THE CULTIVATOR:

A MONTHLY PAPER, DEVOTED TO

AGRICULTURE AND RURAL AFFAIRS

"TO IMPROVE THE SOIL AND THE MIND."

NEW SERIES.] JANUARY, 1845. [VOL. II.—NO. 1.

CONTENTS OF THIS NUMBER.

EDITORIAL.

Notices to Correspondents, &c., ... 10
To our Patrons—Mr. Lenox's Prize Cow, Red Lady—Condensed Correspondence, ... 11
Answers to Inquiries, ... 12
Care of Animals in Winter—Improvement of Farms, ... 13
Raising Fruit Trees from Seed—Winter Evenings, ... 14
Foreign Intelligence, ... 16
Sinclair's Patent Corn Mill—Agricultural Instruction in Common Schools, ... 18
Summer Fallows and their management, ... 19
Irrigation, Mode and Effects of, ... 21
Farming in Massachusetts—Description of C. NEWHALL'S Farm, ... 22
Subsoil Plowing by J. M. SHERWOOD, Esq., .. 23
New Publications, ... 24
Esterly's Patent Harvesting Machine, ... 26
Corn-Stalk Sugar, ... 39

CORRESPONDENCE.

Condensed Correspondence, ... 11
Products of the Dairy, by E. COMSTOCK, ... 15
Letters from Mr. NORTON, No. VI. 15
Experiments in the Culture of Indian Corn, by GEO. GEDDES, ... 17
Sweet and Sour Apples, by D. T., ... 20
Clydesdale Breed of Horses, by C. N. BEMENT, 24
Improvement of Worn Out and naturally Poor Lands, Old Fields, &c., in the Middle States, by G. B. SMITH, ... 26
Hall's Stump Machine, by G. J. PUMPELLY, .. 27
Remedy for the Rot in the Potato, ... 27
Indian Corn—New Variety—Planting, by NOYES DARLING, ... 28
Agriculture and Rural Economy of the South, by THOMAS AFFLECK, ... 28
Salt Destructive to the Grub and Wire Worm—Rot in the Potato, by B. P. JOHNSON, ... 31
Preparation and Use of Charcoal, by ZA. DRUMMOND, ... 31
Agriculture of Mexico—Cornstalk Sugar, by RICHMOND, ... 32
Stone Boat or Sled, by J. SMITH—Review of Prof. Johnston's Lectures, by A PRACTICAL FARMER, ... 33
An Experimental Farm, by D. LEE, ... 35
Injurious Effects of Iron on Soils, by JAMES BATES, ... 36
Culture of Sugar Cane, in Louisiana, by S. TILLOTSON, ... 37
Potato Onions, Culture and Description of, by N. DARLING, ... 37
Management of the Peach Tree, by C. D., .. 38
Rot in the Potatoe—Scours in Sheep—Coalpit Dust, &c., by J. N. SMITH, ... 39

ILLUSTRATIONS.

FRONTISPIECE—PORTRAIT OF "RED LADY," ENGRAVED ON STEEL.

Figs. 2, 3, 4—Sinclair & Co's Patent Corn-Mill, ... 17
Figs. 5, 6, 7—Illustrations of Irrigation, .. 21, 22
Fig. 8—Portrait of a Clydesdale Horse, ... 24
Fig. 9—Esterly's Patent Harvesting Machine, 25
Fig. 10—Hall's Stump Machine, ... 27
Fig. 11—Stone Boat or Sled, ... 33
Fig. 12—Winter 40

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MONTHLY NOTICES.

COMMUNICATIONS have been received since our last, from George Geddes, Esq., Dr. James Bates, A Farmer of Western New-York, D. Lee, Richmond, A Practical Farmer, P. A. Reading, J. B. Cook, W. T. Fannin, G. B. Smith, J. Townsend, Noyes Darling, Thomas Affleck, Za. Drummond, Oneida, B. P. Johnson, H. S. Randall, J. N. Smith, S. W. Jewett, C. D., James Pedder, O. W. Owen, H. J. Powell, A. G. Summer, A Subscriber, W., L. A. Morrell, Franklin, D. T., Spade Labor, Doubleyou, D. A. Ogden, W. A. Cowell, C. N. Bement, Exekiel Rich, L. B. Langworthy, N. N. D., J. P. Norton.

It will be seen by this list, that we have on hand a goodly number of contributions, all of which will be disposed of as rapidly as our limits will permit. Several, in type for this No., are necessarily deferred till our next.

We are indebted to J. S. SKINNER, Esq., for a copy of his Address at Wilmington—to E. MACK, Esq., Ithaca, for a copy of his Address before the Tompkins Co. Ag. Society—to J. W. PROCTOR, Essex, for his Address to the Essex Co. (Mass.) Ag. Society—to JOHN DELAFIELD, Esq. Oaklands, for his Address to the Seneca Co. Ag. Society—to T. B. WAKEMAN, Esq., for Mr. Talmadge's Address to the American Institute—to D. G. MITCHELL, England, for a copy of Mr. Shepard's treatise on Guano —to D. A. OGDEN, Esq., for Mr. Lawrence's Address before the Yates Co. Ag. Society—to S. WILLIAMS, for his Essay on Manures, prepared for the Seneca Co. Ag. Society; and to Messrs. A. WALSH, Lansingburgh, and EGBERT COWLES, Farmington, Ct., for papers, containing Reports of Agricultural Societies.

JAMES GOWEN, Esq., will please accept our thanks for his kind letter of Dec. 2. We shall be very glad to receive an article on the subject he mentions.

AGRICULTURAL ADDRESSES.—Notices of such addresses as we have been favored with, are unavoidably deferred till our next.

PURE BLOOD MERINO SHEEP.—We saw the other day some fine Merino sheep, purchased by Col. J. M. SHERWOOD, of Auburn, (N. Y.) of Mr. JACOB N. BLAKESLEE, of Watertown, Litchfield county, Connecticut. We have before spoken of Mr. Blakeslee's sheep—in last volume, pages 315 and 338. They are a very valuable stock, and we presume will lose none of their excellence or reputation in the hands of Col. Sherwood.

HUSSEY'S REAPING MACHINE.—We take pleasure in inviting attention to the advertisement of Mr. HUSSEY, on our last page. His Reaping Machine, from all we hear of it, has fully answered public expectation, and we trust he will be abundantly rewarded, as he certainly ought to be, for the time, ingenuity and money he has expended in bringing his useful invention to its present state of perfection.

PORTABLE MILLS.—We would refer Mr. W. T. Fannin of Georgia, to the notice and representation of Sinclair & Co's Portable Mill, which we publish in this number. We possess no more definite information in relation to this mill, or Platt's, heretofore published, than we have given to the public. He can probably ascertain any farther particulars he may require, by addressing the manufacturers.

SALERATUS AS A SUBSTITUTE FOR SALTPETRE.—Our correspondent, "C. D." it seems, made a mistake in his paragraph on this subject, in our Nov. number, p. 345, which escaped our notice, till our attention was called to it by a writer in the Providence Transcript, and since by several correspondents. Saleratus, instead of being "composed of sulphate of potash and pearlash," as stated by C. D., "is not," says the writer in the Providence paper, "a very pure bi-carbonate of potash. As usually found in the shops, it may contain some small portion of sulphate of potash and of pearlash, together with certain impurities, none of which possess any remarkable preservative qualities, or would be likely to produce any valuable effect upon muscular fibre."

STATE AG. SOCIETY.—We would remind our readers in this State, that the Annual Meeting of the N. Y. S. Ag. Society is to be held at the old State Hall in this city, on Wednesday, the 15th inst.

TO OUR FRIENDS IN THE SOUTH-WEST.—Circumstances forbidding us to visit, as we have long desired to do, the numerous friends of The Cultivator, in the South-Western States of the Union, we have, at the suggestion of several of them, engaged that old and familiar acquaintance of the readers of our paper, SOLON ROBINSON of Indiana, to undertake an Agricultural Tour through several of the south-western states, for the purpose of procuring information and promoting the interests of "The Cultivator," in that section of our country. Those who have read the numerous articles of Mr. ROBINSON for the last ten years will, we doubt not, be gratified with this arrangement, and we trust that his correspondence during his present tour, will be found interesting to all our readers. We bespeak for Mr. R. a warm reception by the readers of the Cultivator whom he may visit, and hope we shall receive, through him, a large addition to our circulation, assured as we are by numerous friends in that quarter that all that is necessary to accomplish this object, is to have our paper brought to the notice of the planters of that extensive region. Though printed so far north, The Cultivator will be found of nearly equal interest to the Planter of the South as to the Farmer of the opposite section of the country. It is not intended as a *local* but as a *national* journal: and aside from the fact that the general principles of agriculture are every where the same, the constantly increasing list of its correspondents in the south and south-west, with the Letters of Mr. Robinson, will make its pages as valuable to those sections of our country, as to any other. Indeed, we think the communication in this No. from our valued friend AFFLECK of Mississippi, well worth ten times our annual subscription price, to any planter who will read and act upon such of his suggestions as he may find he can adopt to his advantage. Mr. R. will receive subscriptions for our current vol. and orders for any of the previous volumes; and we shall be greatly obliged for any aid which our friends may be able to render him.

☞ The readers of "*The Cultivator*," and of the "*Central New-York Farmer*," were apprised in the December number of both papers, that the latter would, at the close of the then current volume, be discontinued, and that its publishers would hereafter labor to promote the circulation of "The Cultivator." In making this arrangement, we were aware that we should not meet the views of many friends who have been very desirous of continuing a paper in Central New-York, but a proper regard for our own interests, has, among other things, induced us to make the present arrangement. Since the announcement in the December number of the Farmer, we have received from numerous individuals in different sections of this and other States, letters expressing regret at the discontinuance of our paper; and in some of them the writers have hinted pretty strongly that we have done the public a wrong in so doing. As we cannot well answer all letters of this character without encroaching too much upon our other labors, and as we have no doubt that *all* who thus address us will become subscribers to the Cultivator, we beg leave in this public manner to tender our acknowledgments for the manner in which our labors have been noticed, and to assure our friends that we duly appreciate the many favors which we have received from the friends of agriculture.

We trust that all with whom we have formerly held converse through the columns of the "Farmer," will continue to take some agricultural paper, and it will give us great pleasure to forward their names as subscribers to the Cultivator. We will not permit ourselves to believe that those who have during the several years that the "Farmer" has been published, been its constant patrons and readers, will, now that it is united with another, and we hope more valuable journal, forego the advantages of agricultural reading, or be deprived of intercourse with their brother farmers through the agricultural press.

COMSTOCK & JOHNSON.

INTEMPERANCE.—We have received a well written article on this subject, by "*A Farmer's Wife*," which, with the present press of matters relating more particularly to the objects of our paper, it will be impossible for us to publish.

Improved Short Horned Cow Red Lady,

the property of James Lenox, Esq.r N.Y. which obtained the First Prize at the N.Y.S. Ag. Society's Show Poughkeepsie 1846
and at the Dutchess Ag. Society's Show 1843.

Engraved for the Cultivator

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OUR PLATE

IMPROVED SHORT HORNED COW, "RED LADY."

RED LADY, the property of JAMES LENOX, Esq., of New-York, received the prize offered by the New-York State Agricultural Society for the best cow exhibited at their show at Poughkeepsie, Sept. 1844. She also received the first prize at the Dutchess County Society's Show in 1843. Red Lady was calved in 1834, and bred by J. Whitaker, Esq., of Burleigh, Yorkshire, England, and imported by Mr. Lenox in 1840. Her pedigree is as follows:

"Red Lady, by Hubback, 2142. Dam by Don Juan, 1923. Grand Dam and G. D. Dam, by Mr. Woodhouse's bulls. The two latter names are not registered, but the stock has been good upwards of sixty years, and from this herd, Red Lady's ancestors have descended." See Herd Book, vol. 5, p. 841.

Mr. Lenox has at his beautiful place Netherwood, Dutchess county, a small but splendid herd of improved Short Horned Cattle, consisting of imported animals and their progeny. In 1840, he imported two cows, Red Lady and Daffodil, the latter in calf by the celebrated Sir Thomas Fairfax (5196)—in 1841, the splendid white bull King Charles 2d, (4154) exhibited at the late State Fair, and of which we shall hereafter give a portrait. In 1843 Mr. L. imported another cow "Gayly," in calf by Lord Henry Fairfax, (6145.) In the produce of these importations, Mr. L. has a beautiful lot of young animals of great excellence. For pedigree of Daffodil, see Herd Book, vol. 5, p. 231—for that of Gayly, p. 425, do.

TO OUR PATRONS.

IN presenting you the first number of a new volume, we have great pleasure in tendering you the compliments of the season, and at the same time inviting your attention to the efforts we have made to present you with a paper worthy of the occasion. By the continued liberality of our correspondents, to whom we and the public are so much indebted for the interest and spirit imparted to our pages, and whose labors have given it so strong a hold on the public mind, we are enabled this month to present our readers with communications of unusual interest to every section of our extended country, from the extreme north to the "sunny south." In the way of embellishment also, we are enabled to present our readers with something new and beautiful, in the portrait of Mr. LENOX's very superior cow, "*Red Lady*," engraved on steel in a style altogether superior to anything of the kind heretofore issued in this country, and equalling the beautiful plates of the London Farmer's Magazine. Though this plate is issued at an expense of over $200, it is our intention, should our circulation the present year warrant it, to follow it with others of a similar character. Indeed no efforts or expense will be spared on our part, to sustain and increase the interest of our pages each succeeding year. In return for these exertions to please, is it too much to ask of our friends, and the friends of agricultural improvement generally, that they will aid us by their efforts and influence, in extending the circulation of "THE CULTIVATOR?" The invitation to act as Agents, is extended to every one of our readers who may deem our journal worthy of this mark of his favor. It will be seen that by clubbing together, the cost of the paper, postage and all, will be less than one dollar a year, and we would suggest to such gentlemen as may be disposed to aid us in this way, the example afforded by several of our friends last year, who adopted the course mentioned in the following extract of a letter:

"In order to obviate any objection to the price of the subscription, I divided the $10 for fifteen copies, into fifteen parts, and received of each subscriber his proportion of the $10; and in this way I soon obtained the fifteen subscribers, for which I send you herewith $10. If the friends of agricultural improvement generally, would adopt this course, I think your subscription might easily be doubled or trebled, as there are few neighborhoods where a club of seven or fifteen subscribers might not be obtained, with but little trouble, as in this way the paper and postage would cost less than a dollar."

The writer of this letter, by adopting this course, procured over fifty subscribers to our last vol. in a place where we had never before had a dozen. Several other agents who adopted this plan, were equally successful. To any person disposed to act as Agent, we shall with pleasure send such number of extra copies as they may order, that they may have copies on hand to deliver to those who become subscribers.

CONDENSED CORRESPONDENCE.

MERINO SHEEP OF COL. RANDALL AND HON. WM. JARVIS.—We have a letter from Col. RANDALL, in relation to the pedigrees of such of his sheep as have descended from the flock of Hon. WM. JARVIS. In the communication of Col. R. in our last No. he gave no detailed statement in relation to this portion of his flock, supposing it would be generally conceded that Mr. Jarvis had preserved a portion of the merinoes originally imported by him, free from all alien admixture. "Finding myself mistaken in this supposition," says Col. R. "I addressed the following inquiry to Mr. Jarvis:—Have you a flock of merinos, which you *know* to be the pure blooded descendants of your early importations?" In reply to this question, Mr. Jarvis details minutely the course he has pursued in the management and care of his flocks. We make but a brief extract—all, certainly, that can be necessary to establish the fact that he has kept a portion of his flock as free from all foreign admixture as at the time of their importation. Mr. Jarvis says:—"In May, 1826, I purchased 52 or 53 at the sale in Brighton, Mass., of the large importation of Saxony sheep by Messrs. Searle of Boston; and the following autumn I selected and separated one hundred Merino ewes from my flock, and the rest I crossed with Saxony bucks. Those hundred merinos and their descendants I have always been careful to keep by themselves, both summer and winter, and have been very particular in the choice of pure blood Merino bucks to put to them for breeding." Col. Jarvis farther says:—"My flock consists of about a thousand sheep of all kinds, of which there are one hundred and sixty merinos, the pure blooded descendants of those I purchased in Spain in 1809 and '10, and exported from Lisbon; about one hundred full blood Saxons; and the remainder are crossed between Saxony and Merino. The fleeces of the latter, from the attention I have paid to the selection of bucks, (as before mentioned) are much heavier than in 1832. The average of the three kinds, taken together, is now 3 lbs. 2 oz. to 3 lbs. 4 oz. per head."

IRRIGATION, &c.—We make the following extract from a letter of P. A. Reading, Esq. of Philadelphia:—"The application of manure and the best rotation of crops, I deem to be at this time a question of great importance to our farming interest. Next in order of importance, is the subject of IRRIGATION, as practicable to the system of farming in the United States, under the system of rotation in crops, when each field becomes the meadow in turn, and when the locality is such as to render a small stream or spring available for such purposes. The time when, and how long a period should the water be turned on, in order that the coming crop of grass may receive the most benefit. All these things, and many more, I should be glad to see discussed in the Cultivator."

FARMERS' TROUBLES.—We have received a communication treating of the peculiar evils to which the farmer in this country is subjected, and pointing out for some of them a remedy, signed "A FARMER OF WESTERN NEW-YORK." The writer thinks there is "no class in the community which are so poorly paid for their labor, as farmers; many of whom," he says, "like the waterman who is rowing against the current, instead of making headway, are actually beating down stream."—Among the evils and hardships with which the farmer has to contend, he enumerates the smut, rust and fly, in grain—weeds—the rot in the potatoe—low prices of produce—high price of labor in proportion to the price of produce—emigration to the west—indebtedness—high rates of taxes, &c. &c. He thinks farmers "run in debt at the stores for many things they might do without"—that they "have too much aped the fashions of the proud and vain—have gone beyond their means for fine carriages, elegant dwellings, costly furniture and apparel." This, he says, they "were drawn into in times when speculation ran high, and produce brought enormous pri-

ees." He thinks farmers permit themselves to be ruled too much in pecuniary and political matters by a class of men whose interest it is to "keep down the price of every thing they consume," and that as long as farmers continue to be "ruled and trodden down by them, they merit the appellation of *dough faces*." He thinks the presses and the banks are too much controlled by the class just mentioned, and observes that "if a farmer has been so unfortunate as to get in debt, and wants the loan of a little money to save his property from being sacrificed, he cannot obtain a dollar, though he presents a note endorsed by the best men in his county; while at the same time if a speculator wants money to bid off that same individual's property, he can get from the bank as much as he wants." Unless there is an end put to this state of things, he says it is his "honest conviction that the time is not far distant, when all the real estate will be owned by the wealthy land holders, and the present owners and their posterity will be only tenants and serfs." He proposes as a remedy for these troubles, the adoption of what he calls "*the farmer's system*," the outlines of which he gives as follows:—"Let every farmer provide himself with a store-house or granary, of sufficient dimensions to contain the products of his farm, and there secure them with bolts and bars, until he can obtain fair prices for them. Let there be an understanding among the farmers generally, throughout the country, and let them regulate their own prices. Let them establish *newspapers* at different points, which shall advocate the farmer's cause, and let them be liberally sustained. Let lecturers be appointed to go through the country, and arouse the energies of the farming population on subjects connected with agriculture and their interests." "We do not," says our correspondent, "wish to monopolize or tyrannize over other classes of the community; all we ask, is a fair compensation for our labor, and to be raised to our proper sphere in the scale of being. We do not want to be confined to unremitting toil, like a Russian serf, or a galley slave. We want some leisure to read and reflect, as intelligence is the life of liberty; and general information among all classes, is indispensable to qualify them for the discharge of the important duties of citizens of this republic."

Profitable Apple Tree.—We are informed by Mr. Ingalsbe, of South Hartford, in this state, that Mr. Seth Cooley of that town, gathered forty bushels of greening apples, of a superior quality, from a single tree the past season, worth from 44 to 50 cents a bushel on the premises. The tree was situated in rather a north-western exposure—soil, a deep loose gravel, well manured. "There is many a two acre lot in this town," says our informant, "that yields less profit than the three square rods occupied by this tree."

