged in fishing the past season was a schooner of 131 tons.

The importations of 1855 consist as follows: Of codfish, 76,914 quintals, and of cod oil, 806 barrels, which fall short of 1854 about one-eight, and of those of 1853 about one-third, while they exceed those of 1852 nearly one-sixth. The heaviest importations were in 1854, when nearly every vessel returned with a full fare. But owing to the constantly increasing scarcity of fish, our importations do not keep pace with our increasing tonnage. This fact will be perceived by comparing the yearly imports with the yearly tonnage employed. Thus in 1855 were caught to each ton of shipping engaged, nine quintals and thirty-six pounds of codfish, against ten quintals and fifty-eight pounds in 1854; ten quintals and forty-two pounds in 1853, and eleven quintals and fifty-seven pounds in 1852. The obvious tendency of such a decline is to limit the annual import of each vessel in a like proportion. Vessels, therefore, which formerly brought in 1000 quintals of fish in a voyage of four months, are now able to obtain only seven-eights as many during the entire season.

The price of fish for the few past years has steadily augmented, the average price in 1855 being $3 52 per quintal, against $3 24 in 1854, and $3 22 in 1853. The price of cod oil has likewise increased of late, the average price during the past year being 68 cents per gallon. From the scarcity of fish, before alluded to, and an increased demand in the market, the present price must be upheld. The value of importations are as follows:

Cod fish, - - - - - - -	$249,617 28
" Oil, - - - - - - -	17,276 08
Total value of import, - - - - -	$266,893 36

The amount of "bounty" obtained by the fishermen collectively the past year was $27,363,90, against an equal amount in 1854, $25,946 in 1853, and $20,434 in 1852.

During the past year 84,000 bushels of salt were expended, against 98,000 in 1854.

The average length of the fishing voyages the past season was 4 months and 15 days.

The population of Provincetown in 1850 was 3,157.

REVOLVING FIRE-ARMS—COLT'S PATENT.

Our readers must not suppose, from the caption just penned, that we are under the influence of a high war fever; we are as peaceable as any lamb, and regard discretion as much the better part of valor. We have as good a defense against suspicion of any murderous intent as had the Friend who took part in the discussion of the merits of Colt's pistols before the Institution of Civil Engineers in England. After several military gentlemen and others had highly commended the merits of this patent as a most efficient weapon both of attack and defense, and one which had proved itself worthy of confidence in not a few instances in actual war, a Friend remarked that he thought "all weapons might be dispensed with, except for protection against wild beasts." So we may suggest that without regard to their use in war, or in circumstances of peculiar personal exposure, it is of very great importance to have fire-arms which shall be easily managed, safe in handling, and sure and exact in discharge. So far as we can discover, all these requisites are especially descriptive of Colt's revolvers.

The idea of a revolving breech is not a modern one. A match-lock gun in the Tower of London is probably the invention of the 15th century. It has four chambers, mounted on an arbor parallel with the barrel and welded to it. Another specimen, in the same collection, is furnished with a Pyrites wheel lock, and one priming pan is common to the six chambers of the revolving breech.

In the "Musée d'Artillerie," at Paris, are two specimens of match-lock guns, with revolving breeches, each having eight chambers, rotated by the hand, the cover of the priming magazines requiring to be pushed back by the finger before firing.

Another ancient form of this weapon, brought to England from India, closely resembles that first mentioned. The breech has five chambers, each having a priming pan with a swing cover.

There is also, in Paris, another gun with eight chambers, differing in the arrangement of the touch-holes from the preceding, having one main priming tube extending from the pan to the rear of the revolving chambers, with eight corresponding tubes extending from the rear to within a short distance of the front end, where an orifice is pierced into each chamber for the purpose of igniting the charge immediately behind the bullet, obliging the charge to burn backwards towards the breech. This belongs to the seventeenth century.

Other inventions much more recent are well known, which possess more or less merit, but compared with the contrivances of our own times are, of course, exceedingly defective.

Among the first American inventions of revolving fire-arms was a rotating breach with a flint lock, patented by Elisha H. Collier, in 1818, and one contrived by a Mr. Wheeler, of Boston, and patented by Cornelius Cooledge in 1819. The first invention of Mr. Colt was in 1830. Various improvements have since been made in their construction, and they are now admitted to be the most effective, for actual service, of all the ingenious inventions of the day.

These arms were used in the Florida war with great success. The Indians, as is well known, are very expert in the use of fire-arms, and could meet and resist the attack of white men with great vigor. But when they saw that their enemies could discharge their weapons six times without re-loading, they were persuaded that the white men had some valuable secret, some "medicine" far beyond their attainment, and they were induced to surrender. Col. Chas. May says "ten men with Colt's pistols in their belts, and who understand their use, can go anywhere and keep off almost any force. I should not hesitate, with ten men, armed with these pistols, to go anywhere across the plains."

Major Thompson, inspector of fire-arms for the U. S. army says: "After much firing and examination, the Board of Ordinance adopted Col. Colt's pistol for the service as the best weapon presented for their consideration."

The reputation of this invention is as great abroad as in this country. It is adopted by a portion, at least, of the British army, and is in very extensive use all over the world. There are other pistols which possess particular merits to as great an extent as these. For mere pastime and for personal protection under ordinary circumstances they may be equally serviceable, We described one in a late number of our journal. But for quickness of loading, in an actual engagement, and facility of managing, and for accuracy in firing, probably no invention approaches this. At least, we have seen none.

Mr. Colt has an establishment at Hartford, Conn., for the manufacture of these arms. Four-fifths of the work is done by machinery. So extensive and so complete are these works, that two hundred and fifty pistols have been finished per day, or fifteen hundred arms per week, by less than five hundred work-people. Col. Colt has also a similar establishment at Thames Bank, near Vauxhall Bridge, London, in a building which was occupied in making the mouldings, etc., for the new palace at Westminister.

Newton's London Journal says:

The Great Exhibition of 1851 made Europe first acquainted with the repeating arm, known in the United States as "Colt's Revolver." At that time, the importation, for sale, of fire-arms, of foreign make, was strictly prohibited; and although the revolver obtained some favor from military men, yet it was not allowed to be purchased, even by officers ordered on foreign service, without a special permit from the Treasury. At a later period in the year 1851, the Caffres having proved exceedingly troblesome to the Government, some three hundred of these weapons were sent to the Cape of Good Hope, to test their efficiency on the savage tribes in the interior. This purchase was, at the best, but small encouragement; yet it determined Colonel Colt to establish an armory in this country, by the outlay of many thousand pounds, for the manufacture, not of fire-arms generally, but exclusively of a weapon which had its reputation to win in Europe,—and that against no mean competition. What a contrast this daring course—in respect of a weapon, for which, as yet, there was no demand—presents to that pursued by the trade in London and Birmingham, we shall see in the sequel, when we revert to the Report of the Select Committee, appointed in 1854, "to consider the cheapest, most expeditious, and most efficient mode of providing small arms for Her Majesty's service."

"The factory at Thames Bank is, as we understand, but small, in comparison with the Colonel's works at Hartford, Connecticut, U. S.; but, according to our notions, it presents very respectable dimensions; and as an illustration of automatic manufacture, notwithstanding the newness of the system, it is scarcely to be surpassed by any branch of trade with which we are acquainted. The machinery may be divided under four classes, viz.,—that of forging, turning, boring, and milling. The latter three are comprised for the most part on the ground and first floors of the factory, which is a substantial brick building measuring some 350 feet in length, and containing three floors besides the basement. The basement of this building is occupied with planing machines and other heavy mechanism employed in constructing new tools, effecting repairs, &c.; and in the top floor or loft, the assembling of the work is effected, and the final touches are given by skilled workmen to the different parts of the arm. An extensive range of sheds in the factory yard is devoted to the use of the carpenters and smiths. The number of hands employed in the works, reckoning men, women, and boys, somewhat exceeds two hundred. They are divided into groups, and were at first supervised by American workmen from Hartford, who, being paid by contract (each item of the pistol having a determined value,) were thus personally interested in the speed of production: but these posts are now chiefly occupied by the most diligent and steady of the English workmen who first made acquaintance with machinery at the factory'.'

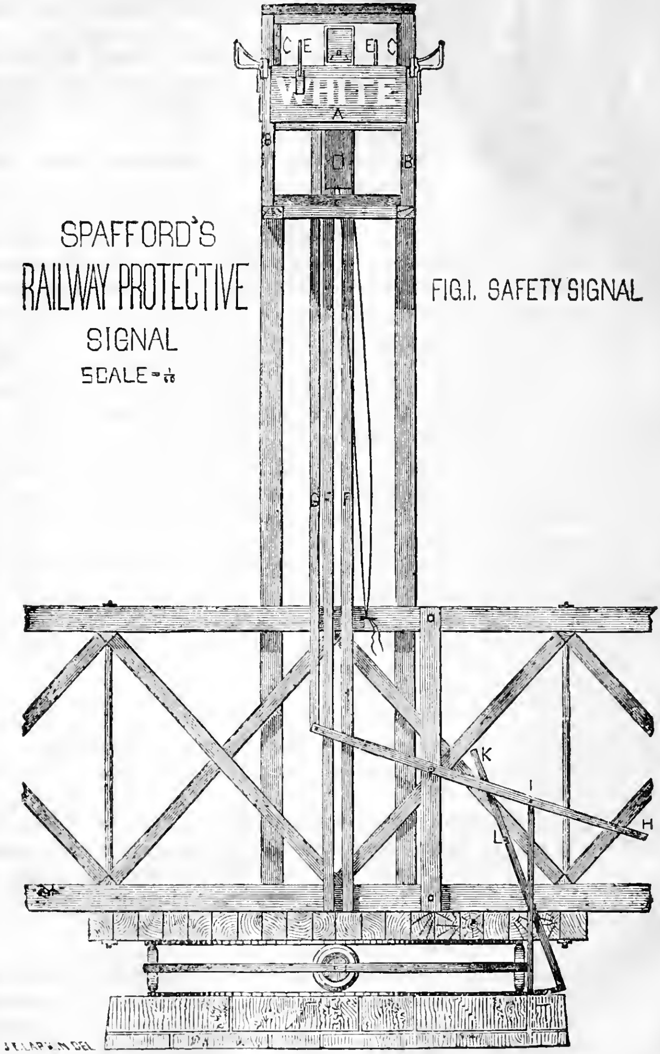
The U. S. Agricultural Society.—The Executive Committee of the U. S. Agricultural Society had a meeting in Philadelphia last week. The Philadelphia *Ledger* says of it:

"Colonel Wilder, the efficient and distinguished chief of the Association, presided. The object of the meeting was to arrange certain preliminaries for the next annual exhibition, which has been fixed to take place in this city on the 7th of October, and which it is proposed to conduct on a scale of unexampled liberality and splendor. It was decided to embrace, as objects of the exhibition, horses and horned cattle, swine and sheep, agricultural implements, cereal and vegetable products, poultry, and native fruits and wines.

"A grand banquet, in which ladies will participate, was also settled as part of the programme; and it was agreed to appropriate $12,000 or $15,000 in premiums."

The people of that city are arranging for an exhibition which will eclipse that held in Boston last fall. They have subscribed $15,000 as a guaranty fund, and appointed a committee of arrangements of forty persons, embracing some of the leading men of the different professions. We do not see how they can exceed in the excellency of arrangements the show in Boston, except they will secure fair weather for each day. This would be a feature of immense value.

RAILWAY SIGNALS.



THE importance of additional security on our railroads cannot be overrated. Whoever will devise a thorough system of signals, which will be easily managed, and instantly perceived and understood, at suitable distances at all times, will confer an immense benefit on the public. Numerous plans have been devised, with many of which we are familiar, but some of them no doubt have failed to attract our notice.

A small pamphlet has recently been sent to us containing an entirely novel form of signals for such use, which certainly has strong claims to favor. We publish below as full a statement of it as our limits will permit. We only detain the reader long enough to commend the skill and energy displayed in the management of the Philadelphia, Wilmington and Baltimore Railroad, where these signals are now in operation, under the supervision of S. W. Felton, Esq. He is not only an accomplished engineer but thoroughly understands the details of railroad operations, as well in their bearings upon the interests of the company, and also in promoting the convenience of the public. But we let the pamphlet speak for itself. It is prepared by Mr. Franklin E. Felton.

The writer first alludes to the defects of certain systems of signals now in use. He says:

"In the first place, the compensation given to signal-men is so slight that none but men of limited capacity will accept the situation. In the second place, it not unfrequently happens that in times of danger, men lose their presence of mind, and are incapable of acting with discretion. The instances are by no means rare of a signal-man, startled by the unexpected approach of a train, becoming so confused as to exhibit a signal of safety, when the occasion demand the signal of danger, and thus a train has been thrown from the track or precipitated into a river. Some two years since an accident of this nature occurred on the Philadelphia, Wilmington and Baltimore Railroad. A draw tender while waiting for a night train, feeling somewhat fatigued with the labors of the day, determined on taking a quiet nap. He had previously opened the draw in order that vessels might pass through without molesting him. Being suddenly awakened from his slumber by the noise of the approaching train, in the confusion of the moment he sprang to his feet, and seizing his lantern, which unfortunately was a white one, waved it across the track. The engine-driver seeing the signal of safety proceeded on his way, and the whole train was precipitated into the river, causing the loss of several lives, and the destruction of a considerable amount of property.

"To obviate the danger inseparably connected with the use of signals dependent in their operation on human power, numerous devices have been proposed, designed to furnish a system of signals free from the objectionable features which characterize those in general use at the present time.

"Within the short space of a month from the occurrence of the melancholy catastrophe at Norwalk on the New-Haven Railroad, no less than twenty improvements in railway signals were presented at the Patent-Office, none of which, however, upon examination were deemed worthy of a patent.

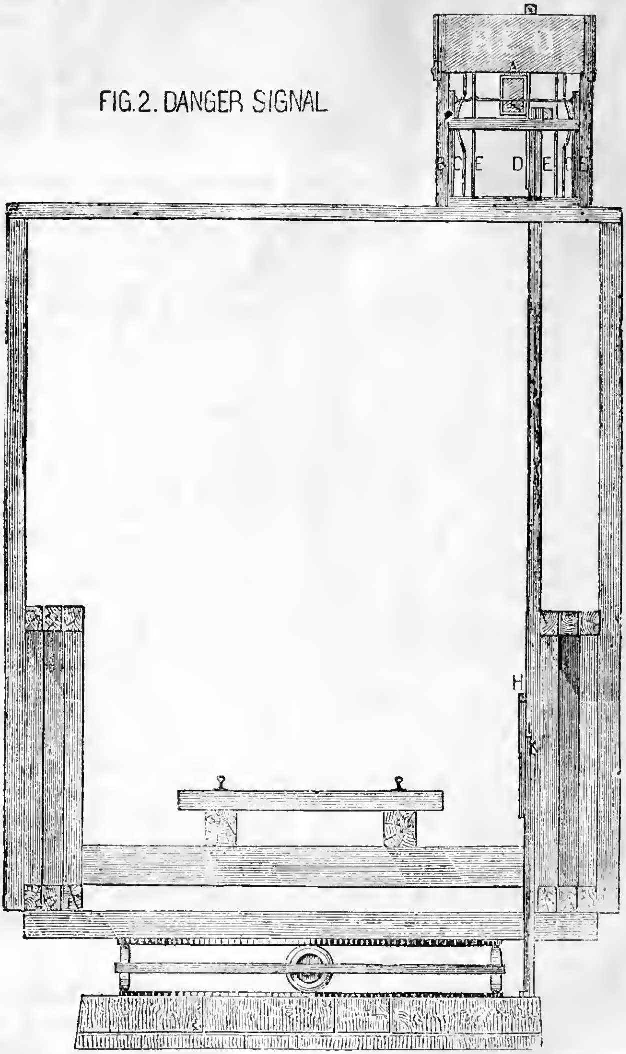
"A recent investigation into the merits of four of the best foreign and domestic devices of railway signals, demonstrates their unfitness to accomplish the purpose for which they were intended."

After discussing these points he proceeds thus:

"The Railway Protective Signal, invented by the late S. L. Spafford, Esq., an Engineer of eminent ability, is free from all the objectionable features characteristic of the various systems as yet devised. From the simplicity of its construction and the substantial character of the materials forming its component parts, there is no liability of its becoming deranged, while its application is not restricted to draw-bridges or switches, like other devices for a similar purpose, but on the contrary it can without difficulty be adapted to any revolving or sliding structure.

"The signals exhibited by this invention are visible at a great distance, and are equally conspicuous by day and night. Both the signals of safety and of danger it displays are positive, and can be made to assume any size or shape desirable, and can be elevated to any height the nature of the locality may require. The engine-driver, accordingly, is informed of the true condition of the track at a safe distance from the bridge or switch, and that too

FIG. 2. DANGER SIGNAL



notwithstand the intervention of a curve or other obstacle between the train and the place of danger.

"In point of economy the Railway Protective Signal takes precedence of all others, since it can be erected at a slight expense, and requires no alteration in the structure to which it is applied, while the cost of keeping it in repair is altogether trivial.

"The crowning merit, however, of the invention consists in its absolute independence of human control and the impossibility of showing an incorrect signal by means of it. If the draw be unlocked or open, or the switch in an unsafe position for the passage of a train, the signal man has no power to exhibit a wrong signal, whereby the safety of the train might be endangered.

"The practical utility of Mr. Spafford's invention has been demonstrated by experience. During the past eighteen months it has been in constant use on nine draw-bridges on the Philadelphia, Wilmington and Baltimore Railroad, and all who are acquainted with its practical operation, from the President of the Company to the engine-drivers, concur in expressing their unqualified approbation of its merits and unhesitating confidence in the infallibility of the signals it displays.

"The record of railroad casualties, for the brief period of seven years, presents a lamentable exhibition of the disastrous consequences attendent on the use of signals operated by the agency of human power.

"From this cause alone, within that time, no less than four hundred lives have been destroyed, and an equal number of persons injured by accidents at draw-bridges, switches, and railroad crossings. The amount of damages paid by the various companies, on whose lines these disasters occurred, as compensation to the victims and their legal representatives, exceeds the sum of three millions of dollars, the Norwalk catastrophe alone having cost the New-Haven Company nearly four hundred thousand dollars. The decrease in business, occasioned by the loss of public confidence arising from a sense of insecurity and danger, as evidenced by such frightful calamities, must have diminished the earnings of these respective companies to an amount equal to the pecuniary damages sustained by them.

"It is gratifying to observe that the duty of Railroad Companies to adopt every practicable measure for attaining safety at draw-bridges is about to be enforced by legislative enactments. The matter has already attracted the attention of the Legislatures of Massachusetts and New-Jersey, and it may confidently be expected that the discussion of the subject, and the adoption of stringent laws, will not only lessen the danger of railroad of traveling, but will also tend to restore confidence in railroad property by preventing the occurrence of those deplorable catastrophies which cause such unspeakable misery to the unfortunate victims and their friends, and the liability to which renders railroad securities of such precarious value.

"In no way can this desirable object be so readily effected as by compelling Railroad Companies to establish a reliable system of signals, certain in their operation, and wholly independent of human control.

"The diagrams show the application and working of the Signal in detail, when attached to a pivot draw. It can, however, with equal facility, be used in connection with any other form of draw, the only change necessary being in the arrangement of the Stop Lock.

"The same letters in different diagrams refer to the same parts of the Signal.

"The principal parts are the Signal Boards, A. A.; the Signal Frame, B. B.; the Sliding Frame, C. C.; the Lantern Carriage, and Lanters, D.; the jointed Levers, E. E.; the Guides, F. F.; the Connecting Rod, G.; the Signal Board and Stop Lock Lever, H.; the Stop Lock, I.; and the Latch Lever, K.

"The Signal Boards, A. A., are painted red on one face and white on the reverse, and the Lanterns are so placed that when the white face of the Board is exposed, the white Lantern is seen above the Board, and when the red face of the Board is exposed, the red Lantern is seen below. The Boards are hinged to the Signal Frame, B. B., at a distance equal to their width from the top of the frame, and connected with the Sliding Frame, C. C., which moves vertically in the grooved corners of the Signal Frame, by the jointed Levers, E. E., one Lever to each Board. The Sliding Frame, C. C., is attached to the Signal Board and Stop Lock Lever, H., by the Connecting Rod, G., while from the

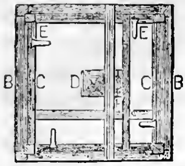


FIG.3. TOP VIEW

Fig. 3 shows a top view of the Signal and Lanterns.

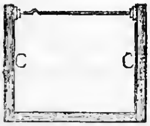


FIG.4. SLIDING.FRAME

Fig. 4. An elevation of the Sliding Frame.

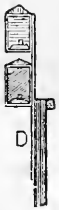


FIG.5. LANTERNS

Fig. 5. The relative position of the Lanterns.

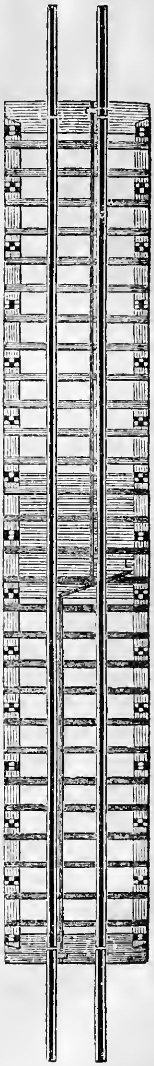
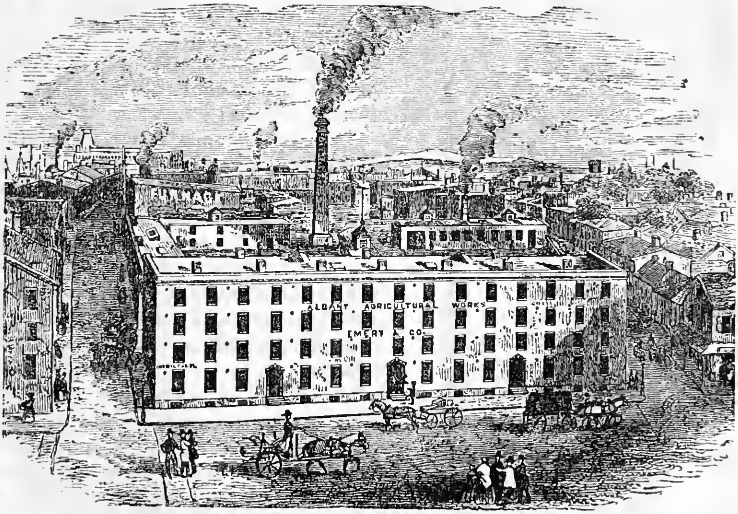


FIG 6 PLAN OF DRAW SHEWING LATCHES

under side of the Levers, the Stop Lock, I, passes into the Pier such a distance that, when raised, it leaves a space between its point and the Pier sufficient to admit the thickness of the curved arm of the Latch Lever, K. Against this Stop Lock, when down, rests the extremity of the curved arm of the Latch Lever, connected with the Latches at the point marked L, thereby preventing any movement of them until the Stop Lock is raised, which is shown at once by the Boards and Lanterns above.

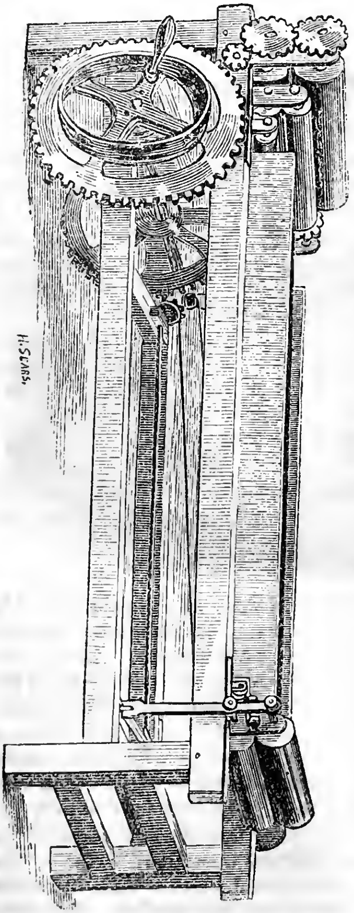
"Fig. 2 shows the same Draw, turned at right angles to its first position. To effect this, the Latches must first be drawn back, as follows: The long arm of the Signal Board and Stop Lock Lever is raised until the point of the Stop Lock comes above the Pier sufficiently to admit the curved arm of the Latch Line. In raising this arm of the Signal Board and Stop Lock Lever the opposite arm is depressed, which, by means of the Connecting Rod pulls down the Sliding Frame, and this, acting upon the jointed Levers, causes the lower side of the Signal Boards to describe a semi-circle, thus exposing the red side of the Boards and the red Lantern. Then by throwing back the Latch Lever, its curved arm passes under the foot of the Stop Lock, the Draw is unlocked and can be turned off.

"It will be seen that after the Draw is once moved, the Stop Lock cannot be lowered, even if the Latches be thrown out, on account of its point coming against the top of the Pier, and that after the Draw is returned to place, it must first be latched before the Stop Lock can be lowered and the signal of safety shown."



EMERY & BROTHERS.—Among the many inventors who have done noble service to the cause of agriculture by improvements in machinery, are the ingenious and efficient firm whose name stands at our caption. Their manufactory is at Albany, and is very extensive. It is equally distinguished for the admirable facilities which they have contrived in conducting their operations, as for the conveniences and the labor-saving which they have devised for the farmer. We are not a little surprised at the show which they make on paper in the advertisement of their machines, which is found at the end of this number. They commenced operations in 1848, and they already include on their schedule of implements which they manufacture, most of the important machinery now employed in agricultural operations. Nor is the display a mere show on paper. We are satisfied that some of their machines are the very best of their kind. With some we are not familiar. But they deserve the encouragement of the community for their industry and efficiency as well as for their valuable inventions. Nor is this a desert merely, for they are receiving what they have worthily earned, the confidence and the patronage of a large number of the agricultural community. To them and others who are devoted to similar pursuits, the world is more indebted than to scores of scientific men, who have designed contrivances good for nothing but for pampering the appetites, or the waste and destruction of human life, or to scores of great generals who have inspired a whole people with the spirit of war and then offered them up, in hecatombs, on the altar which themselves had constructed. We commend the implements of Emery & Brothers to the notice of our patrons.

COLBY'S MACHINE FOR PEELING WILLOWS.



This machine consists of a frame about eight feet long and two and a half high, upon one end of which are hung two rollers, each seven inches in diameter, and of any required length from one, two or four feet, as upon the length of the rollers depends the amount of work that the machine is able to perform.

One of these rollers is made of India rubber and the other of wood or iron. They are so hung that they roll together one over the other so as to draw the willow through between them, and at the same time have an endwise or vibrating motion of an inch on each one in contrary direction so as to rub the bark loose from the willows as they are passing through.

This vibrating motion is very quick, given by a lever attached to one end of each roller with a fulcrum in the center between them, and operated by a crank under the machine as shown by the figure. One of the rollers being of India rubber will allow different sized willows to pass through at the same time, and no willow however large or small can pass through without being rubbed, and the pressure of the rubber is not sufficient to break or injure the willow while it will rub the bark loose if the willow is in proper condition to peel. On the other end of the frame are hung two rollers like the first, only they have no vibrating motion and are both made of India rubber, and are geared as to run about eight times as fast as the first ones. About six inches forward of these are hung two other rollers each three inches in diameter, one or both made of India rubber and running together with the same speed and in the same way (except the vibrating motion) as the first ones. These three sets of rollers and the machinery necessary to set them in motion constitute the whole machine.

The willow, after passing through the first rollers, as described, are carried to the second or small rollers, by a belt running over the table between them, and the thick end, which is already clean, passing through them is seized by the larger rollers running very fast and stripped through the small ones and thrown out *clean*, while the small rollers hold the loose bark which then rolls through and drops in a pile by itself. Such is the simple working of this labor-saving machine; it does its work perfectly and rapidly, to the entire satisfaction of every one who has seen it work. The amount of work which it is capable of performing depends only upon the length of the rollers and the speed at which it is driven.

English Patents.

Improvements in Photography. By Alexander Rollason, of Birmingham. —This invention consists of improvements in transferring to paper, linen, cardboard, bone, ivory, wood, metal, or stone, the film of collodion or albumen used in collodiotype or albumenized plates, by which a photograph may be removed from the glass or plate on which it may have been produced; or the plain film may be transferred on to certain of the substances above named, and a new base or medium produced for the photographic pictures.

The patentee first proceeds in the manner in which ordinary collodiotype photographs are produced; thus:—Having thoroughly cleansed the glass plate either with spirits of wine, naphtha, water, or tripoli, and finally buffed it with a charcoal buff leather, which will have a slightly greasy surface (and is therefore the better for the purpose,) he covers the glass with iodized collodion, or any other similar and suitable filmy material, on which a photograph can be taken; and after submitting it to any of the well-known processes for rendering the film sensitive, such as immersion in a bath of nitrate of silver, he places it in the camera, and takes a picture, which has then to be developed in the ordinary manner, viz., by washing with a solution of iron in nitric or glacial acetic acid, and afterwards fixed with a solution of cyanide of potassium or hyposulphate of soda: having been well washed, it is allowed to dry (if necessary, applying a gentle artificial heat.) Should the collodion be of a very adhesive quality, it is sometimes essential, before drying the picture, to immerse it for two or three seconds in a bath of very dilute nitric acid.

The picture thus taken is subject to the improved process for removing or transferring the film from the glass. Having first ascertained that it is perfectly dry, the inventor proceeds to color it (if intended to be colored) at the back or on the film itself, in the following manner, employing oil, or varnish, or well-sized water colors:—The picture is tinted according to taste; and, when dry, the whole is covered with any colored varnish, according to the general tint wished to be produced. If it is not desired to color the picture whilst on the glass, it is covered at once with varnish, the components of which are asphaltum or Brunswick black dissolved in mineral naphtha to about the consistency of cream. Its tone may be varied by the introduction of warmer or cooler color, according to taste, when the varnish is sufficiently dry, which may be proved by the finger detecting no stickiness. It is not desirable to let it dry beyond this point, lest it should crack; but, in case further operations should be suspended for a time, to avoid cracking, the varnish must be coated with a thin solution of shellac, which will prevent further hardening of the varnish. The next proceeding is to remove the film from the glass, and having prepared a mucilage—composed, by preference, of gum-arabic and honey, in the proportion of two-thirds of the former to one-third of the latter—the patentee covers the varnish with this mucilage; (in case it be paper employed for the transfer, it may be necessary to damp it first, and then coat it with the same mucilage) after which he attaches the paper or other flexible material to the back of the picture. An even adhesion of the surfaces is effected by clamping the edge between two pieces of wood jointed together, and rolling out the air bubbles with a simple apparatus, consisting of a piece of thick India rubber tubing slipped tightly over an ordinary ruler. When the transfer is to be taken upon wood, stone, or other non-flexible substance, care must be taken that the surface be perfectly smooth; and the air bubbles may be excluded by applying one end of the picture first and gradually sliding it on. When the mucilage is dry enough—which may be ascertained by raising or bending back one corner of the picture, upon which, if sufficiently dry, the film should begin to separate itself from the glass—the time has arrived for completing its removal. By means of a feather, a few drops of water or spirits of wine are now introduced between the edge of the picture and the glass, and, at the same time, the separation is gradually effected.

The transfer is now complete; and when it is desired to color it or get rid of the irridescence that will be perceptible upon it, a little magilp, or varnish, or oil, or any other softening matter that will not injure the delicate surface, is rubbed over it with a pellet of cotton wool so as to leave a slight stickiness, to which the dry colors known as "mansions," and many other dry colors, will adhere; and, in some instances, omitting this last operation, water, oil, or varnish colors may be employed. The picture is now complete.

By the same means the transfer from a plate or glass of a plain film of collodion or albumen on to any suitable base, such as a sheet of paper, or linen, wood, or ivory, may be effected.

Improved Composition for fixing Lithographs and engravings on Canvas, after being transposed or reproduced by a printing press. By Louis Adolphe Ferninand Besnard, of Paris.—This invention consists in transferring and fixing, by means of a composition on canvas or cloth duly prepared, all kinds of lithographic representations and engravings, without removing any particles of the paper on which they were made.

In a vessel specially adapted for this purpose and capable of bearing heat, about a quart of soft water with a spoonful of linseed is placed: this is heated to ebullition for a few minutes, and is then withdrawn and strained, and the product is passed into another vessel. In half a glass of the water prepared as above, 400 grains (troy) of white moist sugar, are dissolved and strained through fine linen,—and to this is added the quart of water prepared as above described.

Into a quart of water, maintained in a state of ebullition in a sand bath, 800 grains troy, of white gelatine are thrown while stirring with a wooden spatula. In about three minutes the liquid is withdrawn from the fire and passed through a strainer. The solution, thus prepared, is mixed with the linseed water and saccharine solution, and the whole is placed again on the fire. When ebullition commences, the inventor stirs with a camel-hair brush, which he withdraws saturated with the liquid, and passes quickly and lightly over the lithograph or engraving (which has been previously transferred to the canvas to be painted by means of transfer paper, with is entirely removed) up and down, across, and to and fro; thus leaving the drawing completely freed from the smallest particle of paper. This application of the above solution by the camel-hair brush fixes instantly the drawing to the canvas. The drying of the canvas occupies more or less time acording to temperature. It is next coated with varnish by means of a fish-tail brush, and the canvas is ready for painting by the ordinary methods.

The patentee claims the preparation of a composition and process of transferring and fixing lithographic images and engravings on cloth or canvas.

Improvements in the Masts and Spars of Ships and Vessels. By John Robb, and Laurence Hill, both of Greenock.—In carrying out their invention the patentees build the lower part of the mast of iron, from the "step" to the upper deck, or to a short distance above the upper deck; and the upper part of the mast, from or near the deck, they construct in any of the ways usually adopted in the construction of a wooden mast, and fix it in the upper end of the lower or iron portion. Masts so constructed can be cut away with the usual facility, and, if cut or carried away, they can be more easily replaced than common masts, or than masts constructed wholly of iron, or having iron plates running throughout the entire length. The form of the iron part of the mast is that of a hollow iron tube, which form facilitates the fixing of the wooden part into it. It may either be built into and form part of the vessel, which plan is preferred, or it may be constructed as a separate piece, and fixed in the usual way of fixing masts in vessels.

The spars of ships the patentees also make, in part, of hollow iron tubing, say five or six feet in length, for a spar of about forty feet long, but longer or shorter for other lengths of spars; and the remaining portions or ends of the spar, they form by inserting into each end of the hollow iron tube a piece of wood of the same construction as the corresponding portion of a wooden spar made in the usual manner.

Improvements for constructing Propellers, &c. By George Peacock, of Gracechurch street.—This invention consists in making each blade of a propeller of an open frame of wrought-iron, and covering such frame with sheet-iron, by which means great strength may be obtained with comparative lightness of structure. The form of the propeller-blades may be varied, but it is preferred that the outline of the open frame should correspond with that of a bee's wing; and, in applying the sheet-iron to such frames, the same is formed hollow in front, and convex on the back surface, and parabolic in its curvature.

Improvements on the Construction of Railway Wheels. By Alfred Krupp, of Essen, Prussia.—This invention consists in forming railway wheels by a combination of a solid cast iron disc, whether corrugated or otherwise, or plain, with or without ribs, with a wrought-iron or wrought or rolled steel tyre affixed thereto, by shrinking pressure, or bolts and nuts, or by any other suitable method.

The wheel is constructed of two distinct parts; namely, first, the interior of the wheel, including the nave; and second, the tyre. These parts are united by bolts and nuts, or by the ordinary process of shrinking. The interior part of the wheel and nave are formed of solid cast-iron: the portion surrounding the nave is provided with radial corrugations (or of an undulatory form.) which diminish in depth towards the rim. The rim is furnished on each side with a flange; the inner one being of a greater depth than the outer, in order to receive the bolts necessary to secure it to the tyre; or the central portion of the wheel may be cast with a number of radial ribs, of a greater width at the nave and diminishing towards the outer edge. In all cases the central portion should be cast of sufficient dimensions to allow of being turned in the lathe, to form smooth and even surfaces at the periphery and at the nave, for securely fixing the tyre and axle. For locomotive wheels, the radial corrugations or ribs should be increased proportionably in number and depth to the size of the wheel. The tyres for these wheels may be of wrought iron, or of wrought or rolled steel, and attached to the rims or flanges of the central and solid portion of the wheel, either in a hot state by shrinking, or in a cold state by means of a hydraulic press, or by bolts and nuts, or by any other approved method.

The patentee claims constructing railway wheels by a combination of a solid cast-iron disc with a wrought-iron or wrought or rolled steel tyre, affixed thereto by shrinking, by bolts and nuts, or by any other known suitable means.

Improvements in the Preservation of Vegetable Substances. By Francois Joseph Anger, of Stamford street, Blackfriars.—This invention consists in preserving potatoes and other vegetable substances, by means of a process which effects a change in the nature of the farinaceous matter contained in the vegetables operated on, and prevents decay or decomposition taking place. The agent employed for the purpose of this invention is an extract from fermented grain called diastasis, which is mixed with warm water. This solution is heated to a degree sufficient for decomposing the farinaceous matter of the potato or other vegetable, which is then placed therein and allowed to remain until perfectly imbued with the solution and the farinaceous parts are decomposed. The vegetables are then removed from the solution, and placed in drying-rooms until thoroughly dried. When thus prepared, the potato or other vegetable is not susceptible to the decomposing influence of the atmosphere. The patentee remarks, that certain neutralized acids or chemical salts can be used instead of diastasis, and the employment of them would effect the purpose, but not so well as the diastasis.

Silver Medal to the Amoskeag Company.—The Amoskeag Mills, David Gillis, Esq., agent, have received an elegant silver medal of the first class for their superior display of sheetings, tickings, flannels, and denims, at the World's Exhibition at Paris last year. This company received the prize at the World's fair at London for the same class of goods. These two prizes indicate beyond question that the American products cannot be equalled, in some instances, by the rich manufactories of the old world.—*Manchester Mirror.*

Miscellaneous.

Sharpe's Rifle.—This recently-invented weapon, if it possesses one-hal of the power and capacity claimed for it by its proprietor, is destined soon to supersede every other weapon for warlike purposes now in existence. It is the most efficacious and terrible fire-arm in existence. The small carbine now used by the United States mounted men, throws a ball with a deadly accuracy one-quarter of a mile, and can be fired ten times per minute. It is not complicated in structure, is easily cleaned, and suffers no injury from wet weather.

Mr. Sharpe is now preparing models for four new species of his weapon, namely: A small pocket pistol, calculated to throw a minnie ball one hundred yards; a rifle suitable for footmen, with a range of one mile; and a large gun to throw a two-ounce ball or a small shell, one mile and a half, or as far as a man and horse can be seen to advantage. With this latter weapon, Mr. Sharpe declares he can set on fire a house or a ship at a distance of nearly two miles, and prevent the use of field artillery by killing the horses before the guns are brought within a good range.

This rifle, in the hands of a good marksmen, is equal to ten muskets, bayonets and all; for, place a man six rods distant with a musket and bayonet, and before he can bring the bayonet into use, the rifle can be loaded and discharged ten times. They carry balls with great precision and force. Mr. Sharpe intends these rifles to become a national weapon, and should Congress, by using a little liberality, purchase the patent, the country would be possessed of a means of warfare unequaled in the world.—*Alton Courier.*

Statistics of English and French Agriculture.—Some interesting statistics relative to the Agriculture of France and England were given in a lecture delivered a few days since in Cornwall, by M. R. de la Trehonnais. In England, out of 50,000,000 acres cultivated, 10,000,000 are sown to wheat or other cereal crops, while in France 50,000,000 were cultivated for that purpose. The average growth of wheat per acre in England is 4 quarters, and in France only $1\frac{3}{5}$ quarters; while the produce of English land is about £3 4s. per acre, and that of French £1 12s. per acre. The number of sheep grown in each country is about 35,000,000, and the wool produced about 60,000 tons; but, owing to the difference in the average, there is something less than $1\frac{1}{2}$ sheep per acre in England, and only about one-third of a sheep per acre in France. In France there are annually slaughtered 4,000,000 of cattle, the average weight of each being two cwt.; while in England there is not half the number slaughtered, but the average weight is five cwt.—*London Times.*

The Steamer Sebastopol.—A new steamer, intended to run in the Upper Lake trade, has just been completed in the ship-yard of L. Moses, in Cleveland. She bears the appropriate name of Sebastopol. For strength and capacity, says the *Plaindealer*, she is not surpassed by any craft in that trade on the lakes. Her engine was manufactured at the Cuyahoga Works, has 32-inch cylinder, 11 feet stroke of piston, and is rated at 800 horse power. The wheels are thirty feet in diameter. She is about 830 tons capacity, and, with all her machinery, draws but four and a half feet of water, and with full cargo will not exceed eight and a half feet draught. No lighting over shoal water, or the St. Clair Flats can be apprehended. She cost about $60,000.

The Lake Fisheries.—The number of barrels caught annually is stated as follows:

Lake Superior, 3000 bbls.; Lake Michigan, 15,000; Lake Huron, 15,000; Lake Erie, 3000; making in all 35,000. To which is added Detroit River, white fish, 7000; making a total of 42,000 bbls.

These are sold at an average price of $11 per barrel—the aggregate amount of sales being $462,000, or nearly half a million dollars. Probably one-sixth of all the fish caught in Lakes Michigan, Huron and Superior, are trout—the remainder being white fish. In some of the rivers that flow into the Lakes, enormous quantities of pickerel are caught, reaching a total, with bass, mullet, etc., of about 10,000 barrels, selling for $85,000. It appears that there are thirty-three varieties of fish in and about the Lakes, many of which might be artificially and successfully propagated.

Maryland Agricultural College.—Mr. Sothoron has reported a bill in the Senate to establish and endow an Agricultural College in the State of Maryland. It provides that when the stockholders shall have secured subscriptions for two thousand shares of twenty-five dollars each to the stock of said college they shall be entitled to draw from the States Treasury the annual sum of $6,000, which is to be appropriated as a perpetual endowment for the payment of the salaries of professors, &c. James T. Earle, John O. Wharton, Nicholas B. Worthington, Charles B. Calvert, George W. Hughes, Walter W. W. Bowie, Ramsey McHenry and J. Carroll Walsh, Esqrs., are named as the commissioners to obtain subscriptions. The Governor of the State is to be president ex-officio, and the President of the Senate, and the Speaker of the House of Delegates, and the Comptroller of the treasury, for the time being permanent trustees.

Increased Facilities for Western Travel.—Three years ago I came from Cleveland, by the road, with my family and conveyances, and we were nearly three weeks on the way. Now, we can make the trip by railroad in eighteen hours. We are 145 miles from St. Louis, and a year ago it required several days of hard travel for man and beast to reach that city. Now, two trains of wide, comfortable cars, pass daily over a very good six foot railroad, in which the man of business or pleasure can read the morning paper, or look out upon the broad and beautiful prairie, or take a nap in his easy seat without fear of the horse tiring, or it becoming necessary to pry out of the mud.

A daily line of first-class steamers now ply between Cairo and New-Orleans. Passengers from the South, for the East, take the Illinois Central road at Cairo, to the crossing of the O. & M. R. R.; thence here to Indianapolis, Cleveland, New-York, Boston, Philadelphia, &c., &c. From Cairo to New-Orleans navigation is never obstructed by freezing, while the Mississippi and Ohio, above Cairo, are frequently frozen entirely over. Such is the case at this time, and but for the railroads travel between the North and South would be suspended.—*Cor. O. Far.*

Guano for Cotton.—We have seen a letter of a late date from Dr. Cloud, of the *Cotton Planter*, in which he says, " My guano has astonished the natives. On sixty acres of land, with six dollars' worth of guano to the acre, I have made 100,000 pounds seed cotton and fifteen bales yet to pick." The Doctor's plantation is in Macon county, and consists mostly of level pine-land, with a clay subsoil. We want no better proof of the beneficial results of guano. In this case, less than 200 pounds to the acre, combined with land plaster, have produced, upon what is considered poor land, more than the average yield of the best prairie and river-botton lands. A great deal of similar land is to be found in Mobile and Baldwin counties, which, by the employment of a liberal dressing of guano alone, or guano and land plaster combined, would produce fine crops of corn, oats, rye, wheat, cotton and garden vegetables.—*Ala. Planter.*

Bees and Quails.—The Rev. A. H. Milburn in a lecture on the West says:

"Two remarkable facts are to be noted in respect to the advancement of the whites. The first is that the quail, unknown to the Indian, makes its first appearance—from whence no man knows—when the white man plows and plants his fields, affording an abundance of delicious food to the pioneer. The second fact is that the honey-bee is not found in the country while in the possession of the Indians. It keeps just in the advance of the advancing wave of civilization. When the Indians see the swarms of these new visitors, their wise men sadly acknowledge that it is time for them to abandon their pleasant hunting-grounds and the graves of their fathers, and seek new homes."

Mode of Feeding.—An English farmer says, "Good sheds, *dry beds*, *small* yards or boxes, regularity in feeding *small* quantities at a time, are the great essentials in feeding all animals, and strict attention to these principles would save an immense quantity of valuable food."

Largest Carrying Ship.—The keel of a ship was recently laid at the ship-yard of Wm. H. Webb, in New-York, intended to be the largest carrying ship ever built. She is to be of 2500 tons, 240 feet long, 46 feet beam, and 30 feet hold, and is estimated to carry over 7000 bales of cotton.

Import of Dry-Goods at New-York.—For the first ten months of 1852 the estimated value on imported dry-goods at this port was $53,000,000; for the corresponding period of 1853, $82,000,000; of 1854, $76,000,000; and of 1855, $57,000,000. The falling off during the past year was doubtless consequent on the excess of importations for previous years.

Joy at a Friend's Fall.—A wag having been told that the price of bread had fallen—exclaimed: "This is the first time that I ever rejoiced at the fall of my best friend."

Manufactures in Marblehead, Mass.—Marblehead annually manufactures some 300,000 pairs of boots and shoes, that are valued at over a million of dollars. They have 2,565 persons—1,080 males and 1,485 females, employed in the business. They have found it for their advantage to have fewer fishing vessels and more shoe shops.

Grain Crop of Illinois.—The *Chicago Press* estimates the grain crop of Illinois for 1855 as follows: 180,000,000 bushels of Indian corn; 20,000,000 bushels of wheat, and 50,000,000 of oats, barley and rye.

NEW BOOKS.

Edith Hale. A Village Story. By Thrace Salmon. Phillips & Sampson, Boston. 1856.

This is a pleasing and simple story of a young girl. Some of the scenes are very amusing, and others are very sorrowful. It is a very good book.

Wolfsden; An Authentic Account of Things then and thereunto pertaining, as they are and have been. By J. B. Phillips & Sampson, Boston.

This is a New-England story, describing the fortunes of several of the "Wolfsdeners," but principally of Alek, who, sadly disappointed at finding that his lady love prefers another, leaves his home to seek his fortune.

The Quarto Shakspeare. Illustrated. Martin & Johnson, 27 Beekman street, New-York.

Thirty-eight numbers of this splendid edition have now been issued. We can hardly commend the publishers too highly for the almost absolute perfection of style in which they have executed this great work. The engravings are of the highest style of art. Thirty-eight of equal merit can scarcely be found in any American publication, and they, and the paper and letter-press are all in good keeping. The last will soon be published. Price 25 cents a single number. Most of the later numbers are double.

The Kings of Rome. The Republic of Rome. By F. W. Ricord. With illustrations. New-York: A. S. Barnes & Co. 1856.

These two small volumes give us a concise history of the periods to which they belong. The first is, of course, to a great degree fabulous, but it is all we have. Both are well arranged and well written, and should be in every juvenile library. Both are illustrated with good wood engravings.

The Catholic. Letters addressed by a Jurist to a Young Kinsman proposing to join the Church of Rome. By E. H. Derby. Boston: John P. Jewett & Co. 12mo, 293 pages.

These letters are written with very great ability. The argument of the writer is sustained by the early fathers, Scripture, history, and books of travels. It is admirably written, and the whole is executed with remarkable taste.

Life of Schamyl, and Narrative of the Circassian War of Independence against Russia. By J. Milton Mackie, author of "Cosas de España." Boston: John P. Jewett & Co. New-York: Sheldon, Lamport & Blakeman. 12mo, 300 pages.

Schamyl, the hero of this narrative, and a hero in the Circassian war, was born in 1797, and after the death of Hamsad Bey, became his successor as Imam, and is intimately connected, of course, with the intensely interesting events of that remarkable war. The work has the interest of a novel, is well written, and no doubt reliable.

Ernest Linwood. A Novel. By Caroline Lee Hentz. Boston: John P. Jewett & Co. 1856.

Mrs. Hentz was a very beautiful and a very powerful writer. We say *was*, for we regret to say that she died the very day this book was published. She excelled in the humorous style, and she equally excelled in the pathetic and in the passionate. The volume before us furnishes abundant proof of this. No female writer in this country deserves a higher place in the esteem of the public than she, as no other was more ardently beloved or more highly honored by those who personally knew her. For it is not merely as an author that she was preëminent. As a woman, by her elegance of manner, her rare powers in conversation, her well-proportioned intellect, and her character throughout as a woman, a wife, and a mother, Mrs. Hentz, the individual, was as distinguished as Mrs. Hentz the author.

This volume is remarkable for variety in the character of its scenes, all alike wel conceived and admirably managed. And through the whole there is a tone of deep religious feeling, not ostentatiously paraded nor exhibited for effect, but pervading the whole book, and flowing out of the writer's inmost soul. Would that we had a multitude of just such noble women.

The volume is for sale in New-York by Sheldon, Lamport & Blakeman.

List of Patents Issued

FROM TERMINATION OF PREVIOUS LIST TO MARCH 4.

Edward F. Berry, of Hudson, N. H., for improvement in machines for sowing seed broadcast.

Sherburne C. Blodgett, of Philadelphia, Pa., for improvement in forks.

Henry A. Brown and James Wiley, of Brooklyn, N. Y., for improved fountain pen.

Wallis and George Bull, of Tonawanda, Pa., for improvement in machines for sawing marble.

Abner Burnham, of Albany, N. Y., for improvement in cooking stoves.

George H. Corliss and Elisha Harris, of Providence, R. I., for improvement in rolling metal.

George H. Corliss and Elisha Harris, of Providence, R. I., for improvement in forging thimbles.

John B. Cornell, of New-York, N. Y., for improvement in vault covers.

Marcus M. Cass and Lawson R. Bigelow, of Watkins, N. Y., for improved grapple for raising stone.

Seth P. Chapin, of New-York, N. Y., for improvement in sewing guides.

Stephen Gorsuch, of Altoona, Pa., for improvement in seeding machines.

John Johnson, of Troy, N. Y., for improvement in power looms.

Francis Jos. Klein, of New-York, N. Y., for flexible pen-holder.

Abraham, Ezra, and Chas. Marquiss, of Monticello, Ill., and Chas. Emerson, of Decatur, Ill., for improvement in the mode of draining ploughs.

James B. Mell, of Riceboro, Ga., for improvement in ploughs.

John H. Palmer, of Elmira, N. Y., for machine for tenoning window blinds.

Micheal Phelan, of New-York, N. Y., for improvement in billiard and table cushions.

Charles S. Pitman, of Swampscott, Mass., for improved mode of applying shafts to axles.

Rensselaer Reynolds, of Stockport, N. Y., for improvement in temples for looms.

F. Roesler, of New-York, N. Y., for improvement in the construction of pessaries.

Jos. Smith, of Sunbury, O., for improvement in hubs for carriages.

James F. Starret, of New-York, N. Y., for machine for printing from engraved plates.

Philip Scrag and W. J. Von Lammerhueber, of Washington, D. C., for improvement in machines for sawing marble in obelisk form.

Masa B. Southwick, of the Parish of St. Hilaire, Canada, for improvement in machines for preparing vegetables for preservation. Patented in England September 15, 1853.

Russel Wildman, of Charlestown, Mass., for improvement in furnaces for heating slugs for the use of hatters, tailors, and others.

George W. Livermore, of Cambridgeport, Mass., assignor to the Livermore Manufacturing Company, of Boston, Mass., for improved stave machine.

Hamilton L. Smith, of Gambier, Ohio, assignor to William Neff and Peter Neff, Jr., of Cincinnati, Ohio, for photographic pictures on japanned surfaces.

Re-Issues.—Wm. Apperly, of New-York, N. Y., for ticket registers for railroad cars, etc. Patented May 1, 1855.

John H. Manny, of Rockford, Ill., assignor to Peter H. Watson, of Washington, D. C., for improvement in harvesting machines. Patented October 17, 1854. Antedated June 15, 1854.

Wm. Bell, Boston, improved machine for depositing coal in cellars.

Andrew Blaikie and Walter Clark, St. Clair, Michigan, improved pitman.

Henry J. Brunner, Nazareth, improved machine for edging wall paper.

Benj. F. Bundy, Walton, N. Y., improvement in wagons.

Nathan T. Coffin, Knightstown, Ind., improved mill saw.

Richard Cross, Attleboro', combined knife and pencil case.

Ari and Asahel Davis, Lowell, dove-tailing machine.

Othniel W. Edson, Troy, improvement in machinery for making shirt collars.

John U. Fiester, Winchester, Ohio, improvement in churns.

Alfred C. Garrett, Roxbury, improved box for carriage hubs.

Stacy A. Garrison and Daniel C. Morey, Chelsea, Mass., improved coupling for the joints of felloes.

Stephen J. Gold, New-Haven, improved air-cock for steam-heating apparatus.

Peter C. Guion, Cincinnati, improvement in girders for bridges.

Horace L. Hervey, Quincy, improvement in the arched trussed bridge.

Chas. T. James, Providence, improvement in projectiles.

Edward N. Kent, New-York, improved machine for separating gold and other precious metals from foreign substances.

Wm. M. Kimball, Rochester, improvement in lamps.

James T. King, New-York, improvement in domestic steam generators.

John H. B. Latrobe, Howard county, Md., improvement in percussion locks for fire-arms.

Wm. Lincoln, Oakland, Mass., process of painting or varnishing woven wire.

Nathan Martz, Briar Creek Township, Pa., improvement in horse-rakes.

James S. McCurdy, New-York, improvement in binding guides.

A. R. Moen, New-York, improved mode of constructing walls and floors of cellars.

T. J. W. Robertson, New-York, improvement in sewing machines.

Wm. F. Shaw, Boston, improved apparatus far heating by gas.

David G. Smith, Carbondale, improved door spring.

James Temple, Birmingham, Pa., boring machine.

Ira F. Thompson, Westerly, improvement in velocimeters for vessels.

Heman Whipple, South Shaftsbury, Vt., improvement in instruments for measuring the lengths of braces in carpentry.

Russell Wildman, Charlestown, improvement in machines for hardening hats.

Jos. Wood, Jersey City, improved method for excluding dust from railroad cars.

John Wright, Harmar, O., improvement in bending sheet metal.

Wm. E. Wyche, Brookville, N. C., improvement in cultivating plows.

Jacob M. Webb, Somerville, Tenn., improvement in coffee pots.

John S. Barden, New-Haven, assignor to himself and Aaron W. Rockwood, hydraulic meter.

John Goodyear, Jr., and Thos. J. Berry, Philadelphia, assignees to themselves and Wm. M. Foster, Carlisle, Pa., improved roach trap.

Chauncey H. Guard, Brownsville, N. Y., assignor to John A. Scroggs and C. H. Guard, same place, improved wheelwright machine.

John Sheitltin, Washington, D. C., assignor to himself and Oliver A. Dailey, same place, improved arrangement of means for operating the valves of steam engines.

Wm. P. Wood, Washington, D. C., assignor to himself and John S. Gallagher, Jr., same place, improved sawing machine.

W. W. Albro, of Binghampton, N. J., for improved apparatus for cooking with quick lime.

Timothy Alden, of New-York, N. Y., for machine for sweeping streets.

Christian Amazeon, of New-Castle, N. H., for improvement in machines for sawing marble in taper form.

James W. Beebee, of Brooklyn, N. Y., for improvement in manufacturing hats.

Wm. M. Bonivil, of Camden, Del., for improvement in corn harvesters.

J. M. Burke, of Danville, N. Y., for improved skein for axle-arms.

James J. Cadenhead, of Macon county, Ala., for improvement in ploughs.

Ransom Clifford, of Lowell, Mass., for improved shingle machine.

Robert Cornelius, of Philadelphia, Pa., for improved arrangement of steam tubing for regulating the heating of buildings.

Isaac Davis, of Groton, N. Y., for improved hinge for shutters.

Owen Dorsey, of Howard county, Md., for improvement in harvester rakes.

Elon Dunbar, of Philadelphia, Pa., for self-acting farm gates.

Wm. E. Everett, of New-York, N.Y., for improved lubricator.

Geo. Fetter, of Philadelphia, Pa., for improveprovement in boot crimps.

Luther B. Fisher, of Coldwater, Mich., for improvement in sheep shears.

Daniel Fitzgeral, of New-York, N. Y., for improvement in portable houses.

B. F. Fœring, of Philadelphia, Pa., for improvement in supplementary grating for stoves, furnaces, etc.

F. R. Ford, of Ophir, Cal., for improvement in rifle boxes.

James Greenhalgh, Sr., of Waterford, Mass., for improvement in power looms.

George C. Jenks, of Boston, Mass., for improved guard for coal holes.

Charles H. Johnson, of Boston, Mass., for improvement in the apparatus for heating buildings by the combination of, and burning gas, air and steam.

James Kelly, of Sag Harbor, N. Y., for improvement in stoves and furnaces for railroad cars and other purposes.

Ebenezer Maters, of Morgantown, Va., for improved bench planes.

George T. McLauthlin, of Boston, Mass., for improvement in railroad car seats.

John T. Ogden, of Boston, Mass., for improvement in handle for vise.

Eugene J. Post, of Vienna, N. J., for improvement in scythe rifles.

Alphonse Quantin, of Philadelphia, Pa., for improved method of bottling fluids under gaseous pressure.

Prentice Sargent, of Newburyport, Mass., for improvement in lamps for burning rosin oil.

George Schuh & Phineas L. Slayton, of Madison, Ind., for improvement in machines for pegging boots and shoes.

Horace B. Simonds, of West Hartford, Vt., for improved mode of attaching hubs to axles.

Hiram Smith, of Norwalk, O., for improvement in air escapes for pumps.

Aaron & Thomas S. Smith, of Troy, Ill., for improvement in gang plows.

Jeremiah P. Smith, of Hummelstown, Pa., for improvement in corn shellers.

Abraham Steers, of Medina, O., for improvement in tanning apparatus.

Vinzenzo Squarza, of New-York, N. Y., for improvement in candle dipping machines.

Daniel and George Tallcot, of Oswego, N. Y., for improvement in ships' capstans.

Wm. B. Tilton, of New-York, N. Y., for improvement in guitars.

Andrew L. Whiteley, of St. Louis, Mo., for improved method of adjusting circular saws.

Sylvanus H. Whorf, of Roxbury, Mass., and Charles Rice, of Boston, Mass., for improvement in the application of soles to boots and shoes by means of pressure and gutta percha or other cement.

George Woodward, of Brunswick, Me., for improvement in heading bolts.

The Plough, the Loom, and the Anvil.

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AMERICAN MANUFACTURES.

We took occasion in our last number to present our views in relation to the movement of the New-York jobbers of iron-ware. We are persuaded that our position is the only one tenable by any man who pretends to advocate the encouragement of home industry. If our only object is to heap up money in our own coffers by importations from abroad, or if it is proposed to do so by swindling in any of the fashionable modes of amassing wealth, now so common, which have no regard for the common welfare, or for the progress of the nation in power and wealth; then this movement might be satisfactory. But to say to the intelligent and skillful mechanics of this great country "you shall not affix your name, and above all, your location, on any of the products of your hands"—is the coolest piece of brazen impudence we ever saw in print over respectable signatures. And even now we can scarcely believe it the work of those whose names are signed as approving the movement.

But our object is not now to repeat what we then wrote. The longer we reflect upon this movement, the more induced we are to use stronger terms of disapprobation in reference to it. It is, however, a much more pleasing duty to turn to our own skillful artists and manufacturers, and to show forth the very honorable position they have secured among their fellow-producers the world over.

"Who reads an American book?" is a taunt, the malignity of which is forgotten in the utter contempt which universally attaches itself to one who indulges in such foolish language. As a matter of fact it is probably the few Americans, of the type of those who contrived this vain attempt to govern our intelligent manufacturers, and who led more worthy men to adopt it, without considering what it involved, it is probably these men who never "read an American book," nor any other; but who live only to fatten on the spoils of all whom they can fleece. We are sorry that so many highly respectable men have been drawn into such a net by such men.

The same taunt used to be thrown off, very flippantly, in reference to American manufactures, and the generation of those who prize a thing chiefly because it is foreign, is not yet extinct. We wish some foreign operator would take these persons under their care for a while and mend not only their manners, which often are sadly in fault, but their intellects and their tastes, teaching them the true mode of determining merit, and the way in which even themselves can become useful and honored members of community. But if we allow ourself to dwell on this matter we may be tempted to write what we should regret. We are sure it is safe ground on which we enter.

There are but few departments in mechanic art, in which we do not occupy an eminent position.

In some of the more expensive and merely ornamental, we are content to follow. It is well, perhaps, here *only* to imitate. French milliners are probably gifted by nature, with the faculty of painting butterflies and scenting roses and orange flowers more "charmingly," than our own more matter-of-fact, utilitarian wives and daughters. We doubt whether any body, but these and their few kindred that, by accident, were born under some other firmament, would ever attempt the highest flights in those curious realms. Let them have full scope.

But the moment you enter upon *real life*, upon the catalogue of those pursuits that dignify and improve, you find our own country among the foremost.

From Collins through the whole fleet of structures of all names and sizes, that float on the water, down to the smallest bark canoe, we at least, when we regard actual achievements, have no cause to be ashamed of ourselves. If we turn to what we ought to have done, and might have done, with proper encouragement and protection, we may find occasion for self-reproach and censure. If we look to our Lowells and Lawrences, and Manchesters, another immense vista opens, which in any community would inspire pride and satisfaction. Go through Pennsylvania, and note her mighty products, that provide so abundantly for the comforts of our entire people for the larger half of year, and visit her furnaces and forges, and kindred forms of industry, and if you are not amazed at what has been done, it will only be because you wonder more at the folly which has refused to them that kind of patronage which would have placed the products of that great State far above and beyond those of any like region in the globe.

But life is made up chiefly of little things, and the arts that do so much to make men happy and efficient are mainly much less imposing in their forms. We are not certain that a learned and very discreet friend of ours, was not right, when, some twenty years ago, he remarked to us that the invention of friction matches had done more for domestic comfort than any other invention of the age. It is true, undoubtedly, that some of the most unpretending and unattractive contrivances which daily come into use in every family, are eminently among the *essentials* of an intelligent, progressive community.

Hence it is that the man who contrives an improved cooking utensil, an improved range or stove, a new and useful and safe light, better pots and kettles, improved wares, whether of clay, or iron, or wood, tasteful or useful furniture, &c., &c., tells directly upon the comforts of millions, and adds essentially to the happiness of a whole people. What a change has been wrought out in the habits of nations by the invention of a metallic pen! So humble a matter as an envelope, how it has changed old ways, and brought about new forms and fashions.

But we intended only write an introduction to something else, while it will prove far more pretentious, in volume, than that to which it was designed to lead. We hope it may not, however, be destitute of interest, and may deepen the conviction of the reader as to the importance of the policy we contend for, towards various industrial pursuits.

Leaving the path into which we have been beguiled, by the inspiration of the moment, we desire to turn the attention of our readers to the progress that we have made in certain departments of useful industry.

POCKET AND TABLE CUTLERY—NEW YORK KNIFE COMPANY.

Those who have not examined these useful implements are by no means aware of the perfection to which this art has been advanced in this country.

With all implements, in the manufacture of which each piece demands a large amount of individual labor, that machinery cannot do, the cheap labor of Europe has heretofore affected very materially the success of American artists. So in cutlery, it has not been found possible to afford the jobber so great a profit on these goods as he is able to obtain upon imported articles. Hence their influence has not been in favor of domestic manufacture, but they all favor the sale of foreign cutlery.

But go into almost any respectable store where these articles are for sale, and among the handsomest and finest of the entire stock, are American knives. They are made in various places, and of various qualities. We are not able to give the location of many of these. We remember some years ago to have seen some fine pieces of table-cutlery from an establishment in or near Greenfield, Mass. But our memory does not enable us to speak definitely in relation to them. We are, however, enabled to state with entire assurance, in relation to the wares of

THE NEW-YORK KNIFE COMPANY, MATTEAWAN,

in this State. Some specimens of their manufactures were lately shown us which would compare favorably with the very best English knives, and in answer to our inquiries, we learn the following facts:

The construction of this company is peculiar, and affords a satisfactory assurance that they must be successful. Every member of the company, or stockholder, is a skillful artizan, and nearly or quite every artizan is a stockholder. They are all Englishmen who have wrought in the best shops in Sheffield. They are men with families, having a permanent home in their adopted country, and are surrounded with every inducement to do all that industry and art can do, to insure success. That success they appear already to have achieved.

The company was formed by those enterprising men, on a very liberal foundation, but without cash. Scarcely five hundred dollars could be raised from the whole number. But by saving one-half their earnings, for two or three years, they have created a large capital, and are free from embarrassment.

Companies or individuals who will achieve such triumphs, are sure of success. It is indeed, as we have stated, already achieved. It is a prosperous company, a company deserving the patronage of our entire American people, as well for what they are themselves, as for the character of their work. They do honor to their adopted country. May no shadow ever darken their prospects. We are informed that every blade which they manufacture is STAMPED "New-York Knife Co., Matteawan." May all our retailers and purchasers, learn the exact position (in Duchess county) of that locality. They employ forty-seven hands, mostly men, and have a capital of about $20,000. They use an engine of 12 horse power. They produce about $3000 worth of cutlery per month. They have been organized about four years.

The position of importers, as already explained, towards these artists, deprives the company of the benefit of their influence, and hence they are obliged to find a market for themselves. This they do without difficulty. Their agencies cost no more than the jobber would demand for his commission, and wherever they exhibit their goods they make ready sales.

We have also seen and examined the goods of another of these numerous centers of wealth and industry, which our importers and jobbers would like to exterminate, and which are scattered all over our country. We refer to the

BRUSH FACTORY, LANSINGBURG, N. Y.

This is carried on by Messrs. Cross & Hoyt, whose warehouse is in Pearl st., in this city. The commencement and progress of this establishment, like that just described, is so illustrative of enterprise and perseverance, that we present it to our readers with some detail:

They commenced business in the year 1835 in a very small way, being all apprentices in the same shop, and subsequently journeymen, for some three years; and afterwards formed a co-partnership consisting of James Cross, John Moss, and Joseph Hoyt, under the style of Cross, Moss & Co. They hired a small shop and commenced in a small way, (doing the most of their work themselves,) in which they continued for a year or two. Mr. Cross then purchased a house and lot and built a small shop on the rear part of the lot, the village being laid out in streets and alleys; the said shop was in dimensions 25 by 13 feet, two stories high, in which they did their work for some time. Some of the old establishments at that time having been in business for several years, and being jealous of them, prophecied an existence of just six months. But the evil prophecied did not occur. Now they have an establishment only second in the country. Their factory building is 100 feet by 24, with two wings attached 50 by 18 feet—all three stories high. with cellar, wash-house, and bleach-house. They have a steam-engine of about fifteen-horse power, which moves machinery with which they do much of their work, such as sawing, boring, etc., etc. They use all kinds of wood in the business, as Rose, Satin, Mahogany, Maple, Birch, and Oak. The fancy woods come from South America and Brazil.

Of Bristles, they use more than 30 different kinds, varying in price from 35 cents per lb. to $3 50, according to quality. Those come mostly from Russia, and are the best in the world; some from Prussia, Poland, Germany, and France. There is also a large quantity packed at the West; at Cincinnati, Louisville, and other places.

They now keep about 30 men employed in the shop, and 25 boys, and some 80 women and girls. The men do the sawing, boring, planeing, etc. The boys do what is called drawing, that is, putting the bristles in the holes. This is effected by doubling wire and drawing it into the hole. They do the coarse work; the women draw the fine work, such as hair and hat brushes, etc.,—taking the work to their houses, while the boys and men work in the shop. The coarse work is all drawn in, one knot at a time, and is cut off, every row, as it is drawn, by large shears made for the purpose, which are screwed down on the bench, with blades 10 to 12 inches long and 3 inches wide. They cut it off generally with one cut, having a guage secured on one blade by which the whole brush is cut at the same length. They can turn out $150,000 or $200,000 a year, but the business will not yet admit of doing so much. Their sales however are increasing constantly.

Their varieties of work consist of the following kinds, viz.: Hair, Clothes, Tooth, Nail, Shaving, Shoe, Scrubbing, and Horse Brushes; also, Whitewash, Pain, Sash, Varnish, flat and oval Graining Brushes; also, Marking and Dust Brushes of every style and price. They make more than 250 kinds of styles of hair brushes alone.

Enterprise such as we have here described, deserves success. All these artizans are now reaping the fruits of persevering toil and industry under darker skies. We trust a constant sunshine will henceforth lighten their way to a happy and prosperous old age.

SENECA FALLS, N. Y.

[CONDENSED FROM HARDWAREMAN'S NEWSPAPER.]

This village affords a remarkable illustration of the beneficial influence of manufactures upon the public interests, as well as of the wealth and comfort and independence which are attainable through the same channel, to individuals, by the exercise of perseverance, energy and industry. It is most conspicuous for its success in the manufacture of iron.

1. Boat Building.—Although, from temporary causes, this business is not now in active progress, yet it has been a most important and profitable one to the village—having given a great deal of employment, and produced a great deal of wealth. I have heard that the boats built at Seneca Falls are accounted the best on the canal; and, with the characteristic energy of the inhabitants, I presume they will not abandon so valuable a branch of manufactures, but will engage heartily and vigorously in the improved style of boats which are now in requisition. But whatever may be the future of this branch of industry, it is certain that in the past it has largely contributed to the substantial advancement of the village.

2. Woolen Mills.—One very extensive, the other smaller.

3. Sash and Blind Factories, of which there are two—one being the largest, and perhaps the best appointed in the United States.

4. Grist Mills.—The tremendous water power existing here is largely used for the manufacture of flour. There are eight mills, having sixty run of stones! The vast consumption of wheat by these concerns is chiefly supplied by the west over the canal.

5. Hay and Manure Forks, of Hines' Patent Wire, are largely manufactured by Messrs. Gould, Henion & Co. This enterprising firm have lately considerably increased their capacity of production, and are now in a position to execute very large orders.

6. But the leading manufacture of the place is of Iron, and chiefly consists of the article of Pumps, although some other goods are manufactured to a great extent. There are here three extensive Pump Factories, beside two Foundries and Machine Shops. There are employed in these factories four and five hundred hands, and the value of the goods they produce is not less than half a million of dollars annually. They melt from 16 to 20 tons of iron per day—which, it is to be remembered, it mostly run into light and fine castings—and show every symptom of increasing their production.

In 1849, Messrs. Cowing & Co., produced about 60 pumps a week. In 1855 they produced about 600 pumps a week; and now they can make at about the of rate 175 per day, or 1,045 pumps per week!

Nor is their trade confined to Cistern Pumps. Their Deep Well and Force Pumps are amongst the very best and most perfect in the world. They are also manufacturing a very cheap and efficient Fire Engine, of which last year they made and sold 30; and they have recently gone very extensively into the manufacture of Thimble Skeins and Pipe Boxes, the demand for which is now becoming so wide spread and extensive. They employ constantly over one hundred men, keep in constant use about 30 lathes, melt every week nearly 30 tons of iron, and one ton of brass and copper, besides the large quantity of wrought, which they use in the mounting of their pumps.

Such is the result of fifteen years' manufacturing to this village, as yet so little known or spoken of. What would it be if it were left entirely dependent on "agricultural resources?" its population driven for employment to other places—its merchants bankrupt—its mighty water power unemployed? It would add another to the many proofs which New-York even now furnishes, that agriculture alone is not sufficient to employ the power, elevate the condition, and produce the wealth of a nation.

THE INDUSTRY OF CANADA WEST.

The following lucid statements were sent to this office months since by our valued friend and correspondent, Mr. Robert Howell. But as it required copying before it could be placed in the hands of a compositor, it was given out for that purpose, and by accident was not returned till very recently. We now publish it, with the exception of statements regarding the tariff in Canada, which we believe have been changed since this was written.

Ed. P. L. & A.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

The traveler on the public road from Hamilton, C. W., to Brantford, will notice the large amount of pine timber in almost every direction. This pine is generally of large size, and of good quality. The steam mill is seen here and there sending up its cloud of smoke, especially on the government road from Paris to Hamilton. Water-power is scarce in these sections, streams being few and small. The price at Gault for common pine lumber is $13 per thousand feet, although I was assured by a large lumberman that his would average from 30 to 35 thousand or a hundred thousand of common. Such lumber would command $20 at Port Deposite. A great amount of lumber has been wasted here. Large extent of dry woods is seen in every direction.

The revenues and expenditure of the upper and lower provinces of Canada, from the parlimentary documents were as follows: The gross revenues in 1841, was £343,829 12s. 11d.; the expenditure for the same year was £291,393 11s. 7¾d.; In 1845, gross revenue, £703,447 3s. 8¾.; expenditure, £1,013,176 16s. 9d.; revenue 1851, £842,184 5s. 2d., and expenditure for the same year only, £634,666 6s. 8d.; the imports from Great Britain in 1850, were £2,407,989 4s.; in 1851, £3,012,033 2s. 6d.; from Br. N. American colonies, 1850, £96,404 19s. 6d.; and in 1851 £109,242 16s. 1d. *The Imports* from British W. Indies, 1850, £1,112 19s. 3d.; in 1851, £3,406 7s. 4d.; from the United States in 1850, £1,648,715 2s. 5d.; in 1851, £2,091,441 6s. 3d.; from other foreign countries in 1850, £91,303 18s. 4d. and in 1851, £142,574 0s. 5d. Total Imports 1850, £4,245,517 3s. 6d.; in 1851, £5,358,695 12s. 7d. The Exports of Canada in 1850, to Great Britain, £1,521,279 15s. 3d.; in 1851, £1,921,900 6s. 4d.; to Br. N. A. Colonies in 1850, £202,194 9s. 3d.; in 1851, £259,379 12s. 7d.; to Br. W. Indies in 1850, £2,094 0s. 0d.; in 1851, £978 0s. 0d.; to the United States in 1850, £1,237,789 17s. 11d.; in 1851, £1,017,886 3s. 3d.; to other foreign countries in 1850, £27,070 6s. 4d.; in 1851, £41,036 1s. 7d. Total Exports in 1850, £2,990,128 0s. 9d.; in 1851, £3,241,180 3s. 9d.

According to official report, Canada West contains 31,745,535 acres. By the census of 1852 it numbered 952,004 inhabitants. The province produces an annual amount as follows:

Wheat,	12,692,852	bush.	Potatoes,	4,987,175	bush.
Barley,	62,575	"	Other Roots,	229,121	"
Oats,	11,193,844	"	Butter,	15,978,315	lbs.
Buckwheat,	631,384	"	Cheese,	2,226,776	"
Maize,	1,606,513	"	Hay,	681,682	tons.
Peas,	2,891,503	"	Number of Horses,	203,300	
Rye,	479,651	"	Neat Cattle,	745,894	
Turnips,	3,641,942	"	Sheep,	968,022	
			Swine,	484,241	

Canada West raises three times the quantity of wheat raised by all the rest of British America; of barley, her produce falls short of that of Canada East by a few thousand bushels of oats. Canada West produces as much as all the rest of British America, of maize, peas and rye Canada W. produces more of each than all the rest of the provinces, of buckwheat, Canada W. produces a few thousand bushels more than Canada E., and a few thousand less than New-Brunswick. Canada East produces more hay than Canada West, but the Eastern province produces more potatoes and twice as many turnips than all the rest of British America, while of butter it (C. W.) produces more than all the other provinces by several millions of pounds, and of cheese, she produces more than three times as much as the rest of the British provinces. She raises many more neat cattle, sheep and swine, than all of the other provinces, but fewer horses than Canada East.

JOINT STOCK COMPANIES IN MASSACHUSETTS.

The Secretary of State reports that there are filed at his office the returns of ninety-three joint stock companies organized under the General Corporation law of Massachusetts. The total capital stock of these companies is $5,698,700, and the amount paid in is $3,340,307 70. The company having the largest capital is the Lawrence Machine Shop, $750,000, which, at the time the return was made, had but $320,000 taken up, the shares being $50 each. The North American Patent Boot and Shoe Company (of whose location no report is given) has a capital of $300,000, but none of it has been paid in. There are seven companies with a capital of $200,000 each, but in the case of the Tremont Oil Company, Boston, none of the capital is reported as paid in. The Cheshire Glass Company, Cheshire, has $60,000 out of $200,000 paid in, and the Union Iron Works, North Adams, $81,000. The others are the Merrimac Lumber Company, Lowell; Boston Oil Company, Boston; North American Verd Antique Company, (since dissolved); and S. P. Ruggles Power Press Company; whose capital is all paid up.

The list of corporations includes a great variety of business, such as the American Book and Paper Folding Company, Boston, ($36,000 paid in); American Grist Mill Company, Boston, ($25,000 paid in); Leather Splitting Company, ($4,500 out of $50,000 paid in); Machine Stamp Company, ($7,500 out of $25,000 paid in); Rattan Company, Fitchburg, ($31,200 paid in.) Then there is a Soda Fountain Company, at Haverhill; Stereotype Company, at Boston; Whip Company, at Westfield; Iron Companies, Acid, Manufacturing Companies, Carpet, Earthenware, Flax, Papier Mache, Sugar Refining, Shoe, Coal (at Bristol), Glass, Piano Forte, Rubber (at Edgeworth), Tanning, Foundry and Machine, Straw, Gas Light, Tool, Chair, Comb, Wire Fence, Shovel, Marble, Jewelry, Steam Drill, Persian Sherbet (in Boston with $12,000 paid in out of $32,000), Woolen, Patent Leather, Leather Splitting Cutlery, Tacks, Glass Engraving, Brick and Ice do.

The capital stock of thirteen Companies is under $10,000 each, the lowest being $5,000. The Comb Company at Holliston, has a capital of $50,000, or 500 shares at $100 each, all paid in. The Boston Flax Mills, at Braintree, has a capital of $50,000, all paid in. The Boston and Salem Ice Company, located at Lynnfield, has $34,946 20 paid in out of $50,000 capital. Of the very large capital engaged in the manufacture of Piano Fortes in this State, but $40,000 is invested under this law, viz, by Brown & Allen's Piano Forte Company, Boston.

BATSTO FARM AND AGRICULTURAL COMPANY.

A HOME FOR ALL.

The Company announces the following plan. It certainly commends itself to the notice of those of small means living in or near Philadelphia. This Company has purchased a large tract of land, within one hour's ride of Philadelphia and adjoining the Weymouth Farm and Agricultural Company's land, comprising about thirty thousand acres, known as the "Batsto Tract," and situated in Atlantic county, New Jersey, between Mullica river (which is navigable five or six miles along its northern boundary for vessels of seven feet draft,) and the Camden and Atlantic Railroad; the former affording an outlet to New-York, the latter to Philadelphia, two markets that would absorb all the produce which this fine tract could raise.

"The tract is divided into twenty acres each; each farm fronting on a main road thirty feet wide, at an average value of ten dollars per acre, which is payable in weekly instalments of one dollar.

"One share will entitle the holder to a farm of twenty acres, besides a gratuity of four town lots, twenty feet front by one hundred feet deep, two in the Camden and Atlantic Railroad and two at the junction of the Air Line Railroad and Mullica river.

"Half shares will entitle the holder to a farm of ten acres, besides a gratuity of two town lots as aforesaid.

"The timber and wood will be moved from the tract, (except what the stockholders may desire to purchase,) the roads and streets opened, and the deeds made out and delivered, *without any expense* to the stockholders, which will enable them, immediately after the distribution to commence working their farms, and at the same time afford them ingress and egress to and from them over good roads.

"Hence it will be seen that what would be equivalent to a merely nominal rent of *fifty-two dollars a year for twenty acres of land, for four years*, would pay the purchase money, and entitle the holder to a deed in fee; whereas, if he should lease the land for four years, at the end of that time, he would have paid four times the amount in rent, and have no more right to the land than when he commenced.

"The 'Air Line Railroad' from New-York to Cape May, which is now located and under contract, and which forms a junction with the Camden and Atlantic Railroad on this property, being the shortest route from Philadelphia to Cape May by twenty miles, will give this tract a railroad front of twenty miles, increasing immeasurably the inducements to embark in this enterprise."

EXTRACT OF THE ANNUAL ADDRESS

BEFORE THE ALABAMA STATE AGRICULTURAL SOCIETY,

DELIVERED BY HON. C. C. LANGDON, OF MOBILE.

I beg, however, to tell the representatives of the people, that *something must be done.* I proclaim it here, in their presence, at the very door of the capitol, and in the presence of this vast and enlightened auditory, something must be done for the advancement of our State. She is lagging behind, far, far behind, all her sisters in the march of improvement, and every moment of inaction is placing her farther and still farther backward. Georgia, noble, enterprising Georgia, justly styled the "Empire State of the South," is tapping our eastern borders at points with her railroads—yea, even penetrating our center—and drawing from us products and trade that should and would, were the right policy to prevail, find their way to the commercial emporium of our own State. Savannah and Charleston are reaping the rich fruits of the wise and liberal policy of Georgia and South Carolina, in a largely increased and rapidly increasing population, and the rapid accumulation of wealth, while our own cities are neglected and suffered to decay, and our great works of internal improvement are permitted to struggle with adversity, to languish, to die. And yet, those in authority, with the strangest and most unaccountable indifference, sit quietly by and view the scene of ruin before them, without thinking of a change of policy, without one effort to save the State from the ruin that impends. And why is it so?

Ah, say you, all this sounds very well, but *the State is in debt*, and, until that burden is removed, it would be bad policy for the State to appropriate money, loan its credit, or extend aid in any form, to any enterprise, however meritorious it may be. The State debt is the barrier to all improvement. *The State debt!* Why, gentlemen legislators, do you expect to pay that debt by driving trade and commerce out of the State? by closing up all the avenues of prosperity, and permitting the State to go to decay and ruin? by depriving your people of the means of employment, and forcing men out of the State? What constitutes a State? Is it not *men?* 'Tis man, laboring man, with his stalwart arm and stout heart, and a soul inspired with that energy and strength which a consciousness of his position as a *freeman* can alone impart—man, proud, free, intelligent, laboring MAN—this, it is, that constitutes a State, gives it its strength, its power, its wealth, its renown. Adopt that policy, then, which shall fill your State with men. Thousands of acres of land now lie within your borders in a state of nature, unculivated, simply for the want of facilities for the transportation of its products to market. Build your railroads, and these lands will be brought into cultivation, and be covered with men. There are thousands of acres, again uncultivated, though convenient to market, simply because not adapted to the cultivation of cotton, under the mistaken impression, that no other agricultural product can be cultivated to advantage. Dispel this illusion, convert these wildernesses into gardens, and orchards, and fields of waving grain, and they will become a nursery for men. Mines of wealth lie imbedded in the earth, and all that is wanted to draw it forth from its hiding place, is men, with the will and the energy to do. You have facilities for manufacturing equal to any State in the Union—water power, the raw material, whether of cotton, wood or iron, and the men to labor. Would you then pay your State debt? Adopt that policy that will bring your waste lands into cultivation, and develop your vast resources. Build your own ships, your steamboats, your locomotives, your railroad cars, and your engines. Your forests will furnish you with the best of timber, and the earth on which you tread, with the iron and the coal. Push forward your railroads. Connect North and South Alabama—the waters of the Tennessee with those of the Gulf—and bind the two sections together with iron bands. The capital of your State must be united with your commercial emporium by railroad; and that magnificent enterprise, which is to connect the great West with your own beautiful city on the Gulf, must be urged onward to a speedy completion. These great works completed, and Alabama will enter upon a new career of existence.

[This is excellent, in matter and manner. A few living energetic men like Mr. Langdon, have the power, if they would but exercise it, to regenerate a State, even though it were the most inefficient in the Union.

Ed. P. L. & A.

FACTS IN RAILROAD MANAGEMENT.

The following facts regarding eight of the principal railroads of Massachusetts are developed by the reports to the Legislature, and furnished by a non-stockholder:

1. The cost of passenger transportation is 1.062 cents per passenger per mile.
2. The cost of merchandise transportation is 3.095 cents per ton per mile.
3. In passenger transportation $41 98 per cent of the receipts therefrom are absorbed in expenses.
4. In merchandise transportation $89 52 per cent of the receipts therefrom are absorbed in expenses.
5. The expenses of railroads are almost invariably determined by the weight carried over the rails. For instance: The Eastern road, upon which passenger traffic predominates, is operated at an expense of $3,670 per mile of the length of the road; whilst the Lowell, upon which merchandise traffic predominates, is operated at an expense of $12,478.
6. The cost of renewal of iron upon railroads is an infallible index of the magnitude of expenses. For the preceding reasóns, the cost of that item on Eastern road is but $390 per mile of the length of the road, while upon the Western it is $1,390.

7. Of the expenses of railroads, thirty per cent. are absorbed in maintenance of way, or road bed; twenty per cent. in fuel and oil; twenty per cent. in repair of engines, tenders and cars; ten per cent. in special freight expenses, and the remainder in passenger, incidental and miscellaneous expenses.

8. The weight of the engines, tenders and cars upon passenger trains is nine fold greater than the weight of the passengers.

9. The weight of the engines, tenders and cars upon freight trains, is scarcely one-fold greater than the weight of the merchandise.

10. For cheapness, railroads cannot compete with canals, in transportation of heavy descriptions of merchandise; the cost of carrying merchandise upon the Erie canal ranges from two to sixteen miles per ton per mile; whilst upon several of the principal railways of New-York and Massachusetts the cost of carrying merchandise ranges from thirteen to sixty-five miles per ton per mile.—*Boston Post.*

BALTIMORE AND OHIO RAILROAD.

[A correspondent of the Cincinnati *Commercial* gives a very full description of scenery, etc., along this route, from which we collate the following as worthy the notice of all travelers who can select their own routes. We hope, ere long, to testify more entirely from our own personal experience.]

THE ROAD OVER THE MOUNTAINS.

This road is of the most substantial construction, is equipped with an incalculable armament of cars and locomotives, of all sizes and descriptions, for every purpose, and is managed with consummate energy and tact. The scenery along the route is often exceedingly beautiful, occasionally grand, and at times approaches sublimity. The Blue Ridge summits are in the distance. The chasm where the Potomac rent the mountains, at Harper's Ferry, presents to the passer by (or through, rather) on the flying car, a scene of startling grandeur.

Among the mountains the road curves often, and it sometimes seems wonderful that the engineers happened to find that particular path along the rocky steeps which could be made the high road for the mighty horses of iron and stupendous caravans that follow them inevitably over the granite deserts. At Kingwood tunnel, which is near a mile long, situated two hundred and eighty miles from Baltimore, may be seen, I think, the grandest display of railroad equipments in the world. The tunnel is being arched, and is not serviceable at this time, but will be finished in a few weeks, and over the ridge towering five hundred feet above the tunnel that pierces its heart of rock, the trains are taken with all their loads of passengers and freight, with but little loss of time; and a drowsy passenger would only be disturbed into a consciousness of wondering why the train seemed to run first one way and then another—to be capering forward and back on heavy grades. The facts in the case are hard to explain, but are about these. /Two tremendous mastodon locomotives, besides which the engines that rattle along the levels seem play-things, are attached to the train, one at each end, an dthe track to be followed is called a "Y," from the peculiar zigzag which is made. The train is rushed along the first side of the "Y" down into the point of the angle, and along the tail of the letter until it can be switched off so as to run backward up to the other prong of the letter, until any further progress in that direction is impossible, to be again switched on still another line of track. In this zigzag way the summit is passed, and so also is the descent made.

Somewhere about the western end of the tunnel, the mail train from Baltimore bound west, and the express train from Wheeling to Baltimore, meet in the night, and a half dozen ponderous freight trains are at the same time toiling along the steeps, each with two engines, great coal burners, the jets of flame from which shed a broad ghastly light over the wild scenery. There are at times a score of these prodigious mountain engines in sight or within hearing, and this herd of iron mammoths of the mountains seem like Titans, rejoicing over the conquest of a chaos. Their signal-whistles, booming out questions and responses, sending their echoes roaring around the dismal precipices, and piny slopes, hint of the emotions of humanity in their medolations—seemed to be toned as human voices, solemn and deep in relentless resolution, plaintive in the distress of doubt, or shrill and thrilling with exultation. Their voice is that of the giants of this iron age, speaking from steep to steep, while, "every mountain finds a tongue" to call loud for help, we may imagine, against their fiery and grim conquerors, the wheels of victorious cars roll triumphant over their rude breasts. When passing this place at night, which most passengers do, the glare of the locomotive fires reveals profound abysses beside and beneath the track. Far down may be seen the dim tops of pines and cedars, standing like ghosts in the snow-whitened and flinty gulfs. And perhaps on the other side of the car, at the same moment, are jagged and toppling cliffs, so lofty that the eye can hardly trace the outline of their black peaks in the skies.

Yet the extreme peril of these wild places exist only in appearance. The road has been hewn in the living rock, graven with iron, where it will endure forever. The trussel work and bridges are constructed with the utmost solidity, and at night, guards, carrying large lanterns, are placed at short intervals along the track, to give warning of the imminence of danger, or the assurance that "all's well."

The path subdued by civilization over the mountain is, however, but little more than sufficiently broad to make railroad facilities good. At the point where the passengers get their supplies in the mountainous regions, they are often feasted on venison killed by the roadside.

RAILROADS IN NEW-JERSEY.

It is marvellous to note the rapid extension of railroads. Several States are chequered with them, running in all directions. A recent number of the *Iron Horse*, a small but ably-managed sheet, published in Paterson, contains an account of the roads of the State, from which we condense the following:

Paterson and Hudson River Railroad.—From Paterson, to Bergen Hill, where it unites with the Erie road. Length, 13½ miles, cost, $630.000.

Paterson and Ramopo Railroad.—From the Junction to the New-York

State line, near Sufferns, on the Erie road. Length, 16 miles. Capital paid, $248,225. Debt $100,000. The Erie Co. pay for it $260,500 a year.

New-Jersey Railroad.—From Jersey city to New-Brunswick. Length, 33 miles; capital paid in, $3,482,850; debts $690,000; value of property on hand, $4,309,422; pay dividends of 10 per cent.; number of passengers last year, 2,164,471, besides commuters; tax paid to State, $33,450.

Camden and Amboy Railroad.—From Camden to South Amboy, 63 miles, and there connecting with this city by boats. A branch reaches from New-Brunswick to Trenton, 26 miles, reaching Philadelphia by the Philadelphia and Trenton road. A branch extends from Bordentown, 6 miles. The Camden and Amboy road owns most of the stock of the Philadelphia and Trenton, the Belvidere, Delaware and some others, and also the Delaware and Raritan Canal, 43 miles long, 50 feet wide, and 7 feet deep.

The company pays 10 cents duty on each passenger, and also a duty on freight. The amount paid last year was $55,562; the canal yielded $43,436; cost of road and equipment, $4,877,981; invested in other roads, $2 563,000; capital paid in, $3,000,000; debt, $11,150,000; more than half due in Europe; joint earnings last year, $2,017,727; working expenses, $1,055,180; dividends, $360,000, or 12 per cent.

New Jersey Central Railroad.—From Elizabethport to Philipsburg, opposite Easton, Pa., finished for both wide and narrow guage. Length, 63 miles capital paid in, $2,000,000; cost of road, &c., $3,734,149; debts, $2,266,176; cash and property on hand, $532,027.

Morris and Essex Railroad.—From Newark to Hacketstown, 53 miles; and branch also extends to East-Bloomfield, 3 miles. The main road is to extend to the Delaware river, near Belvidere. Capital, $1,057,805; cost, $636,550 and $20,500 sub. to the Bloomfield road; debts, $375,000; gross earnings, $225,893; dividends last year, 6 per cent.

Freehold and Jamesburg Railroad.—A branch from Jamesburg to Freehold, 11¼ miles, owned chiefly by the Camden and Amboy; stock, $157,900; debt, $70,000; cost, $218,782.

Millstone and New-Brunswick Railroad.—From M. to N. B. 6½ miles, capital, $100,914; cost, $111,000; debts $10,086.

Burlington and Mount Holly Railroad.—Six miles, capital, $70,000; cost, $99,551; debt, $35,000; dividends last year, 5 per cent.

Belvidere and Delaware Railroad.—From Trenton, along the Delaware to Belvidere 64 miles, owned by Camden and Amboy; capital, $1,000,000; cost, $2,619,000; debt, $1,619,000; gross receipts last year, $161,350.

Flemington Railroad.—A branch of the preceding from Lambertville to Flemington, 12 miles, and owned by C. and A. road, capital, $150,000; cost, $279,220; debts. $129,220.

Warren Railroad.—From the Delaware river, near the Water Gap, to New-Hampton, on the New-Jersey Central, 18 miles—nearly finished; a tunnel will be nearly 3000 feet long; cost about $1,000,000.

Camden and Atlantic Railroad.—From Camden to the ocean at Absecum Bay, 60 miles; capital $369,320; cost, $1,729,642; debts, $1,532,130; receipts last year, $122,415.

Sussex Railroad.—From Waterloo, on the Morris and Essex railroad to Newton, 12 miles; capital $150,000; cost, $352,464; debt, $202,464, built for the iron trade and owned chiefly by Messrs. Cooper and Hewitt of this city.

Morris Canal.—From Jersey city to Easton, 102 miles.

CANNEL COAL AND ITS PRODUCTS.

IMPROVEMENT OF COAL RIVER.

A PROPOSITION is now before the Legislature for an increase of the capital stock of the "Coal River Navigation Company," in the additional sum of $100,000. One hundred and Twenty-two Thousand dollars have already been expended by the Company in the improvment of the river; and it is now asserted, after the most careful estimates, that by a further expenditure of one hundred thousand dollars, the entire work can be completed. The "Western Mining and Manufacturing Company" own immense, and we might say, practically, exhaustless fields of Cannel coal bordering this stream, at a distance of thirty-six miles from its mouth, and, as a matter of course, are deeply interested in the progress of this improvement. To facilitate the completion of it, they now propose to purchase of the State her bonds to the amount of Sixty Thousand Dollars, (three-fifths of the increase asked for by the Navigation Company,) thereby investing the State with the funds necessary to pay her proportion. They further propose to subscribe the remaining forty thousand dollars at once, so there may be no delay in the prosecution of this great work.

It is estimated that 5,000,000 bushels of coal will be shipped annually over this improvement, to the Big Kanawha, thence to the Ohio River. The tolls accruing to the company, will be about one cent per bushel, which would be $50,000 on the aggregate amount. The tolls on shipments of coopers' stuff, sawed lumber, &c., &c., and upon return trips, will not fall short of $15,000. If these estimates are verified, and from the data before us we doubt not they will be fully—the work will be a profitable one to the stockholders, while, at the same time, it will develop the rich mineral treasures of the section of the country it traverses. The coal fields of Pennsylvania are taxed in some instances as high as four hundred dollars per acre, pouring annually into the treasury of the State immense sums of revenue. It is but fair to infer that, with equal facilities of transportation, this Commonwealth would find in the coal fields of Kanawha and Boone counties equally as prolific sources of wealth. The Covington and Ohio Railroad, which is but a continuation of the great Central route, crosses Coal River near its confluence with the Kanawha. At an early day after the completion of these improvements, it is not unreasonable to assume that the great superiority of the Cannel coal over all other, as an article of fuel and a producer of light and heat, will bring it into general use in the eastern cities. Three-fourths of the Cannel coal, yet discovered in United States, lie in Western Virginia, constituting one of the richest mines of wealth that has ever been developed in any country, not excepting the auriferious streams and hills of California.

From this coal, is extracted, at a cost not exceeding 16 cents per gallon, a valuable lubricating and burning oil. Probably some of our readers may have noticed, a few evenings since, upon the clerk's table of the House of Delegates, a lamp containing this oil. The clear, bright flame emitied, actually made the candles around it look dull and dim. It burns free from all offensive odor and smoke, and this fact, in connection with its cheapness, must insure for it an extensive and general use. The yield is forty gallons per ton. It also yields thirty gallons of benzole per ton, which is easily convertible into gas, and must eventually supercede the gas at present in use in our cities. From twenty to twenty-five pounds of clean, white wax are also produced from a ton of Cannel coal, which are made into candles of adamantine firmness.

Some fine specimens of this coal, from the mines of the "Western Mining and Manufacturing Company," have been exhibited here during the session, by J. E. Peyton, Esq. A lump has been upon the clerk's table, in the Hall of Delegates, for the past week or two. It has been very justly admired for its firm and beautiful texture, and its freedom from dirt.

We hope it will be the pleasure of the present Legislature to extend its aid to the Coal River Company, and place them in a condition to develop the treasures of our State. The operations of the mining companies interested in the improvement of Coal River, will be greatly retarded if something is not done before the adjournment.—*Richmond Dispatch.*

VALUE OF THE FRUIT CROP, CULTURE, ETC.

At a recent Legislative Agricultural Meeting in Boston, the culture of fruits was discussed, Mr. Wilder, the Pear King, being in the Chair. He remarked that the annual crop of Fruit was estimated to exceed $30,000,000 in value in this country. It was nearly equal in amount to the Potato crop. Fine large fruits were produced in the South-western States and in California. He thought we should become exporters of Fruit, and it was well to inquire what kinds were best adapted to our uses.

He proposed to confine his remarks mostly to "The Pear." The prerequisites to success were the choice of a congenial soil and the preparation of it, in which was included perfect drainage, sub-soiling and trenching.

A safe method is to raise new varieties from our own seedlings by planting ripe seeds from the best specimens. Many pears did well on Quince Stocks, although there was an impression prevailing against them. The quince was a gross feeder and the soil must be made rich to supply its wants.

Pears that were to be kept for some time should generally be gathered a few days before they arrive at maturity. They should then be kept at a low temperature, so that the *ripening process* could not commence until it was desired. This process required to be checked during the warm autumnal days of Indian summer. He regretted to be obliged to say that after building four different "fruit houses," and trying them all, he was obliged to come to the conclusion that the use of ice was the only method that could be depended upon to control the temperature required in preserving pears beyond the natural period of their ripening.

As to the profit of Fruit Culture it was equal to the profit of any other crop. One instance was cited in which an acre was set with pear trees in 1848. Quinces were produced between the rows of pear trees. In the fifth year the owner had on this acre 120 bushels of pears and 60 bushels of quinces. Many of the pears were sold at five dollars per bushel, &c.

INSECTS INJURIOUS TO VEGETATION.

LEPIDOPTERA CONCLUDED.

PHALENÆ MOTHS.—We now enter upon this third division of Lepidoptera, which includes a great variety of insects called millers or moths. They vary in size, color, and structure. Some are very minute, while others, like the Owl Moth, expand eleven inches. The females are sometimes destitute of wings, or are furnished only with very small ones.