Rapid Fattening of a Pig.—W. R. Gilkey, Esq. of Windsor, Vt., informs us that "Mr. T. B. Otis, of that place, bought a pig, April 24th, 1844—weight 9¼ lbs., (said to be five weeks old.) He killed the same on the 18th of Nov. It weighed, dressed, 350 lbs.; making an increase of *pork*, deducting the weight of the pig when bought, 340¾ lbs. in 208 days, it being 1 lb. 10 oz. per day. Blood not known. Feed, slops from the house, and corn meal. Beat this who can."

Tobacco for Glanders.—In answer to the inquiry of Mr. Clark, (vol. I., p. 336,) Mr. Cook of Demopolis, (Ala.,) says—"I regret to state it is out of my power to give to your correspondent, Mr. C. B. Clark, specific directions as to quantity or manner of giving, as I have to rely on impressions alone, long since made on my mind, and that too, but occasionally spoken of. The impression is, the quantity given was considerable, and once a day for as much as eight or ten days, and given in the common form of a drench. My impressions as to quantity, strength, &c., result from what I have distinct recollection of hearing my father say in relation to the case, that he treated him as a dead horse; having at the time, no thought of a cure; he gave something else at the time, but always spoke of tobacco, in his opinion, as the sole agent in the cure. The subsequent treatment of the horse I think was purely southern, corn and fodder, running on a poor grass pasture."

Tobacco for Consumption.—Mr. Cook farther says—"I would submit it as a matter worthy of serious inquiry, whether an habitual tobacco chewer or smoker, has ever been known to die of pulmonary consumption."

Apples without Seed or Core.—Mr. O. W. Owen of Buffalo, says—"I find in a late number of the Cultivator, an article on the absurdity of the existence of apple or pear trees bearing fruit without seeds or core. Will you please to state to your readers that the fruit *can* be produced perfectly free of seed or core, by the following process: Where the tree is sufficiently young to admit of bending or twisting without breaking, take the extreme top of a limb, or small tree, and bring it to the earth, bury it, and when it shall have taken root, cut off the other end of the limb or tree, and you will have thus reversed the order of things, the body or heavy part of the limb being uppermost. New limbs, leaves and blossoms, will put forth in due season, and the fruit will be free of seeds or core. The process was made known to me by a gentleman belonging to Ohio, at the time of presenting me with a specimen of the above fruit, which he raised as stated. I was also told that this transformation could not be produced in other than the apple or pear fruit."

INQUIRIES.

Night Soil.—"Franklin" is referred to pp. 174, 266 and 381, of our last vol. for an answer to his inquiry as to the best mode of using this valuable manure.

Steeping Seeds.—The same correspondent will find the information he asks for, on this subject, in the communication of Dr. Smith, p. 281 of our last vol., where it is given in a more simple form than in any other paper, which has fallen under our notice. The other matters in Franklin's letter shall be attended to hereafter.

Cayuga Marshes.—In reference to the inquiry of Mr. Jason Smith of Tyre, relative to the quality of the muck from the Cayuga marshes, &c., we reply that we have conversed with Prof. Emmons, and also with Prof. Hall, on the subject. They both agree in the opinion that these marshes would become very productive, if they could be drained. If Mr. Smith will send a sample of the muck, Prof. Emmons will make an analysis of it. It would also be desirable to send in connexion with it, a specimen of the marl which it is understood is to be found below the muck. A few pounds of each will answer the purpose.

Locust Trees.—A writer with the signature "M.," in the Providence Transcript, inquires of us whether the locust tree, when set in wood lots, &c., as mentioned in an article in our Nov. number, escapes the attack of the borer. To which we reply, that in western New-York, and we believe in the west generally, the ravages of the borer are mostly confined to locusts which are cultivated by themselves, or such as stand singly, in rows, or small clumps; and we have generally noticed that those were most attacked, which stand in villages or towns. We know this is particularly the case in many parts of Ohio, though in the country or in forests, the tree is entirely free from the insect. Why the borer should confine itself in this manner to trees in towns or open grounds, we are unable to say. No successful mode of preventing its attacks, has yet been discovered, so far as we have learned.

Melons.—A correspondent, "W." at Troy, inquires whether there is a species or variety of the Musk-melon, adapted to this climate, called "*pomegranate*"—and also if citron melons are valuable for any other purpose than preserving. We do not know of any melon by the name of pomegranate—If any of our subscribers know such an one, we would thank them to inform us. The common citron melon, of the water-melon tribe, is not, that we are aware, useful for anything but making sweet-meats; but we have seen a fruit of the *musk*-melon tribe called a citron, which is very good to eat. There is an inconsistency in giving the same name to two fruits of different species, and so opposite in their qualities.

Inquiry.—We shall feel obliged if some of our correspondents will answer the following inquiry, proposed by Mr. W. J. Powell, of Marshall, Michigan. "Our opening lands, which are a rich gravel loam, and are *admirably adapted to the growth of wheat and other grains*,

will not raise more than *half a crop* of grass; notwithstanding, clover and timothy are very tenacious and next to impossible to remove from the land, after becoming once well soded. What, in your opinion, would be the proper course of treatment, to make them yield a good burden of grass?"

CARE OF ANIMALS IN WINTER.

In the cold climate of the northern section of our country, buildings, of some kind, are required for sheltering all domestic animals, and in general we think all should be fed under cover, or in yards attached to barns and sheds. There is much less waste in this way, and the animals are much more quiet and comfortable than when the food is thrown out in the dirt, and they are forced to eat under the exposure of wind and storm. In dry, cold weather, when the air is still, sheep may be sometimes foddered on clean, hard snow to good advantage—they will eat fodder here which they would refuse any where else. But it is only in dry weather that they can be fed in this way—as soon as the snow softens, or the weather becomes moist, they will not eat their fodder clean, out of doors, and they must be fed from racks or mangers in the house. Sheep do not like *wet*—they always prefer to keep both their food and their bodies *dry*.

Large flocks of sheep should be divided, putting the bucks and wethers together, the ewes in another lot, and the lambs and weak sheep in another. Subdivisions of these may be necessary, for too many must not be kept together. Some very good sheep-farmers think not more than a hundred should be allowed to run together—others allow more—but much depends on the room given them, the facilities for feeding, sheltering, &c. A *hospital* should be provided—self-interest, as well as humanity, demand it—and attention to the sick and feeble will be well repaid. A little nursing at the proper time often has such a magical effect on the invalid, that he comes out in the spring as brisk and hale as the best of the flock—a much more gratifying sight, truly, than to see his carcass hanging on a tree for the crows to pick.

If it is designed to raise early lambs for market, the ewes should be at once provided with warm, dry shelter, and fed with a little grain, and some roots, such as potatoes, turneps, or beets. This will ensure a strong, healthy lamb, with plenty of milk to feed him.

Cold weather gives cattle and other stock sharp appetites, and this is the best time in the winter to feed out poor fodder. Give it to the stock in small quantities at a time, replenishing the mangers as often as they are cleaned, till the animals get their fill. It is not good policy to make *milch cows* eat too much poor fodder—it had better be fed mostly to the young cattle—such as steers and two-year-old heifers.

Considerable advantage is sometimes derived from cutting fodder with a machine. Clover hay and straw, cut fine and mixed together, may be fed in this way without waste. Corn-fodder, if the stalks are small and well cured, will all be eaten if it is cut pretty fine. But it is not so with *large* stalks, which are very coarse and fibrous, and the sap of which becomes *sour* before they can be cured—cattle will not eat such much sooner than they would eat their hoofs. It is of but little use to cut stuff for cattle to eat which is absolutely *uneatable*. It is true that animals will sometimes reject long fodder which is really nutricious, and which would be eaten if passed through a cutter; but the idea should never be taken from this, that cutting substances which are little else than woody fibre, will convert them into proper food for animals.

In the western section of the country, where large herds are kept, sheltering and feeding under cover is attended with more inconvenience; but we are satisfied that the extension of the practice even there, would be followed by advantages more than counterbalancing the trouble. There is a great difference in the management of farmers in that region—the contrast between good and bad farming being as strikingly shown there as anywhere else—but it is often the case that the stock is permitted to range at will over the whole farm. The loss which is sustained from the waste of food, the injury done to the land by the treading of the cattle when it is wet and soft, and, as a matter of course, the great waste of flesh in the animals, is incalculable. The practice of feeding cattle almost entirely on corn-fodder, which in that country is very long and coarse, is quite an obstacle to barn or yard feeding; but where this cannot be adopted, the stock should be fed on dry lands, with, if possible, a strong, blue-grass sod, and by all means sheltered from the bleak and cutting winds, by a forest or belt of trees.

IMPROVEMENT OF FARMS

The Middlesex (Mass.) Ag. Society awarded the first premium for the best managed farm to Oliver C. Rogers, of Woburn. It appears from the account given by the chairman of the committee, Nahum Hardy, Esq., appointed to examine farms, that when Mr. Rogers came into possession of his farm, about seven years ago, it was much out of order—the fields were unproductive, and in many places so wet that they could not be plowed in spring early enough for planting. He dug deep ditches to drain the land, stoned them up, and covered over with flat stones—leaving the covering from sixteen to eighteen inches below the surface. He has dug, stoned, and covered over 360 rods of these "blind" ditches. The committee say—"the crops speak well for the improvements in these fields." In most of this swampy land, there is a hard subsoil, in others a deep mud. Mr. Rogers has reclaimed within seven years, more than forty acres, which was very rough and unproductive, when he took possession of the farm. He has also built more than nine hundred rods of stone wall, sixty rods of which is heavy faced wall, "beautifully pointed with cement." He has made various improvements in his buildings, and the committee add, "has constructed a good cellar under his barn for the manufacture of compost manure, being convinced that no good farmer should be without one." Besides these improvements, Mr. Rogers has set out peach and apple orchards, and has carried from his fields and buried in low places and mud holes, about two thousand loads of stone, within the seven years.

Compost Making.—The same committee which made the above award, made a report in relation to the manufacture of compost manures. They mention that one of the competitors, Mr. Fay of Marlborough, burns hussocks from bog meadows, and mixes the ashes with loam and barn-yard manure. Another man, Mr. Chaffin, of Acton, is in the habit, every morning in summer, of throwing a mixture of sand and muck, over the manure dropped by the cattle the preceding night.

Mr. Moore, to whom the committee awarded the premium for the best mode of manufacturing composts, stated that his attention was first particularly called to this subject about five years since. About that time he built a barn, 80 by 40 feet, with a cellar under the whole of it, and began making compost. He keeps seven cows, one bull, two yoke of oxen, and two horses, which are tied up in the barn every night to save the manure. In addition to the above, he winters from twenty to twenty-five head of young and fat cattle. He keeps hogs in his barn cellar. The method which he prefers, is, to keep always at hand plenty of good loam and peat mud, both in the cellar and barn-yard. This is placed in the cellar under the holes where the manure from the cattle is put down, and after remaining there about a week, it is spread over the hog-sties in the cellar, which are 80 feet long by 24 feet wide. Before spreading the loam or mud, corn is sown over it, which induces the hogs to root and turn the whole over. Mr. Moore thinks the urine of cattle is as valuable, when properly applied, as their dung. He thinks urine of so much consequence that he places barrels in his sheds to receive that from the house, which is afterwards emptied on the manure heaps. Plank troughs, set on runners, are placed under the privies, and when they are partly full, are drawn away and mixed with loam and mud.

The committee, in conclusion, suggest that there is no necessity of going to France for poudrette, or to the Pacific for guano, as farmers can manufacture these, or their equivalents, at less than half the cost of importation.

INQUIRIES RELATIVE TO FRUIT TREES.

A correspondent makes the following inquiries:—"Assuming that a proper soil has been selected, according to the Jan. No. of the Cultivator, 1844, p. 37, on which to raise various kinds of fruit trees, such as the apple, pear, peach, plum, and quince, I would inquire,

1st. What is a good method of preserving the different kinds of seeds for planting?

2d. What is the proper time for planting?

3d. The proper depth for covering?

4th. How near each other may trees stand until budded, or grafted?

5th. Smallest size proper for budding or grafting?

6th. Do any of the above varieties ordinarily require protection in winter?

7th. If after suitable care in the selection of the hardiest buds for insertion, any fail, what shall be done with the stocks next season?

8th. If any of those failing are cut or headed down, when shall it be done?—that is with respect to the age of the tree and season of the year?

9th. Proper time for transplanting seedlings?

10th. What shall be done with the tap root?"

ANSWERS.

1. The best way to preserve the seeds of fruit trees, is to mix them with pure or clean sand, as this prevents their drying if it is kept moist, and also prevents their moulding or fermenting, which often takes place when moist seed lie some time in actual contact with each other. The seeds of stone fruit should not become much dried internally—the outside should only be exposed long enough to the air to evaporate external moisture and prevent moulding, when they should be packed in sand.

2. The best time for planting is autumn and spring. If they are well packed and exposed to the weather, so that their external coats may be split with freezing and thawing, spring is as good as autumn, and sometimes better, as the seeds if planted in autumn are sometimes destroyed by mice or otherwise, from which they are more easily protected if remaining in a mass, unplanted, till spring.

3. The depth of covering, as well as in most other seeds, must be regulated chiefly by the size of the seeds, and the nature of the soil. Small seeds, as of the apple and pear, may be an inch or less deep in a heavy soil, and one and a half to two inches deep in a very light soil. Peach stones, (which, if uncracked, come up mostly the second year from planting,) may be from two to four inches deep, varying with the soil, and cherries and plums, one or one and a half to three inches.

4. Where land is plenty, and trees scarce, they may stand nearer than where the reverse is the case. Before budding or grafting, as well as afterwards, they will grow faster and make finer trees, if not crowded in the rows. If not budded or grafted till the second year, they may stand an inch or two apart, to be set out to six or eight inches or more after the first season's growth; but if budded the first summer or grafted the next spring, they should be six inches apart at first. The rows, if only hoed between, may be one to two feet apart the first season; if plowed, they should be three or four feet apart.

5. The smallest size of the stock for budding must depend somewhat on the size of the shoots whence the buds are taken. Buds from very large shoots cannot be well inserted into stocks smaller than themselves. As a general rule, however, half to three-quarters of an inch is a very good size for budding. For root (whip) grafting, trees may be one-quarter of an inch in diameter. For cleft-grafting, they are convenient, if from three-quarters of an inch to an inch and a quarter.

6. The above named kinds of fruit are generally hardy throughout the northern States, except the peach. Some of the varieties of the latter, especially of the earliest, are tender. The best protection in winter, is to plant them on soils least liable to frost. In parts of the country inclining to be hilly, other things being equal, the hill-tops are best and the valleys worst, as the latter become soonest warmed by the hot sun, and the trees are driven forward earlier in spring, and continue to grow later in autumn; while the sharper frosts to which such valleys are liable, still increase the difficulty. A wet subsoil is also detrimental. Mucky land, also, by radiating heat more rapidly, is more liable to frosts, than dry compact soils. Deep lakes, which do not freeze in winter, afford great protection to tender fruits, by softening the severe cold of the winter's air. All these things are to be taken into consideration in setting out tender fruit trees.

7. When buds fail, the stocks may be re-budded. Peach stocks, for this purpose, should be cut down to the ground, that fresh and vigorous shoots may spring up, all but the largest of which from each root, should be carefully removed.

8. The best time for thus heading down, is early in the spring of the year. It should be done when the tree is not more than two or three years old.

9. Seedlings may be transplanted both in spring and autumn.

10. The tap root should in all cases be cut off a few inches below the surface, so as to throw out horizontal roots only.

Our correspondent also inquires if "it is a good plan to stop the growth of trees in autumn in moist places, where frosts are expected?" We do not understand this question. The only way to avoid the effects of frosts on tender trees, is to plant the trees where the frosts are least severe, and where the trees, from exposure to winds, &c., and by growing in a moderately fertile soil, will cease growing and harden their wood early in autumn.

He also inquires if the small crook in trees at the surface of the ground, occasioned by the sprouting of the seeds before planting, will seriously affect the value of the tree? It will not; especially, if in transplanting, the crook is placed beneath the surface.

WINTER EVENINGS.

THE favorable opportunity for reading and study, afforded by the long evenings of this season of the year, it is hoped will be duly improved by farmers. The school libraries which have been provided in several of the states, furnish to all an excellent means of acquiring useful information. As the agriculturists constitute the most numerous class in community, we think each of these libraries should contain some books particularly applicable to their profession. It is important that the farmer should acquaint himself, as thoroughly as possible, with the natural laws which constitute the basis of the art by which he obtains his livelihood; and the more his practice is made to conform to these unerring laws, the greater will be his success. Besides studying the principles of his art, the farmer should keep himself constantly advised of the improvements and discoveries in every department of rural economy, which are from time to time made. The readiest, and indeed almost the only medium of acquiring this information, is AGRICULTURAL PAPERS. They may be regarded as furnishing an opportunity for a mutual interchange of ideas on the various subjects of practical husbandry. They present in fact, to every farmer a medium for *conversing* with the most intelligent and successful of those engaged in the same occupation, in all parts of the country. The views of all may be obtained, compared, examined, and modified, to suit the particular circumstances of each individual—an opportunity which is almost equivalent to making a personal visit to each correspondent. What an extensive field, for instance, for this interchange of opinion, and the acquirement of information, is presented through the medium of the CULTIVATOR, with its THREE HUNDRED correspondents, (which it actually had during the last volume) scattered over every state in the Union, besides several from the British North American Provinces, the West Indies, and a number of regular contributors from Europe! And for the sum of only *one dollar*, all the valuable knowledge thus collected for one year, is to be obtained! It is scarcely possible that there is a single farmer in the country, who, being fully aware of the importance of the subject, and the advantages to be thus derived, would lose a moment's time in becoming a subscriber to THE CULTIVATOR.

PRODUCTS OF THE DAIRY.

We trust that no apology is needed for calling the attention of the public to the importance of this subject. The production of butter and cheese is not a matter in which farmers alone are interested, but one which concerns every individual almost without exception, in whatever section of country they may reside, or in whatever occupation they may be engaged; for of the entire population of this country, very few can be found who are not either producers or consumers of these articles. True, there is occasionally to be found a person who has so little taste for good things as not to appreciate the luxury of a *bit* of good cheese, or the almost indispensable accompaniment of every meal, a nice ball of butter, and it is to be feared that in the larger towns, families might be found who have not the means to purchase these articles. The poor man in the country, however limited his means, and to whatever extent he may be deprived of the delicacies and refinements of life, nevertheless keeps his cow and usually his pig also; thus providing himself with that which cannot always be obtained by even the wealthy in our large cities, *pure milk and good sweet butter*, while with the addition of a little meal or a few potatoes, the pig contributes in a great degree to the more substantial provision of the laborer. No wonder then that that observing and shrewd writer, Colman, should descant so agreeably on the pleasures to the poor man, of keeping his cow and his pig.

The farmer has this advantage over all other classes, he can appropriate the choicest of the productions of the soil and of the dairy for his own consumption, thus enabling himself and family to enjoy the first and best fruits of honest labor, and well directed industry and skill. To no branch of agriculture does this remark apply with greater force than to the productions of the dairy. Unfavorable circumstances may injure the quality of the butter or cheese sent to market, but nothing need prevent the farmer from partaking of the best which the skill and care of the dairywoman can furnish. We design in this article simply to call attention to the subject, and to prepare the way for some remarks in a future paper; when we hope to be able to show to farmers the importance, the necessity indeed, of great improvement in the quality of their dairy products, and to prove to them that a very great increase in the average quantity per cow can profitably be effected. Indeed, when we consider the great defects which exist in the quality of much of the butter and cheese now manufactured, and the comparatively small quantity from each cow which is made in many of the dairies, we are forced to the conclusion that in few branches of agricultural or household duties, is there more need of improvement.

There seems to be but a comparatively small portion of the country which is well adapted to dairying. A soil suitable for the production of the proper grasses; a climate of the proper kind for the manufacture and preservation of the butter and cheese; an abundant supply of pure water; cool and dry cellars in which to preserve the butter in good condition; all these, and many other things, must combine to constitute a good dairy district. Several counties bordering on the Hudson river, would seem well adapted to this object; and the high reputation of much of the butter made in those counties, proves their adaptation to this business. This limited extent of territory, is however, no more than is needed to supply New-York and other large cities with milk, and to some extent, with butter for family use in the summer months. The same remark will also apply to that portion of Pennsylvania at no great distance from Philadelphia. In addition to the supply of milk and butter for family use, the counties contiguous to large cities must give the finish to the fattening of the great proportion of the cattle which are required for supplying the city with fresh beef. New-England, with her numerous manufacturing establishments, and the employment of her citizens in the various mechanical occupations, consumes vastly more butter and cheese than she produces. Western New-York must always be a wheat growing region; (unless the owners of the soil exhaust it by severe cropping,) and so to a great extent are the western States.