The distinctive character of moths was given in the commencement of this series, and we need not repeat it. Moths are generally classified in seven groups: The first is that of

SPINNERS; BOMBYCES.—These insects are generally thick bodied, with feathered antennæ, tongue or feelers very short or wanting, thorax woolly and the fore-legs often very hairy. Their caterpillars have sixteen legs. The first group are called

Lithosiadæ, or *Lithosians*, from the Greek lithos, a stone, as these insects live in stony places. They are not very destructive. We will however mention the Deiopeia bella, as one of the most elegant of butterflies. Its fore-wings are deep yellow, crossed by some six white bands, on each of which is a row of white dots. The hinder wings are scarlet; the thorax is dotted with black. It expands about 1¾ inches.

Arctiadæ or *Arctians*, or *Tiger Moths*. These have shorter and thicker feelers than the Lithosians, and a very short tongue; antennæ doubly feathered, usually, on the under side; wings not crossed on the back, but are roofed or sloped downwards on each side, when at rest; thorax thick, abdomen short and fleshy, and usually dotted; fore-wings are variegated, hind-wings red, orange or yellow, and spotted. They fly only by night.

Many of their caterpillars are quite destructive. When about to undergo transformation, they creep into the chinks of walls and fences, or under stones and leaves, and cover themselves with rough cocoons.

The *Arctia Virginica*, or *Yellow Bear* of Dr. Harris, resembles the Ermine Moth, of England. It is white, with black points, with a yellow stripe between them, while the hips and thighs of the fore-legs are yellow.

The Salt Marsh Caterpillar is frequent on the sea-board. The best preventative to their ravages is to cut the grass early in July, while the insects are small and feeble. The Lophocampa, or crested caterpillar is common on the Button-wood or Sycamore, in July and August.

The *Liparidæ* or Liparians form the third group. They are small, slender catterpillars, bright yellow, with long fine hair, but they are not very numerous. They are sometimes found on apple trees and on other trees and shrubs.

The *Lasiocampadæ* or *Lasiocampians* are woolly thick bodied moths, and form the fourth group. The caterpillars which swarm in neglected nurseries and orchards belong to it. The eggs are placed in rings round the ends of branches, and are covered with varnish. The caterpillar comes forth in early spring, and forms a web among the forks of the small branches. In crawling from twig to twig, they spin a slender thread, which serves as a guide on their return. They eat at certain hours and then retire to their shelter. They are about two inches long, with black heads, a whitish line on their back, with fine black waved lines or stripes and spots on the sides.

To guard against these insects, different means are employed. To destroy the eggs in winter or early spring, is the first. This may be done with the thumb-nail and fore-finger. After they are hatched, a brush with a long handle may be used effectually, or a mop or sponge may be more convenient. These should be used with soap-suds, or white-wash, or with some cheap oil. This is indispensable, and should be used as long as any insects are to be found.

The *Clisiocampa Silvatica* or *Tent Caterpillar* is often numerous in some of the States, so as to strip a forest of oaks. They are thus found in Virginia. The insect is a light blue color, greenish on its sides, two inches in length—spots are scattered upon it.

The *Atticus Acropia*, an insect that expands six inches or more, forms its cocoons of silk. Limited experiments have been made in substituting this for the silk-worm in the manufacture of silk.

Other insects might be described under this division of the order, but they are not very numerous nor very troublesome, nor is there any peculiar application to be used in guarding against them. Hence we pass on to the next division.

MASSACHUSETTS HORTICULTURAL SOCIETY.

Grapes, Vines.—We have received from Mr. Wight, Corresponding Secretary, the Annual Report of this efficient Society for 1855, with the Scheduel of prizes for 1856.

From the valuable information it contains we copy the following upon the cultivation of grapes. Mr. Simpson is a gentleman of education, of sound practical sense, and large experience, and what he says may be relied upon with entire confidence. For the sake of reference by the reader hereafter we annex a separate title.

GRAPES—TWO CROPS A YEAR.

It will be remembered that M. H. Simpson Esq., gave us a fine display of grapes in January, 1855, and also furnished an article (see report of last year) on the feasibility of producing two crops a year. July 7th, 1855, Mr. S. made a fine exhibition of his several varieties of grapes, grown on the same vines which produced the crop in January preceding. The berries were fully grown, and well ripened. Accompanying the sample for the Committee to test, was received the following note from Mr. S.:

To the Chairman of the Fruit Committee:

Dear Sir,—The grapes I exhibit to day are from vines which gave the crop of fruit exhibited in January last. This is the third crop in succession on the plan of two crops a year, and thus far the vines exhibit no injury. My theory of growing them is, that when the fruit is ripe, the buds and wood are also ripe, and ready to give a new crop, if you give a proper time to nature; that the vines will not be injured, as the root throws out new spongioles, which, with the new leaves, are the reciprocal workshops that make the sap for fruit and buds. The important requisite is, that the spongioles, are well supplied with food. With regard to rest, my theory is, that they rest at night; the leaves do not work in darkness. The experiment I have made thus far confirms my theory in every respect. It applies also to all fruits, say peaches, pears, &c. If attention is paid to the supply of the root, two crops can be grown, and give a double quantity without injury to the vines.

Yours, truly, W. H. SIMPSON.

Saxonville, July 7.

CULTIVATION OF NATIVE GRAPES FOR FRUIT AND FOR WINE.

WE have received the Annual Report of the Philadelphia Society for promoting agriculture, read before them on the of 2d April. We thank the unknown friend who sent to us so promptly.

The Report is well written, and enforces the propriety of encouraging the growth of native grapes, both for the fruit, and for wines. As the latter may be thought to come in collision with the temperance question, a special effort is made to show that "the failure" of the temperance movement has resulted from its false principles, which denounce the use of wine as well as of distilled liquors.

It does not yet appear that the temperance movement has failed, nor is it yet proved that the people of this country can reform their habits thoroughly and with assurance of a permanent reform, while wines are used as a common drink. In some countries, and in certain states of habit and opinion, etc., this may prove to be sound logic and safe practice. The argument, for this community, we think has proved itself on the other side. But much depends on circumstances. We do not however hesitate to commend this kind of production, for such uses as may be justified.

The writer, we perceive, falls into an error, on page 5, in saying that the "Ashburnham wine" is so named from a county in Massachusetts. Ashburnham is a very respectable township in Worcester county, adjoining the town of New-Ipswich, in the State of New-Hampshire. It abounds in various forms of mechanic arts and manufactures. We have never seen the vine grown there.

MR. BRACKET'S VINEYARD.

MODE OF TRAINING VINES.

WE have been highly interested by reading the report of Dr. E. Wright, Chairman of the Committee on Fruit, made to the Massachusetts Horticultural Society, and published in the March number of Hovey's Magazine of Horticulture.

Among the many things and facts there brought forward, we find a communication of C. A. Bracket, of Winchester, giving an account of his "little vineyard," and his mode of managing his vines. We are persuaded we cannot do our grape cultivating friends better service than by giving the following extract from his letter:

"My little vineyard," says he, "is situated on a side hill facing the west, protected on the north by a belt of pine woods. I should have preferred a more northern or eastern aspect. The soil is by no means what would be called a strong one; it consists of from four to six inches of turf mould, with a reddish subsoil about two feet deep, resting upon a bed of blue gravel. In preparing for the vines the ground was trenched two feet deep, and the top soil put at the bottom. Stakes eight feet long were then set at the distance of seven feet apart each way, one vine was planted to each stake, and immediately cut down to two eyes, (or buds.) And here let me say a word as to the time of setting the vines. My experience is greatly in favor of fall planting. A vine set in Autumn (and it should be done as soon as the leaf falls,) will in three years be as strong and capable of bearing a crop of fruit as one of the five years old set in the spring.

The training of my vines is at once simple and ornamental. The first year two shoots are allowed to grow, and as they elongate are carried spirally, both in the same direction, about five inches apart around the stake, and this is continued until they reach the top. The laterals are allowed to grow at random. In the fall they should be pruned back to within eighteen inches of the ground, and the laterals to one eye.

Second year, continue the two canes from the two uppermost eyes, as directed in the first year. The laterals will require summer pruning. In the fall cut back the canes to within eighteen inches of last year's wood. Continue this course until the vine is established the whole length of the post, whatever surmounts it to be cut back. The fruit is grown upon the side shoots, and the pruning is on the short spur system. The form of the vine may be shaped to the taste of the cultivator; that of the pyramid is decidedly best.

Those who understand the nature of the vine will readily perceive the advantage this system offers. The vine is thus kept at home. The light and air circulate freely through it. The buds break easily, there is no tendency in one part to rob the other of its due proportion of sap, and when once established requires less care than any other mode of training.

Some of my vines, the first year after planting, were watered with sink drain water, and being satisfied that it injured them, I have discontinued the practice, and have since root pruned them, in order to check too free a growth of wood. Many of my neighbors injured their vines by giving them large quantities of stimulating manures, such as fresh stable manures, dead horses, and other animal manures, thereby exciting them to make an increased growth of long jointed wood. I grow my vines for the fruit, and am satisfied if they make a few feet of short jointed wood, and the only manure (if manure it may be called) which I now use, is a top dressing of Anthracite coal ashes.

Mr. Bracket speaks highly of the Diana Grape, as being hardy, early, and the grape holding on well even if suffered to hang out late. We think his hints and experiments worth attending to.

GOOD CROPS SOUTH.

Northern farmers do not manopolize all the good crops. We find the following in a Georgia exchange. Mr. Dorr raised on a Cambridge plantation, as follows:

There were 120 acres of very old land in corn; 40 acres in cotton, 30 of which were good fresh land and 10 of old land, 5 or 6 of which were manured with stable and lot manure. The number of hands employed was 12 in number and rated as 9 good hands. The total amount of the crop and expenses, including provisions, negro clothing and shoes, blacksmith-work and iron, overseer's wages, &c, &c, is as follows:

Corn,	2,200	bushel at 75 cts. - -	$1,650 00
Wheat,	175	" at $1 50 - - -	260 00
Oats,	400	" at 50 cts. - -	200 00
Barley,	27	" at $1 00 - - -	37 00
Potatoes,	50	" at 50 cts. - - -	25 00
Pinders,	50	" at $1 00 - - -	50 00
Fodder,	25,000	lbs. at 50 cts per cwt. - -	125 00
Pork,	2700	lbs. at 8 cts., - - - -	226 00
Cotton, 48 bags weighing (averaged) 388 lbs., making 18,624 lbs., sold at 10 cts., - -			1,862 40
Total, - - - - - - - - -			$4,42 540
Deduct Expenses, - - - - - -			1500 40
			$2,925 00

Equal to $325 00 per hand.

The land was prepared by ploughing as deeply as possible, then ploughing deep the first working, not so deep the second working, and finished with surface culture. Each ploughing was followed with a good hoeing, both for corn and cotton.

The following account is given of a crop raised in another "District" known as "Dark Corner," which we cannot locate; quantity of land not given.

Gross proceeds of crop were as follows:

Cotton,	34,240 pounds sold for - -	$3,147 36
Corn,	2000 bushels which, together with peas, shucks, fodder, &c., worth - -	2,000 00
Potatoes,	300 bushels - - - -	100 00
Wheat,	100 " - - - - - - -	150 00
Oats,	600 " - - - - - -	300 00
Cotton seed,	2,300 bushels - - - - - -	345 00
Pork,	700 lbs. net - - - - - -	560 00
Total products - - - - - - -		$6,602 36

Gross per hand $550 19. I worked twelve hands, eight head of horses and mules together, and used no guano.

Deduct from the above amount of - - -		$6,602 36
For feed of eight head of work stock,	$600 00	
For feed and clothes for hands, -	720 00	
For smithing and iron, - - - -	36 00	
Dr.'s bill for these hands, - -	00 00	
Interest on land, negroes and mules,	1,250 00	
Total expenses, - - - - - - -		$2,606 00
Net amount of crop, - - - - -		$3,996 36

Net amount per hand, $333 03

This is in the region of the Dark Corner, where land rates from three to eight dollars per acre.

I broke up my cotton and corn land both with a long scooter or bull-tongue plough, as you may please to call it. My cotton-land was laid off from thirty to thirty-six inches according to quality, bedded with a turning plough. I run round my cotton with a turning-plough, board side next the cotton, and followed with the hoes chopping it out; after which I replaced the bed to the the cotton as quick as possible, and every working after I endeavored to put a little more dirt to the plant, and by so doing your cotton will be well formed and mature early. On the other hand if you work your cotton by taking the bed away (as is the case with some) and not replacing it, you may produce a large weed with but few forms and these very late.

PROFITS OF FARMING.

We continue our statements on this subject, gathered from different sorces. We first give an extract from the *Country Gentleman*, in reference to

AGRICULTURE IN VERMONT.

From 13 acres harvested in Oct. last, 1600 bushels in the ear of sound corn, and 24 of soft corn. Though but little of it has yet been shelled, it is fair to count it at 800 bushels exclusive of the soft, which cannot be shelled.

Value of corn, 800 bushels, delivered at railroad station, 3 miles, at $1 12½ - - - - - - - - -	$900 00
Value of corn, soft, 24 bushels at 25 cts. - - - -	3 00
Value of 28 cart-loads of pumpkins at 75 cts. per load, -	21 00
Value of stalks for winter feed of stock at $3 per acre,	39 00
Total - - - - - - - -	$963 00
Expense, (including delivery of the corn at depot,) - -	365 30
Profits, - - - - - - - - - -	$597 70

Within a fraction of $48 98 per acre for taxes on and use of land.

From fifteen and a half acres of oats were threshed by horse-power, in November last, 1006 bushels delivered at railroad station, as above at 50 cents per bushel, - - -	$503 00
Fifteen and a half tons straw, worth at barn $6 per ton, -	93 00
	$596 00
Whole cost of production, with delivery at depot, $14 07 per acre,	$218 09
Profits, - - - - - - - - - - -	$377 91

or $24 38 per acre. The land on which these crops were grown is valued at $100 per acre, which is about the price they command when offered for sale.

A farm of one to three hundred acres, in many localities in Vermont, with good buildings and stone fences, surrounded with permanent roads and bridges, churches, school-houses, and the like, can be bought at a price that—counting all these improvements and advantages to the farmer—will hardly leave the soil at $1 25 cents per acre.

The next statement is of a lot of land in

EPPING, N. H.—This statement was not made on account of any peculiarity about it, but to show the proper manner of keeping farm accounts. The crop was grown in 1855.

Lot No. 11 in field A. containing about $1\frac{3}{4}$ acres. Soil on this lot is variable, part being a deep yellow loam, having a large proportion of mineral elements in its composition, the balance a dark-colored moist soil.

Preparation.—In Oct., 1843, 24 loads of yard compost were spread on the dry part of the lot, and the sod turned under with a Michigan double plough, 9 inches deep. May, 1855, 12 loads of manure were harrowed in. Planted with corn, guano compost put in the hill; produced a good crop. Oct., 1854, cross-ploughed the lot.

April 1856, for ploughing, - - - -	$3 00
For sowing, harrowing, and rolling $4\frac{1}{2}$ days, -	3 37
For seed wheat, $1\frac{1}{2}$ bushels, - - -	3 37
Harvesting and threshing, - - - - -	7 92
Interest and taxes on land, - - - -	4 85
	$21 51
Contra, by 19 bushels of wheat, $2 25 per bushel,	42 75
Lot straw, - - - - - - -	8 00
Value of crop - - - - - - -	$50 75
Cost of growing, - - - - - -	25 61
Cost per bushel, - - - - - -	71
Leaving a profit of - - - - - -	$29 24

The variety of wheat grown is known as the Gilman. Also a patch of peas were grown on this lot, producing an abundance of green and $\frac{1}{2}$ bushel of dry peas, for which I have not credited the whole crop.

Lot No. 13, in field A, contains about $\frac{3}{4}$ of an acre.

Soil is a fine dark-colored loam, very mellow.

Preparation.—Plowed and planted similar to No. 11.

May 3, 1855, for ploughing, - - - -	$2 00
Harrowing and sowing, - - - - -	1 00
1 bushel seed wheat, - - - - -	2 25
Harvesting and threshing - - - - -	4 50
Interest and taxes on land, - - - -	3 00
	$12 75
Contra by 11 bushels wheat - - - -	$24 75
Lot of straw, - - - - - -	4 00
Value of crop, - - - - - - -	$28 75
Cost growing, - - - - - -	12 75
Profit of crop, - - - - - - -	$16 00
Cost per bushel, - - - - - -	70

The above crop was injured by worms, thining it early in the season.

The wheat grown on this lot is known as the White Flint wheat, yielding beautiful white flour. The straw grows large and appears hardy; heads of the same length do not produce as much wheat as those of other varieties; the berries do not set thick on the head, but grow at some distance apart, giving them a loose or open appearance.

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

BROOM CORN, SORGUM SACCHARATUM.

For many years this very useful plant was almost exclusively a "Yankee Notion." It is an exotic, brought from the East Indies, yet seems well adapted to our climate. For near a half a century its culture was confined mainly to a few towns in Old Hampshire County, on Connecticut river. It is now cultivated in some parts of New-Jersey, in the Mohawk Valley in New-York, and in Ohio, Indiana and Illinois. In New-England, where the farmers are always ready to engage in the cultivation of what will pay best, Broom Corn is still confined to the Connecticut Valley, and mostly to some ten or twelve towns in Massachusetts.

The Corn Broom has now become an indispensible article in most civilized American families. The unwieldy "splinter broom, which our grandmother were wont to elaborate, by dint of patience and perseverance, from ash, maple and hickory, have yielded to the force of the adage, "a new broom sweeps clean."

Soil and Climate.—This plant will grow and mature in any part of the temperate region where the soil is adapted to it. But it seems to do best between 38 and 43 degrees North. Below, it grows too rank, and the brush is coarse. Above, it does not mature and the seed is of no value.

The soil should be a deep, rich, sandy loam. It should be ploughed deep, manured highly, and reduced to a fine tilth and planted early. The roots, unlike those of the Indian corn, cluster together, in form somewhat like the distaff, and run directly downward. The plant, in its infancy, is very small and feeble; and seems for the first month, to struggle hard for life. It requires a longer season than Indian corn. Hence the importance of having land naturally warm, that it may be planted early and ripened before the frosts of autumn.

Cultivation.—It should be planted thicker than Indian corn. Let the rows be of sufficient width to allow a horse to pass between them, say three feet, and the hills in the row two feet apart, with an average of ten stalks in each hill. A better way is to use the planter, and leave a kernel every three inches. Planted in this manner, the labor of weeding is much less, and the quality of the brush better. In seeding a liberal allowance should be made for insects and vermin. They often lay claim to the whole, and are seldom satisfied with less than one-half.

It has been supposed necessary to manure in the hill, and that till very recently has been the universal practice. A better way has been found out. I would not manure the hill for any crop. However light the dressing, let it be spread broad-cast over the whole surface. If the proper pabulum of plants is in the soil, the roots will find and appropriate it. To thrust a shovel-full of manure underneath a hill of corn, and leave the ground about without manure, is much like stuffing a starved horse with oats on the morning of a hard day's journey, and leaving him to fast the rest of the day. Better feed him well for some days previous, and during the working day, let him have his ordinary feed. So of manuring, let it not be done solely for the crop, but partly for the land. The farmer who pursues the former course will always till a sterile soil, and himself be poor.

During the first six or eight weeks, constant care must be bestowed upon this crop. The earth should be frequently stirred, and all weeds carefully excluded. Not less than four times hoeing will answer, and much care should be used at the second or third hoeing to reduce the number of stalks within the limit mentioned above.

Harvesting.—This should be deferred until the seed is hard, if the season will allow. But if a frost come prematurely, and blight your prospects, the brush should be cut immediately. The common mode of gathering the brush is by tabling, as it is called. The stalks of two contiguous rows are broken down and made to fall diagonally across each other, so as to form a sort of table, on which the brush is spread to dry. Cutting and spreading the brush is suitable work for children. So long as the weather remains good, the brush should be permitted to remain, being occasionally turned. But upon the approach of a storm let it be housed. It is damaged by rain no less than cured hay.

The next step in the process is to bind the brush in bundles, averaging about fifteen pounds, and placing them on end, with the buts down, under cover, where the air can have free access to it. When thoroughly dried, the seed is scraped off and the brush is ready for use.

Another mode of gathering is to cut the stalks near the ground, and lay them longitudinally between the rows, disposing of the product of two rows in one furrow, and spreading the brush upon the stalks. When it is intended to plough and sow after harvest, this course must be pursued. In this case, the stalks may be buried with the plough. In the other, they are usually cut and burned upon the ground.

Profits.—Seven hundred pounds of brush is about an average yield per acre. One thousand pounds is not uncommon. Land that is in a suitable condition to produce seventy-five bushels of Indian corn, will, under ordinary circumstances, yield a thousand pounds of broom brush. Brush is now selling for ten cents per pound. It ranges from four to twelve cents per pound, averaging about six.

The seed is an important item in the product. It is not a certain crop, being liable to be spoiled by early frosts. The seed may be killed without materially injuring the brush. But when the season is favorable it is not unusual to get ten bushels of seed to every hundred pounds of brush. Thus the seed, in a good season, is fully equal in quantity to the crop of oats which the same ground would produce; and for most purposes of stock-feeding it is considered equally valuable. The whole product may be summed up thus:

700 lbs. brush at 6 cts. - - - - - -	$42 00
70 bushels seed at 42 cts. - - - - -	29 40
	71 40
But 1000 lbs. at 10 cts. - - - - - -	100 00
And 100 bush. seed at 50 cts. - - - - -	50 00
	$150 00

More than this has, in some instances, been realized.

It is generally believed that, in case the seed ripens, it is a better crop at 5 cts. per lb. for the brush, than Indian corn at 83 cts. per bush., which is about the average price in this region.

It is thought to exhaust the land less than most other crops. I know of fields that have been planted with broom-corn more than twenty seasons in succession without deterioration in the product. R. B. H.

AMHERST, MASS, March 20, 1856.

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

FOREST TREES OF NICHOLS, TIOGA CO., N. Y., AND THEIR USE.

THE WHITE PINE CONTINUED.

THE price of pine boards down the Susquehanna river for a few years back has ranged from $9 to $14 per thousand—that is, for common cutting lumber or common boards, as some would term it,—the different sizes of pannel ranging from $18 to $40 per thousand. A considerable amount of square timber has been taken from this vicinity. I am not acquainted with this business, but the value of timber often varies much. Some years it is very high. Last year it was so low as to be a losing business. The timber is got out or hewed on four sides, and each stick is from forty to seventy feet long, and often over two feet at the butt end.

The age of the pine is variously estimated. It is quite difficult to count the rings of a large pine. As far as ascertained, the oldest pines in this vicinity range from 250 to 300 years. It is said that a pine was cut down some years ago in the town of Southport, Chemung Co., N.Y., that was over 700 years old. In the year 1841, I cut down a few pines that were of the second growth, or had grown since the land was partly cleared, that were from twelve to fifteen inches in diameter and from twenty-eight to thirty years old, and about thirty-five feet high,—being low and full of limbs like an apple tree. A pine growing in thick wood, that is twelve inches in diameter, is often sixty years old and fifty feet high. A large pine has always an old appearance, being nearly covered with two or three varieties of moss from the ground upwards for several feet, and even on the limbs is found a long, shaggy, gray moss. The wind blowing through pine boughs makes a sighing or humming noise, not unlike a swarm of bees flying over.

A large portion of this vicinity is covered with pine stumps; but a great proportion of them have been pulled within twelve years, and many are now pulled yearly. With Hall's cylinder machine, I have helped pull one hundred pine stumps in a day, the stumps being of a small size and on a diluvial formation, while on hill land, with a good lot of stumps, we pulled from forty-five to fifty-five per day, and on low creek flats, with large stumps, only from fifteen to twenty per day. The price of this machine is about $400. The Hook and Lever stump-machine is getting much in use in this vicinity, and is thought by some to be equal to the Hall machine, and to be more easily worked. The cost of this machine is from $120 to $200, according to the amount of iron used.

Generally all pine stumps with good roots are used for fence in this vicinity. I have about a mile and a half of stump fence, and it wants but little attention from one year to another, and will last an age or more. The pine stumps are hard to root out. Sixty years do not effect much in this way.

NICHOLS, April 14, 1856. ROBERT HOWELL.

INFLUENZA OF HORSES.

BY CAPTAIN RALSTON.

THE perusal of "Thoughts upon the Prevailing Disease among Horses," in the March number of the American Veterinary Journal, together with a preceding article, upon "Influenza," in the number for January, has induced these observations. The writer feels constrained, as a Veterinarian, to commence by remarking that it may be deemed his herein views had better been submitted to the professional journal which has called them forth. But with every respect for any journal devoted to the veterinary art, and this in no diminished degree for one which he favorably estimates, as a pioneer-effort towards highly desiderated objects, in relation to eventual veterinary progress in this country, still he has preferred the privilege of the pages of the "P. L. and A.," inasmuch that professional readers as yet are scant, and it is therefore of advantage to promote and extend discussion, through the more generally circulated and read (and cousin-german) pages of an agricultural serial, in manner whereby it is hoped that veterinary subjects may come more and more under the recognition of those whom it is most to be desired should be aroused into intelligent consideration of their importance. It may not be amiss to furthermore add,—and this is ventured under a truly earnest wish that the journal, which has been first on the field of American veterinary culture, should strike its roots deep, grow, and successfully flourish—that over-much of school science, at the outset, may not prove favorable, on so new and untilled ground? Still the higher scientific tone is to be respected; and, if the editors of the American Veterinary Journal always shall draw for information or seek exponents of the important art which they represent, through such sources as those of "The Veterinarian," (British,) and the writings of the late William Percival, and of his father, (formerly at the head of the veterinary staff of the Royal Artillery and Ordnance Corps,) there is no veterinarian but will indorse the tenets and the teachings.

In 1852, the writer sought to attract some notice to the influenza of horses, through the medium of the "*Spirit of the Times*," and what is here submitted will be a somewhat modified reproduction of the same views. In the A. V. Journal, "Influenza," it is said, passes in stable language under the familiar term of *horse ail*, *pink-eye*, *etc.*

The writer demurs as to *pink-eye;* for he opines that thereby is meant a peculiar chronic-opthalmic affection of the conpinctival tissues (or memranous linings of the eye-lids and white of the eye,) the consequence of standing in darksome and ill-ventilated stables, and where the disengagement of amoniacal gasses assail the eyes and act as a specific local poison to those organs, resulting in corneal opacity, cataract, &c. Such conditions of badly-arranged and ill-kept stables injuriously affect all the vital organs of animals subjected thereto, and particularly pre-dispose to pneumonic affections, and not unseldom beget farcy or glanders.

But in connection with influenza, itself, he also demurs as to those "typhus" and "typhoid" complicities introduced, in manner seen in the "Thoughts upon the Prevailing Disease among Horses." Far be it that any new light from science, or investigation, should be excluded from respectful attention or inquiry; but we may define and refine too far, and thus perplex. In the old term of "Influenza Maligna" the same idea may be said to be predicated; and the writer proposes to waive those new aspects, and treat of Influenza simplex and Influenza maligna, their causes, symptoms, and also their more ready treatment in horse-owners' own hands.

The first alluded to form of this affection is variously named cattarrhal fever, epidemic cattarrh, influenza, and (in the racing stables) distemper. Young horses are generally most liable to and prove least able to contend with or surmount its effects. It ordinarily commences with a rigor, or slight shivering fit. This premonitory, or incipient indication, is very rarely observed or attended to. If, however, it should be noticed at the outset, it may be of much importance; since recourse to prompt and judicious treatment might then arrest the further progress of the attack. We will consider this commencing or initiatory stage of the disorder.

In inflammatory affections, whether of the lungs, bowels, kidneys, or other organs; or in the early or acute stages of local injuries—as wounds, strains, &c.—the resort by uninformed farriers and stable-helpers is almost invariably to stimulant applications, internal or external, as the case may be. Now, at the proper time and place, stimulant and discutient remedies are valuable therapheutical agents; but to administer them in the acute stages of inflammation of the lungs, bowels, &c., or to apply blistering unguents, or imitative oils, or tinctures, in cases of recent injuries or strains, is treatment as pernicious as it is ignorant. It is like pouring alcohol or gunpowder on flame, to extinguish it. *After* inflammatory action is abated, and when the general tone of organs, or local action of parts, has been left in a depressed or unreinvigorate state, then the cordial or the tonic, the blister or the caustic, may become most estimable curative adjurants. Otherwise, the so constant and irreflective recourse to stimulants, at the wrong time and place, has done and does incalculable mischief, in *quasi*, veterinary practice. This is a gross medical and surgical error, which has killed animals by thousands annually, and which converts casual and curable injuries into incurable lameness and permanent blemishes. But ignorant assumption meets with perilous trust and confidence where human health and life are concerned; and if so in relation to ourselves, can better be expected for our domestic animals! Quacks and nostrum-venders flourish; for the want of sufficient knowledge on the part of those ailing—and in earnest and anxious quest of relief, leads to reliance on the sordid vaunts of unscrupulous ignorance. In other things than those of health, individuals will properly require to have some avouchment—to understand the grounds and have reasonable proof of capacity or trust-worthiness—before rendering belief or reliance; but in what is of so paramount moment as competent medical or surgical treatment when sick, the reverse of this is the too frequent rule. It is not "*damnant*," but "*credant*, quod non intelligunt;" for just in proportion to his outrageous averments, and the impossible qualities imputed to his nostrums, is often the blind-fold dependence placed in the *empiric*. As regards animals—let us say horses—*they* cannot, in words express the causes or seat of their ails, or complain how maltreatment may be injuring or torturing them. Yet, while the verbal expression is denied, they have a mute, but most eloquent language of their own, and one altogether undeceptive, if the right observation, tact and skill be in attendance—qualifications each and all essential in the veterinary surgeon. The maladies of animal life are not so complicated as those of human life; but they run their course more rapidly and determinately. Hence, with the former the art of the practitioner—the *mendendi scientia*—is required to be more promptly and shrewdly unerring; else, irrespective of what ought to be done being left not done, the opportunity to do anything effectively may altogether be lost. This, however, all matters but little with your genuine "horse doctors;" for with the the professors of that school of practice the *Quid dem? Quid non dem?*" is a modest self-interrogatory, having no place. With them no adequate standard of general education, on which has been based one more especially professional, so as to guarantee some scientific attainments in anatomy, physiology, pathology, and the art of healing, is in any manner or degree needful for recognizing the symptoms, seat, causes, and remedial treatment of the diseases of animals!

The foregoing has, however, traveled somewhat out of the record concerning stimulants. The object, however, was to decry the abuse of these before adventuring on a recommendation of their use, in one of the rare exceptional cases. If an influenzal attack be recognized in its premonitory, or very early stage—that is shortly from, or a few hours after the horse has been certainly well, and when the drooping attitude, languid, yet quickened pulse, and general appearance of a "cold," but without cough or muscous discharge; in fact when presenting those symptoms which betoken a disturbed or oppressed constitutional, or febrile crisis, without indications of organic inflammation or lesion; then, and just at this time, if two or it may be three quarts of blood be drawn from one of the jugulars, to relieve the heart and lungs, and thereupon proper stimuli be administered, a sanitary reäction may be superinduced, and the revulsive nervo-vascular disturbance, which developes in the mucous membranes, and prostrates the physical energies so rapidly, so as greatly to complicate the after treatment, may be arrested, or materially controlled. The best and safest of the diffusible stimuli for use, in these cases, is nitrous ether, or sweet spirits of nitre. Say, that 2 oz. of nitrous ether be taken, and 2 drachms of infusion of camomile; add these to $\frac{1}{2}$ a pint of milk-warm water, and let this dose be given twice a-day. A bottle is often used for giving fluid medicine; but it is inappropriate and unsafe. An ox-horn makes a serviceable instrument. Sever an inch or two off the small end, and plug it; and then cut the wide end slantingly, so as to form a sloped open end. Put the drink into the horn, and an assistant having quietly opened the horse's mouth, and gently grasped his tongue so as thereby to draw it a little out on one side,—at the same time, with the other hand, elevating his head and muzzle a little let the open end be inserted, on the other side, and over the back part of the tongue, and the contents be softly poured down, gulp by gulp. Every action and movement should be made with the greatest gentleness, not only because the horse's throat may be sore, and swallowing painful, (besides the natural distaste for the medicine and the constraint,) but because less resistance or struggle will ensue, and there will be no risk of injuring the mouth or tongue. At all times, the more unwilling or violent horses are. the greater the occasion for gentleness, otherwise an operator will be more baffled, and the draught be got over with so much irritation as to do more harm than good. In all operations and restraints, as in all lessons or instructions with horses, patience and gentle handling must ever be a *sine qua non* to succeeding well; and the shyer or more intractable any animal may be found, the greater the occasion for his being soothed, and given time, and gone about gently. High couraged and valuable horses—often those the most so—are most of all apt to be rendered sulky or stubborn, and every way of inferior value, by hasty treatment and unfair curbing, constraint, or punishment. Animals cannot, by language, be made to know or understand what it is sought they should obey or do; and as training, &c., to them are acts of a character at once disagreeable and unaccountable, so favorable or kindly submission can only be induced or expected from quiet and gentle, but firm proceedings, and everything that is alarming, or has a coërcive aspect, ought to be studiously avoided or concealed.

As relates to such cases of influenza as has been referred to, besides the nitrous ether draught, $\frac{3}{4}$ of a pint of sound ale, sweetened with two teaspoonfuls of molasses, and having 2 drachms of the best ground ginger stirred in, may be mixed with a pint of milk warm water, and given alternately with the other. The patient should be placed in a moderately warm, well-ventilated loose box if possible; in any case well clothed, and where there are no currents of cold air. He should be bedded up to his hocks in short dry straw; and leg-bandages of flannel may be usefully employed. The food should be small potions of sweet hay; barley or malt mashes; a handful or two of oats; and for drink thin water gruel. If in two, or as may almost be said, one day, the attack does not seem to be arrested, and if mucous discharge from the nasal membranes supervene, then the complaint is established, and will run its course.

In the latter case, the treatment is not very different; but the progress of the disease has now to be carefully watched. The mucous, serous, and sero-mucous tissues seem to be especially attacked. Their nervous tone seems to be altogether deranged, and their secretions correspondingly. In fact, all the membranous system seems to sympathize, accompanied by flying neuralgic twinges. The worst and most difficult symptom, however, is the extraordinary weakness and prostration of all the energies which rapidly attend the mucous discharge. This and the indisposition to food, together with the pulse running high and the breathing oppressed, complicates the case; for it is unsafe to abstract blood, and still the case must not be lost from congestion of the lungs and heart. If food be entirely rejected, pretty thick, smooth oat-meal gruel, sweetened with a spoonful or two of molasses, and with 1 drachm of nitre dissolved in the $\frac{1}{2}$ gallon should be horned over 4 or 5 times a day. Enemas of the same kind should be thrown up. Bran may be stirred in the water, and poured off clear, and in this 1 drachm of nitre and a table spoonful of honey may be dissolved to the pailful. If the submaxillary glands are tumefied and painful, some blistering linament should be rubbed in between the jaws and along the course of the throat. But the practitioner's or owner's best treatment is limited chiefly to moderate warmth, pure air, a well bedded-up loose box, offering small quantities of tempting food, (or if need be horning over gruel and exhibiting enemas,) and giving weak nitro bran-water. If the patient begins to breathe less oppressed; his pulse fuller and not so quick; the membranes lining the nose more natural in color; in a word, if the symptoms altogether indicate decreasing febrile action, everything is to be hoped. The leading object is thereupon to support the strength—by means of gruel, and small malt mashes frequently offered. An oxymel may be beneficially used twice a day in $\frac{1}{4}$ of a pint of honey, mix a small spoonful of brandy, and the same of vinegar; stir into it a table-spoonful of linseed-meal and $\frac{1}{2}$ of a pint of sound ale; and incorporate the whole in two pints of boiling water. Horn over one-half for each draught, when cold.

These remarks having run a sufficient length for the present month, the writer defers his observations on Influenza Maligna until the next month. It may not be amiss to here observe thst the present suggested treatment is intended to be of a scope adapted to cases in any horse-owner's own hands, and when these are disposed, in a lesser degree, to complications and adverse results. In any such latter or more serious cases, the aid of professional advice is indispensable; and bleeding, counter irritants or blisters, rowels or setons and such internal remedies as tatarged antimony, digitatis, hellebore, calomel, opium, croton oil, etc., may come to be demanded, according to symptoms, and the patients condition. J. C. R.

Grad. Roy. Vet. Coll., Memb. Roy. Coll. V. S. &c.

[The above was designed for our last issue, but was received too late. The subject will be further discussed in our next number.—Ed. P. L. & A.]

COW RELIEVED BY SURGERY.

The following case of surgery is reported in the *Ploughman*. The operation was performed by Dr. Thayer of West Newton, Mass., upon a favorite cow of Mr. Geo. E. Allen. The case was stoppage, caused by the generation of gas in the stomach from eating too many rotten apples. He says:

"Finding all my efforts to remove the difficulty, unavailing, and she growing worse rapidly, I called in the doctor above mentioned, who very quickly decided that nothing but tapping would save her, and with my consent he made an incision directly into the Rumen, or first stomach, just in front of the hip upon the left side; and introducing a small tube, such an escape of *gas* took place as would astonish even our *modern politicians*. But the result was all we could desire, the swelling went down at once, and the cow was worth forty dollars more than before the operation. Those who witnessed the case, and some were *old farmers*, pronounced the operation entirely new to them."

AGRICULTURAL CROPS.

PROFITS OF FARMING.

A recent number of the journal of the N. Y. State Society mentions the following crops raised in different parts of this State. How can it be that farmers are content with less than half a possible crop and one-tenth the possible profits?

Mr. R. R. Hart, of Oneida, raised 70 bushels of shelled corn to the acre. Mr. Wm. Johnson, near Geneva, raised 38,671 lbs. of shelled corn on nine acres, equal to $76\frac{40}{56}$ bushels per acre.

Twenty-two cows on Mr. J. S. Hilbert's farm, Chemung Co., produced 4116 lbs. of butter. Included were two three-year old heifers. This butter sold at 27 to 37 cts. per lb. The average yield per cow is 187 lbs. each, or counting them as 20 cows, it would give 205 lbs. each.

In Tioga county the yield of rye is about 20 bushels per acre, some fields producing 28 bushels. The average yield of barley is 25 bushels per acre.

That of Indian corn, 28 bushels per acre, while some fields produced 60 bushels. Buckwheat produced 15 bushels per acre. Oats average 35 bushels, some land producing 60 bushels. Hay, average, 1½ tons per acre, and some fields produced 2½ tons per acre. Potatoes about 50 bushels per acre.

INDUSTRIAL STATISTICS.

Bridgewater, Mass.—Population in 1850, 2700; in 1855, 3363; increase in five years, 575.

Four Rolling and Nail Mills; 1000 tons iron manufactured and not made into nails, valued at $80,000; 52 nail machines, 62,500 casks nails manufactured, valued at $250,000; capital, $77,000, 207 men employed. Two Forges, 70 tons manufactured, value of bar iron, etc., $10,500; capital, $7000, 20 employed. One furnace, 600 tons casting, value, $40,000; capital, $18,000, 30 employed.

Two paper manufactories; 270 tons stock used; 210 tons paper manufactured, valued at $30,000; capital, $18,000, 20 employed.

Two establishments for manufacture of coaches, wagons, etc., value of articles manufactured, $5,800; $2000, 7 employed.

One soap manufactory, 25,120 gallons manufactured, valued at $2,540; $1,500 capital, 4 employed.

One tin manufactory, value tin ware $500; 2 employed.

One cotton establishment, value of manufactures, $14,000, $30,000 capital, 40 employed.

600 pairs boots and 166,000 pairs shoes manufactured, valued at $125,700; 55 males and 35 females employed.

3,000,000 bricks manufactured, valued at $12,000; 30 employed.

63,600 bushels charcoal, valued at $4000; 20 employed.

90.000 ft. lumber prepared for market, valued at $7,600, 30 employed.

2217 cords firewood, valued at $6,651, 30 employed.

259 horses, valued at $16,472; 151 oxen over 3 years old, and 18 steers under 3, valued $7,557; 44 milch cows, and 51 heifers, valued at $14,288.

25,836 lbs. butter valued at $6,459; 6679 lbs. cheese, $834; 130 lbs. honey, $26.

283 acres Indian corn, 20 bush. per acre, valued at $8,136.

1½ acres of wheat, 16 bush. per acre, $48.

57 acres of rye, 11 bush. per acre, $857.

3½ acres of barley, 24 bush. per acre, $80.

129 acres oats, 23 bush. per acre, $1,809.

1 acre onions, 380 bush. $190.

4½ acres turnips, 325 bush. per acre, $450.

1½ acres carrots, 416 bush. per acre, $62.

¾ acre beets, $42.

1540 acres English mowing, 1128 tons, $20,304. 414 tons swale hay, $4,140.

9299 apple trees, $902. 1180 pear trees, $128.

14 acres cranberries, $520.

1 shingle and box board manufactory, capital $3000; men employed, 12. Value of machines manufactured, $4000, men employed, 5.—*Ploughman.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE RESPONSIBILITY OF WOMEN FOR THE HEALTH OF THEIR OFFSPRING.

Mr. Editor:—A medical writer has remarked that "Perfect health in civilized society is unknown; it exists only as an ideality." This startling truth, which any one of observation cannot dispute, leads to the inquiry, Who is in fault? A full and impartial answer would require us to examine the duties of both sexes. At present, however, we shall only consider the manner in which woman discharges her high responsibilities as *mother* of the race.

From reports published by Miss Beecher and others, we learn that our towns do not average *one healthy woman.* Nevertheless, he who teaches that the sex are in fault for their bodily infirmities, is often regarded as blaspheming; for has not Providence seen fit to afflict them!! Thus by making Supreme Power the scape-goat, they *piously* relieve themselves of all responsibility for their own sufferings and those which they inflict upon the race.

When we consider that about every third woman has a diseased spine, that at least every fifth one is scrofulous, consumptive, or possessed of some other disease transmissable to her offspring; and making no estimate of general debility and various weaknesses, that not one in a hundred can boast of having no deformed bones, we are led to ask, what kind of a Providence is that who thus delights in disfiguring his noblest work? Providence establishes laws—those who violate them suffer the penalty. If we look from effects to their causes, we can trace to the habits and customs of women many of the evils which have vitiated the human family. It cannot be expected that infirm parents, groaning under a load of disease, will give to the world an iron race. It should not be expected that women who shut themselves in from the inspiring air and sunlight of heaven, confining their labors entirely to the house or living in indolent luxury, will "stamp their race with signatures of majestic grace," or transmit to the world offspring possessed of sound mental and physical organizations. As reasonably may we look for pure sparkling waters to flow from a malignant morass.

There are those of the sex that have observed and reflected much, who know and acknowledge that women are in fault, criminally so, for scores of the complaints from which the race suffer. With such lies the weighty duty of commencing a reform, which shall restore to the human constitution *some* of its pristine *tone.* At the present time few of our girls reach the age of twenty in a sound condition. Large numbers marry and become mothers,—give to the world a suffering offspring, and themselves drag out lives of pain. So it will ever be until education and fashions accord better with the dictates of nature, until parents observe the laws of health themselves and require them to be observed in the treatment of their children.

Take a fair girl of seventeen or eighteen, who has been so fortunate as to inherit no disease and to pass through the periods of infancy and school with no other misfortune than to come out *rather delicate*, teach her by example to submit to fashions, however opposed to the dictates of sound sense and the demands of sound health they may be, encircle her waist with whalebones and steel; load her hips with skirts, corded, quilted, hooped and starched, tied tensely around the person to keep them in position; have her adopt the sedentary habits of thousands of our women, and then in a few years look at the woman you have *re-created* from the noble girl.

Her whole body is in an abnormal state. Weakness and disease prey upon a form, which, had a reasonable course been pursued, would have been bounding with health. Thus it is that Providence sends afflictions!! Were they not invited?

If women would rejoice in the fulness of life, if they would give to the world an offspring beautiful and noble, let them make the laws of health the great study of life, and the instruction of their children therein one of their great duties.

Let them throw aside whalebones and steel, and make easy but elegant costumes. Let them untie the strings which are doing a work as fatal as the hangman's cord. Let every garment be suspended from the shoulders. Let every limb have scope for action. Let them spend several hours per diem in the invigorating air which God has adapted for their lungs.

Teachers are grossly in fault for not bringing these things forcibly before their pupils, both in practice and in theory. The long processions formed to *take exercise* in measured pace, for half an hour in the twenty-four, leave no vivid impression upon the pupil except a remembrance of the stupidity of the performance. Let scholars *feel* the pleasure of living at least three hours per diem in the open air, and they will readily comprehend when instructed that it is an agreeable duty to do so.

The health of morals and intellect sympathizes with that of the body. If the latter becomes prostrate the former may become enfeebled. It would therefore seem appropriate for our eloquent divines to inculcate, occasionally, lessons upon the important subject of health and the responsibilities of every intelligent being. The effect would doubtless be as beneficial to the human family as homilies upon natural depravity or original sin.

June Isle.

Note by the Editor.—The above topic is one of immense importance, which ought not to be considered out of place in any journal, moral, scientific, or political, for sound minds can only be looked for in sound bodies, and permanent defects in one lead to the ruin of all our social and political institutions. We were not aware that abnormal organizations were so common as they are represented by our correspondent, but we are quite certain that reform in this matter is imperatively demanded, and that we have yet to endure a large part of the penalty for our sin in these matters. From this there is no escape. There is no pardoning power. The law is inexorable. We commend this matter to the serious attention of our readers.

We only add that natural law has herein provided against the permanance of all assumed superiority in the wealthy classes. They are obliged to resort to external appendages, to costly dresses and extravagant modes of living and peculiar habits of life, in order to distinguish themselves from their neighbors. These very habits ruin both mind and body in about two generations, and not only reduce them to the ordinary level in personal attractiveness, &c., but to objects of pity, demanding the sympathies even of the poor.

A "millionaire" once said to us, "I would give you every dollar I am worth for your legs." So the wheel turns. Let not those who are getting up exhibit so much folly as their predecessors. Yet we are sorry to say we think they furnish too much evidence that they are becoming the silliest of all fools who have preceded them.

AN AGRICULTURAL BUREAU.

WASHINGTON, April 4, 1856.

THE following very interesting letter, addressed to the Agricultural Committee in the House of Representatives, exhibits the scope, objects and operations of a bureau of the Government, yet in its infancy, but which is fast becoming one of the most practically useful and important.

UNITED STATES PATENT OFFICE, March 31, 1856.

Agreeably to request, herewith I furnish you with some of the principal reasons why Congress should increase the agricultural appropriations hereafter to be expended by this office with some of the benefits to the country which have already resulted from the appropriations made years past.

One of the prime objects of these appropriations has been the introduction of new and useful vegetable products hitherto unknown in the United States, and the increase and dissemination of those of superior qualities which had already been cultivated or otherwise known. Measures have been taken to procure from every quarter of the globe, such seeds, plants, roots and cuttings as would be likely to succeed in any part of the country, and placing them in the hands of persons who were the most likely to test their adaptation to our climate and soil. As a matter of course, many of the experiments thus made unavoidably proved abortive; but in numerous cases, they were attended with the most signal success, and a single product, in the opinion of competent judges, has added millions to our resources. For instance, a variety of wheat known as the "Mediterranean," which was brought to this country a few years ago, has proved highly productive, hardy and maturing several days earlier than other varieties, thereby escaping the ravages of insects and rust, besides being sooner ready for market.

Within the last year no less than seventeen varities of wheat have been introduced from distant parts of the globe, and distributed in various sections of the Union, most of which promise to be attended with good success.

The "Indian mixed" or "Dourah corn," of African origin, has also been introduced, and it constitutes a valuable crop in the South.

The "Japan pea," unsurpassed by all the others in its yield, believed to be of Eastern origin has been cultivated in various parts of the country with remarkable results.

The "Chinese yam," originally from China, but more recently from France, which promises to serve as an excellent substitute both for the sweet and common potato, has been sufficiently tested to prove its value in the Southern as well as in the Middle States.

The "chufa" or "earth a mond," a small tuberous esculent, from the south of Spain, which has naturalized itself to our soil and climate, has proved prolific in its yield when grown in light sandy soils, as well as those which are rich, and bids fair to become a valuable forage crop for cattle and swine.

At least thirty varieties of turnip seed, including the best cultivated in England, as well as on the continent in Europe, have been imported and disseminated in every State and Territory of the Union. The benefits are already apparent. Similar experiments are now being instituted with all the leading varieties of grasses, cabbages and peas of Europe, the results of which will soon be made known.

Among the forage crops it may be mentioned that the Chinese sugar cane (So gho Suche), a new gramineous plant, of Chinese origin, but more recently from France, has been introduced and has proved itself well adapted to the geographical range of Indian corn. The amount of fodder which it will produce to the acre is estimated to be twenty-five tons; the stalks of which are filled with a rich saccharine juice, the whole plant being devoured with avidity by cattle, horses and swine. It is of easy cultivation, being similar to that of maize or broom corn; and if the seeds are sown early in May in the Middle States, two crops of fodder can be raised from the same roots in the season—one about the first of August, and the other in October.

Another valuable forage crop, the "German millet" (*Mohn de Hongrie*) has been introduced from France, which is very productive, of quick growth, resists drought, and flourishes well in dry soils.

Among the cuttings of fruits trees and vines which have been introduced may be mentioned the "Prune d'Ageu," the "Prune Sainte Catharine," and the "Vigne Corinth." The two former have been grafted on the common plum in all the States north of Pennsylvania, and on the mountainous districts of that State, Maryland and Virginia. From the success which has attended this experiment, there is every reason to hope that there will soon be produced sufficient dried prunes in those regions to supply the wants of the whole Union. Among the seeds of indigenous growth, which have been selected and distributed, in reference to their superior qualities, as well as to their probable adaptedness to certain parallels and localities, and which have proved highly productive, there may be noted several varieties of Indian corn.