The central and northern parts of the State of New-York, must therefore constitute *the dairy district*, from whence must be derived a very great proportion of the butter and cheese used in our large cities, and which is needed for shipment to Europe. The demand for cheese for this latter purppse, is now considerable, and will, doubtless, greatly increase, if proper attention is given to the manufacture; but it is idle to expect a foreign demand for a poor article. It is then to the dairymen in the district referred to, that this subject presents itself with the greatest force; and we deem it one of sufficient moment to demand attention from our agricultural journals. We propose in our next, to give some statistics relating to the products of the dairy in different sections of the country, and also the quantity exported, as far as such information is within our reach. These facts will not, it is hoped, prove entirely uninteresting to any class of readers, whether producers or consumers.

E. Comstock.

Foreign Correspondence.

MR. NORTON'S LETTERS—No. VI.

Lab. of Ag. Chemistry Association,
Edinburgh, Oct. 30, 1844.

Luther Tucker, Esq.—Since the date of my last letter, I have made an excursion into Ayrshire and Renfrewshire. I accompanied Prof. Johnston, who went for the purpose of delivering four lectures in Ayr. He has, on at least one occasion before, addressed the Ayrshire farmers, and so pleased and benefited were they, that they invited him to come again and give them a somewhat more extended view of the great subject of the application of Chemistry to Agriculture. In compliance with this invitation, was the present visit. I will give a brief sketch of the plan and subjects of the Lectures.

The first was upon the organic part of plants. This organic portion of all vegetable bodies is separable into starch, gluten, woody fibre, gum, sugar, &c. By the simple experiment of burning sugar, one of these bodies, it is shown that it resolves itself into carbon or charcoal and water; the same is true of woody fibre, starch, and a great proportion of vegetable bodies. The properties of charcoal were explained, and the two gases of which water is composed, oxygen and hydrogen, were exhibited through their more striking phenomena. In gluten and other vegetable bodies, we have a fourth ingredient, nitrogen; this was also shown, and the method of its formation explained. We see then that the organic, which is far the larger portion of plants, consists of four substances, carbon, hydrogen, oxygen and nitrogen. Plants collect these indispensable materials in various ways; the carbon chiefly through the leaves in the form of carbonic acid gas; oxygen and hydrogen through the roots, a great proportion in the form of water, and the nitrogen through the roots, also in the form of ammonia, or other compounds. The decay of various substances, and the vegetable acids present in the soil, also supply a certain amount of *all* these bodies.

Lecture 2d, was upon the inorganic part of plants and soils. When we burn a quantity of vegetable matter, far the greater proportion is driven away, but something always remains. This, though a small part of the whole, is indispensable; it is as absolutely essential as the glue or nails of the carpenter, or mortar of the mason; plants cannot live long entirely without *some*, though the proportions in which they require it, vary. This inorganic portion consists of eleven substances: potash, soda, lime, magnesia, alumina, oxide of iron, oxide of manganese, silica, sulphuric acid, phosphoric acid, and chlorine; other things are rarely present. The organic portion is derived chiefly from the air, but partly from the soil; but this comes wholly from the soil. Every fertile soil then must possess the above constituents, and a soil which does not, will not grow good crops. If rich in all of the others, but deficient in one, lime for instance, it will not nourish a healthy grain or root crop. Thus we may have a soil that may at once be made fertile, by the addition of some one absent ingredient. Here chemical

analysis comes to the farmer's aid, and is able to tell him the best and most economical method of improvement.

Lecture 3d, pointed out the ways by which the soil is to be improved. Although, as has been stated, some soils only require the addition of a special ingredient to bring them at once into a state of fertility, others are in need of many things. In many instances a soil contains every thing necessary for the nourishment of plants; but will not grow them on account of its physical condition; there may be a superabundance of water—this is to be removed by means of the drain; there may be some excess of acid or noxious mineral substance—these too are to be removed by drains, put in, not because of wetness, but that the rain may descend quickly into them, and carry these substances away with it. Great benefit is also to be derived from thorough stirring and pulverization of the soil, to the greatest possible depth. Sometimes the subsoil is more fertile than the upper, and may be brought to the surface with much advantage. Green cropping, is another most valuable and economical means of improvement. Vegetable matter is thus supplied at the expense of the atmosphere; and the long roots bring up inorganic substances from the subsoil. If we do not return to the soil, both the liquid and solid manure from animals, we do not return all that we have taken away, and it will sooner or later show a deficiency.

Lecture 4th, treated of the purposes to which the crops raised are applied, that is, to the food and sustenance of animals. We find that the muscle, blood, and bones of animals also consist of an organic and inorganic part. This organic and this inorganic part, respectively contain the same constituents as the corresponding parts of the food, and not only of the food, but of the soil; here, then, we have a complete and beautiful chain. The soil and the air build up the plant, the plant builds up the animal frame. The food having fulfilled its purpose in the nourishment of the animal, is rejected, returns to the earth again, and commences its round anew. With a knowledge of the constituent parts of the animal, we are able, having the same knowledge of the vegetable, to adapt our food to the purpose required. To the growing animal we would give food, rich in phosphates, to build up bones, in gluten to form muscle; to the fattening animal, we would give in addition, something rich in oil and fat. These things are all ready formed in the plant; in fact, it is a workshop to prepare materials for rearing and supporting the body; our part is the selection alone.

The above necessarily imperfect outlines will give an idea of the plan and scope of these lectures. The room in which they were delivered, was each day well filled; and on the last day, some persons were compelled to stand. Sir Charles Ferguson of Kilkewan, presided at the two first lectures, the Lord Justice General, at the 3d, and Mr. Campbell of Craigie, at the 4th. The expression of gratification was universal. In his conclusion, Prof. Johnston made some most excellent remarks upon the necessity of caution in our advances. Many men of science even, have launched off into wild theories, and greater injury results from those, who with an imperfect knowledge of the subject, boldly arrogate to themselves the office of teachers, and by erroneous results and conclusions, not only lead others astray, but throw discredit upon the whole science. Our consolation is, that truth will outlive these wounds of purblind friends, and will prevail at last.

During my journey, I was favored with opportunities to visit several of the fine Ayrshire farms; and propose to give some account of them in my next.

Very truly yours, JOHN P. NORTON.

FOREIGN INTELLIGENCE.

By the Hibernia, arrived at Boston on the 21st ult., we have received our usual files of foreign periodicals to the 2d ult.; but have but little time to examine them before our paper goes to press. We notice that great preparations are being made for the great show of fat stock at Smithfield, which was to commence on the 11th December. We shall probably obtain full accounts of it for our next number. The subject of allotments, and of the repeal, or modification of the outrageous game laws, are now creating much discussion in England, and progress seems to be made towards the accomplishment of both these objects.

The English papers announce the death of Lord Western, of Felix Hall, Essex. He was in his 78th year. He was a devoted patron of agriculture, and as such, his name will long rank with those of Spencer, Coke, and others of his country. His farm has for several years been a leading object of curiosity with the agricultural tourist; and a welcome and ready hospitality was always extended to those who called to inspect either the farm or the mansion. He was never married, has no brothers, and the title is said to be now extinct.

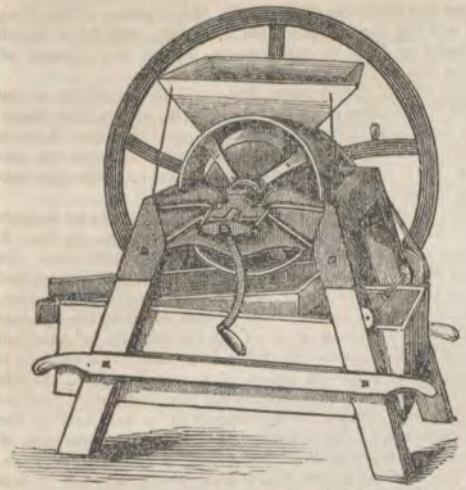
PRINCE ALBERT'S ANNUAL SALE OF LIVE STOCK.—This great sale, which lately took place at Windsor, attracted, as on former occasions, great numbers of butchers and salesmen. From the prices obtained, we should suppose the bailiff might be able to carry out the instructions which it is said were given by his Royal Highness when he undertook the management of the farms, viz. to "*be sure and make them pay.*"

HEREFORD CATTLE.—Mr. John Walker, of Burton, the famous breeder of Herefords, who is just removing to another farm, recently sold a portion of his stock. The sale begun with the cows and two year old heifers, some with calves and some in calf. These realized high prices, ranging from 20*l* to 58*l* each; the yearling heifers sold equally well, fetching from 18*l* to 35*l* each, and weaning calves from 10*l* to 27 each.

GRAZING STOCK.—At the late exhibition of the East Cumberland (Eng.) Agricultural Society, Mr. Ellison, one of the judges of stock, made some good practical remarks on the proper form and qualities of domestic animals. He said he had been a grazier for a number of years, and the result of his experience was, that a short backed, short legged animal, and one that would do with a short bite, was best, and would be found soonest fat for the butcher. There had been a very great improvement in the breed of sheep within the last forty years. Leicesters were now much run upon, and the reason was, that they were a short, compact animal that would suit any bite, and be made fit for the butcher in a short time. The great object in rearing stock as well as crops, was that the capital laid out should be returned as speedily as possible. In respect to pigs, there were certainly some good animals shown, but in his opinion, the object to be aimed at in raising improved breeds of pigs, was to give them smaller bones and larger carcases.

VISIT OF PROFESSOR LIEBIG TO ENGLAND AND SCOTLAND.—The distinguished chemist and physiologist Liebig has lately visited Great Britain. A public dinner was given him at Glasgow, at which the Earl of Eglinton presided. The chairman, in a complimentary speech, proposed the health of Professor Liebig, to which the Professor replied in an appropriate speech, that was received with much approbation. Professor L. received several other invitations to public dinners, which, on account of his short stay, he was obliged to decline. In his speech at Glasgow, the Professor, speaking of the advantage of science with practice in agriculture, observed—"Practical experience possesses unquestionable value; but it is like a vessel, to which, in the form of science, the compass, or the pilot, is wanting—it is a treasure which cannot be inherited. Science enables us to bequeath this treasure to our children, and it enables our children to increase the store. Science gives us the consciousness of our strength, and thus inspires us to recognize the food of plants, and the sources from which it is derived. This knowledge alone makes us the true masters of the soil—the lords of our capital. We can now see where we are guilty of waste, and where we are too sparing. The great truth that animal manures are nothing else but the ashes of the food produced from our fields, consumed or burned in the bodies of animals, has given the chief direction to all modern improvements in agriculture. The mineral food of the plants of all countries must be ascertained by analysis of their ashes."

☞ Some experienced cheese-makers in Nottinghamshire, are adopting the practice of adding churned milk to the usual cheese milk, which is said to very much improve the quality and taste of cheese, and prevents its rising after it is made.



R. SINCLAIR Jr. & CO'S PATENT CORN MILL—(Fig. 2.)

THE machine represented by the above cut, is admirably adapted to plantation use. It makes coarse or fine meal with equal facility, at the rate of two and a half to three bushels per hour. When the screen is attached, (as shown in the centre of the cut,) and fine meal is required to be ground, it will be necessary to drive the mill by horse power, say two horses. Coarse meal for horses, may be ground by two men with good success. The grinding plates are made of the hardest composition metal, and will last about two years. A feeder is attached to the axle, which is intended to pass the grain into the plates at regular intervals. This feeder is important, and obviates the objection to cast iron mills generally. The feeder and grinding plate are represented separately from the mill, in figs. 3 and 4. Price of the mill with a set of extra plates, $40. Manufactured by R. SINCLAIR JR. & Co., Baltimore.

Fig. 4.

Fig. 3.

EXPERIMENTS IN THE CULTURE OF INDIAN CORN.

We are indebted to our friend GEO. GEDDES, Esq., of Onondaga county, for the following detailed account of several experiments made by him, with great care, the past season, in the culture of Indian Corn. They will be read with interest, and our readers will be glad to learn that these experiments will be continued with the same exactness the ensuing season. Mr. GEDDES says:

The SOIL is a deposit of gravel mixed with sand and clay, resting upon a gypseous shale. The previous course of cultivation has been as follows, viz:—In 1837, a crop of corn was raised on a heavy sod turned under that spring, and slightly manured with barn-yard manure. The yield was estimated at 65 bushels to the acre. In 1838, corn was again raised, and without any manure; estimated to yield 50 bushels to the acre. In 1839, it was sown with oats, and yielded a very heavy crop. Grass seed was sown with the oats, which succeeded well. The next four years it was pastured. Plaster was put on both corn crops, and on the oats, and once or twice on the pasture.

The ground was plowed about the first day of May, six inches deep, and planted on the third and fourth days of that month.

The variety of corn was the improved Dutton; that is, Dutton that had been selected from the earliest ears for a series of years.

EXPERIMENT No. I.

One acre was planted in hills three feet apart each way, six kernels in the hill. Fifty loads of half rotted manure, was put on this acre, after it was plowed, and harrowed in as well as it could be done; it being so coarse that it piled up a great deal before the harrow. The hills had a hoe full of the best of the manure drawn in by the planter, and the corn dropped into it. It was hoed twice, and a cultivator was run once along each row *both ways*, at *each hoeing*. The account of the cost of cultivation, is as follows, viz:

To plowing and harrowing one acre,	$1·50
50 loads of manure, drawing and spreading,	12·50
2 days work of one man planting,	1·50
cultivating for both hoeings,	·50
hoeing twice, 3 days work,	2·25
harvesting, 3½ days work,	2·63
	$20·88

The product was 70¾ bushels—at 4*s*=$35.25—20.88 =$14.37, for the use of the land; or the corn cost, besides the use of the land, $0.29, 6 per bushel.

EXPERIMENT No. II.

The other acre was cultivated as follows—One-tenth was planted in hills three feet by two feet apart, six kernels in a hill, and *without any manure*. The account of the cost of cultivation is as follows, reduced to acres.

To plowing and harrowing one acre,	$1·50
planting 2 days,	1.50
cultivating,	·50
hoeing twice, 4½ days,	3·37
harvesting 3 days,	2·25
	$9·12

The product was sixty and one-quarter bushels to the acre, at 4*s*=$30.12—9.12=$21.00 for the use of the land; or the corn cost, besides the use of the land, $0.15,1 per bushel.

EXPERIMENT No. III.

Another tenth was planted the same distance apart, and the same number of kernels in the hill as the last—and was manured, by filling each furrow, as it was plowed, full of barn-yard manure, *unfermented*—the amount used being at the rate of 150 loads to the acre. The cost of production was as follows, reduced to acres:

To plowing and harrowing one acre,	$1·50
2 men to fill the furrows with manure,	1·50
2 days work planting,	1·50
4½ days hoeing,	3·37
cultivating,	·50
3 days harvesting,	2·25
150 loads of coarse manure,	18·75
	$29·37

The product was seventy bushels to the acre, at 4*s*=$35.00—29.37=$5.63 for the use of the land; or the corn cost, besides the use of the land, $0.42 per bushel.

EXPERIMENT No. IV.

Another tenth was the same distance apart, and the same number of kernels in the hill as the last, and manured with coarse manure in the same way, and had beside, a top dressing of half rotted manure, at the rate of twenty-five loads to the acre. The cost of production was as follows, reduced to acres:

To plowing and harrowing one acre,	$1·50
150 loads of coarse manure,	18·75
25 " fine "	6·25
2 days work to put manure in furrows,	1·50
2 days planting,	1·50
4½ days hoeing,	3·37
cultivating,	·50
4 days harvesting,	3·00
	$36·37

The product was eighty bushels to the acre, at 4*s*=$40.00—36.37=$3.63 for the use of the land; or the corn cost $0.45,5 per bushel, besides the use of the land.

EXPERIMENT No. V.

Another tenth was planted in drills, three feet apart, the corn four inches apart in the drills. It was manured with 25 loads of half rotted manure, to the acre, put on after the plowing. The cost of production was as follows, reduced to acres:

To plowing and harrowing one acre,	$1·50
25 loads of manure,	6·25
drilling in seed 4 days,	3·00
two hoeings, 3 days work each,	4·50
cultivating,	·50
harvesting (small ears) 4 days,	3·00
	$18·75

The product was fifty-five bushels to the acre, at 4*s*=$27.50—18.75=$8.75 for the use of the land; or the corn cost $0.34 per bushel, besides the use of the land.

EXPERIMENT No. VI.

The remainder of the ground was planted in hills three feet by two feet, six kernels in the hill, with a top dressing of twenty-five loads of half rotted manure to the acre. The cost of production was as follows, reduced to acres.

To plowing and harrowing one acre,	$1·50
25 loads of manure,	6·25
2 days work planting,	1·50
4½ days hoeing,	3·37
cultivating,	·50
3¼ days harvesting,	2·44
	$15·56

The product was sixty-five and one-half bushels to the acre, at 4*s*=$32.75—15.56=$17.19, for the use of the land; or the corn cost, besides the use of the land, $0.23,7 per bushel.

It is proper to say, that the cost of labor for such small parcels, is a difficult thing to determine with perfect accuracy.

The stalks being of such equal value upon each piece, I have supposed it unnecessary to attempt any separate measurement; neither have I kept any separate account of the cost of the seed, for the same reason. The whole was plastered, but the expense being so slight, and costing the same for each piece, no account has been made of it. The manure is charged at its full value in each case, though the land is greatly benefited for future purposes. Hardly a quarter of its cost is justly chargeable to this crop. In No. 2, we have an example, in which the effects of the manure are easily traced through many years. The last manuring this piece had was in 1837—and it now produced 60¼ bushels to the acre. No charge being made against it for manure, it appears to be profitable above every other experiment. But if the account could be stated for a period of years for each piece of land as we have it for this year, I doubt not the manure would be found to pay fully all its costs.

These experiments were made chiefly to determine *how thick* corn should be planted—what is the *most convenient form to place the plants*—and whether the manure should be rotted and applied to the surface, or plowed under unfermented. The conclusion that now appears likely to be arrived at is, that hills three feet by three feet apart, put in rows, so that a cultivator can be used both ways, is the most convenient form for cultivation, and that six kernels put into each hill, will make the corn thick enough. I counted, and made examinations that satisfied me, that at harvest my hills averaged five stalks to the hill—no thinning was done, except by insects and accidents. That this is not too thick, is proven by experiment No. 6, where the hills were three feet by two feet, the product being 65½ bushels to the acre, and with one-half the manure that was put on No. 1, which was three feet by three feet apart, and the product only five bushels more to the acre. In fact, I believe that more bushels with the same manuring would have been raised with the hills two by three feet, than three by three feet, but the extra labor of planting, hoeing and harvesting, will more than counterbalance the gain.

The labor required to plow under *unfermented* manure in any considerable quantity, is so great, and its great bulk compared with its value, making it so expensive to draw, and the fact that it is not felt until late in the season—and that the next plowing must be deeper, in order to bring it all up and mix it with the soil—are great objections to its use. That the next plowing must be deeper, in order to bring up all the manure, is evident from the consideration that every time the soil is saturated with water it must sink deeper, unless it is held up by some stratum that is impervious to water. If the contents of the barn-yard are piled up in the spring as soon as the frost is out, and covered with gypsum so as to prevent the escape of any of its gases, and turned and re-piled at midsummer, and again covered with gypsum, the seeds of weeds will be destroyed, and the manure will be entirely rotted in time to put on the corn the next spring. The manure used in these experiments was but half rotted in consequence of neglecting to turn and re-pile it. From the decrease of the bulk, the expense of handling and mixing the manure with the earth, will be so much lessened as fully to compensate for all the expense of piling and rotting it.

The cost of the gypsum, too, will be but slight, as but little is required; merely enough to whiten the heap. The corn will then have its stimulus at the time it needs it most; and but few weeds will spring up from the manure. All these considerations lead me to prefer fine manure to coarse.

It is worthy of remark that in No. 2, where no manure was used, that the yield was 60¼ bushels—in No. 3, where 150 loads of unfermented manure were used, the yield was 70 bushels—a gain of 9¾ bushels to be ascribed to the manure; in No. 4, with the like amount of unfermented manure, and 25 loads of fine manure, the product was 80 bushels—a gain of 10 bushels to be ascribed to the fine manure—showing that one load of fine is worth more than six loads of coarse manure. While No. 6, which was manured with the fine only, yielded 65½ bushels—a gain of 5¼ bushels to be ascribed to the same amount of fine manure. Showing that one load of fine is worth about three and a quarter of coarse manure. But the land on which No. 6 was raised, was not as rich as Nos. 2, 3 and 4, owing to the fact that it was so situated in the field that it had not been as highly manured in those years gone by, when manure was only drawn out of the barn-yard "to get rid of it." Nos. 2, 3 and 4, were nearer the gate, and had been served about alike, and furnish the fairest test of the value of the different kinds of manure.

Some of the results obtained by these experiments were unexpected. The highest yield is very far below the great crops that have been reported. I know not why a hundred or more bushels to the acre were not raised on No. 4, with manure both on top and under the furrow, amounting to 150 loads of coarse and 25 loads of fine to the acre; and that too, along side of land that *without any manure*, yielded more than 60 bushels to the acre.

I purpose the next year to plant all of this ground with corn, and carefully measure the product of each piece, with a view of learning the effects of this manuring for the second year.

GEO. GEDDES.

AGRICULTURAL INSTRUCTION IN SCHOOLS.

WE have seen several notices in our foreign papers, of a lecture recently delivered by Professor Johnston before a convention of school-teachers and others, on the subject of the introduction of agricultural instruction into the elementary schools of Scotland. As this subject has of late attracted much attention in this country, a portion of the remarks of Prof. J., who is deservedly considered one of the most practical among the distinguished scientific men of the age, will be read with peculiar interest.

In the course of his lecture, Prof. Johnston observed that he had previously had some doubts of the expediency of introducing this kind of instruction into these schools; but after hearing, at Glasgow, the examination of some boys from the Irish National Schools, all his scruples had been removed.

In relation to what should be taught, the Professor remarked, that

"Agriculture divided itself strictly into three branches; 1st, the culture and improvement of the soil; 2d, the rearing and improvement of stock; and 3d, the use and improvement of agricultural implements. Now, their teaching, that might be of two kinds—theoretical or practical, or both. He would come to the consideration of both. He thought that in elementary schools, they might easily inculcate and impress on the minds of the youth under their care, the principles upon which the culture of the soil ought to be based. Of the sciences on which these principles depended, chemistry was the most important, and it was necessary, therefore, before they could teach the young mind, that they should give a knowledge of so much elementary chemistry as to make him understand the words used by chemists. It was not enough that he should know such names as soda and potash—he should also know the difference between them. They must not teach any one science for its own sake, but as an

important branch of national industry. They were to make their pupils—not chemists—not botanists, but scientific farmers, for in that the public were interested and would support them. As to the experiments they would find it necessary to make, they were few and very simple. For instance, here was the carbonate of soda in one glass vessel, and the carbonate of lime in another—take and pour spirits of salt on them, and they would observe carbonic acid gas arise, which extinguished a lighted taper when put into the vessel. They would also perceive that the smoke of the extinguished taper floated on the top of the gas, thereby showing how much was in the vessel. This gas, they were aware, performed most important functions; but it was not necessary to give the boy more information than was requisite to fix in his mind the name and property of the gas. Then as to phosphoric acid—here was a piece of phosphorus, which they would observe, when he burned it under a glass, sent up white fumes; all they had to do, therefore, was to tell the boy that those white fumes were phosphoric acid; that the same was in his bones, and in the food which he eats—and he would then easily remember what phosphoric acid was. If they did not happen to have phosphorus by them, they might use lucifer matches, which were easily procured, and which on friction being applied to them, sent up the same sort of white vapor as did the phosphorus which the boy had seen burned. They could also connect carbonic acid with the daily life of the pupil, by telling him that what was produced when charcoal was burned, was what he breathed. He would then go and tell his father that this same substance which he throws off from his lungs, was what the leaves of plants sucked in; that plants took it to form starch, and that animals eat the starch to form it. After making an experiment to show that liquid manure was an important substance if applied to plants, as it greatly promoted their growth, the Professor then went on to say that the more simple the teacher could make his experiments, the better—they should teach no more philosophy than was absolutely necessary; but at the same time, it must be strictly correct. He would advise them to confine themselves to facts, not to announce the principles. He would also press upon them, in endeavoring to fix facts on the boy's mind, to call forth all his senses—his sense of sight for instance. Then as to smell, ammonia might be used; and for taste, common salt, alum and soda, which were perfectly harmless. As to touch, sal ammoniac would be of use. They would observe that the little piece which he had just broken off, bent; and he knew of no other substance which a boy was likely to meet with that would bend in like manner.

As to the expense of making the experiments, it would not amount to more than five shillings a year, as the materials could be procured at a very cheap rate. With regard to the apparatus, all that is necessary could be got for thirty shillings from Messrs. Griffin of Glasglow, who had, at his request, prepared a set of apparatus. Then, as to the time it would occupy to teach the science; why, that was a point on which some misapprehension might readily arise. The boys who attended school generally did so for three or four years. Now all that he asked was one hour a week—that was enough to learn all that was necessary to be taught on the subject; but if they could give him two hours he should like it the better, as then there would be time to spare. The children also would learn much without teaching, from seeing the tables he had alluded to, and also from experiments. He did not wish that this one hour a week should interfere with the usual course of instruction, although it might not necessarily be new or additional time to what was now given to teaching. In fact, he did not wish any of them to teach in one particular way or another—he left that to themselves, merely taking the liberty of giving his opinion in the matter. As to the practical teaching of the science, that could be done in various ways. For instance, they might on a Saturday afternoon go with the boys to a farm in the neighborhood and describe the operations of the farmer. After telling them all about the rotation of crops—that a green crop followed after grain and so forth, the teacher might then say let us go now and see how the farmer works. This, he thought, might be of great benefit to the scholars."

SUMMER FALLOWS.

If ancient usage were in all cases to be considered sufficient evidence of the propriety of a practice, the expediency of FALLOWING would not now be questioned. The custom, if it did not originate with the Romans, it is certain was introduced by them wherever they extended their conquests. The practice seems to have originated in an idea that the land, after several years cropping, required *rest*, and that by remaining for one or more seasons without any crop being taken, its exhausted energies would become so far renovated that successive harvests might again be taken.

In England, there are several kinds of fallows, as "naked fallows," and "green fallows." Naked fallowing, as now understood, implies the plowing and cleaning of the land through one season, with a view of better preparing it to produce crops.

By green fallows, is merely meant the cultivation of the land in some hoed crop. In England, turneps, mangel wurzel, or some other root-crop, usually constitute the green fallow. The effect of the latter, is in one respect, that of cleaning the land, the same as the other kind. In the cultivation of the vegetables, the soil undergoes a thorough working, and is deeply perforated and divided by the roots; the tops and leaves thickly shade the ground, so that the combined effect is to pulverize the land and clear it from weeds and fowl growth.

In England, the chief advantage of naked fallows, is thought to be for stiff clay soils, or those which have become foul. The exposure of the soil to the sun, by which it receives a much greater degree of heat than it otherwise would, is by some in that country urged as one of the greatest arguments in favor of the practice. The course there recommended, is to begin in the fall, as soon as the crop for the season is removed; first throwing the ground into ridges in such a manner as to turn off the water as quickly as possible; in which state it is left for the action of the winter frosts. The next spring it is crossed plowed, and subsequently worked over as often as is necessary to secure the requisite degree of pulverization and mellowness, and the entire extirpation of grass and weeds.

The growth of weeds and grass—particularly couch grass, (*Triticum repens*)—is frequently a serious obstacle to the cultivation of grain crops; and where the root-culture, as it is called, either from the nature of the soil, or other cause, cannot be practiced, the only effectual remedy seems to be in a *well-managed* summer fallow. One mode which is recommended in some cases for clearing lands of foul growth, and which has also been practiced with much advantage, is to pare off, with an implement called a "breast plow," about two inches of the surface; which after being allowed to dry in the sun, is burnt in heaps on the ground. The operation of the fire destroys all vegetable life—seeds, roots, &c.—and the heaps of sods are reduced to ashes and calcined earth, which are spread evenly over the ground. If the soil is much filled with couch grass, there will remain a considerable portion of the roots, even after two inches of the top have been taken off and burnt. To eradicate these roots, the next step should be to plow the land thoroughly, by fine, narrow furrows. If the couch roots appear very numerous, or the nature of the soil is not adapted to root crops, it will be hardly advisable to put in any crop till the ground is well cleaned. In accomplishing this, an implement called a "grubber," is found useful and effective. It is made something in the form of a triangular harrow, with long curved teeth. It has wheels to regulate the depth, and handles by which it is guided. By the use of this implement, in connection with the plow, when the ground is in a proper state of dryness, the couch roots are drawn to the surface, and may be raked together and burnt. This course constitutes an excellent preparation of the ground for any crop; though it is thought more beneficial for stiff clayey soils, than for light ones. It has been practiced some by Mr. Sotham, on the farm of Mr. Corning, near this city. We shall probably describe it more at length, and speak more fully of its advantages, in a future number.

It is well to observe, that there is a wide difference between a *proper* fallow, and leaving the land as it often

is left under that name. Fallowing, as often practiced in some sections of this country, is quite a different operation, and we may reasonably suppose is quite different in its effects, from what is recommended by the English authorities. Though the old idea of giving the land *rest* by abandoning its cultivation for a time, is now exploded with intelligent farmers, yet we have seen fallowing, (or what was called such,) practiced and defended from no more correct idea of its benefits. In grain-growing districts, we have sometimes seen fields half covered with weeds, mulleins, and thistles, and on inquiring the object of that mode of *mis*-management, have been told it was "fallow ground," or else that it was "thrown by to rest." It is difficult to perceive the advantage that can result from a "fallow" which not only exhausts the soil as much as would a crop of grain, but what is worse, instead of *cleaning* the land, is actually encouraging the growth of every noxious plant.

A very common practice in some sections of this country, with those who are considered good farmers, is to plow their grass or sod lands intended for wheat, in the month of May or June, and let them lie, sometimes with, and sometimes without harrowing, till September, or near the time for putting in the crop, when they are cross-plowed, harrowed and sowed. This is done without any particular regard to the nature of the sod turned down—whether a crop of clover was turned in, or it was the tough sod of a sheep pasture, the future course is generally the same. The expediency of this mode of fallowing, may well be questioned in some respects. The objections which have been urged against it, are, that whatever gases are produced by the decomposition of the vegetable matter turned in at the first plowing, are by the second plowing brought to the surface, and dissipated in the air; instead of remaining, as they should, to be taken up as food by the growing wheat. Another objection is, if the sward is not entirely dead, bringing it to the surface will cause the grass to grow and interfere with the wheat. In reference to obviating these objections, it has been suggested that some implement might be used for cultivating the ground, after it was once well plowed, which would properly prepare it for the reception of the seed, without again bringing the sod to the surface. An excellent farmer in Ohio, lately mentioned to us his intention of preparing a set of very small plows, to be set in a frame, and so regulated as to work the furrow just deep enough to answer the purposes of seeding, and not to disturb the old sod. Mr. Wiard's "plowing machine," or set of *gang plows*, described in the Nov. number of the Cultivator, is in some degree designed to answer this purpose.

Again, it has been suggested that sowing the ground designed for wheat, with some leguminous crop—as peas, beans, or vetches, which from the broadness of their leaves are known to draw most of their support from the air, and consequently do not much exhaust the soil—would secure the objects of clean tilth and friableness, equally as well as is done by the naked fallow, and give the crop as so much clear gain over that mode. In many situations, we have no doubt a crop of peas, or early beans, might be taken off sufficiently early for a crop of wheat, and it is well known that the effect of those crops is rather to ameliorate than impoverish the soil.

Where land is occupied by clover, and is clear of weeds, plowing has been sometimes deferred till the time of sowing the wheat—giving the benefit of the growth of clover, either for pasture, or to be plowed in, for nearly the whole season, and obviating the necessity of a summer fallow. On loamy soils, or those of not too heavy a nature, we think this course might be safely followed. Excellent crops of wheat have often been obtained by it. Of the many examples which might be given showing this fact, we select the following given on unquestionable authority. On the farm formerly occupied by Mr. Woodward, of Camillus, Onondaga Co., (N. Y.) a field of fifteen acres in clover, was turned over in the month of October and sown with wheat. This proved the best on the farm—averaging 35 bushels per acre. Another instance was on the farm of Mr. Dickenson, Onondaga Valley, where the wheat was sown on a clover sod after a single plowing, and the measured yield from one acre was fifty-two bushels and eight quarts; and on several other acres the yield would not have fallen much if any short of the measured one.

It must be obvious that there is an immense difference in the profits of cultivation where no interval is allowed in the rotation, and where the ground is every third or fourth year unoccupied by any crop: and, excepting under particular circumstances, such as have already been mentioned, we see no good reason for the summer fallow. But, as we have remarked, there are some cases where, from the foulness of the ground, &c., the fallow must be adopted. In conclusion, therefore, and in consideration of the whole matter, we cannot present a more comprehensive and correct view, than by adopting the language of the late Rev. W. L. Rham, in that sterling work, the Dictionary of the Farm:—"The advice we would impress on the minds of cultivators, is—Avoid fallows, if you can keep your land clean; but when you fallow, do it effectually. Do not spare either plows or harrows in dry weather."

"SWEET AND SOUR APPLE."

I have seen apples called half sweet and half sour, said to have been produced by innoculating or grafting together two half buds; but I became satisfied that *the variety was natural*, and not produced by such means. It appeared to me that the *ridges* either ripened before the *hollows*, and hence the former became sweeter than the latter,—or else there was a defect or disease in the former which rendered them insipid. Indeed there was a deadness of flavor which I have found in no other apple.

Now if two half buds can be made to grow and coalesce, it is very strange that such artists only select *sweet* and *sour* apples for a trial of their skill, when a difference of *color*, of *size*, and of *earliness*, would be so much more strking and extraordinary. For instance—why have they not exhibited an apple which shall be on one side the *little* early juneating, and on the other the *large* fall pippin? or the *yellow* harvest and the *red* spitzenburgh? or the *early* bough and the *late* Roxbury russet? If they would take such kinds as should be agreed on, and achieve what they pretend has been done, all difference of opinion might be terminated at once, and a great number of splendid apples *manufactured* profitable to both the nurseryman and the orchardist.

Its not having been done, however, when it was quite as easy to do, is rather a suspicious circumstance; and it is not less remarkable that the *color* on both sides of the fruit which I have seen, should differ so little; that both sides should be so nearly of a *size*; and that both sides should be so nearly *mature* at the same time, not like the disparity between summer and winter apples. Another reason for doubting the reality of such *manufacture* may be found in the loose and careless manner in which its advocates have expressed their opinions. If the half of two *blossom* buds indeed, could be made to grow together, we might have an apple half *sweet* and half *sour*, or half *red* and half *white*, from those two buds, but nothing further; for if the grafter should take the half of two *leaf* buds, the result would be very different. He would then have a stem consisting of two distinct kinds, soldered or cemented as it were together—but not mixed, and each kind occupying its own side of the tree. Hence each side would have its own kind of fruit, and there would be no partnership business between them. The idea that each limb would be composed of the two kinds, is altogether preposterous.

Such are my views of this matter. If I am wrong, however, I shall be willing to make proper acknowledgments whenever the advocates of such amalgamation shall exhibit the necessary proofs of their skill.

Cayuga co. 12 *mo.* 15, 1844. D. T.

TURNEP CUTTING MACHINE.—A man by the name of Saul, in England, has invented a turnep cutting machine, which may be manufactured by the farmer's own workmen, at a cost of from not more than $2 to $4, that will cut turneps from two to three bushels per minute, any size that may be required.

IRRIGATION.

THE benefits of thorough draining are becoming well understood by good farmers; but the mode of improving crops by irrigation, or watering soils by artificial channels, remains as yet almost unknown among them. With the hope of throwing some light and awakening some interest, we offer a few remarks on the subject.

The chief advantages of irrigation are of course to be looked for on grass lands. Every farmer must have noticed the greatly increased product of meadows where streams have passed across them. This may be in some degree owing to the greater richness of the soil in those low places, but it is by no means the chief reason. The few experiments which have been made, most conclusively show that dry upland, when watered by such streams as may be thrown upon it, and the soil enriched by such matters as they deposit, is improved in fertility to a very high degree. A few instances of such beneficial results may be mentioned.

S. Williams of Waterloo, N. Y., states that in the year 1840, during a season of severe drouth, he admitted water in small gutters between the hills and rows of vegetables in his garden. "In ten days, early potatoes grew two-thirds in size." In fact, he had never obtained a good crop of potatoes before. Other vegetables were greatly benefited.

E. Wilbur, now a resident of Macedon, N. Y., tried an experiment many years ago in Yates county, as follows: A field of seven acres lay on each side of a small valley through which a stream passed. This field was so unproductive, that to use the owner's own expression, "it was as dry and barren almost as a road." It was plowed and seeded. Channels were plowed from the stream, to carry the water on either side to the dry portions of the field. Successive furrows below, spread the water evenly over the surface as it escaped from the sides of the upper to the next below. Channels were also made from the side ditches of a road which crossed this valley, to carry the wash from them to the meadow. About a day's work was needed for the whole. And what was the result? "The effect was such," said he, "that it paid me a hundred fold for the seven acres after the first year. It produced for several years while I owned it, from two and a half to three tons of hay to the acre; and the man I sold it to, told me last year that he hardly ever saw such grass—there was hardly room on the ground to make the hay after it was mowed."*

E. D. Andrews, of Pittsford, N. Y., states, "In the hilly country of Vermont, I owned a farm, over which I carried the water of a small stream, in artificial channels, more than a mile. Lands that did not yield half a ton to the acre, were thus made at once to yield two tons; by which means I added to my crop six or eight tons. A little experience taught me I could carry water where I had not the least suspicion it could be carried. Every stream that runs with any rapidity, may be used for this purpose."*

Some farmers in the vicinity of Philadelphia, have long been in the practice of irrigation, by selecting permanent meadows on the sloping lands on each side of a stream, from which the water is diverted by channels, carrying it as high up the sides of the valley as the head of water will admit. Two tons and a half of hay are a common crop on such meadows.

In the southern portions of England, where irrigation is extensively and very successfully practiced, and in a much moister climate than our own, the chief benefits of the operation appear to be the deposition of fertilizing matters held in solution or suspension by the water. Some striking illustrations of this fact are given. A gentleman who owns meadows on the banks of the stream which passes through Winchester, has observed the great superiority of the waters below the city which have received the drainage of the sewers; and has also found that waters once used for irrigation, have their value greatly reduced by the deposit of the materials they contain. On one occasion, having long enjoyed the exclusive use of a stream, his neighbor, higher up, imitated his example, and the water became so deteriorated, that he thought of disputing the right with him. But the most extraordinary instance of the excellence of this mode of manuring, is furnished by the meadows of the Earl of Moray and others near Edinburgh. The spring water, which supplies that city, before it flows off, becomes saturated with all the enriching matters which the city affords. Such are the wonderful effects which after many years, these waters have had upon the meadows, that the grass which is cut and given green to cows, is mowed sometimes six times a year; it is sold by the quarter acre and upwards, and generally brings from £24 to £30 per acre per annum, or from $120 to $150. A part of the Earl of Moray's meadow brought £57 per acre, or about $280.†

It is true that such are rare instances, and that the command of such water is not very often obtained. But nearly all water of running streams contains fertilizing manures. Several analyses have shown that most of them contain considerable portions of carbonate of lime and gypsum; *hard* waters especially, containing the latter. Supposing then, as is often the case, that one part of gypsum is contained in every two thousand parts of river water, and that every square yard of dry meadow soil absorbs only eight gallons of water, (many soils absorb more) then more than a hundred weight and a half of gypsum per acre is diffused through the soil by the water.‡ The same reasoning is equally applicable to several other enriching materials.