Among these are the "Improved King Philip," or brown corn obtained from an island in a lake in New-Hampshire, which was extensively distributed in all the States north of New-Jersey, and the mountainous districts of Pennsylvania, Maryland and Virginia. The result has been that it matured in less than ninety days from the time of planting, (about the middle of June,) and yielded, in one instance 134 bushels of shelled corn to the acre. Another superior variety, from New-Mexico, the "New-Mexico White Flint," has been distributed, which appears to be adapted to the entire corn region south of Massachusetts. For ordinary use, either green or dry, its quality of excellence is unsurpassed.

Among the products which it has been proposed to introduce from abroad, with a view of making special experiments, to be conducted by agricultural societies or by individuals in the several States and Territories of the Union, may be named considerable quantities of all the best varities of wheat and of other cereals of the globe. In addition to these there might be imported the seeds, roots or cuttings of all the principal economical plants and trees known, and experimented upon in a similar manner.

In connection with the subject I would suggest the expediency of Congress making the annual appropriations for the purpose of agriculture sufficiently early in the season to order most of the seeds to be grown the approaching season, so that they may be received in time for distribution by the first of January or before. For it has been found by experience that when large orders for seeds have been made after the month of April or May, it was impracticable for the seedsman to furnish an adequate supply without procuring them from various sources and this too often requiring several months. Hence most of the seeds would arrive too late for the southern and middle sections of the Union; or if they were attempted to be kept over till the next fall they would be either devoured by vermin or insects or rendered worthless by age.

Another feature connected with these appropriations which appears to need simplification or reform, is some more feasible and equitable plan of disposing of these seeds than had been adopted heretofore.

I would therefore, suggest that, instead of distributing of them promiscuously, through members of Congress, societies or individuals, who may apply directly for them at the Patent Office, suitable arrangements be made by said members for them to be sent, in bundles not exceeding four pounds weight, franked by the Commissioner of Patents, to the State, Territorial and county agricultural societies, or to the Secretaries of States or Territories or County Clerks, where there are no such societies, to be distributed by mail or otherwise, to proper individuals residing in each State, Territory or county, for trial or special experiment, with a request that each recipient shall report the result for the use of the Patent Office.

To insure the free and speedy transport of each small packet of cuttings or seeds, an appropriate stamp might be placed upon it, bearing the imprint of the name of the member of Congress or Territorial delegate in whose district or territory any such society may be located, or in which any Secretary of State or Territory, or County Clerk may reside.

The apportionment of the packets sent to the State societies might bear a stamp containing the name of the Senators of each of the States respectively. This change can only be effected by an amendment in the postal law, and necessarily would come before the Committee on Post Offices.

Very respectfully, your obedient servant,

D. J. Brown.

Hon. David P. Holloway, Chairman of the Committee on Agriculture, House Representatives, United States.

BUTTER MAKING.

Editor Ohio Farmer.—*Dear Sir:*—In the 43d number of the current volume of the *Ohio Farmer*, I observe an inquiry from Mr. Alden, on the subject of making butter from sweet cream. He affirms that "Agricultural books and journals tell us that butter cannot be made from sweet cream." And then declares that the life-long practice of his mother contradicts the teaching of the "books" on this subject. There is, perhaps no branch of domestic economy the theory of which is so little understood by those who practice it as the art of *butter making*. The first truth to be learned on this subject is, that butter is not *made* by churning! All the butter that can, by any process, be procured from cream or milk, exists in the milk when drawn from the cow, and the business of the dairy-man is to ascertain how it can be most perfectly separated from the other proximate elements of the milk with the least labor, and carry with it the fewest impurities, or substances other than butter. In newly-drawn milk the butter exists in the form of exceedingly minute globules, each wrapped in a very delicate membrane of cheesy matter (casein) and floating promiscuously through the fluid. If the milk be suffered to stand at rest for a few hours, butter being lighter than milk, the globules find their place at the surface acccording to the laws of gravitation. If the new milk be heated to 180° and suffered to cool, the globules, swelled by the heating, their envelopes thickened by accumulating cheesy matter from the milk, will rise to the surface more rapidly and form a heavier and thicker coat of cream which, on being churned will yield more pounds not indeed of butter, but of a compound of butter, casein and sugar of milk, which has a very rich flavor when fresh, but soon become rancid and unfit for the table. But to the question of Mr. Alden. Churning is but the breaking of these globules, that the particles of butter may cohere together and form a mass more or less solid. This at first would seem to be a mere mechanical action, but connected with it, or least accompanying it, are chemical changes, whose invariable presence leads us to infer that they constitute an essential part of the process. These are, first, an elevation of temperature, frequently amounting to 10°, if the "butter comes" rapidly. And, second, the formation of lactic acid; for if milk be churned as soon as drawn from the cow, and butter be separated, the butter-milk will be found to contain acid, though it may not taste very sour. Whether this lactic acid is a cause or an effect of the separation of the butter, has not been satisfactorily settled, but that it is always present after butter has been churned, is a well ascertained fact, and this fact, all scientific books on the dairy assert. Johnson, Ballantyne, Ayton and Traill all teach that "butter made from sweet cream is less in quantity, and require more labor to produce it, and is therefore unprofitable." In this they admit that it may be thus made. But that sugar of milk is converted into a lactic acid, when butter is churned, is a well ascertained fact.—*Ohio Farmer.*

A NEW STONE FOR STREET PAVING.

A GOOD article for pavement is one of the most pressing demands now made upon the government of this and other commercial cities. The safety of persons and animals, and economy, in a matter involving so much expense, and where so much is at hazard which money cannot buy, cannot fail to engage the attention of all conversant with such matters. Various inventions have been made and tried, with various success. New projects are constantly started, having more or less claim to consideration. Among other claimants, we invite attention to a new stone, not hitherto used for this purpose, found in large quantities, we are informed, in Dutchess County. Our attention has been called to it by Messrs. Bell & McEntee, of Kingston, proprietors of the ledge, we believe. It is a peculiar style of granite, nearly white from the abundance of its quartz, in a mountain, forming one of the ranges of the Catskills, and is known there, as the Esopus stone. It is used extensively for mill stones, and while it is difficult to reduce it to powder it is still more difficult and apparently impossible to reduce it to a polish. Hence it promises, to be both durable and safe for horses.

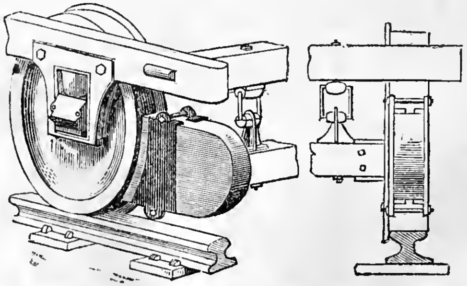
These stones are taken frequently on high ascents, and the roads leading to them are in many places bedded with this stone; forming inclined plains of several rods each, in length. In drawing heavy loads over these beds it has been a subject of remark among the quarrymen that a "horse would pull his shoes off sooner than slip." Heavy loads have been daily drawn over these nature-made pavements, and man has had only to observe, to determine what should be done in a city so sadly situated in regard to its streets as New-York.

BARREL MAKING MACHINE.

We had an opportunity, a few days since, of witnessing the operation of an ingenious machine owned by the Livermore Manufacturing Company, for making barrels and tight casks. The machine is in operation at Alcott's Mills, Broadway, Cambridgeport, Mass., and is worth a visit from those interested in such matters. The strips of wood which are to be made into staves having been first heated, are passed through a machine containing numerous rollers, under which they receive the requisite *bend*, both lengthwise and traversely. They are then put into another machine, where by an ingenious movement they are cut at both ends, grooved, and planed at the sides, so that they are turned out perfect staves of uniform length and width, all being precisely of the same shape, in all respects. Sixteen of these make a barrel. There is a separate machine for cutting out the round heads of the barrels. The machine which bends the staves turns out enough for 600 barrels in a day. Four of the other machines, in operation at the same time keep pace with it in completing them. The work is expeditiously and easily done. It is claimed that the barrels thus made are fifteen per cent. stronger than those made by hand; and the staves being precisely uniform, the business of putting them together becomes very simple. The stock is seasoned before passing through the machine, and the barrels are thus made perfectly tight and not liable to shrinkage. The apparatus deserves the attention of dealers in flour and provisions. The number of barrels used in this country is immense—it is stated that not less than fifty million in a year are required for the ordinary demands of business.

Under these circumstances, a machine which abridges the labor of manufacture and improves the quality of the article, becomes especially valuable. —*Exchange.*

PAIGE'S ADJUSTABLE CAR BREAK BLOCKS.



The frequent pressure of the break upon the periphery of the wheel necessarily produces a rapid waste of material, whether it be iron, or wood, and leather. Each of those substances have been used, and perhaps each has some advantage over the others. But the cheapest material, of course, is wood, and if the block can be so arranged as to allow of frequent change at a trifling cost, then the great object in view is, so far, already realized. But if any plan can be devised by which a partial adjustment of the same material can be secured, the material itself being also cheap, then there would seem to be no further room for improvement, for, as already stated, wear is inevitable. So far as we can percieve, this has been done by the inventor named at our caption. A wooden block is brought into contact with the surface of the wheel, and is so arranged, in a socket, that it can be adjusted, by the rise of screws, or to any desired position. As it is worn away by friction, the block is placed in the socket nearer to the wheel, until its material is almost entirely destroyed.

Two stout plates of iron confine a hard plank of suitable width, which may be adjusted by bolts, at any desired distance from the wheel. All that is necessary to effect this change is to loosen the bolts, driving the block forward in the socket and then re-tighten it by turning the screws or bolts.

This block has been in use on the Hudson River Railroad about six months, and but three out of the eight blocks have required any change, and these three required attention only because the spring which forces the block from the wheel was too weak. Other railroads have the same block in use as an experiment, and with all it is highly successful. The whole arrangement is readily seen by a glance at the annexed engraving.

The beams now in use may be employed in attaching these blocks with very little expense, no change being necessary except the fitting of the ends to the socket. The agent for this patent is C. Dinsmore, of the "Railroad Guide."

English Patents.

An improved construction of Gun-lock. By John Coney, of Newhall, Hill, Birmingham.—The object of this invention is to simplify the construction of gun and pistol locks, and also, at the same time, to provide a simple means for preventing the premature discharge of fire-arms. In carrying out his invention the patentee connects the seer with the hammer, so that they shall move together under the action of the main spring. The seer is provided with retaining notches for half-cock and whole-cock, which notches catch against the V-edge of a bearing pin projecting from the inner face of the lock-plate, and thereby hold the hammer at the required position. The trigger is so arranged with respect to the seer (upon which it acts to discharge the piece,) that when the lock is at half-cock, the trigger will be out of reach of the seer, and therefore, if accidentally pulled, will not act upon the lock. This advantage is obtained by reason of the seer, through its direct connection with the hammer, being caused to travel with the hammer.

Improvements in Marine Steam-Engines. By James Biden, of Gosport, Hampshire.—This invention consists in feeding the boilers of marine steam-engines with fresh water, obtained by the condensation of steam after having been employed in the steam-cylinders. The manner of carrying this object into effect is as follows:—Pipes leading from the cylinders are passed into the water outside of the ship at one side thereof, and carried round from the stern to the other side of the ship. They then enter and open into a reservoir in the hold or other convenient part of the ship. This reservoir is formed with two compartments, one above the other, and the pipes communicate with the lower one thereof. The upper compartment is kept filled with fresh water, and it communicates with the lower compartment by means of a ball-cock or float-valve; and the lower compartment communicates, by means of a pipe, with the atmosphere, to allow any uncondensed steam to blow off. As the steam from the cylinders passes through the before-mentioned pipes it becomes condensed, and the fresh water, produced by such condensation, will flow into the lower compartment of the reservoir, whence it may be pumped, as required, into the boilers. A pipe also leads from the steam-chest to the condensing-pipes, so that when the engine is not at work, any excess of steam may be condensed and conducted into the reservoir. When the water in the lower compartment of the reservoir is reduced below its determined level, the ball-cock or float-valve will fall and open the communication with the upper compartment, so as to allow water to flow from that into the lower compartment, and thus keep the supply therein at its appropriate height. The condensation of the steam may also be effected by allowing the sea-water to enter into the ship, and to flow through a suitable channel within the hull; through which channel the pipes for conducting the steam from the cylinders are made to pass.

A New Metallic Alloy. By François Joseph Anger, of Stamford street.—In conjunction with the metals ordinarily used in the manufacture of copper alloys the patentee mixes certain compound substances which are not in the metallic state, but which, during the process of the manufacture, become elementary, and partly enter into the composition of the alloy, and impart to it properties which it otherwise would not possess—being remarkable in its resemblance to gold, not changing color by use,—and being dense, malleable, ductile, homogeneous, and sonorous, to a marked degree.

The following is the process:—In a crucible the patentee first melts 100 parts of good copper, and, while in a perfect state of fusion, he adds 17 parts of zinc, 6 parts of magnesite, or substance of a like nature, though perhaps differing in name, 3.60 parts of ammonia or salt of ammonia, 1.80 parts of quick-lime or other calx, and 9 parts of crude tartar. The crucible is then covered, and the whole allowed to come to a complete state of fusion; when it may be poured into moulds of the necessary shape, or into ingots or bars, to be afterwards shaped for articles of use. If the metal be required of a more tenacious character, tin may be substituted for zinc. According to the ductility or shade of color of the metal which may be required, the proportions of zinc, tin, magnesite, ammonia or salts, quick-lime, and crude tartar, are varied.

An Improvement in Dyeing Cloth. By Thomas Richardson, of Leeds. —The main object of this invention is to produce a permanent black dye in woolen cloths, and at a less cost than the best black dyes are at present obtained. For this purpose the patentee mordants the cloth with bichromate of potash, and then submits them to a bath composed of sulphate of indigo and other suitable dyeing materials.

In order to prepare, say, six ends of cloth, he pours into a vesssel of the ordinary kind used by dyers, any requisite quantity of water, and adds thereto four pounds of bichromate of potash, three pounds of red argol (bitartrate of potash,) and six pounds of commercial sulphuric acid. The contents of the vessel are heated to the boiling point, and the woolen cloth is placed therein and boiled for one hour, it being turned over by means of a winch to keep it even. The cloth is removed from the vessel, and hung over a horse-tree to drain away the superfluous liquor; after which the cloth is ready to undergo the dyeing operation.

The dyeing liquor is prepared in a second vessel, similar to that used in the first operation. For this purpose the vessel is filled with water; and one hundred pounds of logwood, four pounds of camwood or other red wood, two pounds of fustic, four pounds of the sulphate of indigo, and three pounds of sulphuric acid are added thereto. This mixture is heated to about 200° Fahr. and the cloth is then entered; the liquor being kept to boiling point for about one hour and twenty minutes. During this time (which will in general suffice for completing the dyeing operation) the cloth is turned over frequently by means of a winch to insure the thorough exposure of the whole body of the fabric to the dyeing liquor. It is next removed from the dye vessel, and rinsed in a washing machine along with a little fuller's earth. With a smaller proportion of bichromate of potash and logwood than is given above, a blue color, resembling indigo dyed blue, may be obtained. When a full black is required, it will be found an improvement to use a little acetate of lead.

Improvement in Preparing Pulp or Pulpous Material, applicable in the Manufacture of Paper, and for other useful purposes. By Francis Burke, of Woodlands, Montserrat, British West Indies.—This invention consists of a mode of reducing vegetable substances to a state of pulp, applicable to the manufacture of paper and for other useful purposes.

The object of the inventor is to convert the fibres of vegetables into pulp, without having recourse to the process of separating the fibrous matter from the other component parts of vegetable substances; and to effect this object, he adopts means for simultaneously or in one process reducing the fibres to pulp, and separating the pulp from the gummy and other vegetable matters with which they are combined. The vegetable substances to which the process is applicable are the plants known as the plantain, the banana, and the aloe, and any other vegetable substances containing fibrous matters from which the other matters contained therein can be separated by water, whilst undergoing the operation hereinafter described.

When necessary, the vegetable matter to be operated upon is first cut, crushed, or bruised, for the purpose of reducing it to such a state of division as will permit of its introduction into a mill to be ground. If the vegetable be plantain, banana, aloe, or any other similar vegetable substance in a green state, it is preferred to crush it between rollers, so as to deprive it of its fluid matters.

To reduce the vegetable matters to pieces of a convenient size, a chaff-cutter, saw, or other convenient means may be used, according to the nature of the material. The material thus prepared, is ground in a mill made of a pair of plain stones, similar to those of an ordinary flour mill, with the eye of the runner or upper stone somewhat enlarged, so as to facilitate the admission of the material.

Either the upper or the lower stone of the mill may be made the runner; but it is most convenient to have the upper stone the runner, and motion may be given to it in the same way as in ordinary flour mills. The material to be ground is fed simultaneously with a stream of water into the eye of the mill; the supply of water being sufficient to convert the vegetable material when round into a fluid pulp.

The water used may be either hot or cold, but cold water is preferred and when necessary, any chemical agent may be dissolved in it to facilitate the separation of the fibres from the other vegetable matters with which they may be mixed. The vegetable fibres, as they are ground to a pulp, are thrown out at the periphery of the stones, round which a trough is placed to receive it; from whence it runs into suitable sieves, by which the fibrous pulp is separated from the water, which passes away carrying with it the soluble matters, and also many minutely-divided insoluble or non-fibrous matters which may have been separated from the fibrous matters by the action of the mill.

The pulp of vegetable fibres, thus prepared, may, if desired, be bleached and otherwise treated in like manner as pulp prepared or obtained in any other manner, and may also be used or applied in the manufacture of paper, millboard, or papier mache, or for any other purpose for which it may be applicable The pulp, thus prepared, may be compressed into forms or masses, so as to be stored for use, or more conveniently transported to a place of manufacture.

Improvements in Apparatus for Copying Letters and other Documents. By Alexander Robert Terry, of Adelphi-Terrace.—The object of this invention is to combine apparatus with the cover of a book (composed of suitable paper) in such manner that the act of closing the book shall be the means of copying a letter or letters or other written documents inserted between the leaves of such book. For this purpose, a metal frame is applied to each lid of a book, and when the book is closed they are connected together by links, which are attached to one frame, and hook on to projections on the frame of the other lid. By this means the two frames are drawn thightly together, and the papers between the covers is compressed so as to yield copies as effectually as when a copying-press is used.

Improvements in the Manufacture of Tyres for Wheels. By Herbert Mountford, of Derby—This invention has for its object improvements in the manufacture of the tyres for wheels, in order to adapt the wheels to run at different times on hard land and soft, as circumstances may require. For this purpose the tyre for the wheel is rolled, on its exterior surface, with a projecting longitudinal rib, which may be square or rounding: so that when the wheel is on a hard road, or surface, the tyre will run on its longitudinal rib; but when on soft land, the rib will penetrate, and the whole breadth of the tyre will rest on the land.

The various forms of tyre, according to this invention, are made by grooved rollers, employing wrought-iron or steel, or wrought-iron and steel combined, or an any other metal.

Improvement in the Construction of Harrows. By Edward Hammond Bentall, of Heybridge.—This invention relates to the fixing of the tines or teeth of harrows in their sockets in such a manner that they will be prevented from working loose. To this end, square or rectangular socket holes are punched in the beams to receive the squared or angular part of the stem of the harrow-teeth or tines: and through the cross bars round holes are punched, through which the threaded end of the tine projects to receive a nut, as usual. When the nut is screwed up tight, it is secured in its place by riveting or otherwise securing to the bar an abutting piece, which will fit close against one side of the nut, and thereby prevent it from turning on the tine; and the tine itself being prevented from turning on its centre by fitting into the square or rectangular socket in the beam.

IMPROVEMENTS IN THE MANUFACTARE OF ORDNANCE SHELLS AND OTHER HOLLOW VESSELS. BY RICHARD PETERS, of Union-street Borough.—This invention consists in the employment of a hollow mould, made in two or more parts, into which the metal or other material to be moulded, is poured through a pipe, which descends about midway into the mould,—and imparting to the mould, after a sufficient amount of metal or other substance in a fluid or a semi-fluid state has been poured therein, two centrifugal motions at right angles or nearly so to each other. The centrifugal force acting in all directions, distributes the contents of the mould evenly all round the inside thereof; while the internal pipe acts as a vent for the escape of air and gases, and prevents any considerable quantity of material (if any) being forced therefrom. On stopping the two motions and opening the mould, the hollow article will drop out perfectly formed. When making a shell, a ferrule, threaded on its inside, is set round the internal pipe and being incorporated with the shell, it will be ready for receiving a fuse threaded with a corresponding screw.

IMPROVEMENT IN THE MANUFACTURE OF GUN-BARELS, PIPES, AND TUBES. BY SAMUEL PEARSON, of Woolwich.—This invention refers to the manufacture of twisted barrels and pipes. According to the method of forming such barrels as now practised, a strip of metal is wound spirally round a centre,—the edges of the strip forming butt or scarf joints, which are found in practice to be faulty. Now this improvement consists in forming barrels and pipes of two **V**-shaped strips of metal, which are wound spirally round a centre; the base of the **V** in one strip being placed nearest the centre, while the apex or narrow part of the upper **V**-shaped piece is placed downward, or nearest the centre; whereby the spaces between the first strip will be filled up, and after being rolled and welded in the usual manner, or otherwise finished, will form a perfectly tight and solid barrel or pipe.

IMPROVEMENT IN COATING WROUGHT IRON. BY EDMUND MOREWOOD, AND GEORGE ROGERS, of Enfield.—In the manufacture of japanners' ware, painted work, and for a great variety of purposes, very large quantities of tin plate, and sheets of iron coated with alloys of tin, or zinc, are used, and in coating these and also other forms of wrought-iron. it has been usual to dip the iron into the melted coating metal, by which the iron has become coated with a larger proportion of tin or of its alloy, or of zinc, than is required for japanned ware, painted work, and a great variety of other purposes. Hence, the cost is unnecessarily increased, and the iron, by being dipped into the melted metal, is more or less injured in its toughness, and is rendered less flat and even on its surfaces. In some cases it has been the practice previous to dipping sheets, plates, and other forms of wrought iron into melted tin or zinc—to deposit upon them a thin coating of tin from a solution of that metal; and such deposited coating of tin on wrought-iron, the patentees have found sufficient when protected, as herein described, for japan-ware, painted work, and for a variety of other purposes.

The present invention consists in giving to sheets, plates, or other forms of wrought-iron, a coating of tin from a solution (omitting the dipping in melted tin or its alloy, or zinc), and in afterwards applying a non metallic coating or coatings of a material or compound which is repellent of moisture, and which may be used at so low a temperature as to leave the iron as nearly as possible with its original form and toughness. For this coating the patentees prefer a resinous or such like matter as will not interfere with but rather aid the process of soldering the iron, when it may be desired to do so.

Sheets, plates, or other forms of wrought-iron having been coated by a deposition of tin from a solution (which, separately, is not claimed) are to be washed with water (for which purpose, a stream of running water, either hot or cold, should be used), in order to free them as much as possible from the solution of tin or other matter which they may have taken up.

When well washed, the pieces of wrought-iron are coated with varnish or japan. The preparation preferred, is about two-thirds rosin, and one-third grease or tallow—keeping the temperature of the mixture at abcut 240° Fahr., or at such a point, that on withdrawing the metal from the hot mixture, the moisture will have been boiled off from the surfaces, and a thin coating of the mixture will be found to cover the metal. This thin coating is reduced by rubbing the metal in hot bran or sawdust, placed in a pan, and kept heated with boiling water underneath, or by other suitable arrangements. Or the inventors dry the solution tinned articles in an oven or over a coke fire) or otherwise, immediately after washing, and then, instead of coating them by dipping into the before-mentioned melted mixture of rosin and grease, they dip them into a solution of rosin and tallow dissolved in coal of naphtha in the proportion of two ounces of tallow and ten ounces of rosin to one gallon of coal naphtha, at the ordinary temperature of the atmosphere; and after allowing the articles to stand in order to dry, they immerse them in the solution of shellac and rosin, hereafter mentioned. The sheets, plates, or other articles coated with rosin and tallow are dipped into a solution of shellac, or shellac and rosin, in the proportion of three-fourths shellac to one-fourth rosin, dissolved in wood naphtha or alchohol, say about three quarters of a pound of shellac and one quarter of a pound of rosin in two gallons of wood spirit or strong alcohol, of fifty to sixty degrees above English proof; by which means, a coating which will be moisture repellent, is obtained. By thus coating sheets, plates, and other forms of wrought-iron with tin from a solution, and afterwards protecting or preserving the same by a moisture-repellent coating or coatings of the above-described character, a manufacture is produced highly usesul for a great variety of purposes—the sheets and plates, nearly, if not entirely, retaining their flatness and the iron its toughness and the sheets or plates admit of being bended or shaped; and such coated metal is valuable for a great variety of useful purposes.

Improvements in Dyeing or Coloring the Hides and Skins of Animals. By Isaie Lippman, of Rue Geoffroy Saint Hiliare, Paris.—This invention consists, in the first place, in submitting hides and skins to the process of dyeing before they are tanned. According to the plans now in use the skins or hides are usually tanned first, and then dyed or colored afterwards; but by reversing these processes, the patentee has discovered that considerable advantages are obtained. By dyeing the skins before tanning them, processes and materials which are cheaper and better than those usually adopted, may be employed; a more permanent color will also be obtained than when the skins are subjected to the ordinary process, and will even resist the action of acids. There is also considerable economy in the labor incidental to the process, and the skins or hides, when prepared according to the improved plan, are more supple and softer than when the ordinary process is employed.

The second improvement relates to a mode of dyeing the skins or hides so as to present a variegated or marbled appearance. This is effected by simply crumpling the skins up, and tightly securing them in this state while they are submitted to the action of the coloring matter in the dyeing vat. The result will be, that the coloring matter will only penetrate and act on certain parts of the skins, leaving certain other parts unaffected, and upon unfolding the skin it will present a mottled appearance. This operation may be repeated two, three, or more times in different colored dyes, the skins being of course unfolded and crumpled up again previous to every operation, so that fresh surfaces may be presented. This mode of mottling or ornamenting skins may be employed either before or after the skins or hides have been tanned.

The third head of the invention relates to a method of imparting a metallic lustre to skins or hides. For this purpose, the skins are submitted to the action of certain dyeing materials which have the property of communicating this appearance thereto. The dye-wood which is found most suitable for this purpose is logwood (known in France as *bois de campêche ;*) but other varieties of dye-woods may be employed under certain circumstances. When the skins have been submitted for a suitable length of time to the operation of the dye, they are afterwards subjected to the action of chemical salts (by preference alkaline salts), which will cause the metallic appearance to come out on the surface of the skin or hide.

The patentee claims, "First,—submitting hides or skins to the process of dyeing before being tanned. Second, the method herein described, or any mere modification thereof, of imparting to skins or hides a mottled appearance. Third,—the method herein described, or any mere modification thereof, of imparting to the surface of hides and skins a metallic lustre."

ROUTE FROM NEW-YORK TO PITTSBURGH.

CAMDEN AND AMBOY RAILROAD, PENNSYLVANIA CENTRAL RAILROAD, READING RAILROAD, SUSQUEHANNA AND DAUPHIN RAILROAD.

We propose describing sundry routes from this city to distant points, as occasion may offer, as a sort of general guide to the traveler.

The route from New-York to the Great West, by the Camden and Amboy railroad to Philadelphia, thence to Pittsburgh by the Pa. Central, is one of the most picturesque and romantic in the Eastern portion of the Union. Commencing at this city, we take the steamer for Amboy, and passing through the bay of New-York, we obtain a fine view of Castle Garden, Governor's Island, the bay, and the city, and are regaled with the fresh sea-breeze. Passing New-Brighton on Staten Island we enter the Kills, and are soon at Amboy. Here the cars are taken for Camden, and passing through the southern portion of New-Jersey, we arrive at Philadelphia in five hours from starting. This road is under the superintendence of W. H. Gatsmer, Esq., whose aim is to make his passengers safe and comfortable. From Philadelphia to

Harrisburg are two routes, one by State line, the other, by the Reading railroad to Auburn, thence by the Susquehanna and Dauphin railroad. Leaving Harrisburg four miles, we cross the Susquehanna over an arched bridge, and here the bridge, the river and the mountains, taken together, and combining in one view the beauties of nature and art, form one of the most beautiful and interesting views in the country. We now pass up the Valley of the Susquehanna along a continuously romantic region, consisting of mountains, hills, and vales, till we reach the Junietta, thence up the Junietta to Altoona. Here the company have their depot, and here resides Mr. H. J. Lombairt, the efficient superintendent of the road, to whose promptness, skill and energy, together with his discretion in the choice of officers, the company are greatly indebted for the regularity of their trains and the safety of their passengers. Here is also one of the finest hotels on the road. Mr. Thompson is the proprietor.

Leaving Altoona, we commence ascending the Alleghanies, running up a grade of 92 feet to the mile for a distance of 12 miles. The road winds along the spurs of the mountains. Upon the right, rise the towering cliffs of the Alleghanies, and on your left you look down some hundreds of feet into a chasm below, while the eye catches the distant peaks of the mountains, blue from their distance. Continuing along thus till we arrive near Cresson, we pass through a tunnel, described before in this journal; from thence to Johnstown, where is the terminus of the canal. Here is a large establishment for manufacturing iron. We continue on down the Alleghanies, passing the battleground of Braddock's defeat, and arrive at Pittsburgh in 13 hours from Philadelphia.

Miscellaneous.

Rain on the Atlantic.—Lieut. Maury computes the effect of a single inch of rain falling upon the Atlantic Ocean. The Atlantic includes an area of twenty-five millions of square miles. Suppose an inch of rain to fall upon only one-fifth of this vast expanse. "It would weigh," says our author, three hundred and sixty thousand millions of tons; and the salt, which as water, it held in solution in the sea, and which, when that water was taken up as vapor, was left behind to disturb the equilibrium, weighed sixteen millions more tuns, or nearly twice as much as all the ships in the world could carry at a cargo each. It might fall in a day; but occupy what time it might in falling, this rain is calculated to exert so much force—which is inconceivably great—in disturbing the equilibrium of the ocean. If all the water discharged by the Mississippi River during the year were taken up in one migthy measure, and cast into the ocean at one effort, it would not make a greater disturbance in the equilibrium of the sea than would the fall of rain supposed. And yet, so gentle are the operations of nature, that movements so vast are unperceived."

How Much Should a Cow Eat.—Cows to give milk, require more food than most farmers imagine. S. W. Johnson, writing from Munich to the *Country Gentleman*, gives an interesting report of some experiments which have been made in Bavaria, from which the following is an extract:

"Our trials have confirmed the view that cows, to give the greatest possible quantity of milk, must daily receive and consume one-thirtieth of their live weight in hay, or an equivalent therefor. If more food be given it goes to the formation of flesh and fat without occasioning a corresponding increase in the yield of milk, but if on the contrary, less food be furnished, the amount and value of the milk will be greatly diminished."

Sowing Turnips.—Do not forget that about the last of July or forepart of August is a good time to sow a patch of common turnips. The soil for turnips should be moist, rich and mellow. Ground where corn has failed, or stands too thin will answer, if clear of weeds and well stirred. Or a piece of clean wheat stubble may be ploughed for the purpose; also patches in the garden where peas or early potatoes have been harvested. Turnip-seed is plenty and cheap in most stores where seeds are sold. It is best to buy enough at once to re-sow with in case dry weather or the fly should destroy the first sowing. The seed, if fresh, will keep good for three or four years.

Dubuque and Pacific Railroad.—The directory of this Company have published a circular in which they state that the first thirty miles of the Road will be open to Dyersville, Nov. 15th, 1856; and asking the counties of Delaware, Buchanan and Blackhawk to subscribe each $250,000 to the capital stock of the second division of the Road extending to Cedar river.—*Pella (Iowa) Gazette.*

The Monster Gun.—The boring of this huge gun, which is now being constructed at the Mersey Steel and Iron Company's forge, Liverpool, is all but completed. When finished the barrel will be 15 feet long; it will he 27 inches in diameter at the muzzle, or 84¾ inches in circumference; and 44 inches in diameter at the breech, or 138¼ inches in circumference. The bore will be 13 feet 6 inches long, and 13 inches in diameter. When completed it is estimated it will have cost the company, £3000 in material and labor alone. The gun is expected to be ready in about six weeks, and, with the trunnions complete, will weigh something over 24 tons. When finished it will be drawn through Liverpool by twenty or thirty of the Company's fine horses, and will ultimately be taken to Waterloo to be tested. The charge will be over 100 lbs. gunpowder, with one of the shots of 302 lbs. Mr. Clay, the manager of the works, is superintending the whole of the work.

Cause of Boiler Explosions.—Mr. Fairbairn was some time since appointed by the British Association of Science to make experiments in respect to ascertaining the cause of boiler explosions. He therefore had a boiler made so as to determine not only the proportionate strength of the boilers, but also in relation to their management. The boiler was 17 feet in diameter, with two internal tubes, 3 feet in diameter. It stood a pressure of 80 lbs on the square inch, but at 100 one of the tubes collapsed. The object was to discover a means of proportioning the strength of all the parts, because, as Professor Fairbairn believes, the majority of explosions arise from an excess of steam.

THE NEW RIFLE.—The peculiarities of a new rifle are, that it has a moderated groove, is a foot shorter than the United States rifle, and can readily be fired ten times a minute and from this to sixteen times by an expert hand. It is loaded at the breech, which receives the cartridge by an operation not unlike the opening of a pair of scissors, and with nearly the same facility. The small pocket pistols are calculated to throw a Minnie ball one hundred yards; a cavalry pistol, with a range of five hundred yards; a rifle, suitable for infantry, with a range of one mile; and a large gun will throw a two-ounce ball, or a small shell, one mile and a half. It is claimed for this new weapon that it will set on fire a house or a ship at a distance of nearly two miles. A good marksman has hit a target a foot square, at a distance of a third of a mile, 97 out of 100 shots, with this rifle; and it is said that it will throw a ball with sufficient force to perforate an inch board at the distance of a mile.

EFFECT OF THE ATMOSPHERE UPON MARBLE.—Professor Henry, of Washington, has been investigating—under the direction of the government—the causes which produce discoloration in marble. This is found to be owing to the previous absorption by the marble of water, holding in solution organic matter, together with the absorption of water from the mortar in which the stones were placed. To illustrate the process, Professor H. supposed a fine capillary tube with its lower end immersed in water, whose internal diameter was sufficiently small to allow the liquid to rise to the top to be exposed to the atmosphere. Evaporation would take place at the upper surface of the column, and new portions of water would be drawn up to supply the loss; and if this process were continued, any material which might be contained in the water would be found deposited at the top of the tube, the point of evaporation. If, however, the lower portion of the tube were not furnished with a supply of water, the evaporation at the top would not take place, and the deposition of foreign matter would be exhibited, even though the tube itself were filled with water impregnated with impurities.

IMPROVED RAILROAD AXLES.—An Irish mechanic has taken out a patent at the British office, for some improvement in axles and axle-boxes of engines and carriages in use on railways, which consist, first in fitting the cylindrical journals of axles with one collar only. instead of two, in order to reduce the friction; second, in constructing axle-boxes so that the main portion of the same, and the step or bearing for the axle journal, can be removed without lifting the carriage off the wheels. For this purpose the lower part of the axle-box is made to open at the top, in order to receive the step or bearing, and that portion of the box which forms the upper grease-chamber or hopper.

MANIPULATION OF STEEL AND IRON.—The difference between common iron and steel is in the carbon of the latter; but if iron be heated to a white heat and plunged into cold water, it becomes very hard. Mechanics take advantage of this in making axles and collars for wheel-work, for it is easily filed and turned in a soft state, and afterwards hardened. Moulders who make wheels are often embarrassed by the chemical property in iron, for as the metal is poured in the mould of moist sand the evaporation of water carries off the heat and cools the iron so quickly as to make it extremely hard. This is common in such portions of the metal as have run the greatest distance from the aperture of reception. The only remedy for this is to have the sand as dry as possible and numerous apertures.

New Method of Propelling Steamboats.—Some one in Sing Sing, proposes a method of propelling boats which, he states, entirely dispenses with paddle-wheels or shafts of any kind. Instead of the paddle-wheels or propellers, atmospheric air performs the business of propelling. Eight large bellows or air-pumps, making four sets, with two in each set, are placed within the boat and worked by the engine, each one of the two alternately with the other one. Pipes or trunks leading from each bellows or pump unite each set, and are carried to the bottom of the boat for a discharge of the air from the bellows, as follows:—Air is drawn into the bellows from above the boat, through pipes, by the action of the engine, and forced out through the bottom of the boat, backward, against the water—an open channel or curb being provided beneath the boat to guide the passage of the air upon each side, along the keels to the stern of the boat.

Progress and Extent of the Photographic Art.—The city of Paris alone contains 110 establishments exclusively occupied in the manufacture of materials used by photographists, and some of them employ one hundred and thirty workmen. There are seven hundred photographists in Paris, some of whom execute, ninety or one hundred portraits a day, the average being five portraits a day by each photographist, costing fifteen cents each, and sold at an average of $6. The stereoscope is also a branch of photography, in which one Parisian firm has invested $120,000.

Iron Rigging for Ships.—Two lines of ships of about eight hundred tons each, are running between Glasgow and Montreal. They are built of iron, and all their shrouds, stays, backstays—in fact, all their standing rigging is made of wire rope, with hemp centres like that used on some inclined planes of roilroads. This rigging is lighter than hemp of equal strength, holds less wind, and is not subject to stretch after being once set. Each shroud or stay terminates in a screw, by which it can be strained to any desired extent. An improvement in the hanging of the yards is also adopted, by which the yards are made to turn in their lifts, and roll up the sails upon them, from the deck.

New Surveying Instrument.—An apparatus for delineating sections of surveys for railroads, canals, &c., and for computing the solid contents of cuttings and fillings, has been invented. It consists of a standard three feet high, supported on a carriage having three wheels. From this standard is is supported a pendulum, the rod of which extends beyond the suspension point, and there actuates a series of levers as it vibrates. When it is desired to delineate a section of a railroad survey, it is drawn on the ground, in the proper line, and of course the undulations give a proportionate amount of vibration to the pindulum, which again actuates the series of peculiarly combined levers mentioned.

Plating Metals.—The London *Mechanics' Magazine* contains a description of the process recently patented in that city, for coating lead, iron or other metals with tin, nickle or alumina. The first part of the process consists in a mode of preparing a solution of the metal with which the articles are to be coated or plated, for which purpose the inventors proceed as follows:—For tin, they dissolve metallic tin by nitro-muriatic acid, and then precipitate the tin by an alkali, or alkaline salt, preferably by the ferro-cyanide of potassium; they then mix sulphuric acid or muriatic acid with the precipitated oxide of tin, to which is added a portion of water; these are boiled in an iron vessel with a small portion of ferro-cyanide of potassium; the liquor is then filtered, and the solution is completed.

Prof. Silliman on the Internal Heat of the Earth.—Prof. Silliman takes a decided position in favor of the theory that the centre of the earth is a fused mass of mineral matter. His chief argument is the phenomenon of volcanoes, which he calls the earth's chimneys and escape pipes. There are hundreds of them always in operation—hundreds are dormant; they are all over the earth and the seas surface, and they come from the bowels of the earth. The fiery sea in the centre of the earth—says the Professor—boils over the tops of its chimneys, and when these chimneys become choked, it forces new vents, breaking out even under the sea.

The Iron Discovery in Liberia.—Dr. Hays, the assayer to the State of Massachusetts, has examined specimens of the iron recently discovered in Liberia and subjected them to scientific analysis, with the following result:—Its chemical composition is pure iron, 98.40; quartz grains, magnetic oxide iron crystals, and zeolite, 1.60. There are no other metals present—a fact which prevents the placing of this iron in the class of meteorolites, and the absence of carbon in any form completely removes all doubt in regard to its being possibly of artificial formation.

An Improvement in Carriages.—An invention for making the connection of the pole or the shafts of a carriage more safe, has been exhibited in Concinnati. A small block of vulcanized India-rubber is inserted in the space, which, in what is called the clip or shackles of the shaft, intervenes between the clip-tire and the round head of the shaft, through which the connecting ball is passed. The block of India-rubber holds the ball in its place with a firm but elastic pressure, and entirely prevents it both from rattling or becoming loosened by motion. The application of this contrivance causes the play of the machinery of the carriage to be performed in perfect silence, and by keeping the bolt in its place, and preventing the nut screwed to it from loosening by motion, obviates the liability to accident.

New Material for Paper-Making.—At a meeting of the British Association, the Chevalier Clausson read a paper on *papyrus Bonapartea*, and other plants, which can furnish fibre for paper pulp. The straws of the cereals cannot be manufactured into paper pulp, unless cut before they are ripe, as the joints or knots of the stalks are so hardened by ripening, as to resist bleaching agents. Many grasses contain from thirty to fifty per cent. of fibre, not strong, but easily bleached; ground reeds and canes contain about an equal amount. After examining many kinds, the Chevalier turned his attention to the papyrus, which he found to contain about 40 per cent. of strong fibre, excellent for paper and very easy bleached. He also found that the common rushes contain 40 per cent. of strong fibre, which is a perfect substitute for rags, one ton of them containing more fibre than two tons of flax straw.

Compressible Life-Boat.—The new life-boat of Mr. Berdan, of this city, is a compressible boat, made of a strong frame of wood, thoroughly braced, covered with very heavy three-ply canvas, coated with India-rubber inside and out; a large air compartment, in the form of a cylinder outside the boat, passing from stem to stern, between the water's edge and the gunwale-bars on both sides, so as to prevent a capsize. The gunwale-bars and ribs are hinged to the keel, so that when the boat is not required for use the ribs can be thrown parallel with the keel, and thus allows the gunwale-bars or guards to fall down on both sides close to the keel, thus greatly compressing the boat.

Pennsylvania Coal.—The whole amount of coal sent to the market from the anthracite regions of Pennsylvania, during the year 1855, is now ascertained to be about six million four hundred thousand tons—an increase over 1854 of about seven hundred and fifty thousand tons. It is fair to estimate that this has brought money into the State at the rate of about three dollars a ton, so that Pennsylvania has realized from her anthracite coal mines over nineteen millions of dollars during a single year. The additional advantage she has gained in the immense amount of profitable labor this coal business yields to a large portion of her population, and the employment it gives to her public works, cannot be estimated.

Pennsylvania, in her coal deposits, possesses a means of wealth which begins to compare with the gold deposits of California. In value our coal product already exceeds that of either of our crops, wheat, corn or oats. Thirty years have built up this enormous and remunerative business. In the next thirty, with greater capital, new railroads and canals, more extended markets, vaster population, and increasing manufactures, the coal product of Pennsylvania bids fair to equal all her agricultural products and to surpass the annual yield of gold from California.—*Phila. Bulletin.*

Remarkable Watch.—At the French Exposition there was exhibited a watch which created much interest and admiration. It tells the name and day of the month, the equation of time, is a repeater, striking the minute as well as the hour; is a thermometer of tolerable accuracy, and winds itself up by the action of its own movement. The price of this ingenious piece of workmanship is 30,000 francs (over $5000.)

Gloucester and Marblehead Fisheries.—The fisheries of Marblehead were at one time the wonder of the whole country, such was their extent and importance. In 1812 the fishermen from that town almost manned our northern ships of war. The fisheries of Gloucester at the present time are at least *three times* as extensive as those of Marblehead were in her palmiest days. Gloucester employed last year 300 schooners, 20,000 tons burthen, and manned by 2980 men. Besides its catch of Mackerel, the largest in this country, (70,000 bbls.) Halibut, and other kinds of fish, it sent to market 98,000 quintals of Cod Fish. In addition to its great fisheries, Gloucester has 10,000 tons of shipping in the foreign and coasting trade, and last year had 207 arrivals from foreign ports, bringing, among other articles, 5000 hhds. molasses, 3,000 hhds. Sugar, 5000 cords Wood, and great quantities of Salt, Lumber, Coal, &c. Rockport, and the adjacent ports, are not included in these statistics, although they are in the district of Gloucester.

Peach Tree Borer—Tansy.—We saw it stated, two year ago, in an agricultural journal that these pests could be driven from peach trees by tansy.

We planted it at the roots of some ten or twelve trees, and not one of them have been disturbed, whilst others are injured badly. This spring we intend planting it around all.—*Newberry (S. C.) Sun.*

THE grain crop of Illinois for 1855 is said to be as follows:

Indian corn, bushels,	180,000,000
Wheat,	20,000,000
Oats, barley and rye,	50,000,000
	250,000,000

The estimate is believed to be under rather than over the actual result.

TYPE PUNCHES.—The Americans are, as a rule, a quick-witted, intelligent go-a-head-ative race. There are, however, occupations and pursuits requiring a union of skill and patience which this country is not calculated to develop. What would America be without her press, her newspapers, her books? Yet we are assured that there is not a man in this country who can cut a punch for book type. Certain it is that all the best book-type used or cast in this country is made from punches cut in London and Edinburgh. The Scotch, it is generally admitted, are the best cutters of letters; the Germans of music; the French of borders and ornaments. Those who are not familiar with those matters may be surprised to learn that it requires vastly more skill to make a set of steel punches with which to sink the *dies* or *matrice* for an alphabet, than to make the most finished chronometer. It is work requiring a peculiar organism. A punch-cutter, like a poet, an honest man, or a "dead shot," is *born*, not *made.—Phonographic Reporter.*

FORETELLING THE WEATHER.—In a cloudy morning, it is a matter of importance to the farmer to know whether it will be sunshine or showry in the afternoon. If the ants have cleared their holes nice, and piled the dirt up high, it seldom fails to bring a good day to farmers, even if it should be cloudy till ten or eleven o'clock in the forenoon. Spider-webs will be very numerous about the tops of the grass and grain some cloudy mornings, and fifty years' observation has shown the writer of this, that those little weather-guessers seldom fail in their predictions of a fair day.—*Southern Cultivator.*

"IMPORTS.—The value of imports from the first quarter of this year ending September 30th, is $72,021,950; exports, $60,599,290, or an excess of imports of $11,422,651. In the exports is the sum of $13,671,866 in specie." Jonathan can never get rich in this way.

HAVRE DE GRACE.—One hundred men and forty sloops belonging to Havre de Grace, Md., are employed annually, through the proper season, in supplying the market with wild ducks.

A NEW RIFLE.—Eli Thayer has commenced at Worcester, the manufacture of a new rifle, the invention of B. F. Joslin, an ingenious mechanic. The *Spy* says that this rifle is superior to "Sharp's," as it can be more rapidly loaded, and is simpler, safer and cheaper.

BRADY'S AMBROTYPES.—The reputation of Mr. Brady for his Daguerreotypes has been long established. No artist stands higher than he. The art of taking those pictures on glass is one of quite recent date, but is exceedingly beautiful. It was introduced here by Mr. Brady, who exhibits unrivalled pictures in this style. All lovers of the beautiful may occupy an hour very agreeably by a visit to his rooms, 359 Broadway.

HANDWRITING.—Mr. MacLaurin.—Various systems have been contrived for giving facilities in acquiring a good style of penmanship. Among others, we think very highly of one designed by Mr. MacLaurin. "The arrangement by which this is effected, consists in joining the end of an actual printed model OF A LETTER OR ELEMENT OF A LETTER, *over the surface of which the practice is had* to the beginning *of the same model* so as to secure *continuity and rapidity of movement while in the act of repeatedly overrunning the same surface;* thus Mr. MACLAURIN combines, in the same moment of practice, as must be done in actual writing, the two essential elements of good writing —rapidity and correctness of shape—and insures the result of making a rapid and fine writer of the pupil, which no other system ever did."

S. R. PARKHURST'S BURRING MACHINES.—Mr. Parkhurst has brought a suit against Mr. Israel Kinsman, and Calvin L. Goddard, on his patent for the Toothed Ring Burring Machines, in the United States Circuit Court, for the Southern District of New-York, and recovered against them a decree of \$23,220 $\frac{28}{100}$, for Burring Machines, made by them prior to the 11 of March, 1848. From this decree, Kinsman and Goddard appealed to the Supreme Court of the United States, and there he obtained a decree affirming the decree of the court below, and awarding him \$285 93 with costs.

The patent is still in force, and all persons and manufacturers, making, selling or using the said machines are liable therefor to the patentee.

The manufactory is at Nos. 203, 205 and 207 Center Street, New-York.

EXTRAORDINARY YIELD OF CORN FROM BROADCAST SOWING.—Major W. S. Mellinger, near Monongahela City, Washington county, informs us that about the first of May he sowed $1\frac{3}{4}$ bushels of corn (broadcast) on one acre of ground, intending to cut it up for fodder. Finding in the summer that it was growing about as rapidly as his corn planted and worked in the usual manner, he concluded to leave it to mature. When the time arrived for harvesting, he found it to yield 150 bushels of ears of good corn, and 5 tons of fodder. He says that he had besides about 30 bushel of nubbins, not counted in the above. If such results could always be anticipated from sowing broadcast, we see no reason why corn intended for feeding purposes should not be planted in this way or in drills, (which would be more scientific.) It would not do, however, to rely upon this kind of planting for seed, as we think there is no doubt but it would degenerate in its originality. We suppose, however, that no reliance could be placed upon this mode, except when a wet season like last summer would prevail, or when the land could be properly irrigated.—*Western Agriculturist.*

PASSUMPSIC RAILROAD.—The following statement has been overlooked in our copy drawer for some time, but it is too good to be lost. Mr. Fairbanks' enterprise is not confined to the manufacture of his scales, nor to his own business merely, but is visible in whatever he undertakes. The following is from a St. Johnsbury correspondent of the Rutland *Herald:*

The Passumpsic Railroad Company has achieved a financial exploit, the like of which has not been accomplished by any other railroad company in the State—no less than the payment of their mortgage bonds on the very day of their maturity. Seventy-five thousand dollars of these bonds fall due to-morrow, and the company has the cash in the treasury ready to pay them. Most of this is derived from the net earnings of the road, while the small balance requisite to make up the amount is procured by a temporary loan. Considering that the Company has paid its stockholders' dividends, amounting to 18 per cent. on the capital stock, this payment of the bonds must be regarded as evidence either of very good fortune or of very good management.