Equal success has not always attended irrigation; some waters are doubtless much preferable to others; and on the other hand, some soils are vastly more benefited than others by the same stream, from a difference of composition. It has been found in some cases, that even heavy deposits from turbid streams have been of less utility, than the application of clear water in other cases, when that deposit consisted merely of sand and clay without a mixture of animal and vegetable substances and salts, and when, too, such clear water contained the latter substances in solution. But such, are rather exceptions to the general rule.

Heavy clays are generally least benefited, and sand and porous gravels most benefited by irrigation. On the latter, the water finds freer passage through the soil in depositing its impurities.

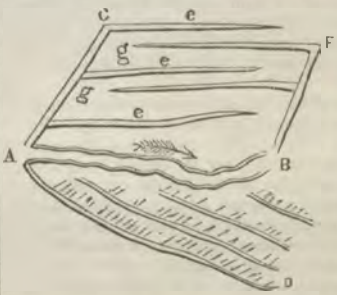


Fig. 5

Two modes of watering the surface of lands are adopted, one for flat & nearly level land, and the other for land possessing considerable slope or steep acclivities. The annexed figure, (fig. 5) represents both these modes, where A B is the stream, and the side C is supposed to be a very gentle slope, and the side D much steeper. A dam is made at A, and the water carried by a main conductor to C, and from which it is distributed over the surface descending from it, by the feeders *e. e. e.* But it is important that the water should not collect nor become stagnant on any part; hence the main drain F is made on the lower side of the field, and from it lesser drains *g. g.* pass upwards between the feeders, and carry off the surplus water. But where the slope is more steep, as on the side D, feeders are made as represented in the figure, the water escaping from the upper one to each successive feeder below, as indicated by the dotted lines. Small pieces of boards placed in the lower sides of these feeders with holes bored through to admit the escape of the water, is the most perfect way of distributing it over the surface.

It is obvious that irrigation is chiefly useful on permanent pastures and meadows; but it may sometimes be employed on lands subjected to regular rotation, which lie

* Genesee Farmer, vols 3 and 6.

† C. W. Johnson.—‡ Ib.

in grass a short term of years. This is best effected by plowing the land in such a manner that the feeders may be made upon the ridges at the center of each "land," the dead furrows forming the drains for carrying off the surplus water. A section of this method is shown in fig. 6, F. F. being the feeders, and D. D. the drains.

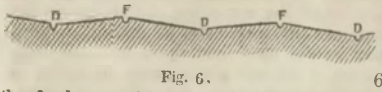


Fig. 6.

Laying out the ground, before striking the furrows, by means of a level, will greatly facilitate the work, and render it much more accurate and perfect. One of the most convenient instruments for this purpose, is the triangular level, represented by fig. 7. It is so made that the plumb line intersects the middle of the cross bar, when the extremities of the legs are precisely on a level. It is used in the following manner:—One foot of the instrument is placed at the level of the water to be drawn off, and the other at such a spot that the plumb will hang exactly at the middle of the cross bar; then bring round the other leg again to a level point as before. and so proceed to mark off the direction of the channel across the field. But it is necessary that the channel should have some descent; this is easily given, by suffering the plum to fall a little from the center towards the intended fall. If this distance from the center be half an inch, the descent from one leg to the other will be about one inch. This level should be made of light but stiff spars, and with ten or twelve feet span; and the exact course of the intended feeder or drain may be conspicuously indicated by a peg driven into the ground at each point marked by the foot of the level. The *general* slope of the land may be previously determined by the two *sights* at the extremeties of the cross bar.

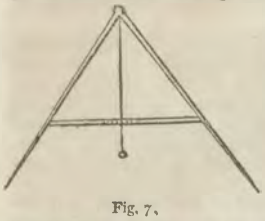


Fig. 7.

An objection has been brought to the practice of watering meadows, that the grass though greatly increased in quantity is much inferior in quality. This is indeed the case, but not more so than results from increased growth by the use of stable manure. The slight inferiority in this respect has been found by careful and accurate experiments to be vastly overbalanced by the increase of bulk.

Judgment must be exercised in not overdoing the business by suffering the water to remain on too long. Two or three weeks, with a short intermission, are admissible in dry seasons, or in autumn; but in spring, when the growth of the grass is rapid, much less time is sufficient. The appearance of scum upon the grass is regarded as an indication for the immediate withdrawal of the water. Autumn floodings are considered as the most permanently beneficial, as the waters are then charged with the animal and vegetable matters which have accumulated during summer. This season of the year will also be generally found most convenient for laying out and plowing the furrows for the channels.

When it is remembered that manure is spread in this way without the labor of drawing and shoveling—that the practice would probably be even more beneficial in our hot and dry summers, than in the moist climate of England—that it is in fact, not the transferring merely of manure from one spot to another, but the actual recovery of an immense amount of enriching material now swept through rivers to the sea,—the importance of a greater attention to the subject must force itself at once upon the mind.

CALCULATING THE VELOCITY OF WATER IN CHANNELS.—It often becomes a matter of some consequence, not only in cutting channels for irrigation, but for surface drains in reclaiming wet lands, to know the exact amount of water which may be carried with a given descent in the stream. To enable any person to calculate this readily, the following rule is given, and may be readily used by any boy who understands common arithmetic.

To ascertain the mean velocity of water in a canal or river flowing through a straight channel of equal size throughout:

Let f = the fall in one English mile in inches:
Let d = the hydraulic mean depth;
Let v = the velocity in inches per second, then

$v = 1.23\sqrt{d\,f}$.

The hydraulic mean depth is a quantity, which when multiplied by the perimeter of the channel in contact with the water, gives an area equal to the area of the section.

Example: Suppose a furrow is cut 6 inches wide and 4 inches deep, with perpendicular sides, and that it descends one inch in a rod; to find the quantity of water that will flow in it. It will fall 320 inches in a mile; the perimeter in contact with the water will be, 6 inches on the bottom and four inches at each side = 14 inches; the area of the section will be 6 times 4 = 24,—which divided by 14, the perimeter, gives 1.7 = the hydraulic mean depth. Then by applying the above rule,

$v = 1.23\sqrt{320 \times 1.7} = 1.23 \times 7.4 = 9.1$ inches, the velocity per second, or about one gall. per second, or one hogshead per minute.

In practice, considerable allowance must be made for rough and uneven sides and bottom, which would tend to retard the current. In larger channels, the calculation would be more accurate.

FARMING IN MASSACHUSETTS.

THE farm of CHEEVER NEWHALL, Esq., in Dorchester, six miles from Boston, furnishes one of the best examples of productive husbandry, we have any where met with. It consists of sixty acres, a few of which are still in wood. Several acres are taken up by the grounds about the house, in garden, shrubbery, &c., and there are eight or ten acres in orcharding; yet the farm supports twenty-five cows, one bull, four oxen, and three horses. All this stock is supported entirely from the farm, with the exception of a few oats occasionally for the carriage-horses, and some wheat bran for the cows.

The soil was originally very strong and some of it wet.

SOILING.—Mr. Newhall keeps his stock altogether on the soiling system. They are fed mostly in the barn, at all seasons of the year. The cows are turned out for a few hours in each day, when the weather will admit of it, and are driven for exercise to a small, shaded enclosure, about a quarter of a mile from the barn. They are perfectly healthy, and Mr. N. thinks give quite as much, if not more, milk, in the course of the year, as they would do if grazed in summer in the ordinary way. The cows average 420 gallons per year, and the milk is sold at the farm at an average of about fourteen cents per gallon.

The principal articles for feeding, in the summer season, are rye and Indian corn, cut green. The former is sown in the fall, and is the first thing that is fit to cut in the spring. It may be commenced on as soon as it is high enough to mow, and will continue to grow till the usual time that rye matures, by which time, the corn, which is most relied on, is fit to use. Corn is the most productive of fodder of any crop which can be grown. The past season, Mr. N. kept *twenty-three* cows for *eight weeks*, wholly from *two acres and a half* of corn. He is confident that *one acre* of rich land is more than sufficient to keep a cow the year round—that is, it will afford sufficient green food in summer, and leave enough to be dried to keep the cow through the winter. In 1843, Mr. Newhall measured a square rod, being part of a lot of corn sown for fall and winter use, and carefully weighed the produce, which he found to be at the rate of more than *thirty-two tons* per acre. It was then carefully dried when it weighed 160 lbs. to the rod, or nearly *thirteen tons* to the acre. He prefers planting in the drill mode, three feet apart, and uses two to three bushels of seed (of the southern corn) per acre. Large quantities of carrots, potatoes, and beets are grown for winter feeding. The white carrot is the kind most cultivated—it is easier raised than other sorts, and generally yields better—giving from 800 to 1000 bushels per acre. Each cow is fed during winter, with from a peck to a half--

bushel of roots per day, with a little wheat bran, in addition to their dry fodder.

MAKING MANURE.—Much attention is given to this branch of farming operations. The manure from the cattle and horses is pushed through scuttles into the cellar under the barn, and a layer of peat muck thrown over it three or four times a week. The barn-yard is so formed that none of the manure is wasted. Much manure is also made from hogs, eighteen or twenty of which are kept principally for this purpose. They are fed with the waste of public houses, &c., brought from Boston—on which food they get very fat. The pork covers all the expense of keeping, leaving the manure clear gain. The hogs are kept with a full supply of marsh mud, peat, &c., which being rooted over and mixed with their excrements, becomes good manure. The pens are mostly under roofing. We noticed a contrivance about the sties which we do not remember to have seen before, except on the farm of J. W. Haines, in Hallowell, Maine. The sty consists of an upper and a lower story, and the hogs resort to either as they find most conducive to their comfort and convenience, by means of an *inclined plane*, across which cleats are fastened to answer the purpose of steps and to keep the hogs from slipping down. The upper story, which is always dry, is generally used by the hogs for a *bed-chamber*—their work is done below, and in very hot weather, they go there to cool their bodies in the moist earth.

Besides availing himself of all the means of making manure from his stock, Mr. Newhall has another manufactory which is of great importance. From some large vats which have been provided at several of the large hotels in Boston, he obtains annually about sixty hogsheads of urine. The mode of using this, is to make it into compost with peat-muck. The muck is kept in the barn cellar, and the vehicle in which the urine is brought is driven into the barn, and the liquid is conducted by means of pipes to the muck below. Each hogshead of urine is sufficient to saturate a cord of muck, which is thus made—as experience has amply proved—of more value than the same quantity of any other manure used on the farm.

BUILDINGS.—All the buildings are convenient and well and substantially made. The barn, (of which we hope to give a cut hereafter,) is one of the best we have seen. It is 120 feet long and 40 feet wide. The floor runs through the whole length, leaving the bay on one side and the stalls for cattle and horses on the other. The cattle stand on a platform raised a few inches from the floor, and slightly sloping backwards, and of such a length that the manure drops off behind it; by which means the cattle are kept clean and dry. Between the manger from which the cattle eat, and the platform on which they stand, is the watering-trough, which runs through all the stalls. Here the stock, whenever it is desired, are watered from a pump which is placed at one end of the barn. We omitted to mention, in our notice of Mr. French's farm last month, that his cattle are also watered in the same manner.

There is a deep cellar under the whole barn, a portion of which serves for the safe-keeping and manufacture of manure as already described, and the remainder as a store-house for vegetables. The space assigned for vegetables is divided into stalls or bins, arranged along one side of an alley, for the convenience of taking out the roots. There are scuttles in the barn floor, through which the vegetables are dropped directly from carts into the bins. The barn doors are made to slide on iron rails, instead of being hung on hinges. This is a plan which has prevailed considerably in Massachusetts for a few years past, and we think preferable to any we have seen. The door rests on cast-iron wheels, which run on the rail. The rails are cast with a small ridge in the centre, and the wheels with a corresponding groove. Thus the door keeps its exact place without any trouble, and runs very easily.

FENCES.—From the system pursued with his stock, (soiling) Mr. Newhall has need of but few interior fences. Those required are heavy walls—the stones for which are found on the farm, and they were formerly in so great abundance that it was necessary to dig them out before the land could be tilled.

SOWING GRASS-SEED.—Mr. Newhall decidedly prefers the fall for sowing grass-seed. He thinks August too early for sowing on his farm, as there is sometimes a drouth after this time in the year which kills the young grass. He has been very successful in late sowing. He showed us a beautiful piece of sward which was sowed down on the seventh of October, 1843; and the past year he has sown still later. We think so late sowing succeeds better on his gravelly soil, than it would do on clay land, or that which is more liable to be thrown by frost.

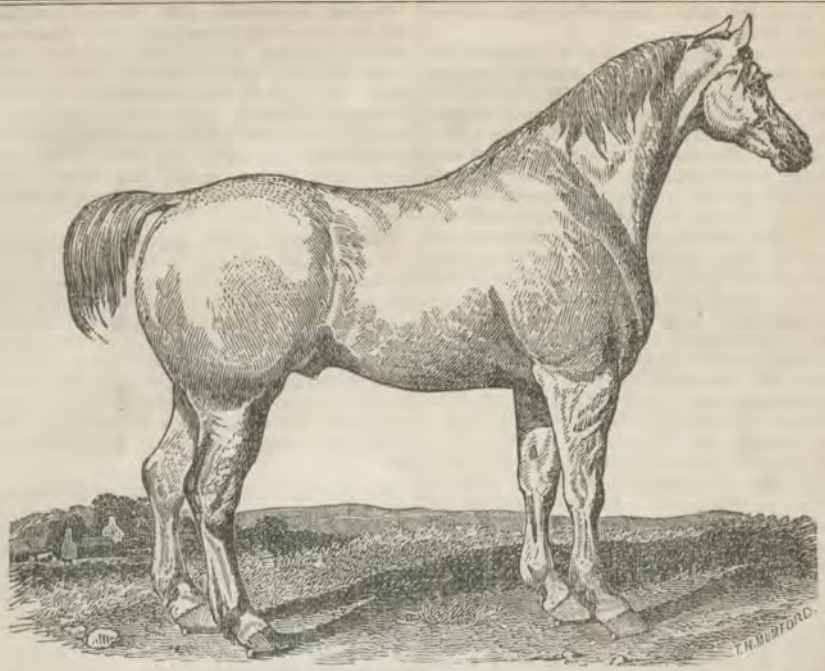
FRUIT-TREES.—Fruit, particularly apples and pears, is a considerable object on this farm. Besides having an abundance for home-consumption, three hundred dollars worth were sold the past year, among which were eight barrels of Bartlett pears, which brought fifty dollars. Mr. Newhall has a large collection of cherries, plums, grapes, and the smaller fruits. He showed us some of the finest Isabella and Catawba grapes we have met with in this latitude. Several of his pears are also very fine. We were shown specimens of Beurré Diel, Seckel, St. Germain, Napoleon, &c., which were excellent.

Mr. Newhall showed us a lot of pear trees imported from France and Germany, grafted on quince stocks, and cultivated at the distance of only four by five feet apart. The trees are kept trimmed in the shape of a distaff—what is called in France the *Quenouille* form—a mode which we are told succeeds well with these dwarf stocks. The trees are brought very early to bearing, and it is said as much, and as good fruit is obtained in this way for a given extent of land, as by standard planting: though none of the dwarf trees are as long lived as those grafted in their own species and cultivated in the usual manner.

REMARKS.—Comment on the above facts seems scarcely necessary, yet we cannot omit to call attention to the great amount of products which Mr. Newhall obtains compared with many farms containing hundreds of acres each. Here is a farm of only sixty acres, which, besides affording three hundred dollars worth of fruit annually, and leaving a large portion of it for merely *ornamental* grounds, supports more stock than most farms of twice or thrice its extent. A striking example is here furnished of the fallacy of the idea that agriculture cannot be prosecuted to any extent or advantage without a *large farm*.

SUBSOIL PLOWING.

Col. SHERWOOD, of Auburn, made use of the subsoil plow the past season on fifteen acres. A part of the subsoiled land was planted to corn, and a part sown with wheat in the fall. The soil was loamy, and the subsoil hard clay and gravel. He used the subsoil plow of Ruggles, Nourse & Mason. It required four oxen to draw it, and to work to the best advantage at the depth it was run in this case, which was one foot, Col. Sherwood thinks there ought to be six oxen. The team worked over from an acre, to an acre and a quarter per day. The ground had not been plowed for thirty years. It was naturally wet, so much so that in a wet time, the water would stand on it to the injury of the grass. The effect of the subsoiling was to render the soil and subsoil so friable, that the water immediately found its way through, and though a portion of the past season was very wet, the water at no time remained on or so near the surface as to do the least damage to the crop. That part which was put to corn, was first planted on the 20th of May, but the seed failed, and it was planted again on the last day of May and first day of June, and grew so vigorously that it got ripe as soon as other corn in the neighborhood. Several strips of twenty to thirty feet wide were left through the field, *not* subsoiled. The difference in favor of the subsoiled portion, was very obvious in the ranker growth and larger size of the corn on that part—it was so plain that it might be seen to a row. The different portions were not measured separately at harvest time. The effect of subsoiling on the wheat crop, cannot be told at present.



THE CLYDESDALE HORSE.—(Fig. 8.)

Among the various descriptions of horses published in the Cultivator, I have no recollection of having noticed a description of the Clydesdale breed. The above portrait is copied from Mr. Stephen's "Book of the Farm."

In the Complete Grazier they are described as being "strong, active, hardy animals, of the middle size, remarkably steady, true pullers, of sound constitution, and well adapted to all the purposes of husbandry. They are, therefore, deservedly in esteem among the northern farmers, particularly on heavy soils; they are not, however, so active, nor, consequently, so well adapted for light land, as the Cleavelands; neither are they so handsome. They are said to have been descended from a cross, made by one of the Dukes of Hamilton, between some Flemish stallions, imported many years ago, with the Lanarkshire mares, and they derive their appellation from the district on the Clyde where they are chiefly found. They have already made their way into the bordering counties of England, and there can be little doubt that, as their good qualities become more appreciated, they will yet travel still further south."

This valuable breed of horses, is described by Mr. Aiton as "rising from 14 to 16 hands in height: if beyond that, they are generally unshapely mongrels, and greatly deficient in spirit; the effects of crossing small jaded mares with overgrown stallions. They are sound, fleshy, well-proportioned, strong, and heavy, without being too coarse or clumsy. The head is in due proportion to the body; rather small than large, and not so full and prominent below the eyes as some of the English breeds: the nostrils are wide, the eyes full and animated, and the ears erect. The neck is neither long nor slender, but strong, thick and fleshy, with a good curvature, and the mane strong and bushy. They are broad in the breast and thick in the shoulders, the blades being nearly as high as the chine, and not so much stretched backward as those of road horses. The arm tapers to the knee: the leg rather short, bone oval and strong, but solid and clean. The hoof round, of a black color, tough and firm, with the heels wide, and no long hair on the legs except a tuft at the fetlocks. The body round and heavy; the belly of a proportional size, neither small nor large, and the flank full. The back straight and broad, but not too long; the loin broad and raised a little; hucks visible but not prominent, and but a short space between them and the ribs. The sides from the shoulders to the hips, nearly straight. The thighs thick and meeting each other so close under the fundament, as to leave only a small groove for the tail to rest on. The tail strong, heavy to lift, and well haired." "The most common colors of the Clydesdale horse are black, or, more frequently, grey."

This description combines most of the best points peculiar to a perfect draught horse for the cart or plow; but it must be apparent that they are not often found united in one animal.

C. N. Bement.

Albany, Dec. 5, 1844.

NEW PUBLICATIONS.

Agricultural Book for Schools.—We see it stated in our foreign papers, that "*A Catechism of Agricultural Chemistry and Geology*," drawn up by Prof. Johnston, at the request of the schoolmasters of Ayrshire, has already passed through ten or twelve editions in Great Britain. From the high terms in which we have seen it alluded to, as well as from the practical and common sense views which the author takes of the connection of these sciences with the practice of agriculture in his lectures, we are rejoiced to learn that he has prepared an edition of his Catechism for publication in this country, by making such alterations as were deemed necessary to adapt it to the use of our schools, and that it is soon to be published, with an Introduction and Notes, by our correspondent, Mr. J. P. Norton, who, it will be remembered, is now pursuing his investigations in agricultural chemistry, with Prof. Johnston.

The Herd Book.—The 5th vol. of this work, consisting of two parts of 620 pages each, has been recently issued in England, and we have been favored by Geo. Vail, Esq. of Troy, with a copy of it. It is devoted exclusively to Cows and their progeny, and contains the pedigrees of a large number of animals owned and bred in this country. We are not aware that any copies of it are for sale in this country.