The Tables Turned.—There was a time when we were indebted to Europe for a portion of our finest machinery, and foreigners regarded American ingenuity as at its climax in the production of wooden nutmegs and clothes-pins. Latterly we have astonished them with our patent reapers and and six shooters, and, at last, they have come to acknowledge that our mechanics are entitled to rank with the best of their own. A further illustration may now be given. Yesterday a sloop arrived at this harbor, bringing from the Jersey shore 40 tons of iron machinery, constructed for use in Scotland, and the same is now being shipped direct to Glasgow. It is designed for the manufacture of India rubber goods, a process in which America is ahead of the world.—*N. Y. Jour. of Commerce.*

The Pneumatic Battery is an English invention. The gunpowder is is deposited in its proper place; a gutta-percha syphon tube extends upward from it, and descends into a gutta-percha vessel containing sulphuric acid; another gutta percha tube extending to any distance necessary for the safety of the operator, connects the vessel with an air-pump. A few grains of white sugar and chloride of potash are mixed together and placed on the top of the gunpowder, then the air-pump is worked, which forces a little sulphuric acid through the syphon, bringing it in contact with the sugar and chloride, and the chemical action produces an instant explosion.

Puddling Iron.—James Naysmith, the inventor of the steam hammer, has effected an improvement of great value in puddling iron. It consists in the disengagement of the carbon from the molten metal in the puddling-furnace by subjecting it to the action of currents of steam, introduced as near as possible at the lowest portion of the molten metal, thence diffused upwards, so as not only to mechanically agitate the metal, and thereby keep exposing fresh surfaces of it to the action of the oxygen of the air passing through the furnace, but also to remove the sulphuric and other deleterious substances in the iron, by thus making the oxygen of the air and also the hydrogen of the water combine with them, and carry them off in a state of acid gas.

A Wonderful Invention.—A correspondent of the *News*, writing from Austin on the 18th of January, thus notices a new invention:

"The great invention of the age is Gen. Chambers' terra-acqueous machine; it has been privately submitted to Committees of both branches of the Legislature, and I am credibly informed that it has been demonstrated to the entire satisfaction of all the members of both Committees, that the invention is a valuable one, and likely to create an entire revolution in the means of transportation. It is represented not to have any wheels, and not to slide, and yet, by some peculiar arrangement, will, on a graded road, make forty miles an hour. The road will be much wider than the rail track, but will require no iron, and possibly cost less than a double track. It will cross rivers or bays at the rate of ten miles per hour. This is a short description of a machine applicable to both land and water. The inventor claims that thes ame principle may be applied to machines intended solely for water transportation, and that the speed of some twenty miles per hour may be obtained. The invention may seem too extravagant for credience, but as some men who have acknowledged mechanical skill, pronounce it a valuable invention, I deem it worthy of notice."

PATENTS ISSUED IN 1855.—The whole number of patents issued in the year 1855 was 1,943. The number for additional improvements was 10, and the number of re-issues 49. The number for designs, included in the totals as above stated, 67. The " Pen and Lever" gives the residence of the parties to whom patents were issued during the year as follows :

New-York, 552 ; England, 15 ; Massachusetts, 304 ; France, 14 ; Pennsylvania, 237 ; Alabama, 13 ; Ohio, 133 ; Delaware, 8 ; Connecticut, 108 ; Tennesee, 8 ; New-Jersey, 82 ; Mississippi, 8 ; New-Hampshire, 47 ; Missouri, 8 ; Virginia, 45 ; Iowa, 7 ; Illinois, 45 ; South Carolina, 6 ; Indiana, 37 ; Georgia, 6 ; Maryland, 34 ; California, 5 ; District of Columbia, 33 ; Texas, 5 ; Vermont, 33 ; Florida, 4 ; Michigan, 29 ; North Carolina, 3 ; Rhode Island, 26 ; Canada, 3 ; Maine, 24 ; Prussia, 3 ; Kentucky, 23 ; Arkansas, 1 ; Louisiana, 17 ; Belgium, 1 ; Wisconsin, 15 ; Germany, 1.

LARGE SUSPENSION BRIDGE.—A new suspension bridge is to be built across the Monongahela, from the point to Jones' Ferry, at Pittsburg. The bridge is thirteen hundred and fifty feet long, and consists of two suspensions supported by piers at each end, and one in the river. The first suspension is 900 feet long—and the second 450 feet. The bridge at its culminating point is 112 feet from the water, as required by the Supreme Court in the Wheeling bridge case. The estimated cost of the bridge is $400,000.

LIGHT-HOUSE.—A revolving light for coast towers has been on exhibition recently in New-York which promises to supersede all the old lights. It is supplied by gas instead of oil ; revolves in such a manner as to indicate, by its flashes, the number of the tower, and consequently its position ; and its shadow may be seen, it is said, to the distance of twenty or more miles. If not too complicated for general use, it must prove a valuable improvement, as well as an ingenious invention in the matter of light-houses.

IMPROVED PLANE IRON.—Mr. H. Harris of N. Y., has invented an improved plane iron. In this improvement the cutting iron is placed inside of a thin piece of metallic case, open at both ends. This case with its cutter, is wedged into the plane in the common manner. The cutter is moved up and down within the case by means of a set screw. The thickness of the shaving is adjusted with the utmost facility, all that is required being simply to turn the screw.

IRISH AGRICULTURE.—A correspondent of the *London Times*, in commenting upon the progress of Irish agriculture, states that during the past fourteen years the value of farm stock in Ireland has increased from £22,000,000 to £35,000,000 sterling, and that the number of horned cattle has risen from 2,000,000 to 3,250,000, while the quality has correspondingly improved. Still, however, of the 20,000,000 of acres which Ireland comprises, only about one-fourth is under direct tillage, and fully one-third in pasture.

Georgia and her Railroads.—Georgia is nearly checquered by railroads, and yet she stands before the world with a debt only of two millions six hundred and forty-four thousand two hundred and twenty-one dollars against her on the balance sheet. No other State in the Union can point to the same amount of works of internal improvement, and show so small an indebtedness.—*Cotton Planter.*

The aggregate assessed valuation of property in New-Orleans this year is $846,860 less than of the year 1854.

Guano for Grass Lands.—We have recently conversed with two gentlemen—both practical men and of critical observation—who informed us that they have now fields in grass, and yielding good crops, laid down some five, six and seven years ago, manuring them solely with guano, and receiving little or no manuring since. If such were to be the general result, we might bring up our farms to a wonderful degree of fertility, because a third or half of the tillage land laid to grass with guano, and producing a fair crop for several years in succession, would enable us to appropriate all the manure of of the farm to the hoed crops. This would allow of very high manuring, and put the land in such condition as to produce heavy grass crops without the further application of guano. But we need further experiments, and test the guano upon its own merits, by putting the land into grass without a particle of any other manure.—*N. E. Farmer.*

Zinc Ore in New-Jersey.—The zinc ores of New-Jersey are believed to be the richest in the world. A single block of the red oxyde, weighing 16,400 lbs., obtained from the Sterling Hill mine, was exhibited at the London World's Fair, and surprised all who saw it. The American Zinc Manufacturing Company at Newark, N. J., which was established a few years since, promised to flourish; yet we have been informed that it has not been so successful as to compete with the Vielle Montague Company, at whose works the smelting is conducted with great skill. Its success, however, is simply a question of time, where the ore is rich and abundant and fuel plenty, as is the case in our country.—*Scientific American.*

Cheese-Making.—A few months ago, I visited a lady friend in the country; her table was constantly supplied with most delicious cheese, of her own making. I asked as a particular favor, that she would communicate to me her peculiar method of making it, and wherein she differed from others. She replied that she followed the method that she had been taught generally, prepared the rennet in the same way, but felt sure that she had discovered the reason why cheeses were strong, both to the taste and smell, which consists in the single circumstance of putting the curd to press, *warm.* She did not use any artificial means to cool the curd, but after it had been chopped and scalded, allowed it to remain spread upon the cloth until it was as cool as the surrounding atmosphere, and thus put it to press.—*N. E. Farmer.*

Juice of the Water-Melon.—A correspondent of the *Prairie Farmer* presents the following method of using water-melons:

I endeavor, every year, to raise a good water-melon patch. They are a healthy and delightful fruit, I think. I cultivate the icing variety; plant early in May, and again towards the end of the month, so that they may come in succession. When they commence ripening, we commence cutting, and use them freely during the hot weather. When the weather becomes cool in September, we haul a quantity of them to the house, split them open, with a spoon scrape out the pulps in a cullender, and strain the water into vessels. We boil it in an iron vessel, then put in apples or peaches, like making apple-butter, and boil slowly until the fruit is well cooked, then spice to taste, and you have something that most people will prefer to apple-butter or any kind of preserves. Or the syrup may be boiled without fruit, down to molasses, which will be found to be as fine as any sugar-house molasses. We have made in a fall as much as ten gallons of the apple-butter, if I may so call it; and molasses which has kept in fine condition until May.

Salt and Guano.—Recent experiments, as stated in the *Mark Lane Express*, go to show that common salt is a valuable addition to all applications of guano to the soil. It not only has a tendency to give strength and hardness to the straw, (which guano weakens,) but prevents the loss of ammonia, which is constantly going on even in a dry atmosphere. M. Barral, the editor of a French Agricultural journal, says: "We left in the open air, in plates, during 15 days, equal weights of the pure guano and the guano previously mixed with salt. At the end of that time we examined anew the amount of nitrogen, and found that the pure guano had lost 11.6 per cent. of its nitrogen, while that mixed with salt had only lost 5 per cent." The *Express* recommends the use of refuse salt from fish packers for this purpose, and any refuse salt would probably answer the purpose.

Wealth of Atlantic Cities.—The wealth concentrated at the great commercial points of the United States is truly astonishing. For instance, one-eight part of the entire property of this country is owned by the citizens of New-York and Boston. Boston alone in its corporate limits owns *one-twentieth* of the property of this entire Union, being an amount equal to the wealth of any three of the New-England States, except Massachusetts. In this city is found the richest community, *per capita*, of any in the United States. The next city in point of wealth, according to its population is Providence, R. I., which city is one of the richest in the Union, having a valuation of fifty-six millions, with a population of fifty thousand. The bare increase per annum of the wealth of Boston is equal to the entire valuation of many of the minor cities, such as Portland, Salem, New-Bedford, Buffalo, Chicago, Louisville, &c.

An Important Railroad Project.—The Oswego *Times and Journal* contains a full report of a meeting held in that city to secure the building of a railroad, six feet guage, from Oswego to Syracuse—35¼ miles. From Syracuse to Binghamton, on the New-York and Erie Railroad, there is a road already in operation, so that it needs but the building of 35¼ miles of road to connect Lake Ontario with New-York by a broad guage road, requiring no change of cars or transhipment of merchandise. At the meeting, speeches were made by the Hon. Daniel S. Dickinson and others, and the right kind of spirit seemed to prevail. The estimated cost of the road is $761,106. An able report was presented by W. B. Gilbert, Esq., showing the importance of the road and its relations to western commerce.

To Fix Carpets on Floors.—A correspondent in writing from Florence says:—"Here iron rings are fastened in the floors, when the carpets are laid, and they have large hooks in the binding, for which these rings are eyes; so that there is no taking out and nailing in of tacks, and carpets are raised and laid as noiselessly and easily as bed covers.—*Family Herald.*

WHALE FISHERY.—From several sources we gather the following items in regard to the whale fishery, interesting to those who still burn oil in their lamps. The total number of vessels employed in 1855, was 585 ships and barques, 21 brigs and 20 schooners. Of the above vessels there is owned in the State of:

	Ships.	*Brigs.*	*Schs.*	*Tonnage.*
Massachusetts,	475	17	23	160,840
Rhode Island,	20			6,736
Connecticut,	50	3	6	21,067
New-York,	31	1		10,498
	585	21	29	199,141

The oil brought into the United States in 1855 by this fleet was 72,649 bbls. sperm, 184,015 bbls. whale oil, and 2,707,500 lbs. of whalebone. The prices have steadily increased; sperm being about \$1 77 per gall., at wholesale, and whale 71 cts. In 1844, sperm oil was 63 cts. and whale oil 31 cts. per gallon.

A GREAT RAILWAY.—"The whole number of cars and locomotives on the Erie Railroad," says the *Newark Advertiser*, "is 3,168, which, if coupled together in one train, would reach a distance of twenty-one miles, and be able to carry 150,000 persons in one day from New-York to Lake Erie. The company has in its employ not less than 5,000 persons, whose pay, per month, is \$125,000, or \$1,500,000 per year. There are single miles on this road whose grading cost not less than \$170,000 each; and one bridge near the villiage of Susquehanna, built upon seventeen stone arches, cost \$320,000. The number of miles from Jersey City to Dunkirk, is 459, and is run over by the evening express train in sixteen hours. The company has in its service six printing presses, which are constantly at work printing tickets that are never used but once, blanks, &c."

OKRA.—This is another plant not yet extensively cultivated at the North, but which deserves a high popularity. It is much cultivated in the southern and middle States, chiefly as an addition to soups. Its long green pods, full of seeds, and abounding in mucus, form the chief ingredient in the famous "gumbo soup." It also makes an excellent stew, cooked as snap beans. The plant grows some six feet high, has a beautiful leaf and flower, and is worthy of its place in the garden for ornamental purposes. The flower resembles that of the cotton plant.

The seed should be sown in drills, two and-a-half to three feet apart, early in May. Thin out the young plants to six inches apart, and hoe frequenly, to secure rapid growth. The pods are only good in the green state, when full of mucilage. We last year secured seeds of this plant, from the Gaboon River, in Africa. They came up well, and matured perfectly. The pod is much shorter and thicker than the variety in common use. The seeds when perfectly ripe, are said to make an excellent coffee, burnt and ground like the berries of the coffee plant. All who affect soups should give the Orka a place in their vegetable garden. The plant needs no forcing, is hardy, and is grown as easily as sweet corn.—*Am. Agriculturist.*

NEW BOOKS.

Library of Standard Letters. Vol. 1. Letters of Madame de Sévigné. One volume, 12mo. New-York: Mason Brothers. Edited by Mrs. Sarah J. Hale.

This volume is the first of a series which certainly commences well. A volume of letters written by so distinguished a lady cannot fail to contain much that is valuable in history, and which can be found nowhere else. It is the filling in of which history is the woof. The plan is most excellent, and this first volume is worthy of extensive patronage.

Library of Standard Letters. Vol. 2. Lettees of Lady Mary Wortley Montague. In one vol., 12mo, 408 pages. New-York: Mason Brothers.

This volume, edited by Mrs. Sarah J. Hale, is the second of the series, the first of which we have just described. The present issue follows the text of the edition published by her great grandson, Lord Wharncliffe, as the best authority. In this, no doubt, the editor has done wisely, and the public may place confidence in the general accuracy and originality of the letters of this eminent woman; and they are certainly very entertaining. The work is well executed by the enterprising publishers.

The Mechanic's, Machinist's and Engineer's Practical Book of Reference, and Engineer's Field Book. By Chas. Haslett, Civil Engineer. Edited by Chas. W. Hackley, Professor of Mathematics in Columbia College, N. Y. New-York: Stringer & Townsend. 1856.

This book accidentally has laid over a month, but this will do no harm. It will bear the extended examination without injury. It is a wonderful condensation of all sorts of valuable tables, on the subjects suggested by the title, with rules, problems, formulas, with various estimates, etc., which "will excite surprise at their number, novelty and value to every one." It is done up in pocket-book style, and on thin paper, and is very well executed.

The Suffering Savior; or, Meditations on the Last Days of Christ. By F. W. Krummacher, D.D. Gould & Lincoln, Boston. 12mo, 474 pages.

This learned divine is distinguished for his richness of ideas and his graceful style. This volume is highly evangelical. It exhibits in an eminent degree the peculiar genius of the author which is German, and not English or American, but it loses none of its interest from its national characteristics.

The United States Railroad Directory, for 1856. Compiled by Benjamin Homans. To be continued annually. B. Homans, 163 Pearl street, New-York. pp. 211.

Mr. Homans has placed in our hands a handsome volume of the 8vo size, containing the lists of officers in the numerous railroad companies of this country. An alphabetical list of all the railroads of the country—more than 500 in number—is annexed. It is next to impossible to avoid all mistakes and omissions in a new work like this, but it will be found exceedingly convenient for reference, and well worth a place in many an office and counting-room. Mr. H. proposes to add many useful chapters to future volumes.

The Flower Garden; or, Breck's Book of Flowers. Boston: J. P. Jewett & Co. 1856.

This is an enlarged and improved edition of what we have before noticed. Mr. Breck has added many new flowers and shrubs, and has a chapter on Parlor Plants.

More than fifty pages have been added to the work, making it the most complete and practical work on that subject.

Bibliotheca Sacra for April. E. A. Park and S. H. Taylor, Editors. Andover, Mass.: W. F. Draper.

Our readers need not be informed of the high rank which this quarterly holds among the religious and literary journals of this country. Whatever may be said of the doctrines it inculcates, or the soundness of its opinions on the great questions in ethics which it discusses, for talent and learning it unquestionably stands at the head of the list of journals of that description. The editors are assisted by many of the ablest writers in the country. $3 00 a year, *if paid in advance;* 225 pages in each number.

Peter Gott, the Cape Cod Fisherman. By J. Reynolds, M.D. Boston: J. P. Jewett & Co. 1856. 280 pages, 12mo.

This is a plain, unpretending narrative of a fisherman's life, showing his perils and hardships. It seems to be a history of real life. Mr. Gott was a prisoner in Dartmoor prison during the war of the revolution The book is very handsomely got up.

Both these volumes are for sale by Sheldon, Lamport & Co., New-York.

NEW MUSIC.

"The Blind Orphan Boy," a ballad, by J. Wood.

"The Footsteps of Angels." Poetry by Prof. Longfellow, music by Emma Harding.

"Bird's Complaint." A song by Benjamin Jepson.

"Beyond the River," song by Jno. H. Pixley.

"Rose of Mississippi," waltz by S. Markstein.

And "The Popular Quadrilles," by James Beelock.

25 cents single. Six pieces sent by mail, free of postage, for one dollar. Horace Waters, publisher, 333 Broadway.

Among the splendid pieces recently published by Wm. Hall & Son, we notice "Rayons" and "Ombres," ballades, by Gottschalk,—one of a series under the name of "La Serenade." It is very beautiful.

GENERAL AGENCY.

We proffer our services as General Agent to the readers of our journal, for the transaction of any business they may commit to our care. We will purchase seeds, tools, implements, plants, trees, musical instruments, etc., etc., and forward promptly. Books will be forwarded to any given address, postage paid, on the receipt of the published retail price. Schools, Sabbath-schools, etc., will be supplied with libraries. We will forward printed lists of any publisher that may be ordered, if a postage stamp is enclosed to us. Teachers also will be furnished.

Patents.—We especially offer our services in making drafts of machines and securing patents for any new invention.

Address. M. P. Parish,
Office of *The Plough, the Loom, and the Anvil.*

List of Patents Issued

FROM TERMINATION OF PREVIOUS LIST TO APRIL 8.

Vincent Barnes, of Washington, improvement in railroad car brakes.

La Fayette Blair, of Bainsville, O., improved hot blast furnace.

Wm. Butler, of Little Falls, N. Y., improvement in valves for lock gates.

Wm. L. Carter, Marietta, Pa., improved ore washer.

Jno. H. Cheever, Boston, improvement in the manufacture of India rubber belting or banding.

Clinton W. Clapp, Nappinger's Falls, N. Y., improved bench clamp.

Edwin B. Clement and Silas G. Willie, Barnet, Vt., for improvement in washing machines.

Charles Davenport, Watertown, Mass., improved apparatus for heating buildings by steam.

Henry R. David, N. Y., improvement in sewing machines.

Nancy Davy, executrix of Edward Davy, deceased, late of Crediton, England, improvement in machinery for preparing hemp and flax. Patented in England Nov. 13, 1852.

Robert D. Dwyer, Richmond, Va., improved apparatus for preventing horses in carriages from falling.

R. Eickemeyer, Yonkers, improvement in parallel rulers.

Francois Garein, Phiidelphia, improvement in preparation of tallow for making candles.

Peter C. Guion, Cincinnati, improvement in spark conductors for locomotive trains.

R. Gould, Whitewater, Wis., improvement in tanning.

Henry Hays, Quincy, Ill., improvement in carriage tops.

Samuel A. Kinsman and Samuel Field, Barre, Mass., improvement in machinery for ironing hats.

Israel S. Love, Beloit, Wis., improvement in harvest cutters.

Horatio N. Macomber, Lynn, Mass, improved spirit blow pipe.

Jacob. J. Mann, Westville, Ind., improvement in mowing machines.

Jno. C. Morris, Cincinnati, improved method of bending wood.

Frederick Newbury, Albany, improvement in revolving fire arms.

Henry Nycum, Uniontown, Pa., improvement in carriage hubs.

Leonard Phleger, Tamapqua, improvement in steam boilers.

Benj. T. Roney, Philadelphia, improvement in grain and grass harvesters.

Edwin P. Russell, Manlius, improvement in straw cutters.

Job Sands, Sand's Mills, N. Y., improvement in limekilns.

Richard Savery, Steubenville, Ohio, improvements in puddling iron.

Theodore Sharp, North Greenbush, improved method of straining mulley saws.

Wm. F. Shaw, Boston, improvement in apparatus for heating or cooking by gas.

Alfred E. Smith, Bronxville, improved boxes for axles.

George N. Stearns, Syracuse, mortising and boring machine.

Mathias Soverel, Orange, N. Y., improved mode of securing thills to axles.

Abraham Steers, Medina, improvement in apparatus for making extracts.

Robert L. Stevens, Hoboken, improvement in means for reducing the friction of slide valves in steam engines.

Wm. Mt. Storm, New-York, improvement in revolving fire arms.

Henry D. Stover and Jas. W. Bicknell, Boston, machine for cutting irregular forms.

Pliny Thayer, Lansingburg, improvement in harvester cutters.

John B. Thomas, Cincinnati, improved plane stock.

Erastus Tracy, Troy, improved wrench.

A. F. and C. M. H. Warren, Brooklyn, fountain pen.

Wm. Wells and Mellin Bray, Turner, Me., improved machine for cutting out and "skiving" the soles of boots and shoes, and also for cutting the "rands" therein.

Edwin Wright, Philadelphia, improved dovetailing machine.

Abner Whitley, Springfield, O., improvements in grain and grass harvesting.

Moses Woodbury, Boston, improved faucet.

Elisha Pratt, Salem, assignor through others to himself and Thos. P. Pengree, of same place, improvement in leather splitting machines.

Chas. C. Reed, Philadelphia, assignor to himself, Wm. S. Reinert, and Jacob Schnell, of same place, improvement in manufacture of umbrella ribs.

Lorenzo Stratton, Feltonville, Mass., assignor to himself and Luther Hill, Stoneham, Mass., improvement in the manufacture of boot and shoe soles.

Wm. C. Watson, New-York, assignor to Ira W. Gregory, of same place, improvement in sewing machines.

Chas. Schmidt, Union, Me., improved method of boxing carriage wheels.

Homer Anderson, of Garrattsville, N. Y., for improvement in welding steel.

Lewis C. Ashley, of Troy, N. Y., for improved bench plane.

James B. Blake, of Worcester, Mass., for improved apparatus for roasting and broiling by gas.

Samuel Blackwell, of Middlesex county, England, for improved dumb jocky, the cross and saddle tree being made out of gutta percha. Patented in England March 9, 1853.

Charles Brahomite, of New-York, N. Y., for improvement in hermetically sealing preserve cans.

John Broils, of Madison county, Ala., for improvement in hernial trusses.

Thomas D. Burrall, of Geneva, N. Y., for improvement in grain and grass harvesters.

Wm. Butler, of Little Falls, N. Y., for improvement in making chiled castings.

Thomas Cope, of Detroit, Mich., for improved carriage coupling.

Hiram Clarke, of Princeton, Mass., for improvement in thrashing machines.

Samuel Comfort, Jr.. of Morrisville, Pa., for improvement in mowing machines.

Henry N. DeGraw, of Piermont, N. Y., for improvement in machines for corking bottles.

Calvin Dodge, of Pittsburg, Pa., for improvement in fire-places.

Eliakim R. Forbush, of Buffalo, N. Y., for improvement in grain and grass harvesters.

Jacob Frick, of Philadelphia, Pa., for improvement in feed and blow-off apparatus for steam boilers.

John German and C. B. Hoyt, of Oriskany Falls, N. Y., for improvement in seeding machines.

R. Gleason, Jr., of Dorchester, Mass., for improved inkstands.

Robert Griffiths, of Alleghany City, Pa., for improved nut machine.

Horace L. Hervey, of Quincy, Ill., for improvement in harvester cutters.

A. C. Hitchcock and C. H. Amidon, of Greenfield, Mass., for improved moritising tool.

Daniel L. Hurlbut, of Utica, N. Y., for improved arrangement of rotary plaining knives.

Joshua K. Ingalls, of Brooklyn, N. Y., for improved illuminating grating.

Edward R. Kernan, of Pittsburg, Pa., for improvement in processes for making transparent window shades.

Lucius Leavenworth, of Freemansburg, N. Y., for improvement in churns.

A. Lempche, of Pleasant Mount, Pa., for improved self-regulating wind wheel.

Jno. Lippincott, of Philadelphia, Pa., for improvement in percussion projectiles.

James B. Mabury, of Jeffersonville, Ind., for improvement in stoves.

Ebenezer Mathers, of Morgantown, Va., for improved machine for felling trees.

John McCrone, of Thompsonville, Conn., for improvement in cone tubes for winding frames.

Richard McMullin, of New-Brunswick, N. J., for improvement in process for making elastic rubber cloth.

Elijah Morgan, of Morgantown, Va., for improvement in seed planters.

Geo. W. Parker, of Fitzwilliam, N. H., for improved machine for making clothes pins.

Merritt Peckham, of Utica, N. Y., for improvement in sectional fire pots for stoves and furnaces.

David R. Perkenpine, of Philadelphia, Pa., for improvement in boxes of railroad car axles.

Nathan Post, of East Cleveland, O., for improvement in harness bucklirs.

James Rodgers, of New-York, N. Y., for imment in omnibus registers.

Chas. A. Schults, of Chicago, Ill., for improvement in machine for sawing marble in taper form.

Phillip Schwikardt, of Brooklyn, N. Y., for mode of producing designs on wood.

John R. Sees, of New-York, N. Y., for improvement in adjusting the brasses connecting rods.

Lambert Alexander, New-York, improvement in propelling vessels.

Gustav. A. Blitthowski and Frederick Hoffman, N, Y., improvement in needle guns.

Charles H. Key, Baltimore, Administrator of Simon F. Blunt, deceased, in detaching boats from their tackle.

Adolph and Felix Brown, New-York, machine for cutting loaf sugar.

Ambrose E. Burnside, Bristol, R. I., improvement in breech-loading fire-arms.

Abraham Coats, New-York, improvement in regulating the flow of oil to the wick in Carcel lamps.

Geo. H. Corlis and Elisha Harris, Providence, improvement in presses for punching.

Charles W. Davis, Newark, improvement in fruit or grain dryers.

Josephus Echols, Columbus, Ga., improvement in stone drilling machine.

Calvin Fletcher, Cincinnati, Ohio, improvement in paddle wheels.

John S. Gallagher, Jr., Washington, improvement in water coolers and filters.

Jesse Gilman, Nashua, improved lath machine.

Stephen J. Gold, New-Haven, improvement in steam radiator clocks.

Halvor Halvorson, Boston, assignor to F. R. Slocum and Robert Watkinson, Hartford, Conn. improved miniature case.

J. H. Hoard, Providence, improved pile driver.

Wm. W. Hubbell, Philadelphia, improvement in explosive shells.

William Jenks, Alexandria, improvement in hand corn-planters.

Charles Jones, Brooklyn, improvement in ash sifters.

Konrad Keller, N. Y., improvement in fan rocking chairs.

Charles H. Lewis, Malden, Mass., improvement in spring platform for railroad cars.

N. Murphy Lowe, Boston, improved piano-forte action.

Azrel S. Lyman, New-York, improved method of cooling and ventilating rooms, etc.,

J. W. Mahan, Lexington, Ill., improved carpenter's bench.

Jos. Miller, Boston, machine for sweeping streets.

Edwin P. Monroe, Charlestown, Mass., improvement in gun locks.

Henry R. and James L. Plimpton, Hamden Co., Mass., improvement in wardrobes, bedsteads combined with other furniture.

Lucius Paige, Cavendish, Vt., improvement in the levers of railroad car brakes.

Horatio O. Perry, Buffalo, improved valve motion for oscillating engines.

Cyrus Roberts and John Cox, New-Hope, Va., improvement in grain separators.

J. B. Reyman, Salem, Ind., field fence.

James Rowe, Tampa Bay, portable field fences.

J. M. Sampson, Waynesville Ill., improved post driver.

Albert Spencer, New-York, improvement in machines for sizing hat bodies.

Solon Staples, Bath, Me., improved clamp for planking ships.

O. M. Stillman and Stephen Wilcox, Jr., Westerly, improvements in steam boilers.

Jno. Stull, Philadelphia, improvement in syringe bottles for medical agents.

Andrew J. Sweeney, Wheeling, water meter.

Wm. Thomas, New-York, improved cock for steam, water, &c.

Wm. H. Towers, Philadelphia, improvement in "creepers" to prevent slipping on ice, &c.

Wm. Warwick, Pittsburg, improvement in wrenches.

A. W. Washburn, Yazoo City, improvement in cotton seed planters.

James H. Bennett, Bennington, Vt., improved butter workers.

Samuel Beaumont, New-York, self-setting rat trap.

John A. Bailey, Detroit, improvement in machines for sawing marble in obelisk form.

Micajah Crenshaw, Springfield, Texas, improved cultivating plow.

Samuel Green, Lynn, improvement in tools for figuring morocco.

John Haselton, Goffstown, N. H., water wheel.

Isacchar A. Heald, Springfield, Mass., improvement in machines for sawing marble in obelisk form.

Philip Scrag, Washington, D. C., improved mold for earthen vessels, pots, &c.

D. H. Thompson, Fitchburg, Mass., improvement in machines for raking and loading hay.

A. W. Washburn, Yazoo City, improvement in cotton hillers.

A. W. Washburn, Yazoo City, improvement in cotton scrapers.

Abner Whitney, Springfield, O., improvement in grain and grass harvesters.

Justus Webster, Boston, and Samuel H. Folsom, Lowell, improved printing cylinder.

Thos. C. Bell, Walpole, assignor to Nathaniel Sampson, Shelburne, Mass., improvement in scythe fastening.

Jno. H. Manny, Rockford, assignor to Peter H. Watson, Washington, D. C., improvement in harvester cutters.

Henry. S. Hopkins, Providence, assignor to himself, Benj. W. Hendrick, East Greenwich, and Joseph C. Peckham, Providence, improvement in means for regulating variable cut-offs for steam engines.

Halsey D. Walcott, Pawtucket, assignor to himself and Milton E. Walcott, same place, improvement in wrenches.

Richard Hunt, Freeport, Ill., improvement in horsepower.

Nathan Ames, of Saugus, Mass., for improved self-inking stamps.

Edward J. Baker, of Baltimore, Md., for lubricator.

Ben. G. Ball, of Nashua, N. H. for improved bench vice.

Wm. F. Brooks, New-York, N. Y., for improvement in making seamless metal tubes.

John W. Brown, of Mt. Savage Iron works, Md., for improvement in rolling railway bars.

Samuel Comfort, Jr., of Morrisville, Pa., for improved apparatus for removing grains from harvesters.

Hezekiah Conant, of Hartford, Conn., for improvement in breech-loading fire-arms.

F. D. Dumpfel, of Philadelphia, Pa., for improvement in steam boilers.

Augustus Elliott, of San Francisco, Cal., for improvement in grain harvesters.

Henry English, of Baltimore, Md., for improved hydrant.

George F. Folsom, of Roxbury, Mass., for improved printing press.

Wm. Fuzzard, of Charlestown, Mass., for improvement in cloths for felting hat bodies and other articles.

William P. Gage, of Saratoga Springs, N. Y., for improvement in journal box for railroad car axles.

Geo. G. Griswold, of Chester, Conn., for improved method of manufacturing augers.

Jas. Harrison, Jr., of Milwaukie, Wis., for improvement in automatic steam whistles in locomotives.

Albert V. Hill, of Hinsdale, N. Y., for improvement in slide rests.

Edward Joslin, of Keene, N. H., for improved mortising machine.

George W. La Baw, of Jerscy City, N. J., for improved life boat.

Vincent D. Lent, of Chelsea, Mass., for improved form for spiral springs.

Stimmel Lutz, of Philadelphia, Pa., for improvement in spark arresters.

Robert Maffett, of Bradford, Pa., for improvement in method of converting reciprocating into rotary motion.

J. W. Mahan, of Lexington, Ill., for improved mitering bench.

Thomas E. Marable, of Petersburg, Va., for improved machine for gathering seeds or grain in the field.

Philip McManus, of Brunswick, N. Y., for improvement in wrenches.

Francis Peabody, of Salem, Mass., for improved wind wheels.

Asahel Pierpont, of New-Haven, Conn., for improvement in soldering wire ferrules.

Calvin A. Richardson, of Waterloo, Me., for instrument for stirring straw and husk beds.

Wm Rodgers and Abraham Bannon, of Bellefonte, Pa., for improvement in forge fires.

John R. Lees, of New-York, N. Y., for improvemethod of varying the stroke of feeding pump for steam engines.

John Sitton, of Williamston, S. C., for improved wheelright machine.

H. C. Spalding, of New-York, N. Y., for improved lathe.

Ezra M. Stratton, of New-York, N. Y., for improvement in axle boxes for carriages.

Wm. Stephens, of Pittston, Pa., for improvement in valve gear of oscillating engines.

S. J. Tufts, of Maineville, Ohio, for improved field fence.

George W. N. Yost, of Pittsburg, Pa., for improvement in grain and grass harvesters.

Alvin Barton, of Syracuse, N. Y., assignor to himself, A. R. Morgan and J. M. Parsons, of same place, for improvement in door springs.

George W. O. Huygens, of St. Louis, Mo., assignor to himself, Chas. Benden, and D. F. Tiedemann, of same place, for improvement in bridges.

John R. Harrington, of Dayton, Ohio, for machine for making carpet lining.

Ferdinand Klein, of Newark, N. J., for improved skates.

Wooster Smith, of South Thomaston, Me., for fishing lead.

Designs.—Nicholas Muller, of New-York, N. Y. for design for clock case fronts.

Samuel H. Ransom, of Albany, N. Y., for design for six plate stoves.

Samuel H. Ransom, of Albany, N. Y., for design for parlor stoves.

Samuel H. Ransom, of Albany, N. Y., for design for stove plates.

Samuel H. Ransom, of Albany, N. Y., for design for cooking stoves.

Samuel H. Ransom, of Albany, N. Y., for design for elevated oven cooking stoves.

Stephen V. Appleby, of New-York, N. Y., for improvement in machines for drying wet grain, &c.

Aaron Arnold, of Troy, N. Y., for improvement in inclosing propeller shafts in keels.

E. B. Bigelow, of Boston, Mass., for improvement in looms.

John Plant and Chas. G. Ball, of Washington, D. C., for improvement in cooking ranges.

Edward J. Baker, of Baltimore, Md., for improved waste attachments to hydrants.

Jason Barton, of Middle Haddam, Conn., for improvement in pressure bells.

G. H. Lindner, of Hoboken, N. J., for improvement in door fasteners.

Nathan Berham, of Hartford, Conn., for improvement in fastening door knobs.

George E. Burt, of Harvard, Mass., for improved machine for combing seed off broom corn.

George Buckel and Edward Dorch, of Monroe, Mich., for improvement in shot guns.

Calvin Carpenter, Jr., of Providence, R. I., for improvement in magneto-electric machines.

Thomas Crane, of Fort Atkinson, Wis., for improvement in rotary pumps.

John J. Crooks, of New-York, N. Y., for improved sash fastener.

Robert B. Fellows, of Shelburne Falls, Mass., for improved tempering furnace.

Geo. W. Flanders, of Lynn, Mass, for improved flood gate.

Orlando V. Florey, of Yellow Springs, O., for improved vise.

A. W. Fox, of Athens, Pa., for improved machine for planting felloes.

Wm. S. Gale, of New-York, N. Y., for improvement in piston valves for steam boiler regulators.

Wm. P. Gamble, of Philadelphia, Pa., for improvement in machines for polishing leather.

Wm. Greenleaf, of Greenfield, Ohio, improvement in carriage coupling.

Charles M. Gould and Charles B. Lamp, of Worcester, Mass., for improvement in sub-marine lanterns.

Samuel Harris, of Springfield, Mass., for improvement in machine for sifting coal and other articles.

Augustus A. Hayes, of Boston, Mass., assignor to Geo. Ashm an and Charles Phelps, of Springfield, Mass., for improvement in process for extracting oil from cotton seed.

Wm. M. Henderson, of Baltimore, Md., for improved arrangement of slide valves and means for operating them.

Liveras Hall, of Charlestown, Mass., for improved machine for tapering whalebone for whip handles.

Henry W. Hunt, of Peeksville, N. Y., and John Sands, of Greenwich, Conn., for improvement in machines for mixing lime and sand for mortar.

Robert T. Knight, of Philadelphia, Pa., for improvement in the construction of envelopes.

Wm. Murer, of New-York, for improvement in locks.

Earl Parker and Wm. Reynolds, of East Hartford, Conn., for Automatic thermohydro-elaio pheumatic valve.

Andrew Patterson, of Pittsburgh, Pa., for improvement in door locks.

Sanford S. Perry, of the county of Charles City, Va., for improvement in charring wood.

H. H. Smith, of Cincinnati, O., for improved governor valve for steam engines.

P. H. Wait, of Sandy Hill, N. Y., for improvement in the felt guide of paper of machines.

Edward Whiteley, of Boston, Mass., for imrovement in boilers for cooking by steam.

Anson Walcott, of East Bloomfield, N. Y., for improved method of treating surface springs.

Edwin Young, of Philadelphia, Pa., for improved slate frame.

Wm. W. Cotton, of New-York, N. Y., for machine for making envelopes.

Jacob W. Goodwin and Moses C. Hawkins, of Edinborough, Pa., for improved method of regulating pumps, by wind wheels,

John D. Heaton, of Dixon, Ill., for improved arrangement of valves for hydraulic engines.

Chas. Harrison, of New-York, N. Y., for basin cocks.

Jesse Lincoln, of Uniontown, Pa., for improvement in machines for sowing seed broad cast.

E. P. Lacey, of Rochester, N. Y., for improvement in corn planters.

Michael Nickermann, of Pittsburg, Pa., for chuck for lathes.

Robert G. Pine, Sing Sing, N. Y., for improved machine for polishing buckles.

Martin Snow, of North Bridgewater, Mass., for improved spoke shave.

Edward J. Updegraff, of York, Pa., for improved machine for bending wood.

Jno. Demarest, of Mott Haven, N. Y., asignor to "The J. L. Mott Iron Works," of same place for improved core bar for pipe moulding.

Royal Hatch, of Stafford, Vt., assignor to Henry C. Hatch, of same place, for improvement in wash boards.

Julius Bevin, of Unadilla Forks, N. Y., assignor to himself and Samuel N. Stillman of same place, for improvement in boxes for axles.

R. M. Evans, of Laconia, N. H., assignor to himself and Chas. S. Gale, of same place, for improvement in railroad car brake.

Thomas Priestly, of Saxonville, Mass., assignor to Daniel Holden, of same place, for improvement in oil cans.

John Sawyer, of Fitchburgh, Mass., assignor to himself and Thomas Hale, of same place, for improved apparatus for heating and ventilating buildings.

Wm. H. Low, of Albany, N. Y., for machines for making envelopes.

John P. Sherwood, of Fort Edward, N. Y., for improvement in nail plate feeding machines.

Alva B. Taylor, of Newark, N. J., for improvement in machinery for making hat bodies.

William P. Thomas, of Hillsboro, Ind., for improvement in harness for shoeing horses.

Isaac Van Bunschoten, of New-York, N. Y., for improvement in Argand lamps for burning rosin oil.

Israel W. Ward, of Birmingham, Pa., for improved adjustment in boring machines. Antedated Feb. 16, 1856.

Hiram Wells, of Florence, Mass., for improved method of suspending circular saw spindles.

Geo. Wellman, of Lowell, Mass., for improvement in stripping top flats of carding machines. Patented in England November 25, 1853.

Liman Wight, of Benton, Pa., for improvement in spinning wheels.

James H. Wilson, Jr., of Nashville, Tenn., for safety apparatus to be applied to harnesses and thrills of vehicles.

The Plough, the Loom, and the Anvil.

Vol. VIII. JUNE, 1856. No. 12.

WOOL AND WOOLENS.

We invite the attention of the public to the present and prospective condition of our woolen manufactures, and the multitude of interests that are clustered around that great center. But, like one who enters a strange city, in which inviting avenues, extending in diverse directions, tempt him to wander, so we scarcely know what view we ought to present to our readers.

One of the great evils of sectional or party divisions and the ascendancy of one or other clique or clan inevitably produces, is the essential change in the meaning of words. "The country is prosperous" is made to mean anything or nothing, according to circumstances. In New-York, it means that importers are doing an extensive business, that their country customers yet hold out pretty well, and that the stocks held or represented here are rising, and whether by fraudulent representations or otherwise is of no concern. The readers of our morning papers run over the "money article," and if that speaks favorably, their anxieties are all quieted and they have no fear of anything. We found it almost impossible, recently, to convince a friend of intelligence and of extensive means who has done a large and profitable business, that the country was not in a very flourishing condition, financially, although he admitted that his own business was not producing any profit to him or to any body. He referred us to the "money article" of a sheet of this city as evidence, even against his own personal experience, and that experience intimately allied to the commerce of the country.

But how is this? What is the kind of testimony that is reliable on this point? Let us look at it. Opening our volume of post-offices and post routes, we find a very large map of the United States. The various mail routes are designated by certain lines which traverse its area in all directions. At the first glance we also notice that at short intervals small circles are drawn, which are sometimes very near each other, and not unfrequently are intersected by each other. Sometimes they are more remote. These circles are so numerous as to give a distinct character to the appearance of the sheet. No one can overlook it.

Now, suppose that each of these circles represents the existence of a raging and fatal epidemic, can that territory be called healthy? Suppose it should be understood that within those mystic circles the property of the people had been, all at once, utterly consumed by desolating fires, are these no evidence of general disaster?

If, within each one of those circles, it had been discovered that stout resistance was made, boldly and openly and defiantly, to the government of the country, would any man say, in his senses, that the civil institutions of this nation were in a very peaceful and prosperous condition?

These circles are situated, without exception, almost, among the most active, enterprising, and hopeful sections of the country. Whatever is represented, therefore, within and by those enclosed areas, deserves serious attention. Their prosperity, or their distress, must, in some form, be very sensibly felt through the country. As to the time when the public will appreciate the truth thus set forth, there may be some uncertainty. But it cannot be always ignored or forgotten.

Now, these circles may well represent the manufactures of wool and woolen goods in this country. Do our readers know, will they believe, that scarcely one, if one, of all the woolen mills in this country is, or for months has been, in operation? Do they know that this capital is idle, that the costly buildings erected for such use are going to decay, their operatives without employment (*or gone to Kansas to grow their own food, or avenge themselves*)—all the thousands of various trades dependent upon these establishments for their markets, deprived of the power to sell their own products? Politicians sometimes find that the evils they selfishly produce in the community come home to roost within their own private enclosures.

These manufactories are scattered over twenty-four different States of the Union. In number they exceed fifteen hundred. Nearly forty thousand operatives are thus thrown out of employment, and scarcely less than eighty or a hundred thousand more of parents, women, children, &c., by the same means, are deprived of the sources whence they have solely derived their support.

All this while foreigners are establishing themselves in our counting-houses, importing foreign goods, and sometimes, under fraudulent invoices, cheating THE PEOPLE out of a large portion of the trifling duties the law demands from them, while in our cities avenues are built up with gorgeous palaces, and princely fortunes are amassed—all for love of liberty and free trade! and the people love to have it so!! and our hardware importers, who would control and pervert all the business of the country for their own benefit, more fortunate than Judas of old, find among those born and reared under our own institutions, and with whom they may be delighted to associate, both sympathizing hearts and helping hands.

But we must stay our zeal. We have as little personal interest in this matter as most of our readers, and if the people assent to this suicidal course, the results should be met submissively.

We must content ourself now by giving to our readers the following able and lucid presentation of this subject, by one of the best minds in the country, and one who has been for a very long period personally connected with it, and is practically familiar with the facts and the workings of the policy which has prevailed.

Mr. Jarvis, while Consul in Spain, was personally concerned in the first introduction of Merino sheep into this country, has been from that time to the present among the most extensive owners of these sheep, and is abundantly able to speak, as with authority, in relation to it. Would that he, and such as he, had the control of this interest, shaping its policy in accordance with the demands of honest truth and the public weal. This letter of Mr. Jarvis first appeared in one of our city papers. ED. P. L. & A.

WOOLS AND WOOLENS.

DEAR SIR:—I was happy to receive a letter from you upon a subject which I have had so much at heart for over fifty years.

After being in Portugal, Spain, and in England, between the years 1798 and 1802, that which most astonished me in the two first countries was the great neglect of agricultural, mechanical, manufacturing, and commercial industry, and the general poverty which prevaded the mass of the people in a country possessing an excellent soil and one of the finest climates in the world; whereas, on going to England, I found everybody busy, the land highly cultivated, all branches of mechanical and manufacturing industry in the greatest activity—that nation then possessing the largest commercial marine in the world, and her ports crowded with shipping.

When I compared this state of prosperity and affluence with the state in which English history represented her to be five hundred years before, without manufactures and without commerce, dependent on the Brabant shipping to carry her surplus wool and other productions to Flanders, and sending it back to England in cloths, to their great benefit and impoverishment of England, the contrast was so great that I could hardly give credit to her own historians, as to the truth of what they asserted. But an examination into her commercial history satisfied me of the fact. England was then as dependent on Flanders for the few manufacturing comforts which she obtained, as the Brazils and Spanish South America have been upon their mother countries, for the European goods which they received through those respective channels. But the teachings of history appear to have produced very little effect upon us. We are now voluntarily pursuing the same policy toward England, which five hundred years ago she pursued toward the Flemings, and with the same result. With our variety of climate and virgin soil, by this injudicious policy, we have got into debt to Great Britain to the amount of some two hundred and fifty or three hundred millions of dollars, with outgoings against us of fifteen to eighteen millions of dollars a year in the shape of interest. By way of economizing our resources, so as to enable us to pay off the principal—for pay-day must come—we have recently more than doubled the imports of those woolen manufactures which we could have made at home. A new way to pay old debts!

In relation to wool, I have from the outset been opposed to any, or at least a heavy duty on this article; but I am compelled to acknowledge that the most serious opposition I have met with on this point has been from my brother wool-growers. They seem to think that a low or no duty will cause this country to be flooded with foreign wool.

With the low price of our lands and the moderate expense of sheep husbandry compared with any other agricultural pursuit, I have never felt any fear that the American wool-grower would be injured by importation. My doubt of success originated in the want of due protection for our manufacturing industry. Manufacturing labor in England did not and does not cost half what it does in the United States; their machinery of every kind has been brought to the greatest perfection; their skill in using it has also been perfected, and the average interest of their capital is not more than half ours, and hence the danger to our success must originate in this source. Once place our manufacturers in a condition not to be prostrated by the competition of those of England, and they would afford a ready and remunerating market to the wool-growers. Now it must be obvious in this immense, extended country, more than half of it adapted to the wool-growing business, where land can be bought for less than the price of the annual rental in England, and most of other countries in Europe, we cannot be in any serious danger from the competition of foreign wools. It might as well be urged that we should lay a duty on foreign raw cotton, for fear of competing with that of our own growth. To lay a high duty on wool, and neglect to lay a a duty on foreign manufactures, which would protect our own from rivalry, would be literally realizing the fable of killing the goose which laid us the golden eggs. Everybody knows, who is acquainted with the subject, that the labor of the operatives, the cost of the dye-stuffs, the expense of the wear and tear of machinery and buildings, and the interest on capital, constitute two-thirds of the value of most woolen fabrics; then to lay a higher duty on the raw material than we do on the manufactured article would be directly legislating for the good of the foreigner to our own disadvantage. It might do very well for the legislation of a Colonial Parliament; but for an independent nation which means to emancipate herself from the leading-strings of her former mother country, it is suicidal.

There certainly has been a great deal more stress laid on this subject of foreign wool than it was entitled to. Had Congress favored us with a steady legislation calculated to promote manufacturing industry since 1816—when the double duties ended by the limitation of the act—there would not at this time be any question upon the propriety or impropriety of a duty on foreign wool; for we ourselves should have raised amply enough for the supply of our own consumption. We have done it in cotton and everything else we have turned our attention to, and we should have done it in sheep—whose fleece affords us our most comfortable clothing, and his carcase our most wholesome food—had proper encouragement been afforded to this useful branch of industry. From the variety of views which have been entertained in Congress in regard to a protective duty, it is pretty certain the friends of manufacturing industry, cannot obtain what they want, and, for one, what I say they ought to have. Mr. Guthrie appears to be a man of sense, and he has probably recommended the only course of legislation which can now be carried into effect for the benefit of both manufacturers and wool-growers. As a general rule, when manufacturing industry is to be promoted, which comes in competition with foreign, it appears to me obvious that the raw material—dye-stuffs and drugs—which are employed in forming the fabric, must be obtained at as low prices as the foreign manufacturers obtain them, so as to enable home goods to be thrown into the market as low, or lower, than foreign. But if a duty is laid here on the raw wool and drugs and dye-stuff necessary to perfect the fabric, and no duties are laid on those articles in foreign countries whence we derive our supplies, it is clear that the value of the goods made here must be enhanced to the amount of the duties so laid; and if a proportional duty is not laid on the foreign manufactures which come in competition with ours, the American goods must go into the market at a higher cost than do the foreign, and their sale be prevented; and thus, instead of Congress legislating to encourage our own industry, it will be legislating practically to promote the industry of foreign nations to our injury.

This opinion I give as a party directly interested, being one of the largest holders of fine wool sheep in the United States.

But in a government of the people, formed by themselves for their own benefit, we cannot suppose that any tariff can be made by their Representatives which shall altogether neglect or overlook the interests of the people, and, of course the industrial interests of the country will receive that attention which their importance imperatively demands. Among other subjects which require attention is the rigid enforcement of our Revenue laws. Such rules and regulations ought to be introduced as will secure the collection of our lawful revenue. Legal proof has been given that great frauds have been practised in our Custom House at New-York, to the great loss of the revenue and to the injury of our manufacturing industry, by enabling the foreign agent to undersell our own fabrics in our own markets. To prevent this evil, stringent measures ought to be rigidly enforced. As we have no Botany Bay, and hanging is out of fashion, the goods, wares, and merchandise attempted to be fraudently introduced, ought to be confiscated, and the culprit and his abettors ought to be condemned, at least, to ten years in the State Prison. With respect and esteem, WM. JARVIS.

TOBACCO STATISTICS.

WE give place in our columns this morning to an interesting and valuable report which was yesterday transmitted to Congress from the Statistical Office, in the State Department, in pursuance of a resolution offered by Mr. Faulkner, of Virginia, in the House of Representatives on the 17th inst.

Not the least interesting feature in this Report is the evidence it exhibits of the utility and public advantage of such a bureau as that from which it has emanated, as well as of the promptness with which such information can be supplied to Congress and the country.

The document itself contains valuable information, presented in a compendious form and well classified arrangement:

STATEMENT "RESPECTING THE TARIFF DUTIES, RESTRICTIONS, PROHIBITIONS, AND CUSTOM-HOUSE REGULATIONS, APPLICABLE TO AMERICAN TOBACCO IN THE PRINCIPLE COMMERCIAL COUNTRIES OF EUROPE."

BREMEN levies a tariff duty of $\frac{2}{3}$ of 1 per cent. Import duty is levied at the rate given on the invoice value, with the addition of freight and insurance charges. All foreign vessels (Americans excepted) must be entered at this port by a licensed ship-broker, the exemption in favor of American vessels having been conceded by the Bremen Senate in 1852.

GREAT BRITAIN levies a duty of 72c. per lb., and 5 per cent. additional. Tobacco, snuff and cigars are prohibited to be imported into Great Britain, unless in vessels of not less than 120 tons burden, and into ports approved by the Commissioners of Customs. These ports are London, Liverpool, Bristol, Hull, Lancaster, Cowes, Falmouth, Whitehaven, Plymouth, New Castle, Southampton, Preston and Swansea, in England; Aberdeen, Leith, and Greenock, in Scotland; and Dublin, Belfast, Galway, Limerick, Londonderry, Newry, Sligo, Waterford, Wexford and Drogheda, in Ireland. Duties alike from all countries and in all bottoms.

FRANCE—Tobacco a Government monopoly. By the terms of the treaty of June 24, 1822, American produce, if imported direct to France, in United States bottoms, is admitted on the payment of the same duties as apply to similar importations, in other countries out of Europe, in French vessels. The origin of the merchandise must, however, be duly authenticated and certified by the collector at the port of exportation and by the French Consul. American tobacco is purchased by the Commissioners of the Regie for the Government factories, and is admitted either in French or American vessels free of duty. In foreign vessels the duty is \$1 86 per 100 kilogrammes, (221 lbs.) The monopoly was established in 1810 by Imperial decree.

HOLLAND levies a duty of 28c. per 221 lbs. If imported direct from the

United States, admitted on the same terms, whether in American or national vessels.

SPAIN—Tobacco is a Government monopoly. Admitted at the port of Malaga in American vessels, at a duty of 20c., and in Spanish at a duty of 15c. per lb. The privilege of the tobacco monopoly in Spain is rented to individuals, and yields a revenue of about $4,000,000 per annum.

BELGIUM levies a duty of $1 86 per 221 lbs. In the direct trade between the United States and Belgium the vessels of both nations are equalized by treaty. In the indirect or triangular trade there are discriminations, though frequently appended by Belgium.

SARDINIA—a Government monopoly. The annual revenue cannot be calculated as the Italian States are grouped in official returns of commerce.

AUSTRIA—a Government monopoly. When imported by permission of the Government the duty is $4 85 per 110 lbs., besides 97c. per lb. for a license to import.

SWEDEN levies a duty of 5 5-6 per lb. The duty is over 100 per cent., and importations from the United States are diminishing annually.

NORWAY levies a duty of 4½c. per lb. Owing to a difference in the weights and measures in use in Norway, the duty is about 33-3 per cent. less than in Sweden.

PORTUGAL—a Government monopoly. The raw article, for the factories of the Government, is derived chiefly from Brazil, about half a million lbs. per annum being received from the United States.

Statement exhibiting the quantities of American Tobacco exported from the United States into the countries designated, with the amounts of duties paid thereon during the commercial year 1855 :

COUNTRIES.	QUANTITIES. *Pounds.*	DUTIES PAID.
Bremen	38,058,000	$16,652.
Great Britain	24,203,000	$18,297,468.
France	40,866,000	Average annual revenue from monopoly $16,000,000.
Holland	17,124,000	$21,695,000.
Spain	7,524,000	Average annual revenue from monopoly $4,000,000.
Belgium	4,010,000	$33,749.
Sardinia	3,311,000	No data from which to ascertain amount of revenue derived from monopoly.
Austria	2,945,000	$129,805, besides an annual profit to the Regie of about $7,500,000.
Sweden & Norway	1,713,000	$88,505.
Portugal	336,000	No data from which to ascertain the share of the monopoly revenue which this quantity bears; the whole amount is about $2,250,000.

NOTE.—The total receipts from custom duties in France for one year (1848), according to official returns, were 146,000,000 francs, of which 86,000,000 were derived from tobacco, nearly all grown in the United States.

The Austrian Empire contains 36,514,397 inhabitants. The annual yield (average) of tobacco in Austria is estimated at 79,000,000 pounds. The only places where the plant is permitted to be grown are Hungary, Galicia, the Tyrol and Venice. In Hungary it is the leading staple, the annual crop reaching as high as 68,000,000 pounds. Of this one-third is sold to the Austrian Regie, one-third to foreign countries, and the remaining one-third is consumed at home. The average annual importation from the United States is from two and a half to three million pounds. The Regie clears a profit of ten cents on each pound of raw tobacco, and the annual revenue to the Government is $7,500,000.

In the States composing the Zollverein the annual crop of tobacco is estimated at 55,000,000 pounds. The revenue derived from American tobacco is about $1,800,000 per annum.

Belgium produces annually about 1,300,000 pounds of tobacco, and imports from 9,000,000 to 11,000,000 pounds.

Holland produces from 4,000,000 to 5,000,000 pounds, and imports annually from 30,000,000 to 35,000,000 pounds. The tobacco factories in this country are stated to give employment to " one million operatives."

Bremen imports annually from 35,000,000 to 50,000,000 pounds of tobacco, most of which is manufactured in that city and re-exported to foreign markets.

Hamburg imports only from 1,000,000 to 2,000,000 pounds annually, most of which, after being manufactured, is re-exported.

The annual tobacco crop of Russia is about 25,000,000 pounds.

The annual consumption of tobacco in Spain is about 9,000,000 pounds, one-third of which is imported for the Government factories from the United States.

In Portugal the culture of tobacco is prohibited by law.

The quantity of American unmanufactured tobacco annually imported into the principal commercial countries of Europe may be thus stated : For each inhabitant of Great Britain 14 ounces ; for each inhabitant of France 10 ounces ; for each inhabitant of Belgium 2¼ pounds ; for each inhabitant of Holland 2¾ pounds ; for each inhabitant of the Hanse Towns 5 pounds ; for each inhabitant of Hanover 3½ pounds ; for each inhabitant of Mecklenburg-Schwerin and Mecklenburg-Strelitz 2 pounds ; for each inhabitant of the States of the Zoliverein 1 pound ; for each inhabitant of Russia ¼ ounce ; for each inhabitant of Austria 1 ounce ; for each inhabitant of Spain 3 ounces ; and for each inhabitant of Portugal 1½ ounce. The aggregate quantity of tobacco annually raised in these countries (exclusive of their colonies) is about 210,000,000 pounds. The aggregate quantity of tobacco raised in the United States in 1850 was 199,752,515 pounds.*

The average annual quantity of American tobacco imported into Great Britain during a period of three years (1851–'52–'53) was 24,543.334 pounds, on which there was levied an average annual duty of $18,554,760. The average annual quantity imported into France during the same period was 14,690,000 pounds ; into Holland 18,660,000 pounds, on which the average annual amount of duty was $24,915 ; into Belgium 4,824,000, on which the average annual amount of duty was $40,600 ; and into the Hanse Towns 38,637,667 pounds, on which was paid an average annual amount of $12,643 91.—*National Intelligencer.*

* Census of 1850.

THE STARS AND STRIPES.—A correspondent of the N. Y. *Courier and Enquirer* calls attention to the fact that our National Flag is made of foreign bunting ; the flags of the capitols of the United States, of the arsenals, forts, ships-of war, of peace, army, taverns, even those of the Native American meetings, all are of foreign manufacture, and should a war come, if the flag did not rise in victory, it would in price.

METEOROLOGICAL.

THE WINTER SEASON IN INDIANA CO., PA.

NEWMAN'S-MILLS, INDIANA CO., PA., April 28, 1856.

MR. M. P. PARISH :

VERY DEAR SIR :—The last winter, like the past summer, has been a very remarkable one here, as well as elsewhere. It set in fairly and squarely just about Christmas, and from that time on it snowed, and blowed, and froze, and snowed, and blowed, and froze, and snowed, and blowed, and froze, for about six or seven weeks before it showed any signs or disposition to relax its awful grasp. One would suppose that it would make the very jaws of winter itself ache, holding on so long. It relaxed a little, and but a little. The first part of March, and in fact on till about the 20th, it was rough and tumble. The lion seemed to shake his mane most terribly. The snow was so deep and dry and drifted that it was almost impossible to get about. I suppose that it must have cost the people here more than twice as much to get their timber for rafts hauled to the river as it does usually. About the 20th of March we had a few soft and pleasant days, which settled the snow some; then it set in again and the old lion shook his tail as smartly as he had done his mane. After he had shaken himself to apparent satisfaction, he became more quiet, and seemed to rest a bit. The snow is now nearly all gone —just a little left to see how it looks. The streams have been very high and much longer than usual, though there has not been much rain. The men folks are nearly all away down the Susquehanna with their lumber, on their way to market, and till they return, if they do so, all the women are widows, or afraid they may turn up to be. The last fall was so wet that not much winter grain was sowed, but what was sowed looks very well, after being covered so deeply with its white robe for so long a time, nearly four months, except where it was covered with deep or high drifts; there it seems to look as though it had been a little too long under cover; had opened its eyes upon the waking world a little too late in the day for its own highest good. I hear much complaint among my neighbors in regard to their potatoes being frozen to death, so also in regard to their plum and peach trees. Well, such being the sober fact, I reckon the late frosts, if we should be unlucky enough to have any, won't kill the blossoms on the peach trees, and as for the plums, why the curculio may sting away at them to their heart's content without molestation, or Mr. Matthew's or any body else's infallible remedy to put them out of the way. During the past few days it has been quite warm, and the apple trees begin to show, or try to, that they have stood the westers better than their neighbors the plums and peaches. I hope Messrs. Apples will be able to bring forth abundantly their luscious fruits to perfection, to bless man and beast. Give me the fruits and the vegetables good in quantity and quality, and you, Mr. Editor, or any body else that wants them, can have the flesh-pots and all their contents. Away with flesh-pots and their contents, and let men, and women, and children, made in the image of God, live like men, women, and children, upon the health-giving, health-preserving, and health-restoring fruits and vegetables, as they come from the lap of old mother earth, and not like hienas, wolves or cannibals upon their less-intelligent fellow-creatures. Away with your flesh-pots, there is disease and death in them, and no prophet to salt them out.

The tornado that passed through here on the evening of the 12th inst., did much damage. It came very suddenly, very powerfully, and was gone, but very ruin seemed to mark its path, and to so mark it, that it will stay marked awhile I guess. On last Monday and Tuesday, the 21st and 22d, we had quite a fall of snow, which robed the ground for three or four days. Since it disappeared the weather up to this time, has been very pleasant and spring-like, and so may it continue. May our Heavenly Father bless us all with plenty, health, peace, and happiness.

Yours truly, D. M.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

FOREST TREES OF NICHOLS, TIOGA CO., N.Y., AND THEIR USES.

PINUS RESINOSA.—RED PINE OR NORWAY PINE.

Of the Norway pine I know but little, having seen only five or six trees, growing with white pine and hemlock on a hill-side near one corner of my farm. These are the only ones of that species in this vicinity. Trees from seventy to ninety or more feet high, and from eighteen to twenty-four inches in diameter, very straight and smooth, and tapering but little, from the ground up sixty feet; limbs few and scattering and near the top. The bark is of a brighter red than any other species of pine, and quite smooth, more so than any other; wood of a reddish color, and very full of pitch; it is hard and durable. Dr. Torrey says the leaves are in pairs, shorter than the cones, five or six inches long, of a dark green color. Again he says, Leaves shorter than the cones, and cones, he says, about two inches long—a mistake somewhere. As far as I have ascertained, the cones are two inches long and sharp pointed, nearly the shape of an egg. Scales dilated in the middle, unarmed, that is without spines. Dr. Torrey in his valuable Botany says the timber is used for decks and masts for vessels.

PINUS RIGIDA—PITCH PINE.

The pitch pine is found in this town in almost all situations, generally on the sides of hills and tops of high hills, and very frequently on diluvial formations along streams, where it is called pine plain land. It is from thirty-five to fifty feet high—generally about forty-five feet, and from twelve to twenty inches in diameter, with numerous branches, often extending nearly down to the ground; frequently a low, bushy, rough tree, with a thick, dark-colored, rough bark. Leaves in threes generally, and about three inches long, being very short and stiff; cones, egg-shaped, and about two inches long, frequently the end coming to a sharp point, in clusters of threes and fours, the scales terminating in a short, acute, reflexed point.

The pitch pine is of but little value except for firewood, it being full of pitch, and trees under one foot in diameter are nearly all sap, or white in color, the middle or sound heart being of a reddish color. In consequence of the large amount of sap-wood, the stumps, in a few years, rot when out of the ground. Flowers in May; fruit in September.

PINUS MITIS—YELLOW PINE.

There are but a few of the yellow pine left in this town. They were never very abundant, and are only found on hills. The trees are from seventy to ninety feet high, and from eighteen to twenty-four inches in diameter, with a regular pyramidal head; bark quite smooth and light colored. It is often a beautiful tree. Leaves elongated, slender, usually in pairs, but often in threes, channeled, the sheaths two and a half to five inches long, dark green, cones small, scales slightly prominent, with a small slender mucre pointing outward, and about two inches long, the prickel at the extremity of the scale very slender.—(Torrey.) The timber of the yellow pine is very valuable, being stiff and solid, and working smooth; it is used for floor-boards, bedsteads, oxyokes, etc. The yellow pine, like similar species, has very thick sap-wood, and its knots are full of pitch, and as hard as a bone. The knots are often found after the tree has decayed partly buried in the ground, and they will in all probability last for hundreds of years. The stump and roots remaining under ground have often been collected and burned for the procuring of tar. ROBERT HOWELL.

NICHOLS, May 13, 1856.

RAILROADS OF NEW-YORK.

THE subjoined statistics are compiled from the reports of the several Railroad Companies of this State for the last year, made to the Railroad Commissioners:

STATISTICS OF TWENTY-EIGHT RAILROADS.

Length of 28 roads in miles	2,398
Number of passengers carried during the year	9,628,983
Average number per day	26.386
Number of miles traveled by all passengers	447,747,789
Average number of miles traveled by each passenger	46½
Number of miles run by locomotives	11,563,816
Passengers killed (1 in 1,203,624)	8
" injured (1 in 385,159)	35
Number of locomotives owned by 28 Companies	695
Number of Passenger cars owned by 28 Companies,	817
Number of Freight, Baggage and Platform do.	9,309
Number of tons freight transported during the year,	3,347,239
Number of Bridges	1,087
Length of Bridges in miles	32
Tons coal used	5,335
Cords wood used	811,567
Gallons oil used	247,963
Earnings for the year	$19,040,986

FIRE REGULATOR FOR STEAM BOILERS. By Wm. S. Gale, of New-York City.—This improvement relates to a method of regulating the draft damper of steam boilers, so as to increase or diminish the fire according to the pressure of the steam. When the pressure exceeds a given weight the apparatus shuts the damper and slacks down the fire; and when there is not steam enough the damper is opened so as to quicken the fire.

STATISTICS OF LONDON.

London covers at present a space of 122 square miles. It contains 327,391 houses, and 2,362,236 inhabitants, the annual increase of the population being upwards of 40,000. The length of all the different streets is 1750 miles. The paving of them cost £14,000,000, and the yearly cost of keeping the pavements in repair is £1,800,000. London has now 1900 miles of gas pipes, and the same length of water pipes. The introduction of gas cost £3,000,000.

There are 360,000 burners in the city, which consume every night 13,000,000 cubic feet of gas, valued at £500,000, or two millions and a half of dollars. The bankers of London have under their control a capital of £64,000,000, and the different Insurance Companies have a cash capital of £10,000,000, and £78,000,000 in negotiable paper.

The tax on houses amounts yearly to £12,500,000. The furniture of these houses is insured to the amount of £166,000,000. Twenty thousand persons are constantly employed in keeping the docks in repair.

London consumes yearly 277,000 oxen, 300,000 calves, 1,480,000 sheep, and 34,000 hogs, worth, all together, £8,000,000. London consumes every year 1,600,000 quarters of wheat, 65,000 pipes of wine, 2,000,000 gallons of brandy, 43,200,000 gallons of porter and ale, 19,215,000 gallons of water, and 3,000,000 tons of coal. It has 350 charity associations, which distribute every year £1,805,635 to the poor, which sum when increased by private charities will amount to £3,000,000. The city, from the showing of its official documents, has 143,064 persons who have no visible means of support. Among these are 4,000 vagabonds, who cost the city £50,000 a year to support them. There are besides in London 110 professional house-breakers, 107 street thieves, 40 robbers, 783 pickpockets, 3675 ordinary thieves, 11 horse thieves, 140 dog thieves, 3 forgers, 28 counterfeiters, and 317 individuals who live directly by the profits of this illicit trade, 141 swindlers, 182 people who speculate on charity with false documents, 353 receivers of stolen goods, &c, &c.; in all 162,000 criminals who are known to the police, and who steal every year to the amount of £42,000.—*Evening Post.*

THE ANGORA GOAT.

At a recent meeting of the Farmers' Club, in this city, the Secretary read some interesting translated extracts from the "Bulletin Manuel de la Société Imperiale Zoologique D'Acclimation," Paris, 1856, as follows:

I went to Cheragas to examine the flock of Angora goats confided to the care of one of our oldest and most able colonists. We found twelve females and one buck. The buck, and ten of the she-goats are of the perfectly pure race, their long silky fleeces undulating, entirely white, shone brilliantly in the sunshine. Two of them had their fleeces as white as the rest, but much shorter and less silky. They seemed to have come from a mixture of breeds.

The flock is in a very satisfactory condition. They are lively, alert, and in very good health, but rather too plump for the race of goats. However it is easy to see that in exterior they, to a certain degree, resemble sheep. They graze all day, sometimes in the plain, sometimes among brushwood, in company with a number of she-goats from this country and some from Malta. At night each Angora goat sleeps in a little separate stable for itself, on abundance of well-kept litter.

Their fleeces are usually neat, but in their rambles they are apt to encounter hooks from some leguminous plants, caterpillars, so that some of the fleece are torn off in getting them out. These are injurious to the fleece. These Angora goats are very rustic, they are less delicate and less susceptible in regard to their nourishment than goats of any other sort. They crop grass and browse on bushes of all sorts, eat leaves of the mastic, of climbing plants, filarias, olives, &c.

The reproductiveness of this little flock is not less satisfactory. Desiring to know the result of mixing breeds, I had two fine Maltese goats led to the Angora buck. I think the favorable season for shearing is towards the end of April, as with our sheep, pretty nearly.

The other extracts had reference to the eduction (taming) of partridges, to the domestication of the ostrich in Algeria, and various other curious matters.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

WATER A FERTILIZER.

Mr. Editor:—I send you below an extract from my "Notes of Lectures on Agricultural Chemistry," which, though written some years ago, may prove suggestive to some of your former readers.

Perhaps every one of you, living as most of you do, in this rolling limestone country, has observed how rapidly land may be improved by being cultivated for a few years as watered meadow. This mode of fertility has often been attributed solely to the organic matter carried down, and spread over the soil by the water, with the increased growth of roots, and the accumulation of rotted grass left by the watered crop. It is true in many cases, that valuable organic matter is thus either produced in the soil, or transported by the running water from one place to another, and rendered an available source of fertility; but there is another part performed by this water, which should not be left out of view.

As water percolates the strata of the earth, it dissolves and carries out a variety of mineral substances which are useful to almost all soils that have been long under cultivation. Among these are the carbonates, sulphates and chlorides of lime, potassa and soda. The elements contained in these are nearly all essential in some form or other to the fertility of a soil. An excess, too, of any fertilizer, above what may seem sufficient to meet the immediate wants of the growing crop, is generally desirable, so that all the rootlets, which spread themselves through the soil in search of nourishment, may be able readily to find a supply.

Waters in lime-stone regions are generally charged abundantly with carbonate of lime in solution; and also contain more or less of valuable sulphates and chlorides. Phosporic acid, too, in some form of combination, is found in small quantities in many of these waters. Running water, besides these valuable ingredients, often contains silica in a soluble form. For grass and the stocks of grain this is a most important element of nutrition.

From analyses of a variety of waters, from different parts of this State, I have come to the conclusion that there are few springs to be found, which do not hold in solution, salts which would be valuable, if applied to almost any soil. The water of some springs may contain matter injurious to soils. Such would be the case with a water containing proto-sulphate of Iron in considerable quantity. But such springs are rare.

The benefit then, arising from watering meadows, is not to be attributed solely to the supply of moisture thus furnished to the roots of the grass. This moisture carries with it valuable nourishment—food as well as drink—and thus performs a secondary office of no inconsiderable importance.

Fields contiguous to streams may have water conveyed to them in ditches, and spread over a large proportion of their surface. The water thus having a broad surface exposed to the influence of the sun and air, is rapidly evaporated; but the mineral matter held in solution, being involatile, is left behind to enrich the soil. If the water is supplied in quantities just sufficient to spread over the whole surface, yet so as to be entirely taken up by absorption and evaporation, the mineral matter contained in it will all be communicated to the soil and the growing crop. Then whatever portions are not appropriated at once will be left for future use. Thus we see how water may in many cases be made a valuable source of fertility.

The cost of watering would frequently be less in proportion to the benefit derived, than would be the application of the same quantity and quality of fertilizers in any other way. The summer season is most favorable to this kind of irrigation, as evaporation then goes on most rapidly, causing the most abundant precipitation of mineral residuum. J. L. Campbell.

Washington College, Va., April, 1856.

INSECTS INJURIOUS TO VEGETATION.

LEPIDOPTERA.

Through the action of some sprite, not over-truthful, our readers were led to regard the account of this general division of our subject as "concluded" in our last issue; but we are not at liberty to dismiss so important a matter quite so hastily. We have been compelled to omit even the names of many insects injurious to our forest trees, chiefly confining ourselves to those which were destructive to the vegetation found in our orchards and gardens, and around our houses. A more thorough course would fill a volume. And though we have been long occupied in this meagre sketch, on a very limited plan, we are yet far from the end of our task. More space must still be occupied by that very important order "Lepidoptera."

The moths thus far described devour the leaves of plants, and are of course more or less exposed to view; but some are concealed in roots and in stems, devouring the wood and pith, like the Aegerians among the Sphinges. The Locust tree is peculiarly subject to the attack of some of these, one is a small reddish catterpillar, perhaps belonging to the Aegerians, or the Bombices; a larger insect, which is a grub, is the *Clytus Pictus*, already described among the beetles. A third is still larger, is a true catterpillar, reddish above and white beneath, two and a half inches or more in length, and nearly as large as the end of the little finger. It bores into the tree obliquely, lines the passage with a web, spins a cocoon around itself, and thus assumes the chrysalis form. It comes out, after transformation, a winged moth of a gray color, fore-wings thickly covered with dusky lines and irregular spots, the shoulder-covers edged with black on the inside. It expands about three inches. It was named by Professor Peck, *Cossus Robiniœ*, and by Mr. Newman it is called the *Xyleutes*, or the *Carpenter*. It is the *Bomby* and *Cossus* of Europe. The moth comes forth about the middle of July. The male is much darker than the female, and has a large oker-yellow spot on the hind-wings, near the posterior margin. These moths give out a peculiar smell and hence are called *goat-moths* by some European writers.

Notodontœ—These insects infest various kind of fruit trees, toward the end of summer, and also our rose-bushes and hedges. At the South, they are said to breed twice a year, the first brood appearing in May or early in June. The young catterpillars are yellowish brown, paler on the sides, and are striped longitudinally with slender black lines. On the fourth ring is a hump. Along the back are several short black prickles. The head is red. The hinder extremity tapers, and is always elevated when the insect is not crawling. When full grown they measure an inch and a quarter or more in length. Sometimes they entirely cover the small twigs and the ends of branches. The early broods leave the trees by the middle of August, all of the same brood descending at the same time. They disappear in the night, concealing themselves under leaves or in the earth.

Another kind of insect, highly injurious to apple or other fruit trees, late in summer, belongs to the genius *Pygœra*. The head is large and black, body cylindrical with a spot on the tip of the first ring, legs dull orange-yellow, back traversed by a black stripe, and the sides striped with black and yellow. When at rest both extremities are raised, the body being bent and resting on the four intermediate pair of legs.

They begin at the ends of the branches, eating all the leaves as they advance toward the trunk. They all quit the tree at the same time, by night, descending into the earth three or four inches, and become chrysalids without making cocoons. The moths come out in July. They expand two inches or more; are of a light brown color, the head and a large square spot on the thorax dark chesnut-brown. On the fore-wings are four or five transverse lines. Near the middle of them are one or two spots, and near the tip is a short oblique line.

Noctuœ; Owlet Moths.—These form the second tribe, and are named from their habit of flying, chiefly by night. They frequent the maple, elm, chestnut, &c., is greenish-yellow above, head, tail, belly and feet black, body covered with long and soft yellow hairs. On the fourth and sixth rings are tufts of black hairs and a pencil on the eleventh. It forms its cocoon in the chinks of the bark, on fences, &c.

Nonagriadœ; Nonagrians.—These catterpillars are naked, smooth, long, slender, tapering at each extremity, of a reddish or greenish tint, with an oval, dark-colored, horny spot on the first and last rings. One of these Nonagrians is known as the Spindle-Worm. It often devours the spindle of the Indian corn. The leaves wither, and may be easily separated from the stalk. A small hole may be found in the side of the stalk, near the ground, penetrating to its center, which is perforated upwards and downwards, by this caterpillar. It grows to an inch or more in length, and to the thickness of a goose-quill. It is smooth, roundish, naked, yellowish, the head and the tip of the first and last rings black. It also attacks the Dahlia. The chrysalis is slender, of a mahogany-brown color, the anterior edges of four of its rings roughened with little rings and four short spines or hooks, turned upwards, on the hinder extremity of the body. The fore-wings are rusty red, mottled with gray; with a spot near the tips, with a few black dots near the veins; hind-wings yellowish-gray, and a spot near the center, with two feint dusky bands behind. The head and thorax rusty-red, with an elevated tawney tuft in each. Abdomen pale-brown, and a row of tufts on the back. The wings expand one and a half inches.

These insects, as soon as their presence is made known, by the withering of the leaves, should be sought for and destroyed, while in the catterpillar state, before they turn to moths and lay their eggs.

Agrotidæ; Agrotidians.—These moths fly, some of them by day and others by night, lying concealed during the day. The catterpillars come up from the ground by night and devour the tender stems and twigs of herbaceous plants. They are smooth, shining, naked, of dark color, with pale and blackish longitudinal stripes, and a few black dots on each wing. Their form is cylindrical, tapering toward each extremity. They form chrysalis in the ground without any silken cocoons. The wings of the catterpillars are nearly horizontal when at rest, the upper pair covering the lower. Thorax smooth; head blackish, antennæ set on the under side, with two rows of short points. The fore-legs are often spiny. The moths come forth in July or August. On the approach of winter they descend to a lower depth in the ground, and remain torpid till spring.

It is chiefly in July and August that they do the most injury. At that season they often prove very destructive to fields of corn, to cabbage plants, potato vines, beets, peas, &c. Flowers are also devoured by them. From their habit of *cutting off* a plant near the root, they are called *Cut-Worms.* The largest of these moths is the *Agrotis Telifera* or the Lance Rustic. The fore-wings are light-brown, the hinder nearly white, semi-transparent, and veined. The thorax is gray-brown, the abdomen gray. The wings expand two inches. The smaller kind was named by Dr. Harris *Agrotis inermis*, or Unarmed Rustic.

Agrotis Messoria or the *Reaping Rustic* is similar to the Agrotis Legetum of Europe.

The fore-wings are reddish-gray, crossed by five bands, the first two and often the fourth being double. Spots bordered with black, hind-wings whitish, dusky-brown behind, veins dusky, head and thorax chinchilla-gray, collar edged with black, abdomen brownish-gray. It expands about an inch and a half.

A still smaller species, *Agrotis Tessellata*, the *Checkered Rustic*, expands an inch and a quarter.

The *Cabbage Cut-Worm* is larger than these, sometimes expanding an inch and three quarters. It is common in July and August, flying only by night. The fore-wings are dark ashen-gray, with a luster of satin, and are crossed by four narrow wavy whitish bands, which are edged with black. Between the third and fourth bands is a transverse row of white dots, followed by a row of arrow-shaped spots, and three white dots near the tip. The spots are edged with black and white. The hind-wings are light brownish-gray. Head and thorax chinchilla-gray. The abdomen is colored like the hind-wings.

For more particular descriptions of these insects, we must refer the reader to some scientific treatise. It is scarcely expedient to go more into detail here. To find the best remedy is the most important matter. For preventing these ravages, soaking the seed in copperas-water is recommended, though this moth seldom attacks the seed. Any application which secures a rapid vigorous growth will be servicable, and thus the rolling the seed in lime or ashes is often found useful. Fall ploughing which turns up the insects and exposes them to the severity of the frost, and to the attacks of birds is also commended. The use of sea-weed was found to be useful by Mr. Deane.

It has been found very serviceable to secure cabbage plants and the like, by tying a slip of paper around their stems between the leaves and the root. It should be wound firmly in a conical form, and be secured by an embankment of earth.

There is still another catterpillar which is destructive to cabbages, &c., but which does not conceal itself in the ground. It rests upon, and devours the succulent leaves of plants. It is of a light yellow color, with three broad yellow stripes on each side, and one upon the back. It has hence been called the *Zebra Catterpillar.* The moth is of a light-brown color, shaded with purple brown, with spots on the wings and a transverse zigzag gray line forming a distinct W on the centre, near the outer hind margin. Hind wings are white—edged with brown around the tip. This belongs to the

Mamestradæ or *Mamestrians.*—These catterpillars are distinguished for their bright colors. The moths fly by night only. As these insects do not conceal themselves they may be killed by the hands.

Geometræ; Geometers.—We come now to the third tribe of moths, which are called Loopers, Span-Worms, or Geometers, from the peculiar manner in which they span or measure the ground as they advance. One of these, a terrible pest to the farmer and of all who cultivate trees, is known as the *Canker-Worm.* It belongs to the group termed

HYBERNIADÆ or HYBERNIANS.—The catterpillars have ten legs, six before and four behind. The male canker-worm moth has antennæ with a very narrow edging scarcely visible, and very minute feelers. The wings are large, thin and silky. The fore-wings, when at rest, are turned back, and entirely cover the hind-wings. They are ash-colored, with spots or bands upon them. The hind-wings are pale ash-colored, with a feint blackish dot near the middle. The wings expand an inch and a quarter.

Canker-worms appear usually after the first hard frosts of autumn. The time for their general rising is about the middle of March, sometimes earlier, and they continue to come forth for three weeks. The females are wingless, and instinctively make their way up the trunks of trees. In a few days the winged males appear, and accompany them in their ascent, pairing as they go. The female lays her eggs soon after, upon the extremities of the branches, from sixty to a hundred in number, placing them in rows, and glueing them together and to the tree. They soon after die. The eggs are hatched by the middle of May, or when the red currant is in blossom. The young canker-worm is a blackish or dusky-brown color with a yellowish stripe on each side, two whitish bands across the head, the belly whitish. Two minute warts occur on the tip of the last ring. When fully grown they are ash-colored on the back, and black on the sides. Some are dull-green or clay-color, with slender lines on the sides and spots on the back. Some are green with two white stripes on the back.

When not eating, they lie stretched out at full length beneath the leaves. When fully grown they are about an inch in length. They leave the tree when about four weeks old, creeping down the trunk, or dropping down by their threads, and descend into the ground, from two to six inches. They become chrysalis in about twenty-four hours, of a light brown color. They come out chiefly by night. As the females are destitute of wings, they are confined within a comparatively limited space, except as they are carried by accident to more remote places.

To prevent the ascent of the females, tar or raw cotton, or dissolved or melted India-rubber, may be placed on bands of cloth or otherwise, around the trunks of the tree in October or early in November, and daily be renewed till the insect ceases to appear. Collars of tin or lead, or troughs containing a cheap oil with some careful stuffing of fine hay, &c., which will not absorb the oil between them and the tree, is often used with good success. A little mound of sand *while it remains dry*, around the base of the tree, has proved an impassible barrier to this insect.

Sprinkling the leaves, &c., with fine air-slacked lime is sometimes successful, if used when the leaves are wet with dew or rain. A mixture of a pound of soap to seven gallons of water, thrown upon the trees by a syringe, has also been found successful in destroying these and other insects, without injury to the tree.

After they have entered the ground, swine have been found to destroy great numbers of the canker-worm. Ploughing will facilitate this mode of their destruction. Some recommend ploughing in June and the removal of the soil to the depth of six inches, for some four or five feet from the trunk of the tree, replacing it with compost or rich earth. The earth carried away should be thrown into a pond-hole and left covered with water. These last-mentioned plans are recommended by some of the best farmers in Massachusetts.

The canker-worm has a destructive natural enemy in several kinds of birds, and in a large splendid ground-beetle called *Calosoma Scrutator*. The ich-neumon fly stings great numbers of them, depositing an egg in each worm which it pierces. Each egg hatches a maggot that preys upon the worm and destroys it. The Platygaster, another four-winged fly, drops an egg in each egg of the canker-worm, which becomes a fly like its parent.

Another span-worm, larger than the canker-worm, of a light yellow color, head rust-color, and with black lines on the back, is often found very destructive to apple-trees, elms, &c. It appears at the same time with the canker-worm, resembles it in its habits, and can be kept in check by the use of similar means.

LIVING PICTURE OF CONSERVATISM.

The following letter was sent us a few weeks since from one of the Southern States. We trust it is not a fair sample of any extensive district, and hence we suppress all the names of men and places. We sent a few copies of our journal to the gentleman who addressed us, and hope at least for further correspondence. But we wish our readers to see what that state of things is in which too many large sections of country were once placed, and from which it is so hard entirely to remove them. Ed. P. L. & A.

Mr. Editor: March 23, 1856.

Dear Sir:—My profession is that of a farmer (yet a servant of Christ.) I am poor, with a wife and four children, the eldest not eight years old.

five servants, among whom there is one man, two women, and two small children. I live on my father-in-law's land, which, by-the-by, is good enough for any one.

Mr. A. (my father-in-law) has many servants and children, mules, horses, and asses, and very rich land, and the old man sows and reaps large crops. But he is old, and is compelled—like most rich men among us—to employ an overseer, at about a cost of $200. But his cows are dying of pure neglect. His sheep drop their lambs unnoticed. At least three or four, I think, out of every five which have appeared this spring have died.

Mr. A. cribbed between 1500 and 2000 bushels of corn last fall, besides hay (dried crab grass), 10 or 12,000 bundles of corn-stalk blades, or fodder, and peas and pea vines without stint or measure. His hogs usually fatten on the peas and the gleanings of corn left in the field. His cows, horses, mules, and sheep can generally be kept fat in the pastures till about December 15, without any care from the owner, save a little salt and driving from one field to another when the former begins to fail.

After December 15 the stock are driven nearer to the house, without any shelter save the canopy of heaven. The shucks, cotton seed, and grass are usually strewed on the muddy ground. From one-fifth to about one-half the feed, so dealt out, is usually picked up by the cows or sheep, and, not unfrequently, a herd of swine befoul the whole before the poor cow or sheep can chew one shuck. These things ought not so to be. But "book-larnin" was not popular in his raising, and he sees that colleges make children idle, lazy drones and spend-thrifts. But still if you can convince Mr. A. that you can make *more money* by farming than he can he will hear you and pay you too.

I have no time for more details. Mr. A., I think, is better than the average of farmers among us. If you will send a specimen of the Plough, the Loom & the Anvil, also Mr. Randall's book on sheep, or Sheep Husbandry, I think I can forward you some five or ten, or, perhaps, twenty subscribers.

Address me at ———

Very respectfully yours, —— ——.

ECONOMY OF PLANTATION LABOR.

A SENSIBLE writer of a series of articles in the *Alabama Planter* thus treats the matter of profits from agricultural labor:

"If the plantation was always under the immediate direction of its owner, the stimulus of interest would long ere this have directed its labor more profitably; but it has been generally otherwise by those not having such promptings, and who have had their time more occupied in active employment than in reflection. The progress made in the two branches of industry, manufactures and commerce, have been great; while in agriculture it has remained nearly stationary. Within our short memory, the spinning-wheel and the hand-loom, that worked up their half pound of cotton per day, have advanced to the great cotton factory and its thousands of spindles and power-looms, that work up their thousands of pounds a day. The largest craft in Columbus's little fleet, that discovered our shores, was under one hundred tons, is now displaced by ships of three thousand tons or more, and there is one now in progress of construction very nearly the eight of a mile long and over twenty-two thousand tons burthen. Why, when her sister arts have so immensely increased should she be so stationary? She yet travels slowly on the well-beaten old road, when she should be on the new rail-car and locomotive, and the good sense and judgment of the planter is alone to be depended on to place her there. My purpose is not to give directions, but to make suggestions, in aid of your own reflections. The first step on the road of progress is that the plantation must be fertile or be made so, so as to give a large yield, as it is a work of labor to apply it to poor land. The cotton should yield from four to five hundred pounds; corn, forty bushels; wheat, thirty bushels; and hay, three tons to the acre. With materials for manure convenient, you can neither make nor have it made for you from the stock-pens, enough to do so, as it requires more labor than you command. You must make it so by the addition of guano and the phosphates, poudrette, bone-dust, etc., as they require no labor but only money. Their purchase is a part of your working capital, and must be considered so in an improved farm. If you calculate on a certain return from your bought manures that will amply pay the purchase in their superior yield, it follows that you can make your lands rich and profitable. You may be cautious in your steps, but you cannot reach great results without a very free use of manures. Your fields are to be made rich by "ungraising," home-made manures and bought manures, all requiring but little trouble except the home-made, which should be pushed in quantity up to all the labor at your command not called for by the crop. This done well and fully, with from twelve to fifteen inch deep ploughing, with the subsoil left where nature placed it as a depository and equalizer of superabundant moisture, will be considered your first step in the path of progress.

The next will be to give effect to labor, and, as preliminary to this, I would say that the labor of cultivation must be on the plough; that no labor should be done by the hoe that the plough can do as well; and no superior hand should do what an inferior one can do as well; and these are axioms to be always in view. You have a certain amount of labor at your command, and there are portions of time when you are always over busy and others of comparative leisure, and the crop to be planted should be so arranged as not to increase work on the busy time but to use up the leisure. The scheme of crop that I propose is made with this object in view. Cotton calls for all the time of those engaged in it; corn about one-third, and wheat and hay very little. Let a crop for thirty hands with twenty good ploughs be set down something as follows:

150 acres in cotton to yield 100 bales, at $40. is - -	$4,000
500 acres in corn, to yield 35 bushels, is $18,000; deduct for home use $6,000—$12,000; at 50 cents, - -	6,000
200 acres in wheat to yield 30 bushels, say at 25 cents, -	5,000
200 acres in cultivated hay—3 tons, say 2 tons at $20, -	- 8,000
	$23,000
30 workers at $500 dollars each would be - - -	15,000
	$8,000

"Such a crop can be attended without difficulty, as there is but about 20 acres to the hand that calls for cultivation. The small grain will be ploughed for and put in in the fall and not in crop time. The cutting in May will be the work of the reaper, and the cleaning out can well wait the laying by of the corn for any call on manual labor. The hay crop is to be ploughed in

April, in advance of the busy time, and the mowing and saving will be in August after it, and the labor principally on the machine. The price for hay is not too high if you are convenient to market, and if not put it down at ten dollars the ton. It is a very valuable crop, properly made, and much superior to that which springs up in June after laying by the corn. With a good hay crop in, I should not waste much time in the fodder field."

JOURNAL OF THE U. S. AGRICULTURAL SOCIETY.

PART I. of the Journal of the fourth annual meeting of this Society has been sent us by its accomplished President, Mr. Wilder. It was "edited" by Mr. King, the Secretary. It is full of very valuable matter. For our present issue we have marked certain portions of it as of peculiar importance, and publish them under separate titles below. We begin with

THE IMPORTANCE OF METEOROLOGY TO FARMERS.

This topic was treated by Prof. Page as follows:—" A year ago last May, the water of our wells and deep springs began to fail, and has continued to diminish up to the latter part of the past month. During the whole of that time not a rain has occurred which has penetrated the earth beyond the wants of vegetation. My observations have not been systematic, but I have watched the perpendicular sides of deep excavations, and have repeatedly dug into the earth and measured the depth of springs, and am satisfied that during that time no rain has percolated the earth so as to reach the deep springs. Consequently all the water we have been drawing up from the earth for more than a year and a half, fell *previous* to that time. The farmers and gardeners in my neighborhood have suffered great privation, distress, and losses from this state of things. They have deepened their wells and dug new ones, and still the water has given out, and many have been obliged to cart water for a long distance. Of all this we have no published report. It is for the philosopher to generalize from accumulated data, but the farmer wants to be informed every day of what is going on and to judge for himself. The barometer is not of much *immediate* use to him, but he must have the hygrometer, the rain-guage, the thermometer, and the wind-guage. I need not stop to explain the importance of noticing the velocity of the wind in connexion with temperatures, for every farmer and gardener knows this *practically*. The ways are many and various in which these observations will benefit the farmer. For instance, I ask who can raise here a California potato or a California onion? And who can tell why they *cannot* be raised out of California? I have been trying for two years to raise them here and have failed. I have planted California potatoes ten inches in length and three in diameter in *rich* soil, *medium* soil, *poor* soil, and in all have obtained potatoes not much larger than nutmegs; and so with their onions; and so it is with all their gigantic vegetables. They degenerate immediately when planted here. Is it due to any peculiar chemical constitution of California soil? I think not. It can hardly be supposed that similar soil does not exist elsewhere; and the fact that all their vegetable productions are monstrous, is an argument against any peculiarity of soils. I am inclined to think that the causes are chiefly atmospheric; and, as we can imitate climate as well as soils, it might be of great value to our farmers and gardeners if they could be furnished with information upon this subject; for it would be a great acquisition if we could raise such vegetables here.

"In conclusion permit me to say that, in carrying out *any* system of observations for the benefit of agriculture, we should not lose sight of the importance of publishing *daily* reports, in such manner as to be widely circulated."

ENTOMOLOGY.

The practical value of a knowledge of this science, was thus illustrated by Mr. Glover.

Several years ago, when I first settled on the Hudson, and was almost entirely unacquainted with either horticulture or entomology, I wished to raise my own parsnip-seed, having been the previous year very much disappointed with non-germinition of some purchased in a store, where it had probably laid on the shelf unnoticed for several years. Accordingly the best roots were procured; these grew, flowered, and finally seeded, when several catterpillars made their appearance in the umbels, which they webbed together so as to form a shelter and then leisurely devoured the footstalks and seed, thus destroying my hopes of a crop. I endeavored, but in vain, to raise some of these caterpillars, to satisfy myself what sort of a moth would be produced, as they all died in confinement or produced distorted and deformed chrysalids upon the surface of the earth. Finally, I determined to examine underneath the plants in the ground to see if I could find any chrysalids there; but none were to be seen. At last I examined the stalk again more carefully, and accidentally discovered several small perforations along the sides. This stalk was immediatety split open by means of a garden-knife, when, lo and behold, the large hollow of the stem was found to be entirely filled with caterpillars and chrysalids, snugly ensconced each in its own peculiar slight silken web. The discovery thus accidentally made induced me to burn all the hollow stalks left, and hundreds perished in the flames. I have merely mentioned these two facts to prove how it is, by a proper study of the natural instincts of almost any insect, some means may eventually be discovered to destroy it in some of the many changes it undergoes. Of some, the eggs may be plainly discovered on the trees when the leaf is fallen. Take, for instance, the tussock moth, which is sometimes so injurious to fruit and shade trees. The female of this moth lays her eggs in a frothy matter on the top of a cocoon, sometimes placed on the branches, trunks, or enclosures, and occasionally under the dried leaves that remain suspended from the tree by means of the silk by which the cocoon is formed. These are easily seen, and can be gathered together and burned in the winter, similar to the cases of the hang-worm before mentioned. Others might be destroyed to the best advantage in the catterpillar state, especially when they congregate together at certain times of the day in their web, and only come out at other stated times to devour the foliage; others in the chrysalis state, as the before-mentioned parsnip-worm; but yet it is in the perfect state that we can hope to attack them to the best advantage, as with one perfect female in spring all her future progeny for that year are destroyed.

Lights have been used to attract insects with much advantage; one was used by a horticultural friend last year. This insect-trap (for it is nothing else) is formed like a large box-lantern, only instead of one glass forming a side, two glasses are used, which slope inward to an angle towards a light placed in the interior. These two glasses are left open an inch or more in the center, as the case may be, and can be slid more or less in and out by means of proper grooves. The insect, seeing the light, approaches the glass, and, following the angle, it enters the opening, and dazzled by the light, is incapable of finding the small place where it entered, and either burns its wings against the glass tube which protects the lamp or is precipitated into a vessel underneath filled with some glutinous liquid, in which, incapable of using its wings from the adhesive nature of the compound, it must finally perish. Thousands of the small vine-hoppers, night-flying moths, and beetles were thus destroyed. Several planters South prescribe the burning of fires of fat pine wood on the appearance of the ball-worm or catterpillar-moths, as these insects are attracted by the lights and destroyed by the flame. Indeed, it is only by the instinct of insects that they can be exterminated. Appeal to their antipathies by putting anything they positively dislike in their way, and they will avoid it; place anything they particularly like in the shape of food and hundreds are attracted; for instance, the flies and wasps in casks of sugar. Love itself is used by certain aurelians in Europe as a means of attracting the unsuspicious males of certain species, as when an unimpregnated female is placed in a gauze box the males for hundreds of yards around will invariably gather and flock to the place of her imprisonment, where they are easily captured. It will not be improper to mention here the result of an experiment instituted by Mr. Jesse Wood, of Quincy, Florida, and several other tobacco growers of that neighborhood, to stay the ravages of the much-dreaded tobacco worm, which is only the catterpillars state of the (*sphynx Carolina*) tobacco fly or horn-blower, as it is most commonly known by the planter. This insect, when in its perfect or fly state, is in the habit of frequenting the plants of the *datura stramonium* or Jamestown weed, during the evenings for the sake of the sweet liquid substance at the bottom of the tube of the flower, and which is easily extracted from its receptacle by means of a long flexible proboscis, furnished by nature to the insect for the purpose. This fact being known to several intelligent planters experiments were instituted which I am assured have proved highly satisfactory.

The Agricultural Department of the Patent Office received a letter from Mr. Jesse Wood, of Mount Pleasant, near Quincy, Florida, detailing his experience in this matter. After mentioning many experiments, he gives the following recipe for a poisonous composition to be put into the flower: "One pint of water, one gill of honey, and one ounce of cobalt. This to be put into a bottle, with a quill through the cork. The flowers being picked off, (as the composition poisons the plant,) one drop is put into each blossom and any fly tasting of this will be killed before it can deposit eggs." He concludes by saying that he "considers this discovery of immense value to the tobacco growers, and, if it should lead to the destruction of the cotton catterpillar and ball-worm, it will be of incalculable benefit." Now, what Mr. Wood says in the last part of his letter is very true, as combined with the former experiments made by Col. Sorsby, of Columbus, Georgia, and reported in the last year's agricultural report of the Patent Office, where he states that the moth of the ball-worm is exceedingly fond of molasses and vinegar, which can be placed in shallow plates on posts throughout the plantation; and if these were poisoned, it might possibly prove the saving of thousands of bales of cotton annually, although I must confess that our lively and useful little friend, the honey-bee, might also be killed by the poison at the same time; but I think that, in the case of cotton versus honey, cotton would gain the verdict. The cotton-catterpillar in its moth-state will also suck certain substances with its tongue or proboscis, and it now only remains to find out what it is particularly fond of as food, and then discover also some quick and efficient poison. Several other insects, beetles, night-moths, the cut-worm-moths, and several others, might possibly also be destroyed in a similar manner if this is found to answer. Last year I made several experiments with cobalt, strychnine, and arsenic, which are not of consequence enough to be reported, as, although several succeeded, I must own others again failed in a most singular manner. However, as the subject has once been started, it would be well for several able and scientific men in different parts of the country to make experiments and then report them for the good of their fellow-sufferers.