"Ohio Cultivator."—Mr. Bateham, whose retirement from the New Genesee Farmer, we noticed in our last, has removed to Columbus, Ohio, from whence he has sent us his prospectus for "The Ohio Cultivator," the publication of which he proposes to commence in that city on the first of this month. It will be published semi-monthly, 8 pages quarto, at $1.00 a year. Success to him.

ESTERLY'S PATENT HARVESTING MACHINE—(Fig. 9.)

THIS machine is calculated for cutting the heads from standing grain, leaving the straw behind. Where grain stands up well, it is warranted to cut the heads from 25 acres of wheat per day—the power employed being three horses, requiring two men and a boy to manage the machine. It is claimed that from one to three bushels more grain is saved per acre by the use of this machine, than is saved in the usual way. As the heads of the grain are cut off, they are received into a large box, or "receiver," and when that is filled, the heads may be conveyed to the barn, or secured in cribs—the latter being considered preferable, as they afford the grain a better chance to dry. From half an acre to an acre of wheat (according to the condition of the crop,) may be cut at a time, without unloading the "receiver." The operation of threshing is much facilitated by this mode of cutting grain—making a saving in this respect of from fifty to seventy-five per cent. It is confidently believed that this machine is destined to effect a great improvement in the saving of labor and expense in harvesting grain, and preparing it for market. By the use of it, the farmer is enabled to cut and secure, at the proper time and in good order, his wheat crop, with only the ordinary number of hands employed on his farm, besides abolishing the severe labor and drudgery of harvesting in the usual mode. The machine is manufactured by the patentee, GEORGE ESTERLY, Heart-Prairie, Wisconsin, and will shortly be for sale at Chicago, and other central points in the western country.

PRACTICAL HUSBANDRY.

Improvement of Worn Out and naturally Poor Lands, Old Fields, &c., in the Middle States.

I intimated in a late paper in the Cultivator, (vol. 1, p. 344,) that I would shortly give the readers of that excellent work an answer to the question HOW the improvement of the kinds of land mentioned in the heading of this article, could be accomplished in the cheapest way. I now proceed to the fulfilment of my promise. Land is poor or rich from various causes. It may be poor naturally, from being deprived of the accumulation of decomposed organized matter, by the washings of rain, the overflowing of streams, &c., and by its own gravelly and porous nature, admitting the upward filtering of spring water, as is the case in low gravelly bottoms. It may also be poor from the too large a portion of iron in its composition. But the most universal cause of poverty of soil, is EXHAUSTION, from over-cropping, taking away always, and returning nothing; as was so generally the practice in old times, and is too much the practice now in all the middle States. In a former paper I have expressed the opinion that a man may purchase and improve a piece of this poor or worn out land cheaper than will be the cost of removal to, and purchase of a piece of land in the west, especially when the sacrifices incident to such removal are taken into the account. I most sincerely believe in the truth of this proposition. But let us proceed to the subject—the HOW, not the *why*, this land should be improved.

The first object to be attended to in the improvement of land, is the grubbing up and clearing off every tree and shrub that is not wanted. Let this be done at the beginning. Allow no clumps or clusters of bushes or briars, or single ones either, to remain in the field. The next thing is ditching and draining of all sunken and boggy places, if such exist. Very often the simple plow furrow will answer, but sometimes a deep ditch must be dug. If it be deep enough, a blind ditch should always be preferred, so that you may cultivate the land over the ditch, and also save your land the inconvenience of open ditches. Having grubbed and ditched, and thus drained the land, the next object is to ascertain the quality of the soil, all parts of it. You may find that the low places you have drained are composed of hard clay. Some of the upper or higher places may be too sandy. You will in such case, employ your carts in carrying clay to the sandy parts, and return with sand to the clayey parts; and be very liberal in your exchanges, too. You may spread the clay at once, or allow it to remain a winter in cart load heaps, and spread it in the spring. The sand may be spread, of course, at once. All this is merely getting the land ready. A carpenter builds his shop, and "gets out" his stuff, before he thinks of "going to work" at his trade. So does every other artisan or mechanic. Why should a farmer not, also, before he goes to work to make money and a living, first "get his shop in order?" Having properly grubbed, drained, and mixed the soil, the next thing to be done is to ascertain the quality of the whole. It most probably wants lime to make it complete. Take a handful here and there from the whole field, say twenty handsful in all; mix them well together; then take a handful from the whole mixture, put it upon a shovel and heat it red hot; then take it from the fire and let it cool; when cold, pulverize it into a fine powder, and pour upon it good cider vinegar; diluted muriatic acid is best, but vinegar, if good, will do; if it foams considerably, you want no lime in the soil; if it do not foam, you must then apply lime. Nearly all the land in the middle States wants lime, and is benefited by its application. If it wants no lime, then go to work as follows: plow in the fall with the deepest working plow you can afford. In the spring, sow corn broadcast; and as soon as it is as high as you can well turn under with a good plow and two or three horse team, turn it under well, and immediately sow corn again broadcast; as soon as that is high enough to turn under, turn that also with a deep working plow. Generally you may turn under three crops in the same season. In the fall plow deeply in turning the last crop of corn under, harrow and seed with wheat. However poor your land may have been, you may be sure of a good crop of wheat the ensuing harvest. In sowing the corn, about three to four bushels should be sown to the acre, each crop.

If by the trial above described, you find your land requires lime, then, before the first plowing, apply twenty bushels of slaked lime to the acre, broadcast, then plow as before directed, sow the corn, and proceed as before, taking care to sow twenty bushels of lime before turning under each crop of corn; sow the lime on the corn as it stands, and turn corn and lime all in together. In this way, a first rate soil may be made out of the poorest old field in Maryland or any where else; and it will be observed that the only cost is in the liming and value of the

seed corn, except the labor. Those who cannot afford to expend so much labor and money the first season, can extend the time over several seasons, applying say twenty or thirty bushels of lime to the acre, and turning under but one crop of corn each year.

The above may be considered a brief summary of the whole argument; and, it seems to me, scarcely requires elucidation. Some may however require explanations, and I therefore proceed to give them.

A clay soil requires only sand to make it a good one, so far as constitution is concerned; a sandy soil requires clay to make *it* good. These two elements of a good soil generally exist on all farms; and wherever they do exist in separate places, they should be combined and mixed, that the whole may be made fertile. If your land be too clayey, and you have no sand on *your* farm, probably some neighbor would be glad to exchange some of his sand for some of your clay, doing half the hauling, and thus both farms will be benefited at half the labor each. Rely upon it, there is more to be obtained in the improvement of land by a judicious admixture of soils, than is generally supposed. Manuring cannot supply its place, however large the quantity applied; and when once made, the effect is permanent, the benefit perpetual, the improvement lasts *forever*.

Low wet places are not only unproductive, but they are unhealthy, unseemly, and an absolute loss of all the land so situated. If your farm consists of one hundred acres, and twenty acres of it is of this low and wet kind, you have but eighty acres of land. Therefore drain, by ditching this low land, make it productive, by adding sand, &c., where necessary, and you will in effect have added twenty acres to your farm. And in draining, take care to avail yourself of the advantages of blind ditches. I do not suppose it necessary to tell you how to make them—the way may be found in almost all agricultural works, and they are very simple. A summary of the different plans may be stated as follows. Dig the trench as in the usual way of making an open ditch, of the proper depth and capacity, to carry off the water. Then lay in the bottom of the ditch, stones loosely packed, so that water will freely pass between them, about a foot deep. Then lay upon these loose stones, larger and flat ones, to keep the earth from filling the interstices, and then return the earth thrown out, leveling the whole surface. Some, instead of stone, lay in the bottom of the ditch, branches and limbs of trees and shrubs, and cover these with earth; but such blind ditches are obviously subject to obstruction from the decay of the wood, and thence from the caving in of the superincumbent earth. Others, in Europe especially, use an arching of *tiles* in the ditch instead of stones or brushwood; but this is too expensive for this country as yet. Where stones can be had, a good blind ditch may be made permanently effective by their use; next to stone, brushwood is to be preferred.

It surely cannot be necessary to say a word in illustration of the grubbing up of all useless growths of bushes, trees, &c. Never allow your fences to be sheltered by bushes or trees of any kind; they rot the timber, and you lose all the land they occupy. "Head lands," as they are called, are just so much deducted from your measure of acres. Clear out all such. If you have no other *clean* place in your field, let the head lands and fence corners be clean.

In ascertaining the precise quality of the soil, you accomplish precisely what every other artisan does when he ascertains his ability to do a certain job. You find out what the materials you are to work upon are capable of producing. If in that examination, you find your materials deficient in any one necessary ingredient—lime, for example—you, as other artisans would necessarily and instinctively do, apply lime. If you find it deficient in vegetable fibre, &c., you apply that substance, and if you find it deficient in clay or sand, as either of these preponderate, you apply the one or the other, as the result of the examination shall indicate.

Having prepared the soil for the reception of manure, the cheapest and most efficient method and material for supplying nutritious principles to the soil, is the next matter for consideration. I believe that corn sown broadcast, as above directed, is the cheapest, most efficient and speediest fertilizer. Some, and very many, suppose that the old plan of clover laying is the best and cheapest. I differ with them. You can only turn under a crop of clover once in two years; you can by an effort turn under three crops of corn in one year; and I believe that each crop of corn will carry as much nutritious matter into the soil as each crop of clover can do.

Now in this system of improvement, you have only to purchase the lime, if that be necessary; you can raise the seed corn on some part of the farm. All the rest of the improvement is derived from labor.

Never undertake the improvement of more land than you are certain you can manage. If you expend your funds upon too large a surface, you will be likely to lose the whole advantage of them. Calculate how much land you can work *well*, and confine yourself to that and no more. And in all your operations in agriculture, take care not to undertake too much. Suppose you can only work ten acres well in one year, if you undertake twenty acres, some of it will have injustice done it, and the result is obvious.

Deep plowing is one of the most efficient agents in the improvement of soils, as it is in the continuation of good soils. Never omit it. It may pay you scantily for a year or two; but it will ultimately repay you an hundred fold. Without it there cannot be any continued successful farming, no matter what the original soil may have been. Discard all shallow working plows from your farm, except the mere seed and cultivator plows.

Some lands will be benefited by 50 bushels of lime to the acre, and by it be rendered sufficiently calcareous; others may require 100 bushels; all this is to be found out only by proper experiments, as above indicated. If the solution of the soil foams freely in the vinegar or muriatic acid, it wants no lime; if but partially, it wants probably 50 bushels to the acre; if not at all, it may require an hundred bushels. If it be a red clayey soil, it wants more lime than if it be white or blue or yellow.

If you have no lime, and wood ashes are at hand, you may accomplish all the objects you aim at by their application. As ashes are mostly composed of different kinds of lime, besides their more soluble potash, from 50 to 100 bushels of ashes to the acre, applied in the same manner as directed for lime, will have the same effect as lime, besides giving you the advantage of the potash, the first year.

Where neither lime nor ashes are to be obtained, Plaster of Paris, as it is called, may be applied to most lands with advantage. The action of plaster continues to be a subject of dispute. My opinion is, that it simply serves the purpose of fixing the ammonia floating in the atmosphere, and that evolved from decaying animal matters, and thus securing it to the uses of the soil. No matter what its mode of action is, however, it certainly is a very efficient agent in soils generally, and in the absence of other still more effective agents, it should always be used, or at least tried.

I have said nothing of *fencing*, the most expensive item of farming, because it has nothing to do with the main object of this paper, and because the cheapest fence is that which each locality can afford with the greatest facility. One farmer can build a stone fence all around his farm, easier than he can a rail fence, simply because he has too many stones on his land, and in getting rid of them he hauls them to the line where he intends to make his fence, and in the seasons when he cannot be more profitably employed, he erects the wall. In the absence of stone, and where timber is plenty, the rail fence, the post and rail, &c., will of course be the cheapest fencing. I have no favorable opinion of hedges, except in the absolute absence of both stone and timber. They require a long time to grow; and in this country there is not a single kind of hedge plant that has succeeded satisfactorily. There are a few instances of good hedges being made, but I will venture to say there is not one in the United States that can be imitated profitably as to cost, time, and efficiency. If nothing but live fences had ever been in use, and some inventive genius had discovered the use of artificial fencing with rails and stone, he would have been considered the benefactor of his age. For myself, though I have traveled much, and have extended my ob

servations over fifteen of the States of the Union, I have never seen a good efficient hedge occupying the place of ordinary farm fences. And yet the attention of farmers has been directed to it ever since the country was settled; the oldest American writers recommend them; seeds were imported to plant them a century ago; and all these efforts have been continued to the present day with increased force each year. And yet there is not, so far as I know, a single farm in the United States protected by hedges, in all its parts, or in any considerable portion of them. The economical farmer, therefore, will look to some other mode of fencing for protection; and, as said above, that which his land affords most plentifully and most easily of access, is the cheapest and best for him.

I must not omit a few words more upon *deep plowing*. I know it is the general opinion that we must not plow so deep as to turn up the "*hard pan*" of clay, or the white gravel, &c. &c. I am very certain this is a very great popular error. If we had a plow that would turn up the earth two feet deep, I do not care what the subsoil may be, in five years the *fertile soil* would be two feet deep. I admit, that generally a very stinted crop would be produced for the first two or three seasons; but I also assert, that the third or fourth and all subsequent seasons, will pay not only for all the deficiencies of the first two or three, but an hundred fold interest. Wherever a deep working plow has been used, the drouths of a dry season are not felt. The roots of plants pass deeply into the earth, and the burning suns and parching winds pass over them harmlessly. The subsoil plow is a good thing. It enables the farmer to avail himself of most of the advantages of deep plowing without any sacrifice of the first and second season's crop; but then it does not turn up this subsoil—it merely loosens it, enabling the roots to pass deeply. The roots, however, get no other advantage in this deep rooting, than that of protection from drouth; they get no nourishment in those depths. The protection from drouth, however, is an important consideration, and should always be availed of. But I would seek this advantage always when I could by the use of the deep plow, even at the sacrifice of a portion or even all the first two or three crops.

The saving of manure is the next, and though last here, not the least important matter for consideration. Every thing of a vegetable or animal kind, useless for other purposes, on a farm, should be gathered and saved for manure. A convenient compost yard and pit should be provided. The dung from the stables, the weeds from the fields, the chaff and offal straw, cornstalks, &c., the kitchen waters, *contents of chambers*, and all of such things, should be cast into the pit. The pit should be so situated that the drainings of urine, &c. from the stables should pass into it. A shed should be built over it to protect it from rains, and the effects of the sun's rays. Plaster of Paris should be sown over the surface of the manure pit once a week during warm weather, to catch and fix the volatile ammonia that will be continually passing off. If such a thing as a leisure day happen, (which, by the way, I do not see how a *good* farmer can ever have even a leisure moment,) the leaves from the woods may be profitably gathered and thrown into the pit. Twice a year, say in April and October, the contents of the pit should be taken out, thoroughly mixed and piled up to digest for a week or two or even a month. In forming the piles, if you have any swamp mud or bog earth, you may very properly add two or three loads of this to each load of the contents of the pit, taking care to mix them well. After the pile has stood a sufficient length of time, the compost may be carried out and spread over the land, either as a top dressing, or to be plowed in before seeding.

These are my views of the improvement of worn out and all other land. I submit them with great deference to the farmers of my country. Should they disagree with me in any or all particulars, I trust they will attribute my errors to at least good motives. I desire to do some good in my day, and the agricultural interest is, above all others, the most worthy of my efforts in my opinion. It certainly has my best affections and wishes.

GIDEON B. SMITH.

Baltimore, Nov.. 1844.

HALL'S STUMP MACHINE—(Fig. 10.)

LUTHER TUCKER, Esq.—I have the pleasure of answering your inquiries in relation to Hall's Stump Machine, the model of which you have seen.

Mr. R. Hall's Stump Machine, to which the State Society recently awarded the premium and silver medal, has been used on my farm in pulling 400 or 500 pine stumps of the worst description, and I found its operation superior in all respects to any machine I have used or seen.

Mr. Hall has spent six years, and near ten thousand dollars, in bringing his machine to its present state of excellence; and certainly deserves great credit for his perseverance as well as ingenuity.

The machine requires three men and a boy, with a small horse, to work it to advantage. Its cost, with all the chains, levers, &c., is from $300 to $400.

Upon some of our best lands in the southern counties, the Stump Machine must precede all agricultural implements but the axe. The expense is considerable, being from 15 to 25 cents per stump, but the ground is thereby thoroughly cleaned to any depth. The stumps are either made into fence or burnt: the plow and harrow do their work; the seed is sown, and the effect is like magic; the unsightly stumps are gone, and the whole field is like a garden.

There are four or five different kinds of Stump Machines now in use in this county, and some of them work very well; but Hall's is the most powerful, most convenient in the application of power, and is least likely to get out of repair.

In conclusion, I ought to state that this machine is found of great service in moving buildings and sunken vessels, and in other similar operations; but it is especially *as an agricultural implement*, of great importance, that I desire to bring it to the notice of agriculturists through your excellent paper. Very respectfully,

Owego, N. Y., Oct. 19, 1844. GEO. J. PUMPELLY.

REMEDY FOR THE ROT IN THE POTATOE.

MR. EDITOR—I notice in the November number of the Cultivator, complaints made about the "rot" in potatoes. I was troubled with it for many years, and having found a remedy, give it for the benefit of your readers.

The rot in potatoes commenced in this section of the country about 10 years ago; one-third of a crop was frequently lost by it, and often in the spring, hundreds of bushels have been thrown from the cellar quite useless. For some years past, I have used slaked lime, which I sprinkle on the potatoes as soon as they are cut for seed, and shovel them over in it, and plant them immediately. Since I have adopted this plan, I have not lost a potatoe, either in the ground, or after they were put in the cellar; and such of my neighbors as follow my example, are alike fortunate, and in no way troubled with the rot.

When other potatoes were troubled with the rot—three varieties of mine were exempt from it, viz: the "Cups," "Black Apple," and "Red Apple" potatoes. I shall be glad if any of your correspondents can explain why they, with the same treatment, were not subject to the rot like other kinds.

I find it best to plant each kind of potatoes separate, otherwise if the seed is mixed, a few years will produce quite a different kind of potatoes.

I have often raised seed from the potatoe balls, adopting the mode recommended in the November number. The potatoe will obtain its growth in four years; but the second year, the best variety may be selected for yielding and for the table.

About seven years since, I raised from the ball an ex-

cellent kind of potatoe, resembling very much the "White blue nose," which I call "Howards;" they yield largely, and are of fine flavor, and preferred here to the "White blue nose."

If any of the above varieties of potatoes are wanted in your neighborhood, I can ship them to Boston, and if you will accept a barrel as sample, I will forward them as you may direct. Yours truly, JOSEPH WALTON.

Saint Andrews, New Brunswick, Nov. 20, 1844.

REMARKS.—We thank our respected correspondent for the above statement. The mode by which he has succeeded in preventing the rot in his potatoes, is certainly worthy of a trial by our farmers. The experiment will cost but a trifle, and can do no harm if it should fail of success on our soils. A barrel of samples of such varieties as Mr. W. may deem best, will be very acceptable. They may be shipped to Boston in the spring, to the care of A. D. Phelps, 124 Washington-st.

INDIAN CORN—NEW VARIETY—PLANTING.

I send you a few ears of a new variety of sweet corn, obtained by the process detailed below:

1*st year.* I had a very early yellow corn, but quite diminutive in its growth—the stalks not over 3 feet in height, and the ears not over 4 inches in length. Late in the season I planted this in a patch of sweet or shriveled corn, then considerably grown. As soon as the tops or blossoms of the yellow corn protruded, they were cut off, in order that the early corn might be impregnated only by the sweet corn. The result this year was yellow corn of the usual size and appearance.

2*d year.* The last year's product was planted by itself, at a distance from all other corn. The result was, a corn growing about five feet in height, having ears 7 to 8 inches in length, with a mixture of yellow and white smooth corn and sweet or shriveled corn on the same cob—fit to eat about the middle of July.

3*d year.* I separated the corn into two parts, the smooth by itself, and the shriveled by itself, and planted them apart, at a distance from other corn. The product this year corresponded mostly with the corn planted, only there was a slight mixture of the shriveled upon the smooth corn, and of the smooth upon the shriveled. The smooth was fit to eat about the middle of July, and the shriveled about a week later.