QUESTIONS PROPOSED BY THE ROYAL SOCIETY OF SCIENCE IN DENMARK.

PHILADELPHIA, May 10th, 1856.

TO THE EDITOR OF THE PLOUGH, THE LOOM AND THE ANVIL:

DEAR SIR:—I send you, herewith, a liberal translation of a circular letter recently received from the Royal Society of Science of Denmark.

I presume it would please them to have it published in the United States, and I know no better medium to the reading Americans than your journal.

I am, very respectfully, your obedient servant,

P. A. BROWNE.

QUESTIONS PROPOSED, IN THE YEAR 1855, BY THE ROYAL SOCIETY OF SCIENCE IN DENMARK.

1. *By the Class of Mathematics.*

The general properties of new imaginary quantities are to be considered, which Galois introduced into the theory of numbers, in such a manner that their nature and qualities may be compared; such as are obtained from the consideration of what are called harmonies, with the nature of imaginary algebraic quantities occurring in the theory of equations.

2. *By the Class of Natural Philosophy.*

Since no answer has been given to the question proposed by the Society in the year 1853, it is again propounded.

As marine Sponges or Spongozoa are not yet so accurately known that we can say for certain with what other organic existences they are chiefly connected, the Society desires these new organisms to be embraced in the investigation. Therefore, it offers its medal of gold to the person who shall satisfactorily examine one species, or more, of those Sponges which exist in the ocean, as well in reference to their natural history as their structure and physiology. It is likewise of importance in this investigation that the origin and development of the different species be separately considered. The essay may be illustrated by diagrams and necessary preparations; also specimens of each species may be furnished.

The prize is the golden medal of the Society, and 100 Imperials.

3. *By the Class in Philosophy.*

An historico-critical narrative is desired of the principal instructors who have obtained some celebrity since the Reformation to the present time.

The hot vapors of water are of constant use in the various arts, whereas the hot vapors of alcohol, ether and sulphuretted carbon are not yet, as far as known, applied to the arts, although it cannot be doubted that great advantage may be derived from the skillful use of such vapors. In order to encourage experiments, on this subject, the Society offers a prize of 200 Imperials for the essay which shows the best manner of applying the hot vapors of alcohol, ether, and sulphuretted carbon.

Specimens must accompany the Essay, and also an estimate of the cost of preparation.

1. Numerous experiments having been made in reference to the manner in which roasted Coffee affects the human system, it has been ascertained that the volatile oil formed is of very great importance. Now since it happens that in parching the roots of the Leon. Tarax. or the Cich. Intyb.,* if they are parched and prepared with sufficient care, oils of a similar effect are produced, the common opinion prevails that if these were substituted for Coffee, they would produce effects similar to roasted Coffee. Therefore, the Society requests that it be shown, by recent and extensive experiments, what is the real value of these substitutes, and also the best manner of preparing and preserving them.

The Society offers a prize of 200 Imperials to the person who will produce the best technical and chemico-physiological examination of Cich. and Leon.

2. The oxides of metals have been discovered in many plants, not only iron and mangnese, but also copper.† It has been lately shown that other metals also—for instance, lead, tin, zinc, nickle, and cobalt—exist in plants, and can be seen in their ashes. Now, since it has not yet been shown what portions of these substances are of use in the development of plants, the Society desires that any one of the common trees of our forests, for instance, the oak, may be carefully examined with reference to its particles of metal, and in such a manner that it may be ascertained, by comparing with each other the different portions of the tree, as the wood, bark, leaves, and fruit, what quantity of metal exists in each part. The nature of the soil in which the tree grows must always be regarded.

The prize is 200 Imperials.

The Essays may be written in Latin, French, English, German, Swedish, or Danish. They are to be known not by the name of the writer, but by any mark which may designate his name and residence. Members of the Society, and persons living in Denmark, are not allowed to be competitors for the prizes. The person who shall give a satisfactory answer to the questions proposed shall receive a gold medal valued at 50 Danish ducats.

* Leontodon Taraxacum or Cichorium Intybus.

† I have rendered "æs" copper instead of brass, because the latter metal is not found in nature. "Cuprum" is the proper word for copper.

Improved Washboard. By Royal Hatch, Assignor to H. C. Hatch, of Strafford, Vt.—The washboard is composed of beaded rounds placed together lengthwise in a frame, the beads of one round fitting into the spaces between the beads of the next round, so that a perfect corrugated surface is obtained for the clothes to be rubbed over. The water will pass through the rounds, but the suds will be retained, spattering will be prevented, &c.

EXPERIMENTS IN GROWING INDIAN CORN.

At the late meeting of the Oneida County Agricultural Society a premium of $15 was awarded to Mr. H. H. Eastman, of Marshall, for a series of experiments with different manures in the culture of Indian corn. The following statement was furnished the Society by Mr. Eastman:

Different kinds of manures used.	Manures how applied.	Quantity of manures used.	Weight of produce in the ear. *Lbs.*	*Oz.*	Rate per acre. *Bush.*	*Lbs.*
No manure..........			30	8	52	50
Compost*...........	In hill.	Half shovelful.	48		82	68
"	Top hill.	"	25		43	15
Quick lime..........	In hill.	Half handful.	38	8	57	68
"	Top hill.	"	30		52	50
Gypsum.............	In hill.	"	36		62	16
"	Top hill.	"	33		57	03
Ashes...............	In hill.	Small handful.	30	12	53	10
"	Top hill.	"	38	8	66	38
Equal parts lime, gypsum and ashes..........	In hill.	"	32	4	55	52
"	Top hill.	"	35	8	61	25
Guano†.............	In hill.	Tablespoonful.	20		34	40
"	Top hill.	"	33	8	57	63
Guano and Superphosphate of lime‡.....	In hill.	Do. of each.	51	4	88	41
"	Top hill.	"	37		63	67
Superphosphate of lime§	In hill.	Tablespoonful.	37	8	64	57
Lime...............	Top hill.	"	45		77	55
Equal parts poudrette, superphosphate of lime & guano‖.....	In hill.	"	43		74	23
"	Top hill.	"	33	8	57	63
Poudrette...........	In hill.	Handful.	41	12	72	11
Night soil composted..	In hill.	Double handful.	33	4	57	33
Hog manure.........	"	"	49		84	49
Unfermented horse manure..............	"	Half shovelful.	39	12	68	49
"	Top hill.	"	28		48	28
Hen manure..........	In hill.	Handful.	48		82	68
Carb. of lime.........	"	"	42		72	42
No manure...........			32		55	22

* Composted 4 muck, 4 hog manure, 1 lime and 1 ashes.
† Intermixed with soil. Seed injured.
‡ Superphosphate on seed; Guano on outer edge of hills.
§ In contact with the seed.
‖ Intermixed with the soil.

The above experiment consists of 28 rows, and 40 hills in each row. The ground was green sward, plowed early in the spring, about 5 inches deep, harrowed thoroughly, and marked out into rows two ways at 8 angles, 3 feet apart each way. Planted the 12th of May with a "white flint" variety of corn. The cultivation of the growing crop consisted mostly in the use of the cultivator, which was run through between the rows four times alternately in different directions—with one slight hoeing only with the hand hoe. Soil, gravelly loam. I calculate the cost of cultivation, not including cost of manure nor interest of land, at about $13 per acre. The corn stood upon the hill till killed by the frost, when it was husked, each row separately, and weighed in the ear, allowing 70 pounds to the bushel.

CULTURE OF POTATOES.

An interesting discussion on this subject was had at a late meeting of the American Institute in this city. The experience of different persons seems to lead them to opposite conclusions on this, as on many other topics. Our readers will remember a very different course from that here recommended, was advised by a practical writer, who gave his experience on the speedy raising of potatoes, which was published in one of our recent issues.

In the recent debate, Mr. Sears, of the *Phalanx*, New-Jersey, said they had experimented largely on the best manner of preventing potatoes from rotting, and found that they kept best when taken immediately from the field as soon as dug, and put in slatted bins in a cellar, where the air could circulate through the pile, but no light ever came to them. He never observed any difference in their keeping, whether put up wet or dry. Their potatoes grew in dry land, the soil of which did not adhere much to the tubers.

Prof Nash, of Amherst, Mass., had long been satisfied that potatoes never should be exposed to the light. Many farmers are in the practice of sunning their potatoes all day after they are dug. It is a bad practice—no matter how damp they are, or how much dirt adheres to them. My father used to raise large crops of potatoes, and his method was to have them put in carts as fast as dug and hauled to the house, and dumped into a shute that led down to the bin in the cellar. In the spring the potatoes under the chute were found buried in earth, and were always the soundest and best, and yet had always been in damp soil. They were often found as fresh in May, as they were when dug in October. Probably the true economy of growing potatoes is to plant them in light land on inverted turf, and only calculate upon a light crop. They are certainly less liable to rot in such land than in richer soil. I would plant them in four-inch furrows and cover them with a harrow, and just as the plants begin to look out, give them another harrowing, and afterward, hoe once, but raise no hills. A good after-dressing may be made by mixing four bushels of ashes, one bushel of plaster, and half a bushel of salt, and give twelve to twenty bushels to the acre.

Judge Meigs.—If the soil is wet I would hill; if dry, level culture will do.

A Connecticut farmer said he planted a piece of under-drained swamp, one half in ridges and one half flat, and that the first produced a good crop, while the flat culture was a decided failure.

Robert L. Pell.—Col. Muir, of Scotland, has produced potatoes from clay forty feet below the surface. This contradicts the idea of the potato being indigenous solely to America.

Prof. Nash.—Forty years ago the people of Deerfield, Mass., adopted the level system of potato culture, because experience taught them it was far preferable; yet so slow are farmers to adopt new systems, that the plan has not spread out fifteen miles from the original starting point. I do fully believe that the loss in hilling corn and potatoes in Massachusetts during the 225 years that it has been practiced, both in loss of labor and productiveness, would make a sum sufficient to purchase the whole State, both real and personal property.

Robert L. Pell.—I planted potatoes on a drained swamp, and found that the rows over the drains were far superior to the others. From further experiment I became satisfied that the effect was produced by the circulation of air through the drains and the soil. I raised 425 bushels per acre; I used no manure, because the soil was that of a bog-swamp. I afterward put 200 bushels of lime per acre, and then hauled out and used the muck, and found it as good as manure.

Mr. Lowe said that raw muck put upon sandy land makes good manure for potatoes. So does spent tan bark.

TRIAL OF COKE ON THE HUDSON RIVER RAILROAD.

A TRIAL of two samples of coke, one English, the other American, has been recently made on this road. The object in making it was to ascertain whether it would be expedient to purchase a lot of English coke, which was offered at a very low price. The engine used for the experiment was a common wood-burner. The coke burned freely, and made steam well; but in a very short time the fire-bars were melted by the English coke. This was owing to the clinkering, clogging of the grate, and consequent unequal and blow-pipe action of the draft, which, while the whole fire was not very powerful, produced in parts such intense heat as to melt the bars.

The American coke was free from clinker, and burned freely without fouling the grate or leaving anything upon it or apparently injuring it.

There was no design to ascertain the amount of water vaporized, and no notes were kept from which the relative economy of coke and wood can be determined. All that is proved is, that a common wood burner can work well with coke, if it be of such quality as will not foul the grate.

The difficulty of melting fire-bars is an old one; the early engines on the Liverpool and Manchester Railway used sometimes to have a new set of bars destroyed in a single trip. But since companies have taken measures to obtain coke of a suitable quality there has been very little trouble. The obvious conclusion in this case is, that the English coke tried was very different from that now commonly used on English roads; and yet, had it now been tried for the first time, and without the concurrent trial of a better quality, we should probably have been assured, as the result of it, that coke could never be used in locomotives.

But since it can be used, without the expense of altering fire-boxes, we conceive it to be a duty to the traveling public to adopt it, as a means to get rid of the smoke and sparks of wood, and also a great part of the noise which is made by the striking of the steam against the cone, and other parts of the spark-arrester. This contrivance sends out the smoke in a direction nearly horizontal, and insures to it the best chance of finding its way into the cars. But from a straight and unobstructed chimney the smoke is projected upwards clear of the train, and it is only when there is wind blowing against contiguous embankments, or other objects to disturb its course, that the smoke touches a train.

Even if the cost of coke should be greater than that of wood—instead of less, which is most likely—this company would probably find it profitable for passenger trains; because the sparks, which compose the greater part of the solid impurities of the air which they supply to their passengers, are so injurious to ladies' dresses, that many prefer to go by steamboats, who would go by rail if this nuisance were removed. This is our argument.—*Railroad Advocate.*

THE VERBENA.

This is a beautiful flower almost in perpetual bloom, and presenting every variety of color. The *Country Gentleman* gives the following article and list:

Search the whole list of plants—and there name is legion—and there is none, taken all in all, that can at present dispute the palm with the Verbena as a summer flower for bedding purposes. So varied are they in color, somewhat so in habit also, that a large space could be planted exclusively with them and yet present anything but a' monotonous appearance. Indeed so indispensable are they in the arranging of very extensive geometric flower gardens, that they always form a large proportion of the entire plants used. No other plant of the herbaceous character, is so nicely adapted to supply this demand with so little trouble. Secure a few dozen pots in the fall, of a healthy character, and by the time they are wanted to plant out in the spring, with proper conveniencies, which need be nothing more than a very small greenhouse and abundance of pits, thousands of the best plants may be obtained. Any one who remembers the original imported kind, *Melindress*, a very rich scarlet, from Buenos Ayres, and considers for a moment, that the numberless different tints and shades now to be met with, counted by hundreds in Florists' catalogues, have sprung directly from that, can have no better illustration of the sportive character of certain plants when raised from seed, and which only need a little care in the selecting of the seed to be improved. Even if sown out of doors, and treated as an annual, it will flower in August and continue till entirely destroyed by hard frost. Any ordinary good garden soil will grow them to perfection, providing it is rich enough, and if too stiff and retentive in its nature use plenty of street dirt, good sharp sand and decayed leaves, while if the soil is already very sandy, thoroughly rotten manure should be used very plentifully. To keep in a flourishing condition all summer, they require abundance of room, so that as the branches extend themselves they can find nourishment by the roots that strike into the soil from almost every joint. If planted less than a yard asunder they soon fill the entire space, after which the flowers will not come so freely. Where land is plenty and a large space of it to plant, four or six feet asunder is not any too much, as many of the strong growing kinds will extend over a space of six or eight feet during the season. In a plant like this, sporting into so many different varities, and raised from seed by so many florists, almost every locality having one or more, who is raising and distributing those of his own naming, it is difficult to give a selection of kinds obtainable, and suitable to all, but the following list are known and tried kinds, and if not *as good* as some of the new ones advertised by the different florists, they can all be depended on as first-rate.

Auricula, lavender blue, white eye.
Black Warrior, dark indigo purple.

Blue Bonnet, deep blue, shading to purple.
Indispensable, (Beck,) very rich crimson.
Defiance, the best scarlet.
Fair American, large white, strong grower.
Henry Clay, rich ruby, maroon center.
Jenny Dean, bright cherry, pink center.
Mad. Lemounier, fine satin rose, white stripe.
Mad. Sevigne, dark plum purple.
Mazeppa, rosy lilac and purple.
Phenomena, intense scarlet crimson.
St. Margaretts, rosy scarlet, violet center.
Thalia, pure white very fine.
Uncle Tom, very dark maroon.
Visceta, rich crimson maroon, free bloomer.
Beauty Supreme, satin rose.
Beauty of Astoria, light pink, shaded, red.
Clotilda, lilac and purple, very showy.
Fadette, bluish white scarlet eye.
Fair Maid of Perth, bluish, cherry eye.
Gen. Scott, blood-red or crimson.
Gem, (Bauch,) bluish pink, shading to pink in center.
Heroine, deep lilac blue.
Imphigene, lilac and rosy purple.
Lord of the Isles, fine deep rose.
Mad. Clonet, rosy crimson, shading dark in center.
Macrantha, rose white, rose purple center.
P. B. Mead, rich shaded pink.
Painted Lady, white crimson center.
Queen of Whites, good white.

ARTIFICIAL PROPAGATION OF FISH.

At a recent meeting of the Boston Society of Natural History, Dr. H. R. Storer, at the request of the President, briefly stated some of the well-known facts relative to the artificial propagation of fish.

The operation of obtaining the ova and milt is very simple, consisting merely in pressing the body of the fish, from the head towards the tail, and collecting the spawn in water, in a common vessel. The contents of the vessel should be put in motion occasionally, to prevent the collection of parasitical growths upon the eggs. Freezing, or even complete dessication of the eggs does not always necessarily destroy them; so that some kinds of eggs may be transmitted from one place to another in the dry state, and ready to be matured. Dr. Algernon Coolidge, of Boston, has estimated the cost of raising one million of trout to be less than two hundred dollars.

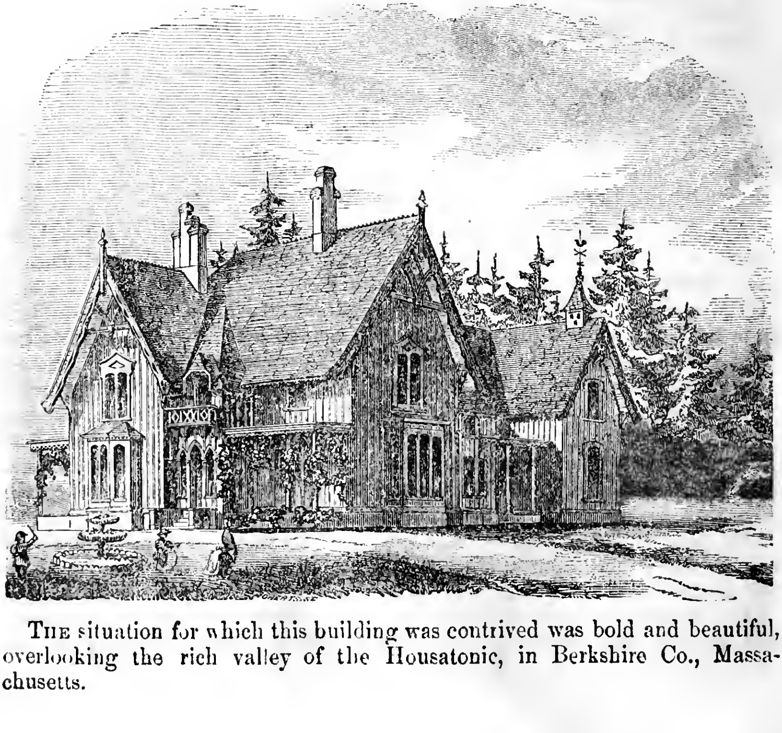
Dr. Storer referred to the extirpation from this Commonwealth entirely of salmon and almost entirely of trout, and to the constant demand for these fish in the markets at exhorbitant rates; to the comparatively small supply of salt water fish, wholly insufficient, if proper efforts were made to extend the country and Western trade; and to the excellence of many species of fish, now unsaleable because not generally known, as the whiting, turbot, &c.

The feasibility of artificially propagating salmon and trout has been proved in France and Scotland, and that of shad and alewives has been proved in Connecticut, on a small scale, by Dr. Wm. O. Ayres, formerly a member of this society.

The capacity in many species of fish, of adapting themselves to new localities is well known; from fresh water to fresh water, as is shown in the instance of the common pickerel, placed in the ponds of Berkshire County, where there were none before, and in the instance of the great Northern pike of the lakes, transplanted to the Connecticut river; from salt water to fresh water, as is illustrated by the presence of smelts in Jamaica pond; and from salt water to salt water, as is proved by the tantog planted in Massachusetts bay, North of Cape Cod, and consequently in water of much colder temperature.

Dr. Storer alluded likewise to the comparatively small expense, both of the preliminary experiments, and of the business when established upon a permanent basis; to the adaption of many of the waters of this State to this purpose; and to the advantages of a greater supply of fish to the general health, and in reducing the prices of meat

AN ORNAMENTED COTTAGE.

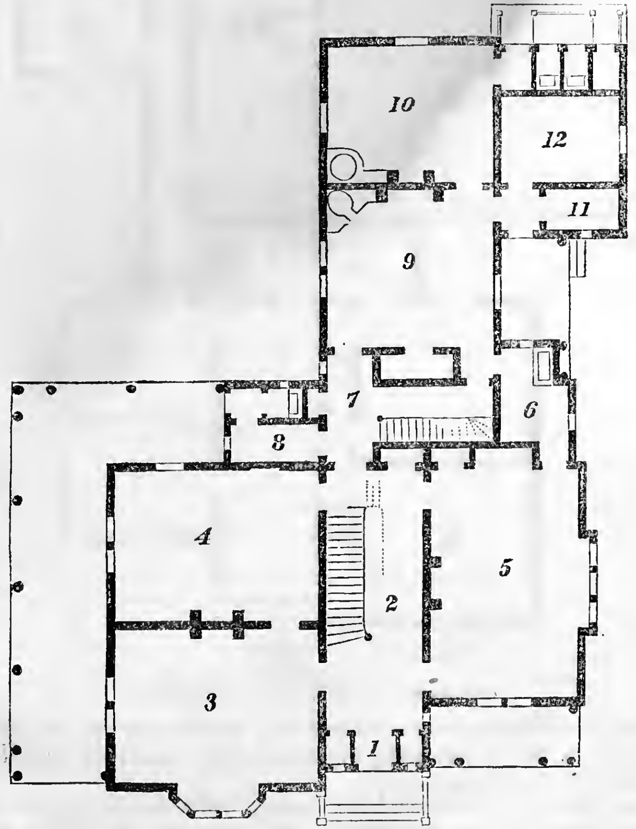


The situation for which this building was contrived was bold and beautiful, overlooking the rich valley of the Housatonic, in Berkshire Co., Massachusetts.

The plan is arranged thus. In front, a few steps, protected by an overhanging balcony to the window above, lead to the hall door, which opens into a vestibule, No. 1, on either side of which are hall closets with sash doors towards the inner hall, and narrow windows upon the exterior.

Within this is the inner hall, No. 2, and in it the principal staircase. This hall is ten feet in width, and, exclusive of the entry and closets, twenty-eight feet in length.

Connecting with it on one side is a drawing-room, No. 3, with a projecting window in front, and a double window opening on to the side veranda; its dimensions, exclusive of bay-window, are twenty-two by sixteen. In the

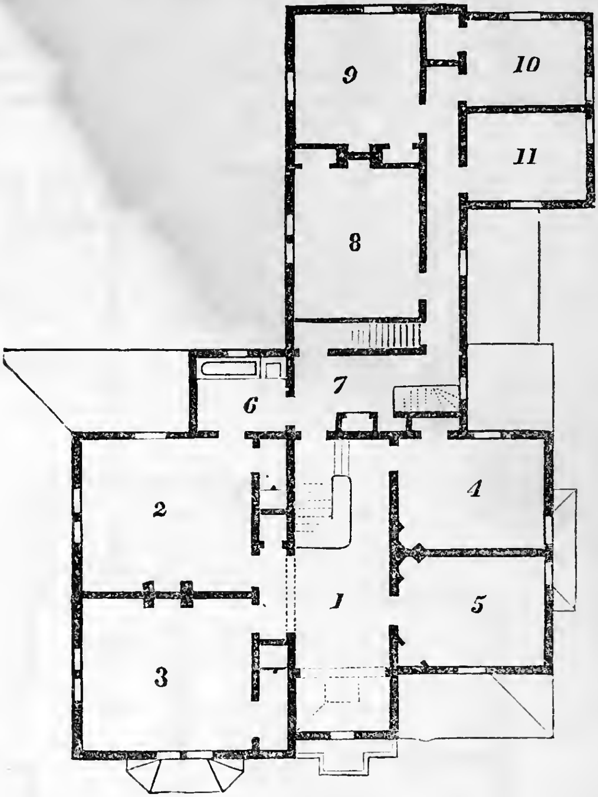


ORNAMENTED COTTAGE—PRINCIPAL FLOOR.

rear of this is the library, No. 4, the same size as the drawing-room, with the exception of the space inclosed by the projecting window. In this room are double windows to the veranda at the end, and one at the side, corresponding to which is a recess in the wall for a mirror, the finish around which should be the same as that to the window, and the symmetry of the room will thus be preserved.

Upon the other side of the hall is the dining-room, No. 5, a fine apartment sixteen by twenty-four, exclusive of a recess at one end for a sideboard, and a projecting window upon the side. The room also contains a closet, and attached is a pantry or waiter's room, No. 6, with a sink, and a door connecting with the kitchen.

At the end of the principal hall a sash door leads into an entry, No. 7, from which is the back staircase to cellars below and floors above. In this



ORNAMEDTED COTTAGE—CHAMBER FLOOR.

is a closet for fishing-apparatus, baskets, &c., and from it a door leads into a dressing-room, No. 8, containing wash-stand, water-closet, and an outer doorway leading to the veranda.

Beyond these is the kitchen, No. 9, a large, well-lighted room, with a large closet at the end, opposite the fireplace, and next the latter provision is shown for an old-fashioned brick oven, if the family desire such an appendage. The fireplace is of a large size, suitable for a Metropolitan range and roaster.

In the rear of the kitchen is the laundry, No. 10, with a boiler inserted near the fireplace, and from this a door leads into an entry connected with a platform conducting to the outer yard, and, as shown by the plan, two water-closets, and a tool-house, are inclosed within this portion of the building. The remaining portions of the plan are No. 11, a larder, and 12, a small wood-house for the storage of fuel for immediate use. A side veranda shelters a rear entrance to a hall leading to the kitchen, &c., by the side of the larder, and examination will show that every comfort and convenience has been secured, in the arrangement of the plan of this floor. The height of the rooms in the main part of the house is eleven feet, and that of those in the kitchen wing, nine feet six inches.

The chamber plan shows a large hall, No. 1, at the end of which an arch opens into a lower bay, from which is a window on to the balcony. From the side of the hall a similar arch leads into a vestibule conducting to a chamber, No. 2, by the side of which is a large hall-closet, and in the room itself one of ampler size and fitted with drawers.

In front of this is a chamber No. 3, and at its side a large closet. Upon the other side of the hall, above the dining-room are chambers 4 and 5 with closets.

The wing building contains a bathing-room, No. 6, which is provided with a door into chamber No. 2, so that in case of necessity, they could be used in connection. The entry No. 7, has in it a house-maid's closet and sink, and under the stairs which lead to the space in the roof above the ceilings, in the principal body of the house, is a large linen closet.

Nos. 8 and 9 are large bed-rooms, each one provided with a fireplace and closets, and 10 and 11 are sleeping-rooms of smaller size.

In the front part of the house the high pitch of the roof affords an opportunity of partitioning off, if wished, three good sleeping-rooms for servants, though independently of the increased accommodation thus capable of being made, the plan shows that a liberal amount of room is laid out upon this floor.

The cost of this building, finished fully, including a large furnace to render the house comfortable in case of winter occupancy, plumbing and painting, would depend upon situation; in the instance for which the design was made, the contract comprehending all these, was about six thousand dollars, but a very careful finish was insisted upon, and the house contains all the appendages found in a suburban villa.

These engravings and the substance of the description are taken from "Homes for the People," an excellent work by Gervase Wheeler, an architect in this city, and published by Mr. Scribner. The volume is well worth the attention of those intending to build or improve. The price of the volume, sent by mail, is $1.

FOR THE PLOUGH, THE LOOM AND THE ANVIL.

A GOOD FARM GATE.

Mr. Editor :—I cannot believe that we, the farming community, sufficiciently appreciate your valuable work, the P. the L. and the A., (name too long,) as a medium through which to interchange our experience and various ideas of improvement.

We seem to treat it as too many of us do our lands; we willingly glean from its pages as from our fields, whatever we can appropriate to our use, but never think of making any similar return. Thus, my dear sir, we are taxing your brain and your pen to supply, and gather from sources at your command, such material as you may think will be acceptable to us, or adapted to our wants. I do not know whether you are a practical farmer or only an editor; but I know that many of our practical farmers can furnish many articles, upon various subjects of practical utility to each other, thus receiving and conferring mutual benefit.

Hoping that others will act upon the above suggestion, I will contribute my mite, by offering the best pattern and mode of hanging a Farm Gate.

It is very desirable to every good farmer to have good and substantial as well as cheap gates, at all places on his farm where there is a necessity of various passings with wagons or stock, &c.

This gate is hung upon a cast-iron pivot, with an ink or socket let into the beam in an inverted position. The pivot should be about 1 inch in diameter at the point for a heavy gate, for one of 500 is as easily opened and shut as of 100 lbs. I need not remind any one of the necessity of selecting the most durable timber for posts. Locust is the best. To preserve the post from absorbing rain at the the top, it may be tapered to about 4 or 5 inches, and secured by an iron band to prevent splitting.

The beam should be tapered from six inches at the pivot to about 3 at the point. Four bars framed into an upright will generally be sufficient; more or less may be used. The plank or boards should extend a little so as to lap upon the post against which it is shut and fastened. Any fastening may be adopted according to fancy. The mode which I have adopted, and think equal, if not superior to any other, is to insert a hook into the post to receive the end of the beam. This is secured firmly in its place by a pin passing through the post; the pin should be secured by a string or a small wire chain is better, of just sufficient length to allow the pin to be drawn into the post, but not entirely through, thus it is always kept in place, and easily forced in with the finger or a stick if on horseback, and as easily shut and fastened after passing through. After the gate is hung in its place, a weight sufficient to balance it should be attached below the end of the beam which extends beyond the post. This may be done in different ways; a billet or log of wood, fastened by slats pinned upon the sides, is perhaps the simplest. A very neat and convenient way is to make a box into which rock or any heavy article may be placed till the gate is balanced. The beam should not be placed at the top nor mid-way the gate, as I have often seen them, but just one-third should be above and two-thirds below the center of beam and weight as before described, and the gate will always hang perpendicular.

The superiority of this gate will doubtless be obvious to your readers. 1st. it is the cheapest, if made plain; for it is equally adapted to lattice or any kind of fancy work. 2d. The pivots cost only $\frac{1}{8}$ to $\frac{1}{4}$ of the price of common hinges made by the black-smith. 3d. It is impossible for it to swag or drag upon the ground, as common gates are apt to do, often requiring the strength of a man to open or carry them. 4th. It is as easily opened and shut as a house door. 5th. It will last much longer than common gates, say four times as long if well made and painted, as all gates should be which are exposed to the weather. One day's work by any plain carpenter will make one of these gates, and the castings may cost 25 to $37\frac{1}{2}$ cents. I furnished my own patterns, and they weighed 5 lbs. There should be a collar or flange around the pivot to rest upon the top of the post.

I am, dear sir, very obediently yours, J. Mann.

Deerfield, Va., April 21, 1856.

INFLUENZA OF HORSES.

CONTINUED FROM MAY NUMBER.

BY CAPTAIN RALSTON, GRAD. ROYL. VET. COLLEGE, AND MEMBER ROYL. COL. VET. SURGEONS. ETC.

Your correspondent is no murmurer at trivial "*faux pas*," accidental or not and be the same of "the press," an' so please you, Mr. Editor, or other grave stumbler; but he cannot refrain from a comment on his last article, as it appears in your pages of last month. Has its press-connection not been very lax? or is it that his own caligraphy has been of the shape and character of that of the old gentleman, an official of a Scotch bonding warehouse, who never could read his own hieroglyphics next day, and wont to testily answer, when asked for explanations of his endorsations of office-papers, "What come you to me for, eh? Sir, I am docket-writer an' no docket-reader." However, any one, even a corrector of "the press," may misapprehend a technical term; but still, it is somewhat of an irksome fact to be made, in a professional communication, to say "impinctival" for "conjunctival;" "imitative tinctures," for "irritative tinctures;" "tartarged antimony," for "tartarized antimony;" etc. Moreover, of constructive punctuation it might be objected that there were some little room for mending, on an occasion?

The previous observations, on (so-called) "influenza simplex," are proposed to be here followed up with some, on "influenza maligna;" but it must be admitted that in any attempt to do so are contained many elements of a "questio vexata," inasmuch that neither satisfactory data of fact or inference can be brought to bear upon this latter peculiar type of disease; one whose causes and effects, symptoms, indications, and terminations are each and all full of perplexity. Electrical phenomena, and deranged conditions of the atmosphere; nervous, infectious, and contagious complications, are all mixed up with considerations of it. And how much of real or reliable progress has medical science and investigation, as yet, made towards apprehending, or revealing, the mystery in which nature seems to have shrouded those first-named phenomena, whose relations to all vitality, whether animal or vegetable, in normal or abnormal states, are so all-pervading!

At the present time, influenza and its morbid coördinates appear to be cognate of extra claims to attention. Well nigh half of the population of Paris are said to have been suffering from quinzy, or some other form of influenzal malady; and in this country, as elsewhere, the prevalence this spring of affections of the air passages, and of neuralgic ails, has been of a very marked character. But here it is in relation to animals—more especially horses—these remarks are intended. It may, however, be passingly noted, that when epidemic sickness is produced by deranged atmospheric conditions, and which operate oftentimes inscrutably, that in the human subject fatality seems to be most apt to attend upon cases where the internal tissues and glands of the alimentary passages and abdominal organs sympathize and take on morbid action; while in animals, fatal results seem most to accompany the manner in which the membranous linings of the air-passages and cavities of the chest yield to diseased action.

Influenzal disorder, in various localities, as well as in various gradations, has been, and is now, a very formidable evil in many parts of this State, as in other regions. It is a class of malady which has proved a very devastating epidemic among horses and farm-stock, at frequently recurring intervals, in all parts of the world. At the present time, its ravages and progress in Europe have been so serious, that the French and different other governments have taken alarm, and are directing scientific inquiry into its origin, and the adoption of veterinary measures of precaution and remedy. Does it not emphatically behoove that in this great agricultural and stock-raising country, timely forethought should be stirred up, and that this should lead to means for the introduction and diffusion of veterinary knowledge and skill, through the various states and districts? Adequate advice and precautionary measures depend wholly thereupon, and from no other source can rational remedies ever be derived in cases of disease, or information as to improved care and treatment of animals be ever expected to flow.

Influenza, in its various phases, may be epidemic or endemic; the former, when supervening in a very extended or general manner; and the latter, when peculiar locality seems more immediately to be the occasion. In its simpler form, of catarrhal cold, the proximate cause appears to be dry, searching weather or winds, attended by a good deal of mid-day sun. In its malignant character, does it present only an aggravated degree of the same complaint, or is it now especial in cause and effect? This is a direct and may be inferred to be a simple question, but it is not one to be either very well or directly answered. For himself, the writer has come to be forcibly of opinion that in influenza maligna are recognizable causes and effects that are both specific; that to produce it there is in operation, not only the aforesaid characteristics of weather, but some great alteration of the atmospheric constituents—perhaps their chemical decomposition—and that the air when inspired so, acts as a local irritant superficially, and as a poison when absorbed by the lungs. And he goes further, for not only does he believe in this specific action on the circulation, through absorption by the thoracic viscera, in animals, but also at times through the stomach and lining surfaces of the human alimentary canal; when the result will be deranged action of the bowels to correspond.

Of influenza as an endemic, proceeding from locality, an illustration not a little pointedly in place may be adduced. There is a rising hilly district, called "Gullane Links," (*links—Scotticè; downs—Anglicè*) near Edinburgh. This spot is situated on the Frith of Forth, an inlet of the German Ocean, into which the river Forth debouches; and a more delightful, breezy summer "locale," for an exhilarating gallop, than is presented by the short, grassy, elastic turf of its slopes, cannot well be imagined; while the fertile, highly cultivated Lothians (the midland counties of the lowlands of Scotland) on three sides, with the fresh, rolling ocean-billows combing and sparkling on the other—and six or seven miles across, the shores of Fife, Stirling, etc., (as it were a fine landscape picture,) and having beyond all the range of the Grampians, so suggestive of the Highlands and the old clan-times—the whole, with the throned capital, its castle, spires, and hills in the view, combine no common scene:

"Edina! Scotia's darling seat!
Behold her Palaces and Towers;
Where *once* beneath a Monarch's feet,
Sat legislation's Sovereign Powers!"

If this be a digression little in keeping with the present thesis otherwise, *memories*, as best they may, must even be its plea! The capital upland levels, however, of Gullane Links, for condition-exercise and finishing well with race-horses, at one time rendered this a very popular training quarter, where were several public stables. Few or no horses go there now, however, because the place being open to that coast of Scotland where cold dry spring weather, along with north-easterly winds, is apt to prevail, for a few days at a time, and this often with bright April and May sun, it was found that the horses, particularly the two and three year olds, were very prone to influenzal attacks—or distemper, in racing parlance; and which, in some seasons, swept through the stables. Here, then, this disorder was evidently endemical. It usually yielded to judicious treatment; the most intractable symptom being tumefaction of the parotid and sub-maxillary glands, sometimes so great as to alarmingly impede respiration. The writer can recall the case of "Highlander," a valuable plate-horse, of Lord Fyfe's, who died of suffocation from this cause; a fatal termination, however, which ought not to have resulted, if any competent veterinarian had been at hand, as tracheotomy would have yielded instant relief to this symptom.

Having used the term of "finishing well," perhaps it may be only pertinent to explain, that being able to finish well means, in racing phraseology, that a horse's powers admit of his being extended or pushed at the end of a heat, or a race, without winding or distressing him; and, in training, a place for finishing well is a gentle ascent at the end of a line of gallop, where either an individual horse, or "a string," can be "hustled up," under the observant eye of the trainer, who judges of clearer wind and improving condition, from a better or more persevering style of "finishing," whether in a usual morning gallop, or "a trial," as the case may be. Again, as to the phrase "plate-horse;" it is a British one, which means that a race-horse of four years old and above, is in training to run for those royal plates, or cups, of 100 guineas, given annually by Government, at various courses in England, Scotland, and Ireland. The public object is the improvement of the national or general breeds, by hereby contributing to foster the raising of turf or thorough-bred horses, of substance and fine form, and possessed of powers to contest the palm in four mile heat-races, under very high weights; six years old and all aged horses carrying twelve stone, or 168 lbs. These horses, after being withdrawn from the turf, become the stud horses of the agricultural districts. Local racing associations and clubs likewise subscribe gold and silver cups and pieces of plate, in order to be given in a similar manner and view; but the distances more usually run in these instances are two miles.

That influenza maligna is a specific result of unbalanced, or abnormal, atmospheric conditions, is more easy to assume than to prove; but that it is so, has long been a conviction of the writer, however vague or speculative his reasoning, or feeble his attempt to convey his own impressions, may read. The morbid influences which he supposes to preside are intrinsic, as regards the aeriform medium we inspire and have our being in. Decomposition of animal and vegetable matters; neglect of drainage and the proper scavengering of cities; the hospital or lazaretto; the pent-up and impure surroundings of the poor or the ignorant—these and other sources may taint the air, or the spot, so that the former being breathed, or the latter touched, putrid fever, or disease of some distinctive type, low or typhoid, or more actively malignant, may be the consequence; and here is conveyed the ordinary ideas of infection and contagion; and no doubt correctly so, in so far. But that plague or Asiatic cholera, in the human subject, malignant influenza of horses, or murrain of cattle, are infectious or contagious, in the same sense, the writer is skeptical.

Irrespective, or short of such excess of aforesaid malarious agents as were capable of engendering positive disease, there yet may be other or lesser degrees of malarific agency, such as would go only the length of impairing constitutional stamina, in a manner to predispose the individual to yield under some sickly influence, which otherwise might have passed him by. Is it not, then, in this way epidemical, as well as other sicknesses assault some, while others escape, or that plague and cholera have seemed often to select their victims? The writer was serving as an officer of cavalry, in cantonments at Arcot, in the Southern Peninsula of British Asia, when cholera broke out, and the mortality proved terrific. The farriers and bandsmen of one of the regiments, the 13th Light Dragoons, were cut off in a very disproportionate degree, as compared with any other of the rank and file of the corps; and this undoubtedly was from the fact that these men had money to spend more freely (obtained from permitted private services, rendered out of duty hours), and were mostly intemperate. Still, the proximate cause of the disease, in all cases, was the same; and assuredly that cause was a peculiar condition of the atmosphere, which might be properly termed malarious, not from palpable agents extrinsic of itself, but from its own constituents being in an altered state, which it is ventured to here predicate might be one of malarific decomposition. This idea, or theory, is one the writer has not known to be broached by other observers; but no other inference seems to account for the phenomena of malignant cholera or certain other epidemics. He does not aim at confident assertion in his premises, or to offer strictly inductive proofs; but he was a very young officer when he witnessed the terrible scene of havoc from true Cholera at Arcot, and noted its singular and fearful march from thence around the globe, as may be said. During four or five years after, up to 1834 or later, it moved from east to west, as a kind of erratic zone or belt of unseen and death-striking miasma, carrying the first dire alarm of Asiatic Cholera to the continents of Europe and America. From this, and his after-studies in veterinary medicine, and opportunities to watch the onset, progress, and decline of epidemics, at various times, among the horses of several regiments of cavalry in his veterinary charge, have all concurred not only to imbue with these strong impressions, but forcibly to vest them in present opinions.

It may be not undue to superadd, that there may be states of the air, arising out of miasmatic impregnations, the combined product of heat, moisture, and decaying-vegetation, or pent-up impurities, whose effects resemble those assumed from the origin aforesaid. In such kind of contamination may even be the exciting cause—the yeast that starts the fermentation of those atmospheric conditions, the visitations of which are displayed in virulent or wide-spread epidemics. Such miasms, themselves, may give direct rise to specific fevers—as the jungle-fever of India, or the yellow-fever of the West Indies, or cholera-morbus, etc.—but the plague and Asiatic Cholera in ourselves, the malignant influenza of horses, and its congener the murrain, or pleura-pneumonia of cattle, infer chemically altered conditions of the atmosphere itself, and in which that mysterious but everywhere and all-potent agent, electricity, plays no insubordinate part.

In the observations of your last month's journal, new or substituted ideas of "typhus," and "typhoid complicities," with malignant influenza, were demurred against, and it was maintained that it was better to hold to the old notions." But not only was it against the innovation, but because neither the sudden attack of the latter—the rapid and extraordinary prostration of all energy—the disorganized secretions—nor the tabid state, which lingers on to death in from five to fifteen days, seem to correspond to usual ideas of typhus. The want of coherence of the blood and the escape of the serous part, through the bowels in human Asiatic Cholera, and the tendency to the same thing into the cavity of the chest of horses and cattle, in influenza and pleura-pneumonia, are facts to be noticed; as are also the peculiar vesicular affection of the mouth and hoofs of cattle, which attends the latter affection.

But, in horses, what really is the disease, then, which is treated of? The reply continues to be vague; and must be accepted in connection with the foregoing premises. It is not pleuritis, and it is not pneumonia, and yet partakes of affinities to both. The indications are rapid, yet sub-acute, contradictory, and bewildering. The veterinarian of true skill is baffled, and acknowledges it; and pauses, in doubt how to act where the symptoms are at once so indeterminate and conflicting. The two safe points to take up are—*First*, that all due measures of prevention on the part of horse owners and raisers should be adopted. When the atmosphere is electrically disturbed, and the weather dry, and the wind cold, as is so often the case in spring and fall, every careful precaution should be taken. In these states of weather, whether it be aeriform malaria or no, still every one may have observed in his own case how flaws of wind will create neuralgic aches, or some exposure bring on influenzal symptoms. Stabled horses should never stand in flaws of such wind, and in such weather should never be exposed while warm, or after sweating. Stable currents of air should be guarded against, although ventilation ought ever to be carefully studied. Horses that are in the fields, or depasturing, should at once be sheltered against the direction of the wind, in such states of weather. *Second*, that the onset or early stage of any attack, in such weather, should not be allowed to pass unobserved. It is only immediate measures of relief that are likely to repay owners at times of epidemics. If a horse be noticed with a slight defluction from the nasal membranes, or with a little cough, or degree of tenderness of throat, or any dryness or staring appearance of coat, let him be clothed more warmly; woolen leg-bandages be put on from the hoofs to the knees; a boiled barley or malt mash be given at night, with a dram of sugar and two drams of nitre in it; and let the drink be nitro-bran water. In the instance of the dry coat, should there be no soreness of throat, some blood-warm gruel, with a tumbler of sound ale, and two drams of ginger, in an ounce of honey stirred into it, may be given once a day for three or four days; or the stimulant treatment, generally, recommended in former article on influenza, may be had recourse to. But if the symptoms begin to appear more urgent, the head to be hung, the flanks to heave, etc., then instant professional assistance should be called in, if possible. Unfortunately, from the narrowed and neglected sphere of the veterinary art in this country, there are very few places where competent assistance can be obtained. In this case, owners, farmers, and others had better either trust to their own intelligence, or the "vis naturæ," rather than resort to those who are often as bold and dangerous in their hap-hazard remedies, as they are ignorant of all physiological or pathological truths. The blacksmith may mean well, or fancy he can be of some medical service, and, if he is consulted and relied on, there is no wonder that he should act. If he declined, then he was far above ignorance; for he had learned to curb the proneness to human vanity and a natural sense of self-interest. But that the educated and intelligent should yield to the delusion that because a man is familiar with horses, or forges, and nails on their shoes, he must, necessarily, have become pregnant with veterinary knowledge and its scientific attainments, is indeed surprising. This would truly be the "afflatus" divine, not of poetry, but of medicine; and if it correspondingly caught cobblers, they would be the best of physicians! The writer advises the horse owner to either trust to nature, or inquire and prescribe himself, if an educated veterinarian is not to be had;

and this without any failure of right and just respect to his horse-shoer, who may very properly be employed to bleed, or give a bolus, under his directions, should himself, or no one in his immediate employ be able to do so. In the very early stage of an influenzal attack, bleeding may do good, but only then. Horses are very soon unable to stand up against venesection in this malady; cattle still sooner and less able. What is now said as to treatment does not differ much from the observations in the preceding article. Whenever mucous discharge has come on, sedatives must be substituted for any attempts to take away blood, in a view to endeavor to reduce and regulate the hectic action of the heart and arterial system. From four to six doses of tartarized antimony, calomel, and opium may be given—say ½ a dram of each, made into a bolus with liquorice-root powder and treacle; two doses a day. Or ½ dram doses of digitalis may be alternately substituted. Counter-irritation should not be delayed, viz.: Trim the hair closely off along both lower sides of and under the throat, and for eight or ten inches broad on each side of the chest, behind the elbows; then soak all the trimmed space for a minute or so with large flannels, wrung in hot water; and immediately thereon rub in 2 ounces of blistering ointment. Nitrate of potass, or purified saltpetre, is a valuable remedial agent in this complaint. A small portion may be dissolved in all the gruel or drink given, and in the water offered. A rowel, dressed and changed daily, with savine ointment, may be inserted in the breast. For cattle, two setons eight or ten inches long, through the dew-lap, is better. As regards food, any may be allowed the animal will touch, for the disinclination to eat is usually great. Linseed gruel, oatmeal gruel, malt mashes—these are best; and the recovering animal should be tempted with these, in small cleanly portions—a bite of fresh hay—a handful of oats, etc. Clysters of gruel are good, at once to assist in evacuating the bowels and sustaining the strength. When the more active febrile state has passed, stomachics and tonics are most useful. To those more homely recipes stated formerly, the following may be added:—Carbonate of ammonia, 1 dram; gentian powder, 1 dram; ginger powder, 1 dram, stirred into an ounce of honey, and then mixed with a quart of gruel: or sulphate of copper, 1 dram; ginger, 1 dram; liquorice—root powder—2 drams, and treacle enough to form a bolus. The draught may be given in the morning, and the bolus at night, for three or four days, and then daily, alternately, for a week or more.

But, in conclusion, the writer reiterates that the defence against this epidemic is precautionary measures first; and next, early attention to any attack, and prompt professional assistance, if to be obtained. He has known two stock-farmers, in the same locality, one of whom, on the atmospheric conditions indicated prevailing, along with a certain direction of wind, collected all his unhoused animals and sheltered them merely in his stock-yards, while the other used no precautions. The mortality among the latter's stock was ruinous; he lost more than one-half of his whole herd of cattle. The former escaped with an amount of casualties that were very light, in comparison.

John C. Ralston.

IMPROVED PIANO-FORTE.

THE INVENTION OF SPENCER B. DRIGGS, OF DETROIT.

The private history of useful inventions, could it be known, would be found very curious. Their failure or success often depends on very trivial circumstances. Besides how many new ideas are conceived and partially formed, and even carefully studied, but, for want of complete development, are considered worthless, and are thrown away. That same idea is suggested, accidentally it may be, to some one who follows it out in the right direction, and it becomes a valuable estate.

It is but in the last week that we accidentally heard a tuner remark that the thick and heavy timbers which so abound in the piano-forte were of no use but to give it strength to resist the powerful tension of the strings. We knew this before, but at once we asked ourself the question, Then why not dispense with this cumbersome contrivance, and resort to an iron frame? The thought being but an incident, was laid aside, other matters demanding our attention. But lo! to-day we have seen that very idea most successfully carried out, and have proved its reality and its great value by the test of our own fingers and our own ears. It is not an hypothesis, or a probability. It is a demonstration.

Piano-fortes have heretofore been formed of cases, some two inches thick, over a large part of the sides, while the bottom and the interior is some six inches thick, filled up with blocks of wood for braces. The whole forms a heavy, almost immovable mass of timber, on which the wires are strung, while a thin sounding-board alone gives musical effect to their vibrations.

In this instrument, the invention of Mr. Driggs, the case is only half an inch in thickness, while the bottom is a single veneer, an eight of an inch in thickness. This is made stiff or firm and sonorous by being pressed into an iron frame of dimensions not quite so large as those of the wood, thus securing to it a concave form, like the back of a violin. This extends the entire length of the instrument.

The sound-board differs from the old form, chiefly in its braces and fastenings. The strings ride upon metallic saddles, fastened to the sounding-board, and have a clear, direct, and uninterrupted vibration from end to end.

The effect of these changes is a great increase in the volume of sound, particularly in the lower octaves, and a long-continued vibration in the entire series, so that even the higher strings emit a prolonged note. The character of the tone is improved in richness, and it has increased brilliancy without a wiry twang. It is a pure musical utterance, unadulterated with conflicting vibrations, and unimpeded by blocks of pine wood.

The firmness and fixedness required to resist the powerful tension of the strings (which amounts to some tons' weight), is obtained by the use of an iron frame forming a sort of skeleton box, of suitable dimensions, with cross bars judiciously arranged and slightly arched where there is the greatest danger of its yielding.

Messrs. Mason, Strakosh, Gottschalk, and other eminent professors, we are informed, have pronounced it a complete success. In fact we have seen a written statement to this effect, signed by the gentlemen above named. Mr. Driggs is about to establish a manufactory in this city. The instrument we tested is the only one, we believe, he has finished.

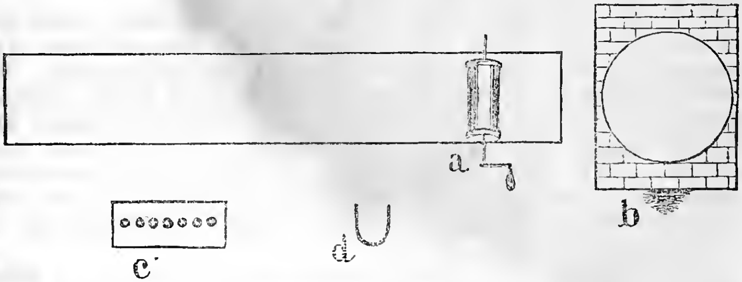
FOR THE PLOUGH, THE LOOM AND ANVIL.

WAX BLEACHING.

BY SAMUEL G. OLMSTEAD.

At Siena, Italy, I visited a *Ceraiuola*, an establishment for bleaching wax. The following is the process:

Twelve hundred pounds of beeswax is put into a large copper kettle and melted. The following rough sketch will show the order of the apparatus for preparing the wax for bleaching:



A is a cylinder of wood, solid, about $\frac{1}{3}$ immersed in water. *C* is a bottom view of a tin vessel, into which the melted wax is poured. The holes represented by the dots are small This is placed over the center of the cylinder *a*. *D* is an end view of the same. The fire is applied to the kettle at *b*. The melted wax is dipped out of the kettle into the tin vessel *c*. The cylinder is turned about as fast as a grindstone is ordinarily turned. The melted wax falls in fine streams about the size of small knitting-needles upon this wet cylinder. As it turns a thin ribbon of wax is formed, between $\frac{1}{4}$ to $\frac{1}{2}$ an inch wide, which floats on the surface of the water. The wheel is turned towards the kettle which produces a current towards the other end of the vat. One man dips out the wax into the tin vessel which is over the cylinder. Another turns the cylinder. A third, with a shovel made of willow twigs, dips out the wax, which is in thin ribbons, into large trays made with willow-twig bottoms, and two men carry it out into the yard, where there are four tables, placed side by side, each 10 feet wide, 60 long, and $2\frac{1}{2}$ high, with tops made of reeds, over which is stretched a coarse canvas cover—upon this the wax is spread. In handling the wax, spreading it, &c., it breaks up into short pieces. Two of these tables hold 1200 pounds, of 12 ounces to the pound. It is spread on the canvas about $1\frac{1}{2}$ inches thick. As it lays up lightly and loosely, the light of the sun penetrates to the bottom. They melt the wax over and make it into thin ribbons in the above manner twice during the process of bleaching. The process occupies thirty days. It is exposed to rain, &c. They prefer to have rain, because, when the sun is very hot, they are obliged to sprinkle water upon the wax to keep it from melting and running together. In this way it is bleached as white as snow.

Any housewife, with a simple apparatus, which she may get up herself, can easily try the experiment on a small scale, and bleach what she may wish to use in candles or for sale.

Immense quantities of wax candles are burned here in the churches, as every Sunday is a feast day, and almost every day in the week. There is no worship of the gods here except with, in, through or by means of wax. Different colored wax is used on different occasions. On some days the yellow, unbleached wax is used. Sometimes colored wax. This is a very economical arrangement, inasmuch as there is no loss of wax. That which becomes soiled, so that it is not a perfect white, is then colored. A church orders from one of these establishments what they require of various sizes, &c. They burn what they need, and the rest is returned and deducted from what they took. They thus pay for the deficit. Only a few inches of a candle which is five feet long are burned. There are five of these large wax establishments in Siena.

The large candles are made by suspending the wicks and pouring the wax over them. They are made round and very true by rolling them under a plank on a table. They are colored by putting in chrome, Prussian blue, &c. They are then hung up in the sun for a time to harden. They make some candles four or five inches in diameter and five feet long. Wax unbleached is worth 3 Pauls, or about 30 cents, bleached, 40 cents for a pound of twelve ounces.

STEAM FIRE ENGINES.

On the 6th instant a trial of Steam Fire Engines took place in the City Hall Park, pursuant to a call of the Common Council of this city, to compete for the following premiums, to wit:

For the best \$500. For the second best \$300. For the third best \$200. The call was answered by the appearance of two full-sized and one small working model; represented as follows:—First a full-sized machine with Cary's Patent Rotary Force Pump by Messrs. Lee & Larnerd, of this city. Second, a full-sized machine, by W. C. & J. S. Burnham. Third, a small model by James Smith. " A mere toy."

At 10½ o'clock A. M. the fires were lighted in the furnaces of the respective engines, and for a short period a dense smoke told conclusively that the war had actually begun. In twelve minutes from the lighting of the fires, Smith's boiler (which by the way we understand had been previously fired up, and fire withdrawn, and came on to the ground with the boiler so hot that the hand could not remain upon it without a very unpleasant sensation), showed steam up sufficient to blow off. Burnham succeeded in making some demonstration, by raising his safety valve to indicate that steam was up, but not until twenty-two minutes had elapsed, and the steam was not then sufficient to thrown a 5-8 stream over 80 feet. He finally succeeded in reaching about a hundred feet with steam, which indicated fifty pounds, but understood to have been something over a hundred.

Messrs. Lee & Larnerd's engine was ready to work with a pressure of 80 pounds in eight minutes, and in twelve minutes was blowing off at 120 lbs.

At this juncture, all three machines were fairly at work, and only one machine (Lee & Larnerd's) seemed to do the work required of a Steam Fire Engine. Burnham's machine labored under a very troublesome difficulty of keeping up a sufficient head of steam, having adopted the old-fashioned, upright, tubular boiler, which, with the dimensions he has brought forward, seemed entirely inadequate to produce the desideratum of communicating the amount of power required to project water to any great distance—having, as we are informed, but 125 feet of fire surface to supply cylinders 9 inches in diameter by 7 3-4 stroke.

The difficulty of getting a sufficient supply of steam from a boiler of such weight and dimensions, with the requisite machinery to complete a Steam Fire Engine, seemed to us to be one of the principal objections that might be urged against their practical utility and efficiency. We understood that Mr. Larnerd, the inventor of the boiler, used in Lee & Larnerd's engine, has devoted a year or more upon this particular and highly-essential point; and, from a careful and critical examination of the construction of his boiler, we are convinced he has obtained a very great desideratum, in so combining the tubes as to produce the greatest amount of heating and fire surface with the least possible weight, and at the same time, by his ingenious arrangements of passing the small tubes through the steam drum, which render such efficient aid in staying the circular and vertical plates, has precluded the possibility of an explosion. This is a point of great practical importance.

The Committee had provided three lengths of hose, attached to the Croton, to supply water for the cisterns, which received the suctions of the different engines. This supply proved to be insufficient even for Lee & Larnerd's engine alone, for any length of time when working up to her ordinary capacity and throwing two streams, through 100 feet of hose each, with nozzles 1 1-8 inch in diameter, to the surprising distance of 185 feet.

Some weeks since this engine was tried in the Park for three successive days, and produced most satisfactory results, continuing its operations from four to seven hours each day, and at times discharging from 500 to 600 gallons per minute, throwing it through 50 feet of hose, and a nozzle $1\frac{1}{2}$ inch in diameter 190 feet. To more thoroughly test its projectile powers, a line of hose was stretched from the hydrant near the fountain to the roof of the City Hall, a distance of nearly 700 feet, and there was no hose produced that could withstand the pressure, as a number of outsiders, who were in close proximity, could testify to from a practical experience.

We have been somewhat particular to ascertain the respective merits of Steam Fire Engines, as they have been exhibited from time to time, and in none do we find as many good points as in Lee & Larnerd's engine.

We think there can be no further cavil as to the entire practicability of this machine, and would recommend that all cities adopt it at once. We have recently learned that the city of Cincinnati has seven steam fire engines, on which she exclusively relies as a defence against fires.

COMPOSITION AND FORMATION OF STEEL.

At a recent meeting of the Boston Society of Natural History, Dr. Jackson gave an account of some researches into the composition and manner of formation of different kinds of steel. As commonly known, steel is a combination of carbon and iron, made by heating flat bars of pure iron in combination with charcoal. The carbon is first converted into oxide of carbon, and then unites with the iron as carburent. The result of this process is known as blistered steel, from the bubbles generated by gases upon its surface. Shear steel consists of parallel plates of pure iron and steel welded by folding, and uniting the bars of blistered steel. Cast steel is fused in pots of the most refractory material, and differs from cast iron, which likewise contains carbon, in this respect, that cast iron is a mixture of coarsely-aggregated matters, graphite and iron, whilst cast steel is a chemical combination of carbon and iron.

From the researches of Berthier, it is known that manganese will form an alloy with iron. When iron is mingled with a considerable proportion of manganese, a brittle compound results; but when combined with a very small proportion of manganese, a steel of very fine quality is obtained, which has the advantage over carbon steel; carbon steel becomes coarse when tempered in thick masses, from seggregation of the particles of carbon; but no such troubles arises with manganesian steel. Parties in England have lately introduced excellent wire for piano-forte strings, made of this kind of steel, as well as for cutting instruments and other purposes. In the wire, Dr. Jackson has found $1\frac{1}{2}$ per cent. of manganese, and has established the fact that it resists, to a very remarkable degree, the action of hydrochloric acid. Sixteen years since, Franklinite iron was manufactured by Mr. Osborn into very hard and fine steel. This steel required tempering at a lower heat than carbon steel. Many of our manganesian irons might be manufactured into steel by the simple process of fusion, and a steel of uniform character might be made without previous cementation with carbon.—*Boston Natural Historical Society.*

MARBLE, AND MARBLE SAWING.

Messrs. Editors:—Something more than six months since it was made known, through your columns, that an invention was needed for sawing tapering forms of marble. You accompanied that notice with editorial remarks, in which you prophesied that the required machine would be produced, and encouraged inventors to undertake the work.

Your expectations have been met. Sixteen patents have already been granted for machines of the character proposed, and several of these are now doing satisfactory work. In a short time a number more will be added to the list. With so many earnest, practical minds directed to a point a failure was impossible. This competition, unparalleled in point of success, has had, and must continue to have, the effect greatly to diminish the commercial value of each patent from the price it might have commanded standing alone. As no one or two of these machines can enjoy anything like a manopoly of the public confidence or of actual merit, they will at once be introduced into general use. What the patent right of a machine of exclusive excellence would have been worth may be guessed from the fact that several discriminating inventors, when they had satisfied themselves of their success in the production of a good machine, refused the $10,000 offered, and one of them sold the right of a single machine to one of the largest marble manufacturers in Vermont for $1000. An ordinary gang of saws is worth $1000 per annum, but this invention, by doubling its efficacy, makes it pay for itself the first year. The aggregate value of this invention must be very imperfectly understood by those who are ignorant of the present extent of the marble business in this country, of the present rate of development, and of its capacity for unlimited expansion. The business is yet in its infancy, although it has increased more than a hundred fold in ten years. I have no hesitancy in saying that the entire marble interest in Vermont is now valued by its owners, at not less than $15,000,000! Here is found marble of almost every hue, from the ebony black to the snowy white, and varying nearly as wide in texture. Sudbury, Brandon, and Middlebury have statuary marble equal to the best Italian, as the busts of our native sculptor, Kinney, testify. Roxbury has an inexhaustible supply of the *Verde Antique*, so identical in composition and appearance with that hitherto obtained from ancient ruins, that the best judges have mistaken the one for the other. Although these quarries have been opened but a couple of years, this new stone has already made its way into the new capitol at Washington, and into the parlors of the rich in New-York and Paris. The committee for the erection of the Benjamin Franklin monument in Boston, adopted it for that purpose after subjecting it to the severest tests of heat, cold, and pressure. The "Vermont Italian" quarry of Dorset, presents a bold front on the side of the mountain, half a mile long by one hundred and fifty feet high, and of a breadth which ages cannot exhaust. Rutland alone turns out half a million dollars worth a year.

And yet this formation which extends the entire length of Vermont, runs also through Berkshire County, Massachusetts, through western Connecticut, and, I believe, into New-Jersey. And probably the marble interests above briefly alluded to, are not a moiety of those which exist in the country.

No sane person, with these facts before him, will say that an improvement which at once does away with one-half of the expense of an important branch of the business is not of great value, and no reasonable person will charge mercenary motives upon those who were instrumental in the production of those improvements. Some inventors, who in their too great haste, seized upon the first idea that presented itself, instead of carefully and experimentally feeling their way to the truth, have made failures; and now finding themselves minus a trifling sum of money for patent fees and models, seem to forget that some waste of property and life always attends a great victory.

There is yet ample room in the marble business for the exercise of the inventive faculty; some important improvements are yet needed.

M. M. Manly, *in Scientific American.*

ENAMELS.

Enamel is a variety of glass, usually opaque and colored. It is formed by the combination of different metallic oxydes, with the addition of fusible salts, such as borates, fluates, and phosphates.

The art of enameling has been practised for ages, and the ancients carried it to a high degree of perfection. Specimens of their work yet remain, the composition of which and manner of applying are not now known. It was certainly practised by the Egyptians; and also by the Etruscans, from the time of Porsenna, 600 years before Christ. After remaining almost dormant for centuries, the art was again revived in Italy, in the time of Julius II. At the present time, the Venetians, possess the best processes of enameling, and supply most of the other nations with enamel of every variety of color.

Enamels are divided into two distinct classes, namely, transparent and opaque. In the former, all the elements that compose it are subject to an equal degree of liquefaction, and are thus converted into crystal glass. In the other, some of the elements resist the action of heat in such a manner that their particles retain sufficient aggregation to prevent the free transmission of light.

Enamels of all kinds and colors are produced by different combinations and processes; such as yellow, green, blue, red, violet, &c. The simplest enamel, and the one that serves as the basis of most of the others, is obtained first by calcining a mixture of tin and lead, in proportions varying from fifteen to fifty parts tin to one hundred of lead. This alloy has such an affinity for oxygen, that it may be calcined in a flat cast-iron pot, and at a temperature not above a cherry-red heat, provided there is not too much tin in the composition. As the oxyde is generated, it is drawn off to the sides of the metal, new pieces of the composition being thrown in, from time to time, till enough of the powder is obtained. When the powder is sufficiently cold, it is ground in a mill, levigated with water, and elutriated. After these processes, it is mixed with silicious sand and alkaline matter, or sea salt. It is then put into a crucible, or laid on a stratum of sand, quicklime, or wood ashes, and placed in a pottery kiln. It then undergoes a semi-vitrification. This serves as a basis of almost every enamel; and by varying the proportions of the different simples, different kinds are obtained.

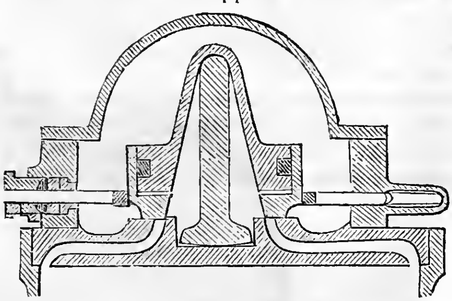
Enamel painting has been carried to a high degree of perfection. The colors used are prepared from oxydes of different metals, melted with some vitrescent mixture, laid on with a fine brush, the medium being oil of spike, or some other essential oil. It requires the utmost skill in using these mixtures, as they do not produce the coloring till after the article has been subjected to the process of firing.

Various processes have been discovered for enameling leather, and different metals, such as iron and copper. Cast-iron vessels are enameled so that the enamel will not crack upon being subjected to heat.—*Pen and Lever.*

IMPROVED MEANS OF RELIEVING SLIDE VALVES FROM PRESSURE.

INVENTED BY J. K. FISHER.

The novelty in this plan consists in the means by which the piston in the back of the valve is supported and carried. In order to explain this clearly we first describe the means heretofore used for this purpose



The piston has sometimes been in the cover of the steam-chest. But if the valve is ever lifted from its seat, as it may be in a locomotive, a piston in the cover will be forced outward, and held so that the valve cannot fall back to its seat when the pressure beneath it ceases; this method is, therefore clearly inadmissable in locomotives.

When the piston is in the back of the valve, there is a link or hanger connected to it, and also to the steam-chest cover. If this hanger were indefinitely long, it might not sensibly affect the action of the piston; but as it is impracticable to give it much length there is always this difficulty—that, as the lower end of the hanger moves in a curve, the piston slides up and down in the cylindrical cavity of the valve; and as the direction of the hanger is oblique when the valve is not in the middle of its travel, it strains towards the center, pressing the piston alternately against the forward and back halves of the cylindrical cavity; thus rendering it liable to considerable wear, as the sliding motion takes place.

To remedy this, Mr. Fisher places under the piston a sector of a wheel, which rolls upon a planed way in the exhaust passage. The cut shows the arrangement. In the back of the piston there is a sort of hollow steeple, to allow room for a sector or rocker of long radius, so that the friction and wear may be slight. And to accomodate this steeple there is a dome in the steam-chest cover. The piston may have packing of a very simple kind, as there will be so little wear that no provision for it need be made; and it may be ground in with emery.

It is obvious that this sector will carry the piston in a straight line; and there will be no slide of the piston in its cylinder, except when the valve is lifted; and that the piston will not be pressed against either side of its cylinder, except with the slight force due to the friction at the axis, and the rolling resistance at the rim or foot of the rocker. Hence, if the packing be well fitted at first, there will be no danger of its becoming leaky, or unsteady from wear.

The advantages of relieving the valve from the pressure on its back are considerable. First, power may be saved. A writer in the London *Artizan*, a few years ago, showed that, if the co-efficient of friction be taken at 2, which is the usual estimate where oil cannot be kept in its place, the motion of the valves of a first-class locomotive of 750 horse power, would consume 35 horses' power, or more than 4.6 per cent. of the effective power of the engine. Now as .85 of the pressure may be thrown upon the piston, we may, after due allowance for friction of the rocker, assume that .8 of this power can be saved, and therefore that the power to work the valves may be reduced to a fifth of what is under full pressure; or, 7 horse power, less than 1 per cent. will suffice. Second, the exhaust passage may be made much wider, which will allow freer egress to the steam and relieve the piston from a part of the back-pressure. Third, the steam ways between the ports and cylinder may be shortened, so that less steam will be lost in them. Fourth, the valve gear, by being relieved from eight-tenths of its strain, will suffer less wear, and be more easily handled, and keep in better order; and it may be made lighter and less expensive. Fifth, the liability to strain the parts by compression when reversing, or if water is in the cylinder, is greatly reduced; as the area of the valve minus the area of the steam ports.

The object of publishing this is to induce some one to try it, on an engine; on condition that he shall have a fair proportion of the patent, if the device works well, and a patent can be obtained. If any party is willing to try it on such terms, he is invited to address a letter to Mr. Fisher, care of *Colburn's Railroad Advocate.*

Miscellaneous.

Musical Instruments for Churches.—Messrs. Mason & Hamlin, of Boston, have invented and are now manufacturing a Reed Instrument on the principle of the Melodeon, with great and important additions and improvements. It is called the Organ-Harmonium, and has the power and variety of a pipe-organ of double its cost, and contains two manuals and eight stops, as follows: Dulciana, Diapason; Hautboy, Bourdon, Flute, Principal, Expression, and Coupler. Musicians and organists who have seen and heard this instrument, express themselves not only pleased, but surprised at its power and variety of tone and effectiveness.

The chief object in the construction of this instrument seems to have been to produce an instrument adapted to the use of the many religious societies, whose means will not allow of the purchase of an expensive organ. Messrs. M. & H. think they have succeeded in making an instrument which combines all of the desirable qualities of a pipe-organ that costs \$700 or \$800, besides many others not to be found in an organ of that price. The effect produced from its full chorus is almost precisely similar in a small or medium-sized church to the effect of the full chorus of a large-sized church-organ in a large church; the volume of tone being massive, full, round, well-balanced and church-like. It has two great advantages over the ordinary pipe-organs, which are especially a desideratum in country towns and villages. One of these is its property of remaining for many years in good tune, and the other is the much-lessened liability of getting out of order. Having two rows of keys, it is capable of many beautiful solo effects, with subdued accompaniments, which renders it a valuable instrument. It is especially adapted for use in vestries and lecture-rooms. It is a beautiful musical instrument, with rose-wood case, fine finish, and a prompt utterance of tone—that is of a sweet, even, and pure quality.

Commerce with Africa.—It would seem that American merchants would do well to give their attention to commerce with Africa. In four years the exports of palm oil alone, to Great Britain, have increased about fifteen thousand tons, amounting last year to 30,000 tons total exportation to that country, value \$8,000,000. A steamer recently conveyed from Cape Coast Castle 8000 ounces of gold, equal to \$140,000. Other articles of African produce are also coming rapidly into favor and use in England and France. In the course of ten years there will be, beyond a doubt, a very large and highly lucrative commerce between the Republic of Liberia and the Kingdom of Great Britain.

The Camels.—The United States store-ship *Supply*, Lieutenant Porter commanding, which was sent to the Mediterranean for a cargo of Camels for the use of the army, secured thirty-five of these animals, and had reached Kingston, Jamaica, on the 13th ult., on her way to Indianola, Texas. She has reached her destination before this.

The Indianola *Bulletin* of the 12th ult., says that the workmen are now busy in erecting an enclosure for the camels, which will cover ten acres of ground. It is proposed to keep the animals at that place several months to recruit them. Some of them were presented by the Viceroy of Egypt to our

Government, but most of them were procured by Major Wayne and Captain Porter, under the appropriation made for the purpose at the last session of Congress. Some Arabs accompany them to take care of them.

Prince's Protean Pen.—We are still in the constant use of this capital pen. As it is Princely in its origin and name, so it is princely in its relation to other pens, whether we regard the ingenuity displayed in its construction, its convenience, or its capacity. An improvement has been lately made, more particularly desirable, we should think in the larger sizes, by which the flow of ink may be regulated, and even entirely shut off. We have some experience in the use of this improvement, and we think it must add to the value of that which we before regarded as indispensable to all who are in the habit of writing.

NEW BOOKS.

The English Bible; History of the Translation of the Holy Scriptures into the English Tongue, with specimens of the old English Versions. By Mrs. H. C. Conant, author of Translations of Neander's Practical Commentaries. New-York: Sheldon, Blakeman & Co., 1856. 404 pages, 12mo.

In this volume Mrs. Conant has set forth the many claims of the King James's Version to the confidence of the public, showing its antecedents, the conditions on which that translation was undertaken, the influences which operated in securing fidelity in the work, &c. In doing this, she traces the origin and history of the early English versions: Wickliffe's, Tyndale's, Coverdale's, Taverner's, Cranmer's, the Genevan, the Bishop's Bible, the Douay Bible, and the common version. She performs this service with great ability and fairness, and her conclusion is that King James's Version was translated under the most favorable circumstances, by the most profound scholars of the age, and in a manner to claim the confidence of all. It seems very singular that she should append a distinct and separate chapter to this complete historical examination, in which she assumes that the great scholars of the present day have or can shed such brilliant light over the sacred page, as to demand for it another new translation, that shall be up to the times. It seems to be "annexed" to the work after it was completed, after the manner of our politicians, without any due preparation. The conclusion of this one chapter is quite open to criticism. The body of the work is far too able to court the pen of any critic for any other service than the highest commendation.

A System of Moral Science. By Laurens P. Hickock, D.D., author of Rational Pscychology, Empirical Pscychology, &c., Union College. New-York: Ivison & Phinney, 1856. 12mo., 418 pages. $1 25.

This new firm composed of gentlemen, each well experienced in his trade, are doing a very great service to the public. Their issues are of the very highest order. Among these is the book, the title of which is here given. It is designed as a college text book. Its plan is comprehensive, the topics or sub-titles are wisely selected or classified, and concisely but ably treated, and in its progress it evolves a thorough, entire system of principles, which include the whole range of moral obligations.

A New Method of Learning the French Language, &c. By Louis Fasquellé, LL.D., Professor of Modern Languages in the University of Michigan. 27th edition. New-York: Ivison & Phinney, 1856. 499 pages, 12mo. $1 25.

This course was first published, we think, in 1851, and the fact that it has already reached its 27th edition is proof of its peculiar adaptation to the wants of the community. It is both analytic and synthetic in its modes of instruction, being formed on the plan of Woodbury's method, with German. It is designed to aid the scholar in reading and speaking and composing French. It is admirably adapted to these objects, and, indeed, it is the system now in extensive use in the best institutions of the country.

NAPOLEON. Par ALEXANDRE DUMAS. For the use of Colleges and Schools. New-York: Ivison & Phinney. 1856, 274 pages, 12mo. 75 cents.

THIS is one of the volumes of Fasquelle's French Course, and is published in a style highly creditable to the publishers. It is liberally furnished with notes and with references to the "new method" just described; so that the reader need be at no loss for the solution of any difficulties of idiom or of any *irregularity*, which he may encounter.

CHEFS-D'OUVRE DE JEAN RACINE. Prepared for the use of Colleges and Schools. By LOUIS FASQUELLE, LL.D. New-York: Ivison & Phinney. 1856. 320 pages, 12mo. 75 cents.

THIS volume also belongs in "the course" of the learned professor Fasquelle, and is a part of the "new method." The notes, explanations and references are similarly arranged to those of "Napoleon." The work itself is one of great interest, and contains the very gems of the French Drama, the compositions of one of the most popular and most able of all French writers, to wit, Les Plaideurs, Andromaque, Iphigenie, Esther and Athalie. The notes and references are very numerous.

TELEMAQUE, another volume of the series, was noticed in our journal when it was first published.

THE AMERICAN DEBATOR, being a plain exposition of the principles and practice of public debate. By JAMES N. MCELLIGOTT, LL.D. 3d Edition. New-York: Ivison & Phinney. 1856. 12mo., 312 pages.

THIS volume contains a thorough system of parliamentary law, of vital importance to every one who presides in a public meeting, and furnishes a great deal of valuable information, besides the laws which regulate all legislative or deliberative assemblies; it covers the entire subject of debate in all its aspects. It has reference to personal bearings, gestures, instruction, forms of address, styles, &c., &c. It is a thorough consideration of what might occupy large volumes. Numerous specimens are given in illustration of its teachings.

VASSALL MORTON, a novel. By FRANCIS PARKMAN, author of the history of the "Conspiracy of Pontiac" and "Prairie and Rocky Mountain Life." Boston: Phillips, Sampson & Co. 1856. 414 pages.

THIS book is written in a off-hand, animated style, and embodies a rather wild but very entertaining story.

FOREST AND SHORE, or Legends of the Pine Tree State. By CHARLES P. HALEY. Boston: J. P. Jewett & Co. 1856. 420 pages.

THIS entertaining volume comprises five separate stories, well-written, some of them chiefly historical, others only founded on fact. They will fill up an occasional hour of leisure with a very pleasant occupation.

THIRD ANNUAL REPORT OF THE SECRETARY OF THE MASSACHUSETTS BOARD OF AGRICULTURE, WITH REPORTS OF COMMITTEES, &c., &c. 2d Series. 1856.

WE have received this valuable report from the indefatigable Secretary, Mr. C. L. Flint. It is a valuable addition to the "permanent documents," which belong in every farmer's library. It is also got up in a superior style.

The Mechanics' Manual, a pocket companion, for working Carpenters, Joiners, Masons, Bricklayers, Painters, Glaziers, Builders, Slaters, Plasterers, Pavers, Planters, &c., with forty-two woodcut diagrams. By Oliver Byrne. New-York: J. N. Fairchield & Co. 1856. Price 50 cents.

This little work, in pocket-book form, contains 128 pages of useful cuts, tables, problems, &c., by a civil and military and mechanical engineer, and just suited to the wants of the classes described. It is remarkably well executed.

Colomba. By Prosper Merimee. Translated from the French. Boston: Phillips, Sampson & Co. 1856, 12mo., 310 pages.

This translation of "one of the most brilliant of French writers," gives a most graphic, life-like illustration of life and manners in Corsica. The heroine is a most remarkable character, viewed as a conception of the author, and, if regarded as a historical sketch, the interest with which she is regarded is not diminished but materially strengthened. It is unlike any other tale we have ever perused, and, considered in either of the lights to which we have referred, the volume richly deserves an extensive sale.

Berenice; a Novel. Boston: Phillips, Sampson & Co. 1856. 332 pages.

This story is in the form of an autobiography. The scenes which it describes, whether in the life of the heroine or of other persons, taken by themselves, are very naturally drawn, and the story abounds with incidents which greatly interest every reader. We are not certain, however, that all leave a good impression on the mind, nor even that some of them are not positively harmful in proportion to the ability displayed by the author. For a wife to be romantically "in love," as the phrase goes, with a stranger at first sight, however careful she may be of personal improprieties, is not likely to be commended or excused even, by readers of the stricter sort.

But the book lacks nothing in interest, in style is unexceptionable, and the work is executed in a manner worthy of the distinguished gentlemen who publish it.

The New Age of Gold; or, the Life and Adventures of Robert Dexter Romaine. Written by himself. Boston: Phillips, Sampson & Co. 1856. 403 pages.

We have read this volume with unusual interest. The path is a new one. The plan is formed on no model that we have seen, although the author must have read Robinson Crusoe. It is not a rehash of that story, however. We fully agree with the publishers, that Alice is one of the most finished pictures of female excellence we have ever seen. Many of the scenes are novel, often deeply exciting the sympathies of the reader, though told in a marvellously quiet way. The note of the "publishers" at the close is, perhaps the *coolest* piece of fiction we have ever seen. They suppose that every reader will wish to know the final result of the hero's efforts in finding his lost island; and we certainly do. Please send us that "paper," gentlemen, as soon as it is off the press. The portrait we have entire confidence in.

Way-Side Songs. By Edward C. Goodwin, author of Hampton Heights. New-York: Mason Brothers. 1856. 185 pages.

Mr. Goodwin is an enthusiastic lover of nature, and has a quick perception of the peculiar traits of the scenes he looks upon. Nor is he deficient in the power of language. Some of his stanzas are exquisitely beautiful. This little volume does honor to his head and his heart, and the execution of it is highly creditable to the publishers. It is very handsomely printed, and is worthy a place in the list of gifts for the holidays. It consists chiefly of simple ballads, interspersed with some of the more stately forms of poetry.

THE EARNEST MAN; or, the Character and Labors of Adoniram Judson. By Mrs. H. C. Conant. Boston: Phillips, Sampson & Co. 1856. 498 pages.

WE need only to announce the name of this distinguished lady to give the literary public an assurance of a scholarly and able performance. Dr. Judson is also too well known, and his position as the first missionary and a faithful and efficient laborer, was too important and too affecting, to be viewed with indifference. This volume cannot fail, therefore, to be read extensively and to be highly appreciated.

THE AMERICAN PULPIT; Sketches and Biographical Description of living American Preachers. By Henry Fowler, Professor of Political Economy at the University of Rochester, with portraits on steel. New-York: J. M. Fairchild. 1850. 515 pages, price $2 00.

THE selection of "Living Preachers" in the volume includes not a few of those who occupy a foremost place in the public mind. So far as we know the men, not one of them but is eminent for talent or for eloquence. Some of them as forensic orators are first even among the foremost. The peculiar views any of them may have on the topics of the day cannot affect this point. But as men whose names by this very peculiarity are so familiar to the whole country, the selection is peculiarly happy. The strong points of each are judiciously drawn by the author, and most of them are represented by a remarkably accurate portrait; and we can vouch for all except one, Dr. Sommers, whose face we have never seen. Portraits are given of Dr. E. N. Kirk, Dr. O. Baird, Revs. W. H. Milburne and H. W. Beecher, Dr. Sommers, Dr. T. L. Cuyler, Dr. S. H. Cox, Dr. S. H. Tyng, and Rev. Albert Barnes.

The friends of each of these gentlemen will not be disposed to say that the sketches are not judiciously and skilfully drawn. Twenty-one sketches are given, so that each, of necessity, is short.

A SHORTER COURSE WITH THE GERMAN LANGUAGE By W. H. Woodbury, author of, &c. 6th edition. New-York: Ivison & Phinney. 1856, 230 pages.

THIS admirable work is on the same plan as the larger one, published in 1848, and which is the book now in extensive use in this country. It has no rival in the market.

NEW MUSIC.

WM. HALL & SON have recently issued the Minnehaha Polka. By Francis H. Brown. Very brilliant and very pretty.

Six Nocturnes. No. 1. By Wm. Vincent Wallace. Worthy of the eminent author, and capital study for the pupil.

The Banjo. By L. M. Gottschalk. A grotesque fantasie, which pays well the time required to manage it, and is a very popular piece.

List of Patents Issued

FROM TERMINATION OF PREVIOUS LIST TO MAY 6.

Andrew Allen, Wilmington, Del., improvement in power looms.

Edwin Allen, Glastonburg, Conn., improvement in calendar clocks.

J. A. Ayres, Hartford, improved machine by which cattle raise water for themselves.

Andrew J. Barnhart, Hartfield, N. Y., improvement in securing and releasing blocks of lasts.

Wm. W. Binney, Seneca Falls, improvement in coal stoves.

Henry E. Canfield, New-York, improved arrangement of means for operating cut-off valves of steam engines.

Jacob Cohen, New-York, improvement in the arrangement of grates and dampers for chimneys.

J. B. Creighton, Tiffin, Ohio, improved stump extractor.

Levi Cromwell, Baltimore, improvement in omnibus register.

Abram J. Gibson, Clinton, Mass., improvement in attaching thills and poles to vehicles.

Abel H. Grennell, Springfield, Vt., improvement in mode of protecting vines.

Samuel E. Hartwell, New-York, improvement in frames for mosquito nets.

Wm. B. Hatch, Elmira, improvement in straining marble saws.

Nathaniel Hayward, Colchester, Ct., improvement in manufacture of India rubber.

J. E. Haviland, Galveston, improvement in machine for sawing marble in obelisk form.

Jonathan J. Hilliard, of Fall River, improvement in spreading rollers for stretch cloth.

William Hinman, Elkart, Ind., improvement in bedstead fastenings.

William H. Hovey, Springfield, Mass., improvement in grain and grass harvesters.

John Jones, Brooklyn, improvement in candle cutting apparatus.

Simeon Ingersoll, Green Point, N. Y., improvement in hay and cotton presses.

Charles Kirchoff, New-York, improvement in electric telegraph.

James Kline, jr., and Simon V. Kline, Chicago, improvement in safety platforms between railroad cars.

George W. La Baw, Jersey City, improvement in hoisting drums.

Palmer Lancaster, Burr Oak, Mich., improvement in fire-arms.

Marshall Lefferts, New-York, improvement in metalic bedsteads.

Wm. H. Lyman, Newark, improvement in whip sockets.

Wm. Loyd, Philadelphia, improved stereoscope case.

Geo. Marty, Pottsville, improvement in apparatus for hoisting coal.

B. T. McCreary, New-York, double-acting catch for reversible backs for settees.

W. J. McIntosh, Savannah, improved implement for reaping rice.

Alexander Sprague, Mobile, improved apparatus for feeding furnaces with fuel.

M. Newmen, 2d, Oak Hill, N. J., improved lock hasp.

H. W. Oliver, Witneyville, Conn., improved floor clamps.

Wm. Newbrough, Mohican, O., improvement in churns.

Jos. Summers, Raleigh C. H., Va., improved wheel hub.

Joel H. Tatum, Baltimore, preparation of oil ground to receive photographic impressions.

Wm. D. Titus, Brooklyn, improvement in vault covers.

Benj. T. Trimmer, Parma, N. Y., improvement in railroad brake.

Maurice Vergnes, New-York, improvement in electro-magnetic engines.

Dewitt C. Warner, Wikesbarre, improvement in wigs.

Henry H. White and Edward A. Gray, East Poultney, improved stone marble saw.

Geo. P. Wilcox and William Butler, Little Falls, N. Y., improvement in apparatus for teaching phrenology.

Gilbert L. Bailey, Portland, improved door spring.

Wm. H. Bramble, Cincinnati, improvement in grain weighing machines. Ante-dated April 8, 1856.

Lebbin Brooks, Great Falls, N. H., improvement in adjusting the angle in machines for sawing marble obelisks.

J. F. Downing, Erie, improved method of hanging and elevating or depressing farm gates.

John Ericsson, New-York, improvement in air engines.

Geo. G. Griswold, Carbondale, improved door springs.

R. L. Hawes, Worcester, improved diaphragm fluid metre.

Wm. H. Hovey, Springfield, Mass., improvement in harvester-raking attachments.

Wm. A. Kirby, Buffalo, improvement in grain and grass harvesters.

Jas. McLellan, Detroit, improvement in repairing railroad bars.

O. W. Minard, Waterbury, Conn., improvement in making brass kettles.

John North, Middletown, Conn., machine for folding paper.

George W. Pruyne, Mexico, N. Y., improved machine for raising and creasing leather straps, &c.

E. H. Stearns, Cincinnati, improved head and tail blocks for saw mills.

Shubael Wilder, New-Castle, Pa., improved puddle ball squeezer.

R. F. Wolcott, Claremont, N. H., improvement in weighing scales.

Thomas A. Fisher, Lancaster, O., assignor to himself and J. R. Cooper, of same place, improvement in seeding machines.

Benj. James, Worcester, assignor to Roswell E. James, of same place, improved awl-haft.

James M. Kern, Morgantown, Va., assignor to Enoch P. Fitch and Isaac Scott, of same place, improved method of adjusting circular saws for concave or convex work.

Julius T. Buel, Whitehall, N. Y., improved fishing tackle.

George J. Bitler, Lancaster, Ohio, improvement in seeding machines.

Warren S. Bartle, Newark, N. Y., improved machine for sowing fertilizers.

Alexander Buchann, New-York, improvement in balance and slide valve for steam engines.

Gustav A. Blittknowski and Frederick Wm. Hoffman, New-York, improvement in revolving fire-arms.

Andrew Caleman, Perth Amboy, improvement in receiving magnets for telegraphs.

John Calver, Baltimore, improved waste device for hydrants.

Patrick S. Devlan, Reading, improvement in brick machines.

John B. Erb, Strasburg, Pa., improvement in door locks,

George Esterly, Heart Prairie, Wis., improvement in cultivators.

Abraham Fitts, Worcester, improved machine for digging peat.

Samuel H. Gilman, New-Orleans, improvement in sugar evaporators.

Christian Haas and John C. Noll, Chicago, machine for driving spokes.

Wm. H. Hale, Worcester, improvement in hotel annunciators.

Wm. E. Hayes, Geneva, improvement in the arrangement of dampers for cooking stoves.

C. B. Hoard, Watertown, improvement in steam boilers.

Eben N. Horsford, Cambridge, improvement in preparing phosphoric acid as a substitute for other solid acids.

George Hubbard, Stonington, improvement in suspending extra topsail yards.

James J. Johnson, Alleghany, improvement for flasks for moulding.

James H. Kinyon and James Hollingshead, Chicago, for improvement in cotton cleaners.

Pells Manny, Wadham's Grove, Ill., improvement in subsoil plows.

Alonzo M. Mace, Springfield, Mass., improvement in hydro-carbon vapor lamps.

James Miller, Buffalo, improvement in machines for sawing marble in obelisk form.

R. C. Maack, Conard's Store, Va., and W. T. McGahey, of McGaheysville, Va., improvement in corn harvesters.

Albert J. Partridge, Southbridge, Mass., improvement in electro-magnetic printing telegraphs.

Thomas Petherich, Pottsville, improvement in coal breakers.

Nathan M. Philips, New-York, electro-magnetic grain scale.

Edwin A. Palmer, Clayville, N. Y., improved measure faucet.

Alanson Quigley, Sheldrake, N. Y., improved apparatus for raising and lowering carriage tops.

Asa P. Robinson, New-York, improvement in cast iron pavements.

Wm. F. Shaw, Boston, improvement in gas burners.

Samuel R. Shepard and Orson W. Stow, Plantsville, Conn., improvement in working sheet metal.

Henry H. Sibley, of the United States army, improved conical tent.

Emile Sirrett and Wm. H. Scott, Buffalo, improvement in the method of fastening lamps to lanterns.

Thos. Smith, Pittsburg, improvement in projectiles for fire-arms.

George S. Spence, Boston, improved pressure regulating apparatus for steam-heating boilers.

Alfred Speer, Passaic, N. J., improved weather strip and lock for windows, &c.

A. H. Stephens, Warsaw, N. Y., improvement in corn-shellers.

Samuel T. Thomas, Lawrence, Mass., improvement in looms for weaving bags.

Richard Vose, New-York, improvement in divided axles for railroad cars.

Chas. B. Waite and James W. Senor, Fredericksburg, for improvement in coffee-pots.

Henry R. Worthington, Brooklyn, improvement in completing the throw of the valves of direct acting engines by the exhausted steam.

Thos. D. Burk, Chicago, assignor to John C. Miller and Chas. A. Fowler, same place, improvement in link gearing for horse powers.

Thos. D. Burk, Chicago, assignor to James Garrett, Ogle county, Ill., improved device to allow for contraction and expansion in wire fences.

Kelsey Curtiss, Winchester, Conn., assignor to the "Winsted Auger Company," same place, improved auger.

George W. Holmes, Buckfield, Me., assignor to James C. Marble, Paris, Me., improved hoop machine.

Samuel Hoffman, Richmond, Va., assignor to himself and James D. Brown, same place, combined shovel and tongs.

Ira Merrill, Shelburne Falls, Mass., assignor to himself and Arthur Maxwell, same place, improved machines for tunneling and quarrying.

Lucius Paige, Cavendish, Vt., assignor to himself and Albert L. Lincoln, Boston, Mass., improvement in studs for wearing apparel.

Thomas J. Alexander, of Westerville, Ohio, for improved sawing machine.

Enoch Applegate, of Wilmington, Del., for improvement in chain cable hooks.

Henry N. Baker, of Union, N. Y., for improvement in electro-magnetic printing telegraphs.

Edward Baptis, of Hoboken, N. J., for pen and pencil case.

Milton Barlow, of Lexington, Ky., for improvement in cradling harvesters.

Asa W. Cady, of Sullivan, N. Y., for improved machine for excavating and moving earth.

Wm. Dawson, of Huntington, Conn., for improvement in cigar machines.

John M. Dearborn, of Boston, Mass., for improvement in scaffolding.

John B. Evins, of Green Castle, Ind., for improved shingle machine.

Edwin J. Green and Moses H. Wheeler, of Cedarville, N. Y., for improvement in joint-bodied buggies.

Edward Hopkins, of Cincinnati, Ohio, for improvement in hand seed planters.

Wm. H. Hovey, of Springfield, Mass., for improvement in attaching harvester cutter blades to the sickle bar.

Salem T. Lamb, of New-Washington, Ind., for improvement in automatic rake for harvesters.

William Lyon and Charles W. Dickinson, of Newark, N. J., for improvement in the construction of dry gas meters.

Ebenezer Mathews, of Morgantown, Va., for improvement in corn shellers.

Jno. McInnes, of Braintree, Mass., for machine or printing woolen and other fabrics.

Elisha P. Moulton, of Baltimore, Md., for improvement in door fasteners.

Fred. Newbury, of Albany, N. Y., for improvement in fire-arms.

Ephraim L. Pratt, of Philadelphia, Pa., for improvement in machine for paring apples.

Silas B. Rendall, of Rockford, Ill., for improvement in corn planters.

Benj. T. Roney, of Philadelphia, Pa., for improvement in harvester cutters.

John B. Root, of Brooklyn, N. Y., for improvement in rotary steam engines.

Bradford Rowe, of Albany, N. Y., for improved wrench.

Simon F. Stanton, of Manchester, N. H., for improvement in breech loading fire-arms.

Pling Thayer, of Lansingburg, N. Y., for improvement in reaping machines.

Alex. Underwood, of German Flats, N. Y., for improved machine for manufacturing friction matches.

Chas. P. S. Wardwell, of Lake Village, N. H., for improvement in box openers.

John T. Whitaker, of St. Charles, Ill., for improvement in self rakers for harvesters.

Samuel Wilt and George W. Albaugh, of Green Castle, Pa., for improvement in corn planters.

J. W. Wood, of Washington, D. C., for improvement in propelling boats.

Albert H. Brown, of Albany, N. Y., assignor to Tingley & Viele, of same place, for improved lathe.

A. C. Ketchum, of New-York, N. Y., assignor to Edward D. Olcott, of same place, for improvement in machines for cleaning knives.

Samuel W. Lowe, of Philadelphia, assignor to Jacob M. Beck, of Harrisburg, Pa , for machine for embossing and printing.

John Reily, of Heart Prairie, Wis., for improvement in harvester fingers.

Clayton Brown, Senior, of Richmond, Ind., for improved apparatus for lubricating grist mill spindles.

Chas. Beverly, of Ohio, for improved rotary shingle machine.

Joseph Bastion, of Theresa, N. Y., for improved construction of guides, or chutes for turbine wheels.

J. T. Baughman, of Frazeysburgh, Ohio, for improved wagon tongue.

Chas. Buss, of Marlboro, N. H., for improved vise.

G. W. Bishop, of Brooklyn, N. Y., for improvement in self-heating smoothing irons.

Abel Braer, of Saugtuck, Conn., for improved lubricator.

Chas. S. Bruff, of Baltimore, Md., for improvement in double pannel shutters.

Thos. D. Bailey, of Lowell, Mass., for improvement in pegging jacks or "shoemaker's head blocks."

John D. Browne, of Cincinnati, Ohio, for improvement in machines for paring apples.

Reinhold Boeklen, of Jersey City, N. J., for improvement in corn-planters.

S. & Wm. H. Book, of Rushville, Ohio, for improved machine for sawing felloes.

Chas. Day, of Lancaster, N. Y., and Alanson D. Lord, of Bethany N. Y., for improved machine for splitting wood.

Wm. Clark, of Dayton, Ohio, for improvement in processes for making paper from straw.

C. J. Cowperthwait, of Philadelphia, Pa., for improved hydrant.

Samuel Davis, of New-Holland, Pa., for improvement in lard lamps.

Melvin C. Chamberlin, of Sheldon, N. Y., for improved mould press for horse collars.

Albert G. Field, of Quincy, Ill., for improved self-regulating wind-mill.

John Gustine and J. M. Rankin, of Lewistown, Ill., for improved road scraper.

Abraham Heulings, of Philadelphia, Pa., for improvement in potato diggers.

Nathaniel Hayward, of Colchester, Conn., for process of preparing elastic india rubber cloth.

Abraham Hager, of Baton Rouge, La., and Youngs Allyn, of New-Orleans, La., for improvement in bagasse furnaces.

Benj. L. Hood, of Albany, N. Y., and E. P. Monroe, of Charleston, Mass., for improvement in salt evaporators.

Henry G. Tyler, of Ballard Vale, Mass., and Jno. Helm, of New-Brunswick, N. J., for improvement in making gum-elestic cloth. Ante-dated January 9, 1856.

Moses A. Johnson, of Lowell, Mass., for improvement in manufacturing felted yarns.

Matthew S. Kahle, of Lexington, Va., for improvement in machines for saving clover seed.

Matthew S. Kahle, of Lexington, Va., for improvement in dumping scrapers.

James T. King, of New-York, N. Y., for improvement in washing machine.

Edward Linder, of New-York. N. Y., for improvement in breach-loading guns.

Geo. Leonard, of Shrewsbury, Mass., for improvement in repeating fire-arms.

Eugene L. Norton, of Charleston, Mass., for improvement in machines for figuring and polishing morocco.

James Neal, of Boston, Mass., for improvement in gas-burners.

Samuel Nickleson, of Pulaski, Tenn., for improvement in machines for sawing marble in kerfs of varying angles.

Robert Neisch, of New-York, N. Y., for improvement in preparing artificial stone.

Jesse Ohmert, of Mt. Morris, Ill., for improvement in ovens.

Samuel Oberholyer, of Terre Hill, Pa., for improved method of hanging gates, doors, etc.

Thos. H. Powers, of Wyecena, Wis., for improvement in furnaces for smelting iron.

Geo. Pierce, of New-York, N. Y., for improvement in cooking apparatus.

N. W. Robinson, of Keesville, N. Y., for improved machine for manufacturing barrel heads.

Solomon W. Ruggles, of Fitchburgh, Mass., for improved machine for extracting stumps.

Ephrain D. Rosencrantz, of New-York, N. Y., for improvement in extension wagons.

John Rose, of Newark, N. J., for improvement in compositions for stuffing leather.

Joseph and Sylvester Sawyer, of Fitchburgh, Mass., for improved hoop machine.

Willard H. Smith, of New-York, N. Y., for improved door fastener.

Thos. Sloan, of St. Louis, Mo., for improvement in heating-feed-water apparatus for steam boilers.

Geo. Willard, of Boston, Mass., assignor to himself and Nathan W. C. Jameson, of Antrim, N. H. for improvement in railroad car seats.