4*th year.* I again planted the smooth and the shriveled corn in separate patches. The smooth was fit to eat 18th of July, and the shriveled the 24th. The height of the stalks averaged about five feet. The character of the two kinds seemed now to be permanently established. The smooth corn produced its like, as did the shriveled. The latter has the disadvantage of being yellow, but is earlier than common sweet corn and equally palatable. The smooth corn has a mixture of white and yellow on the same cob.

5*th year.* I separated the white and yellow smooth corn, and planted them apart from each other. The result is two distinct varieties of smooth corn—the earliest fit for eating 19th of July. The white partakes very much of the tenderness of sweet corn. Some portion of it was about a week later than the rest and grew about a foot higher.

6*th year.* Having separated the earliest of the white corn from the latest, I planted them apart, and thus procured two distinct varieties of white smooth corn—one fit for boiling 18th July, the other about a week later. Upon the ears of the earliest variety of last year's growth, I noticed a few scattering kernels of white sweet corn. These were carefully picked out and planted this year by themselves. The result is *a white sweet corn fit for boiling 18th of July*, corresponding with the earliest smooth corn in size of stalk and ear.

My object in instituting this experiment having been to obtain a corn, suitable in color and early maturity for marketing, I discarded the yellow varieties, closing the experiment in possession—

1st. Of a white, smooth, eight rowed corn, with ears 7 to 8 inches long, approaching the common sweet corn in flavor, and fit for boiling 18th of July.

2d. Of a similar corn, but somewhat larger in stalk and ear, and a week later.

3d. Of an *eight-rowed sweet corn*, with ears 6 to 7 inches long, and fit for boiling 18th July, (in 1844, 14th.)

The last variety, proving to be the precise article that I was in pursuit of, I have for three years past kept for cultivation that alone. It is that which I send you.

A word upon the proper depth of planting Indian corn. A small patch of the early sweet corn above mentioned, was planted last spring *three inches* deep. It came up well and grew thriftily till it was 3 or 4 inches high, but then came to a stand. It remained without increasing its height perceptibly, a full fortnight, while another patch of the same kind of corn grew rapidly. On examining the roots of the non-growing corn, it was found that a joint had been formed about an inch and a half above the kernel, and that roots had sprouted out from the joint, *leaving all below to perish.* In other words, the plant had abandoned the lower roots at 3 inches depth, and formed a new set an inch and a half from the surface. While the process of changing the roots was going on, the plant seems to have ceased to grow above the ground. The effect was to retard the maturity of the corn about a fortnight; but I do not know that its size and productiveness were ultimately impaired.

The inference which I make is, that corn, *to be early,* should not be planted more than $1\frac{1}{2}$ inch deep.

NOYES DARLING.

New-Haven, Ct., November 18, 1844.

AGRICULTURE AND RURAL ECONOMY OF THE SOUTH.

Ingleside, near Washington, Miss., Nov. 16, 1844.

To the Editor of the Cultivator:

DEAR SIR—Press of business, alone, has prevented my carrying out my intention of addressing you, as I promised in my last, on various subjects of interest to us here; and in particular of replying to Mr. Camak's call for aid in introducing the olive to the south. He does me but justice in supposing that no effort on my part, within my power to make, would be wanting towards the introduction of any plant that would add to the wealth of my adopted country. Among others I have often thought and spoken of the olive; but felt so much discouraged by the fact that my father-in-law, Mr. Isaac Dunbar of this place, has repeatedly introduced varieties of that plant without success, the frost destroying them, that I entirely overlooked the extract in Kenrick's work. Since reading Mr. Camak's article, I am resolved to make an effort to procure the Nikita olive and give it a fair trial here. The difficulties, however, which a private individual has to contend with in such an effort, are very great. In my own case, the only course I can pursue, is to request my correspondents in Paris to make every exertion to procure some plants for me. If some few others would do the same, we might, some one of us, ultimately succeed. I have long ceased to expect that the General Government will give any such aid to the farming interest.

That every effort should be made by the south, to introduce other staple crops than cotton, is very certain. The over-production is so great that prices cannot improve; at present prices this troublesome crop cannot be grown with profit—in fact not without loss—and the only possible means of lessening this over-production, is to induce the cotton planter to turn his attention to and employ a portion of his force in other crops, or in auxiliary branches of economical husbandry, if even these pay no better than cotton does now. Here it is that a State Agricultural Society *and farm*, liberally supported by the state, would give proof of their value. Those experiments in the introduction of new staple crops could be tried there, which cannot well be done by individuals to any extent, with justice to themselves. Any planter can however, after a few years, carry on upon his plantation many practices of economical good management—to some of which I will presently advert.

I prepared a series of resolutions some weeks ago, which I intended submitting to our Ag. Society at its business meeting after our last Fair. But so great was the political excitement at this time, that I regret to say a

sufficient number of the members did not attend on that day to form a quorum. As another business meeting will be held about the time your January number will have reached us, when I intend bringing the matter forward, I will give you these proposed resolutions here:

"Resolved, That it is the opinion of this society, that the present ruinously low price of cotton, arises almost wholly from inordinate over-production.

"That a committee be appointed to prepare an address to the farmers of the cotton-growing region; setting forth the absolute necessity that exists for an entire change in the system of farming pursued among us, so as to lessen the quantity of cotton produced—to employ a considerable proportion of the labor of our slaves in the production of other staples; and of all the supplies necessary for the plantation which can be so produced, if not with profit, at least without loss.

"That they shall include, in their address, all the information they can procure as to the staple crops which may be so introduced; with short notices of the system of culture necessary for each; cost of production compared with cotton, &c.

"That the use of cotton bagging, in baling, be particularly considered; information acquired as to the cost, in plantation labor, of its manufacture; strength requisite, &c.; and the particular grounds that may exist for objections, if any there be, to its use.

"That they also inquire, whether the establishment of cotton factories generally within the cotton growing states, would not have the effect of counteracting the combinations which are formed in the foreign markets to keep down the prices of the staple.—Whether, such a demand for provisions may not thus be created at home, as to render their production at least as profitable as that of cotton, and thus divert a considerable portion of the labor now employed in the over-production of the latter—And if, in the judgment of the committee, manufactories within the cotton region would produce these results, what measures can be best adopted to encourage their introduction.

"That they shall submit their address and report at the next regular meeting of this society."

In all enlightened governments, but our own, agriculture receives powerful aid and support; not so much by means of protective duties and imposts, as by the wise measures taken for its relief when in any manner oppressed. Witness, in Great Britain, the frequent appointments of committees of the House of Commons, to examine into the causes of results the most trivial when compared with that now in question, and with power to call before them for information, individual and documentary evidence from every part of the country. Although we in this country, have no such powerful aid given us, we might do much good by such a plan as this here proposed.

Some weeks ago, I had some inquiries made of me by a gentleman in Natchez, who informed me that he was one of a company formed with the view of shortly erecting an oil mill there; chiefly with a view to the making of castor oil. I assured him, at once, that the bean can be grown with profit by the planter; and promised to grow, next year, an acre or so, each, of the castor oil bean, sunflower, and Benê; also to try the Madia sativa, of which I have a small quantity of seed. I know that all these plants will do well here. In Illinois large quantities of the Palma Christi bean are grown, and the manufacture of castor oil is carried on with much profit. The farmers, there, so far as my recollection goes, found the bean a very remunerative crop. I neither remember the average yield per acre, nor the usual price, but have taken measures for refreshing my memory. Can you aid me? If you have files of the (Chicago) Union Ag. and Prairie Farmer, I think you will there find all the information wanted. It grows spontaneously along our road side, producing, I think, quite as good crops as those I have seen in Illinois. I have a variety of it in my garden of extraordinary and productive growth. A plant of it, which made its appearance in one of the borders, a volunteer, quite late in this present season, has attained a large growth. At five feet from the ground the stem is 15 inches in circumference; there it throws out three branches the tops of which are 17 feet from the ground, and spread to a diameter of 12 or 14 feet. Where the branches spring out, a spike of seeds has been ripe this three months; and now at the top of each of the three branches is a very heavily laden spike, the seeds in which are not quite ripe; though they certainly would have been had the seed been planted sufficiently early. The beans of this variety are very large. I find on trial that they weigh an average of six grains each. The stem and leaf-stems have a reddish tinge; the plant altogether forming quite a handsome tree. Last winter was so mild with us here that plants of this variety stood uninjured, and in the spring threw out multitudes of flower spikes. I am perfectly aware that a plant of such gigantic growth would be illy adapted to field culture, as a crop in rich land; I mention it merely as a proof that there is nothing uncongenial in our climate to the growth of the Palma Christi; and because I think that this sort would do well as an aftercrop, say on oat stubble; and would then have abundance of time to ripen its seed.

The Benê grows vigorously, and produces an abundance of seed; so, I am told, does the Madia sativa, although I have no knowledge of it myself; the sunflower I know will do well—all of these yield a very large proportion of valuable oil.

I have grown a small crop of Havanna tobacco this season, which is said to be of fine quality by those who profess to be judges. When properly cured and made into cigars a better opinion can be formed. I cut this three times, and each cutting was good; if planted early, and a handful of cotton seed or some other equally portable and effective manure hoed in round the plants at the second cutting, I have no doubt but four cuttings could be had each season—the two last of course of inferior tobacco.

The gentleman before spoken of, Mr. Isaac Dunbar, has for many years made his own wine. That which he exhibited at our last Fair was pronounced decidedly superior to any he has before shown. I think it was the best native wine I have ever met with. Mr. D. has a vineyard of sufficient extent to make a few barrels of wine, and leave enough of grapes to give even his negroes a fair share. His favorite grape is the Herbemont Madeira—as being perfectly hardy and requiring but little attention. At our summer Fair, this season, one gentleman exhibited seven varieties of grapes, principally European sorts. The variety that does best with us, is one known as the *Jack grape*. What it is I can only guess at. The vine is of a vigorous, healthy habit; young wood having a reddish tinge, resembling the cigar box and Norton's seedling: the bunches quite large and shouldered; the berries, which are entirely without pulp, are of sizes varying from that of an eighty-to-the-pound rifle bullet, to that of ordinary sized buckshot; juice a rich claret color and very abundant; the flavor fine, with a delicious admixture of sweet and sour; and forming altogether, when fully ripe, a most delicious table grape. If Mr. Camak will inform me by letter or otherwise, how to forward to him, I will have much pleasure in sending a couple of plants, that he may test this fine fruit in his region.

When I have again leisure, I may have somewhat to say on the cultivation of the vine, through yours or some other journal. I will only now add, that *excessive* deep planting will assuredly prove injurious. Moderately deep planting, however, *the soil being of a proportionate depth*, is by all means advisable. With you in the north, even as far south as Cincinnati and Nashville, and in the colder districts of Europe, the vine is trained low that it may benefit by the reflection of the sun's rays from the earth; while here, and even in latitudes north of us, to avoid this, and to secure the full benefit of the shade afforded by its own foliage, and all the air possible, the vine requires to be trained high—over a ten or twelve feet arbor, if possible.

I must pass over the subject of "new staple crops," on which a lengthy series of papers might be written. Indigo has been successfully and profitably grown here—the sole objection to it being the difficulty of making sale of the entire crop without having to seek for a mar

ket. Madder, I am confident, would find its most congenial climate and soil here. It is a native of a southern clime, and requires just such a warm, light soil as we can here furnish it with.

Bread, meat and clothing, every cotton plantation *should and can* furnish for its own consumption, and even for sale, and yet grow as much cotton as should be grown. In fact, there is not a doubt, but if such a system could be generally introduced, cotton would again command a remunerative price. Other items should be included—comforts instead of blankets; leather for shoes and harness; tobacco for the negroes; bagging made at home, of cotton; hay grown for stock and for sale; all the mules and horses needed, raised at home; a flock of sheep kept, sufficient not only to clothe the negroes, but to afford a considerable return for wool and mutton; butter made for sale, the buttermilk being decidedly more wholesome for the negroes, young and old, than sweet milk, especially in summer, and any tidy old woman can easily make more in the dairy than in the field; and many other ways in which hands can be employed to at least *as great advantage and profit* as in the cotton crop—with the very great additional advantage of thereby lessening the ruinous over-production of that staple.

I have already written you, thus far, a most egotistical letter; too much so; and yet I do not see how I can so well sustain my assertion, as to the practicability of this change in our system of farming, as by giving my own experience. True, this experience has not been great—but it has this advantage, that though but of three years standing, it has been acquired in the face of serious difficulties. I had every thing to buy but corn—and even some little of that. So, with your leave, I will continue as I have begun, and give you a little more of *Ego!*—premising, that in good and economical management, I am far, far behind many of the planters of this region, *as yet.*

Corn can be grown here quite as well as in New-York, notwithstanding the opinion of that *enlightened southern gentleman,* who made such wonderful discoveries relative to the climate of the south—see the garbled edition of Johnson's Farmers' Encyclopedia. I am now offering 2,000 bu. of corn for sale, being my surplus of this year's crop, over the requisite supply for that plantation. Wheat, also, will do well at least two seasons in three; if we had a sort sufficiently early to ripen before excessive warm weather, I do not believe this crop would be any more subject to failure than with you. The "Valparaiso," of which I received a small quantity of seed through the Patent office, was entirely destroyed, this year, by rust. It tillered well, and the heads when coming in bloom, were very large. I mean to secure a supply of all of Mr. Harmon's sorts against another season. Egyptian or winter oats do remarkably well. They are sown in September or October, and afford capital pasture all winter, and a fine yield of grain, ripe early in May. Forty bushels is spoken of as a good, fair crop; one bushel sown produced me twenty. I prefer this grain to rye. It commands readily from sixty cents to a dollar, according to the supply. My pea crops, with the gleanings of the sweet potatoe lots, will fatten my hogs this year—a trifling quantity of corn *may* be needed. Of sweet potatoes, turneps, Irish potatoes, white beans, rice, hay, fodder, pindars, &c., I have hitherto found no difficulty in growing in abundance.

Cattle, unless where the range is extensive and good, or where the planter has formed good Bermuda pastures, I do not consider profitable stock here—at all events, by no means as much so as sheep, hogs or mules. To raise one's own meat, requires a good deal of care and attention—but it can be done profitably and advantageously on any cotton plantation. A little over two years ago, I commenced operations with eight thorough bred Berkshire sows, as many good common ones, and two or three fine boars, of different families of Berkshires, including imported Newberry. This fall I will kill a fair supply of meat, and offer some thirty or forty fine young, in-pig sows for sale, being unwilling to kill them while they are so much needed in the south. I offer them at less than the price of a barrel of pork each—$10. I lost, last spring, over one hundred pigs and shoats of a disease in the throat, caused, I believe, by their eating young cuckle-bur plants. Such, too, is the opinion of my overseer who had charge of them—Mr. Hamilton—a very intelligent, observing man. When turned out of the field where these grew, the hogs ceased dying and got well—when put back there they became sick again, and many died off. In addition to this, I have lost, in spite of every precaution, a good many through my own and my neighbors' negroes—no matter how much meat they may get, both salt and fresh, the negroes have a particular liking for fresh pig, killed and cooked *on the sly,* as school-boys say. All this, however, *can* be prevented. And even supposing that from ten good sows, one hand devoting his entire time and attention to them and their produce, 50 hogs of 200 lbs. each can be killed per annum, that hand is doing a fourfold better business than at growing cotton. Moreover, the hogs being during the picking season in the pea field, the services of the hand can be had at that time, when they are most valuable. I think I can have two hands supply the slaughter pen with three hundred fine fat hogs, each year, and attend to the breeding and stock hogs also. I feed much cotton seed, thoroughly cooked, and a small proportion of meal, with salt and ashes added, and occasionally pumpkins and turneps, boiled with it—and with decided economy and advantage. For sheep, as I have often asserted, this is the finest country I have ever seen, and I think myself tolerably good authority in the matter. This, however, may very fairly form the subject of a separate article.

Clothing—this too, requires time and attention; but there is nothing else needed to enable any force of negroes to manufacture the material for their own clothing, *with profit* to their owners. During winter the women cannot be so well employed in any way as in spinning up the wool—particularly where a carding machine is accessible. One woman, keeping a spinning machine and a loom going all the year, would spin the warp and weave the cloth for a very large place. Those spinning machines are a great convenience—they spin six threads at a time—the gin saws taking the cotton from the seed—the brush placing it on the cards when ginned, where it is carded, and then spun direct from the cards, all at one operation. Mine was made by Pearce & Co., Cincinnati, and cost $130. We have now, in Natchez, a very excellent manufactory established, and now in the hands of a most energetic business man—Mr. McAllister, of the firm of McAllister & Watson—who is proving that such a concern will succeed in the south, afford a profit to the manufacturer, and be a great source of convenience and economy to the planter. Linsey, jeans, all kinds of cotton goods, including *bagging* and sacking, bale rope and twine, &c. &c. Also *burring* and carding wool at so much per pound. Mr. McA. began by pledging himself that he would manufacture for the planter, from his own cotton and wool, fabrics of any kind to cost him, at least, *no more* than he could buy it for of northern manufacture, allowing a fair price for the raw material. The cotton bagging, made for Mr. Isaac Dunbar, out of most indifferent cotton, worth perhaps one or two cents per pound, is a very superior article—better, in the opinion of many, than the hemp article. I have little doubt that the cotton shipped from Natchez will be, half of it, put up next year in bagging of cotton—if the planters consult their own interest they will do so. If all the cotton made in the Union was packed in this material, we would have the crop lessened or consumption increased rather, to the amount of 22,500,000 pounds, or 56,250 bales—being five yards of bagging, weighing 9 pounds, for two and a half millions of bales. Bale rope and twine would swell the amount to over 70,000 bales.

Mrs. A. is just finishing off a lot of over 50 double and single comforts for the negroes, in place of blankets, which cost an average of about $1.12 each—not counting the labor of making, which in fact may be so much wet weather time of the women's labor saved, and it is well repaid in the difference in the cost of blankets. Had we not made comforts, I would have required over 45 pairs of blankets—difference, to pay for the making of the comforts, at least $120. This has been our first experiment in comforts, though some planters here have

used them for many years. The use of comforts has other advantages—see the extra consumption of cotton—then the women are all taught to sew better than they usually do.

Many other items of economical management of the plantation might be mentioned, each of sufficient importance for a separate article; but I must now close, with the hope that every planter who has the good of the south at heart, and who is desirous of lessening the overproduction of our main staple, will never cease to act, to talk and to write with that object in view, until public attention is drawn effectually to it.

Yours, &c. THOMAS AFFLECK.

INDIAN CORN AND POTATOES.

Salt Destructive to the Grub and Wire Worm—Diseased Potatoes.

LUTHER TUCKER, ESQ.—Every experiment which is made by the farmer, whether successful or otherwise, should be published for the benefit of the community. Among the enemies of the corn crop, especially on sward land, the grub and wire worm are pre-eminent. Many expedients have been tried for their destruction, some of which have proved useful, and others have entirely failed.

I had about three acres of sward land which had been in grass for several years, which I plowed in the spring for corn. On turning the sod under, I found the worms in great numbers, and fearful that my crop would be seriously injured by them, I sought for a preventive of their ravages. After it was plowed, I sowed broadcast about one and a half bushels of fine salt to the acre, and harrowed and rolled the land. My seed was prepared by soaking in warm water for about eighteen hours—and I dissolved two ounces of sal ammoniac, and put in the water, in which about a bushel of seed was prepared. The corn was planted the two succeeding days after the salt was sown. The seed germinated very quick, the plants remarkably vigorous, and grew very luxuriantly. Not a single hill during the season, was found injured by the worms, although multitudes of them were in the ground. A neighbor, who occupied a field near mine, and who planted his seed in the ordinary way, lost at least one-third of his field by the worms.

I have no doubt my corn was much benefited by the sal ammoniac, in bringing it forward rapidly, but I have supposed that its preservation from the ravages of the worms, resulted from the application of the salt. The crop was an unusually good one, and ripened very early. The soil was a gravelly loam.

In a field near by the one in which the corn was planted, I had three acres of potatoes. This was sward ground, but rather a sandy soil, with a clay subsoil. The land was manured with a good top dressing of barn-yard manure, previous to plowing. I planted five varieties of potatoes. The Perfectionists or Kelseyites, the seed of which I procured of Dr. H. Wendell of Albany, two years since, and which has proved a very valuable as well as prolific variety. The Pink Eyes, Silver Lake or Chenangoes, Black Ohio potatoe, and the Rohan.

The seed was cut, and the potatoes planted in hills about three feet apart. The potatoes came up well, and for a time advanced as rapidly as could be desired. The *curl* or *rust*, made its appearance when the potatoes were about half grown, and the crop from that cause was very seriously injured. The Pink Eyes, Silver Lake and Black potatoe, were also affected by the disease, which has prevailed so extensively this and the last season, and the crop from that cause diminished full one-third. The Kelseyites and the Rohans escaped the disease. In looking over an agricultural work, containing experiments in agriculture, made in Ireland, under the direction of the Dublin Society in 1773, I find that the *curl* existed at that time in Ireland. The remedy there recommended, *is change of seed every year*, and planting *whole potatoes*. It is there said to have been successful.

In the field of corn alluded to, I planted four rows of potatoes, same kind of seed as the other. These grew finely, were not injured by the curl, nor were they diseased. Their growth and yield equal to the most favored seasons. What was the cause of this difference? Had *the salt any influence* upon the potatoes, and were they benefited by it?

The fact is interesting; and I give it in hopes it may lead to further investigation, and perhaps to some useful result. Yours, B. P. JOHNSON.

Rome, N. Y., Dec. 7, 1844.

PREPARATION AND USE OF CHARCOAL.

Age and business both thickening upon me, I had ceased to write on agricultural subjects; but as I am called on, I come forth, willingly, cheerfully. But first, one word to my son Levi, and others of my sons. Whenever you may write me again, be assured I shall answer, but remember what I told you long ago, "it is hard work for an old man to gather fruit from a tree with so much brush about it."

In the winter and spring of 1842, I made and applied several thousand bushels of coal, mostly combined with the covering of earth and ashes of the pits; not doubting that coal, lying on or about the surface of the earth, absorbs ammonia in dry weather, and gives it to the earth in wet weather. I would not have it finer than the ends of my fingers, and unavoidably down to dust; for it is evident that in proportion to the pulverization, so are the pores destroyed. Towards the close of my operations, my preparation of the coal was to burn two or three pits on the same ground, mixing and casting back the same earth and coal for covering; by which, and a little extra labor with a shovel or hoe, the coal was pulverized to my liking. As to the effect of the pure coal which I pulverized and cast into my cattle yard, I cannot speak, as no test was attempted, but never expect to do the like again; for why should I use coal for securing my already acquired capital, when straw or leaves would answer the same purpose. Better use the coal broadcast to extract and secure capital from the universal fund. Remember that in my operations, the coal, the covering earth, (which is always filled with valuable salts,) and the ashes, were mixed together. This compound was carted out and cast on land in wheat, corn land, oat land, meadow and pasture grounds. The effect on wheat and corn, apparent and decisive, say improvement 15 to 20 per cent; both wheat and corn land inclined to white clay. Effect on oats not visible; land, white clay. Effect on meadow very evident, the grass being lifted thereby from 5 to 6 inches on both dry and wet land. The grass consisted of a mixture of greensward, alias Kentucky blue grass, and red clover.

The pasture ground operated on, was the top of a high poor ridge, which has ever since been closely grazed. On this, white clover and other permanent natural grasses are now about half as thick as I could desire, and suppose that in two more years, the ground will be well sodded. Be it known that this hill is so situated that it would improve without the coal, &c., but I attribute about one-half the improvement to this source.

The earth from a coal pit I would estimate at the outset, to at least as much as the coal; but as the coal is a permanent actor and reactor, it may ultimately perhaps be worth 100 per cent, or even 1,000 per cent more than the earth.

My manner of spreading this manure, is by casting it from the cart in such quantity as to blacken the earth handsomely, and for obvious reasons always keeping the cart on the wind side.

If Liebig's theory as to the action of coal be right, then it must act profitably on all lands wanting manure, except such as are continually wet; but on clay grounds, when plowed down, it has the additional virtue of opening the pores. If then the coal be used as manure separately, I would plow it into clay grounds; and if burnt earth and ashes be used separately, I would cast these on sandy grounds.

He who spreads manure of any kind, but especially coal, has this fund out at interest. It behooves us then to inquire what fund in labor or money we can afford to invest in this way. Let us suppose an acre of ground without improvement, capable of yielding 20 bushels of corn; which corn is worth $8; suppose $5 worth of coal, &c.,

spread on the acre, by which the crop is increased only 12½ per cent, thus creating an annual income of $9, how now stands the case. If you live on the premises twenty years you pocket for one acre a profit of $15—ten acres, $150—one hundred acres, $1500. My son, 12½ per cent profit above a living, will by and by make you rich, and whether this be in meal or malt, no difference. And remember moreover, the additional value of your lands, and the sweat you have saved by the difference in cultivating hard and poor ground, and that which is improved.

I would say to A. J. P. that coal and all other vegetable matter, must in time become earth; but I wish my coal to remain coal as long as possible; for I would value the ammonia which the coal may furnish, much more than the carbon which it would furnish by its decomposition. This winter I intend again to make and spread several thousand bushels of coal. But after all this, I doubt whether it is advisable for my son Levi to do so likewise; for if his lands are by nature black and porous enough, it contains already enough charcoal, or that which is its equivalent. But let me not discourage you, if this be the quality of your lands. I tell you what you can do; just burn your wood, not so much for the coal, as for the burnt earth and ashes; and I will warrant the application equally as valuable on such lands, as on that which is sandy. To burn a large quantity of earth, and produce a large quantity of ashes, with a given quantity of wood, you will let the air more copiously in at the bottom of the pit, keep a goodly quantity of earth packed on, and burn the greater length of time. For agricultural purposes, it is best to open a coal pit while rain or snow is falling; or if water be convenient, this can be cast on the coal, by which it is broken or pulverized.

ZA. DRUMMOND.

Amherst Co., Va., Dec. 1844.

AGRICULTURE IN MEXICO—CORN STALK SUGAR.

THE following extract from "Prescott's Conquest of Mexico," (vol 1, p. 134,) recently published in the city of New-York, may be interesting to the readers of the Cultivator:

"Agriculture in Mexico was in the same advanced state as the other arts of social life. In few countries indeed, has it been more respected. It was closely interwoven with the civil and religious institutions of the nation. There were peculiar deities to preside over it; the names of the months and of the religious festivals had more or less reference to it. The public taxes as we have seen, were often paid in agricultural produce. All, except the soldiers and great nobles, even the inhabitants of the cities, cultivated the soil. The work was chiefly done by the men; the women scattering the seed, husking the corn, and taking part only in the lighter labors of the field. In this they presented an honorable contrast to the other tribes of the continent, who imposed the burden of agriculture, severe as it is in the north, on their women. Indeed, the sex was as tenderly regarded by the Aztecs in this matter, as it is in most parts of Europe at the present day."

"There was no want of judgment in the management of their ground. When somewhat exhausted, it was permitted to recover by lying fallow. Its extreme dryness was relieved by canals, with which the land was partially irrigated; and the same end was promoted by severe penalties against the destruction of the woods, with which the country, as already noticed, was well covered before the conquest. Lastly, they provided for their harvests ample granaries, which were admitted by the conquerors to be of admirable construction. In this provision, we see the forecast of civilized man."

"Among the most important articles of husbandry, we may notice the banana, whose facility of cultivation and exuberant returns are so fatal to habits of systematic and hardy industry. Another celebrated plant was the cacao, the fruit of which furnished the chocolate—from the Mexican *chocolatl*—now so common a beverage throughout Europe. The vanilla, confined to a small district of the sea-coast, was used for the same purposes, of flavoring their food and drink, as with us."

"The great staple of the country, as indeed of the American continent, was *maize or Indian corn*, which grew freely along the valleys, and up the steep sides of the Cordilleras to the high level of the table-land. The Aztecs were as curious in its preparation, and as well instructed in its manifold uses, as the most expert New-England housewife. *Its gigantic stalks, in these equinoctial regions, afford a saccharine matter, not found to the same extent in northern latitudes, and supplied the natives with sugar little inferior to that of the cane itself; which was not introduced among them till after the conquest,*" (in 1519.)

In perusing Prescott's Mexico, the above facts struck me as remarkable. If a semi-civilized nation on the continent of America, more than three hundred years ago, made sugar from the stalks of Indian corn, why may not the more civilized races of the present day in North America, with the aid of art and science, do the same? There is no doubt that it may be done; it has been done. But we have yet to try experiments, to improve the process, and not only to render it practicable, but profitable. As maize was, in the time of Montezuma, *the great staple* of the American continent, so it continues at the present day in its northern portion. Every State and Territory in these U. S. raise it in abundance. In Mr. Ellsworth's report to Congress of the crop of Indian corn, for the year 1842, it is estimated at 441,829,246 bushels. This *great staple* will increase with the rapid increase of our population; and the question will arise, how shall we dispose of our surplus? We can export but small portions to other countries, and must therefore create a market at home, or diminish its cultivation. How we can provide a home market to consume the superabundant crop, applicable to all parts of the country, it is difficult to determine. If maize continues to be as extensively planted as heretofore, it will become as it were a valueless drug, unless we cut a part of the crop when fullest of sap, and convert the expressed juice into sugar. This change of cultivation may not be advisable in all parts of the country. The experiments that have been made, show that it can be done, but in which of the States it can be most advantageously adopted, remains to be decided by other experiments. I feel satisfied that before long, we shall see and consume corn stalk sugar in abundance. I remember when maple sugar could only be obtained of the blackest and coarsest kind, such as was strained through the dirty blankets of the aborigines, and sold in small cakes or birch baskets as a rarity. At the late Fair of the State Society at Poughkeepsie, I saw beautiful specimens of refined maple sugar, and even rock candy, which had never before been made from the sap of the maple tree. The march of improvement is onward, and we shall see sugar from maize gradually introduced, as the process of granulation and refinement is improved, as has been the case with maple sugar.

It is encouraging to the husbandmen of our country to know that there was a time when cotton, and wool, and silk, and sugar from the cane, were not raised in the United States, while they are now firmly established. Maple sugar was always made in small quantity, but of late years, a large amount is manufactured, and refined equal to the best of imported sugar. So will corn stalk sugar be gradually improved and introduced. In some countries, sugar is a mere luxury, but with most of the people of the United States, it is a necessary article of consumption. In addition to the sugar imported, there was made in the country in 1842, (as by Mr. Ellsworth's report,) 142,445,199 lbs. Every State in the Union except Delaware, makes sugar; the southern States, from the sugar cane, and the northern and western States from the maple, (Acer saccharinum.) To supply the place of foreign sugar, let us persevere, until the manufacture of sugar from maize shall render it unnecessary to import the article.

RICHMOND.

Oakland Farm, Staten Island, Nov. 25, 1844.

LABELING SEEDS.—The Southern Cultivator furnishes a good hint to seedsmen, at all events a valuable one for purchasers—that it would be better to put upon them the date of the year in which they were raised, instead of the usual "*Warranted fresh.*"

STONE-BOAT OR SLED—(Fig. 11.)

THE accompanying figure represents a simple but very useful implement, which no farmer should be without. It is nothing new, except the tongue. I am induced to present it to the public, by seeing its usefulness tested in smoothing down roads previous to freezing. If each pathmaster (or road supervisor) would procure one and go over his district, just before freezing up, it would confer a greater public benefit than the same amount of labor bestowed in any other way, by making a smooth sleigh track through the winter. I have represented it with saddles or bolsters for drawing logs, which can be taken off when it is wanted for any other use. They are used by the sawyers in this region to draw logs into the mill from remote parts of the yard. Large saw logs are easily loaded, and more easily removed in this than in any other way, even on bare ground. If the farmer is obliged to convey any thing over the roads, when they are partially frozen, this will draw more easily than any thing else; and instead of being like the wagon, detrimental to the road, is actually beneficial.

It is made of two or more plank, according to their width. They may be sawn in a sawmill, by cutting part one way, and then reversing the ends of the log and sawing the other. The tongue is attached by means of eyes passing through the fore part, secured by nuts; these are easily taken off when wanted for summer use in drawing stone. JASON SMITH.

Tyre, N. Y., 1844.

SCIENCE OF AGRICULTURE.

Lectures on the Application of Chemistry and Geology to Agriculture. By JAS. F. W. JOHNSTON—Part 4th, 8 vo. pp. 135. Wiley & Putnam, New-York.

THIS valuable work, as it was issued from the press of this country, has been noticed in preceding pages of the Cultivator. But when we called the attention of the agricultural community to the two volumes published in the city of New-York by Wiley & Putnam, the fourth part was still wanting. We now have that fourth part given to the public by the same publishers, and it completes the work, and when the several parts are put together it will form one octavo volume of 620 pages.

If the first, second, and third parts were valuable and interesting, the concluding fourth part is still more so. To the farmers of New-York, who feed stock to make butter and cheese, the twentieth lecture, *On Milk and its Products*, is worth more than any heretofore published work on these subjects. It contains, in a condensed form, under distinct heads, all that is desirable to be known in relation to butter and cheese as made in Europe. And although it may not be practicable in this country, to follow all the directions given in this lecture, yet the skillful agriculturist will find much information by which he may be benefited. To those who make cheese for export to England, the various methods of preparing it in that country will give him hints calculated to make it suitable to the taste of his customers.

On another occasion we stated in the Cultivator, the necessity of having pure salt to make good butter. Johnston in the above mentioned lecture corroborates our former expressed opinion by the following remarks:

"The salt should be as pure as possible, as free, at least, from lime and magnesia as it can be obtained, since these substances are apt to give it a bitter or other disagreeable taste. It is easy, however, to purify the common salt of the shops from these impurities, by pouring a couple of quarts of boiling water upon a stone or two of salt, stirring the whole well about, now and then, for a couple of hours, and afterwards straining it through a clean cloth. The water which runs through is a saturated solution of salt, and contains all the impurities, but may be used for common culinary purposes, or may be mixed with the food of the cattle. The salt which remains on the cloth is free from the soluble salts of lime and magnesia, and may be hung up in the cloth till it is dry enough to be used for mixing with the butter or with cheese." (p. 565.)

Johnston's work comes to us in the form of Lectures as they were delivered to a class of farmers in England. They were published in parts as the lecturer gave them to the press after delivery. The fourth now before us completes the series, and contains three lectures, being the 19th, 20th, and 21st of the entire course. These three treat respectively—*Of the Produce of the Soil—Of Milk and its Products—Of the feeding of Animals and the purposes served by the Food.* Each of these lectures is a treasure to the farmer. They are published in a small octavo volume by themselves, by Wiley & Putnam, (Broadway, New-York, price 31 cents.) The entire series of twenty-one lectures may also be obtained of them and other booksellers, in a handsomely bound volume of 620 pages for one dollar and fifty cents. The work is the most valuable of any of the late publications on agriculture. We do not mean by this commendation to depreciate the labors of Liebig. He pointed out many new chemical facts applicable to the improvement of agriculture, (some of which however were more theoretical than practical,) and he led the way for Johnston and others to profit by his labors, and render them practically useful. Johnston has done so in an eminent degree, and his work is a pearl to all practical farmers.

In the commencement of the 21st and last lecture he treats of the substances of which the parts of animals consist, viz: the muscles, the fat, the bones, hair, horn, wool, &c. He then in the second section asks—*Whence does the body obtain these substances? Are they contained in the food?* And continues—

"Whence does the body derive all the substances of which its several parts consist?"

"The answer to this question appears at first sight to be easy. They must be obtained from the food. But when the inquiry is further considered, a reply to it is not so readily given.

"It is true, indeed, that the organic part of the food contains carbon, hydrogen, oxygen, and nitrogen—the elements of which the organic parts of the body are composed. The *in*organic matter also which exists in the food contains the lime, the magnesia, the potash, the soda, the sulphur, the phosphorus, and the iron which exist in the inorganic parts of the animal body—so that the question seems already resolved. The body obtains from the food all the elements of which it consists, and if these be not present in the food, the body of the animal cannot be properly built up and supported.

"But to the chemist and physiologist the more important part of the question still remains. *In what state do these elements enter into the body?* Are the substances of which the food consists decomposed after they are taken into the stomach? Are their parts first torn asunder and then reunited in a different way, so as to form the chemical compounds of which the muscles, bones and blood consist? Are the vital powers bound to labor, as it were for the existence and support of the body? Do they compound or build up, out of their ultimate elements, the various substances of which the body is composed—or do they obtain these substances ready prepared from the vegetable food on which animals in general are fed? The answer which recent chemical researches give to this second question, forms one of the most beautiful contributions which have been made to animal physiology in our time.

"We have seen that the flour of wheat and other cultivated grains consists in part of gluten, of albumen, or of casein. These substances all contain nitrogen, and are identical in constitution with each other, and with the fibrine of which the muscles of animals chiefly consist. The substance of the muscles exists ready formed, therefore, in the food which the animal eats. The labor of the stomach is in consequence restricted to that of merely selecting these substances from the food and dispatching them to the several parts of the body, where they are

required. The plant compounds and prepares the materials of the muscles—the stomach only picks out the bricks, as it were, from the other building materials, and sends them forward to be placed where they happen to be wanted." (p. 589.)

Here we find the author of these lectures agreeing with Dumas and Boussingault in a work recently published in this country by the title of "The Balance of Organic Nature,"—but these opinions were also entertained by Liebig.

The animal frame receives a portion of its substance from the atmosphere, and expels carbon from the lungs. On the subject of respiration Johnston observes (p. 594) as follows:

"But for what purpose essential to life do animals respire? If the starch and sugar (as previously stated) be so necessary to feed the respiration—the breathing itself must be of vital importance to the living animal.

"Some doubts still exist upon this point. It is generally believed, however, that carbon is consumed or given off from the lungs for the purpose of sustaining the heat of the living body. When starch, or sugar, or gum, are burned in the open air, they are changed into carbonic acid and water, and at the same time produce much heat. It is supposed that in the body the same change—the conversion of starch and sugar into carbonic acid and water—taking place, heat must in like manner be produced. A slow combustion, in short, is supposed to be going on in the interior of the animal—the heat of the body being greater, in proportion to the quantity of carbonic acid given off from the lungs. In favor of this view many strong reasons have been advanced, but there are also objections against it of considerable weight which cannot as yet be satisfactorily removed."

"Were we to adopt this opinion in regard to the main purposes served by respiration as the true one, it would afford a very distinct reason for the large amount of starch existing in all our cultivated crops. Respiration, according to this view, is necessary to supply heat to the animal, and this respiration is most simply and easily fed by the starch contained in the vegetable food. The life and labors of the plant again minister to the life and labors of the animal."

That animal heat was derived from respiration was long since pointed out by Lavoisier in France, and Priestley in England, but they were not so certain as to the manner of its production.

"By the separation of carbonic acid (says our author, p. 596, note) which may be given off by the lungs—of water, which may or may not remain in the system—and of a portion of oxygen which may be used up in various ways in the blood, the starch or sugar of the food may be converted into fat.

"That in some such way these substances may be changed into the fat of animals, was first insisted upon and explained by Liebig, and it is probable, as I have said in the text, that in cases of emergency fat is really formed in the animal body from such kinds of food. But when Liebig put forth his views on this subject, it was not known that vegetable substances naturally contained so large a proportion of fat as has since been found in them. The necessity for the constant production or formation of fat in the body itself, therefore, is not now so apparent, and the soundest opinion, according to our present knowledge, seems to be that, while the vegetable food *usually* supplies all the fat ready formed which the animal requires, yet that a conversion of a certain part of the starch, gum, sugar, and even of the cellular fibre of the food, into fat, may take place, when all the wants of the body are not supplied by the fat which the food naturally contains. Of course this opinion applies only to animals in perfect health. In certain diseased states of the body a larger and more constant production of fat from the food may take place, as appears to be the case in animals which no diminution of food seems to prevent from laying on fat."

In the seventh section of the 21st lecture (p. 500) Johnston affirms that the health of the animal can be sustained only by a mixed food. From this summary we may learn a valuable lesson in dispensing food to animals, and the Graham philosophers may read a lesson that will teach them how to live.

"From what I have already stated, you see that the vegetable food eaten by a full grown animal for the purpose of keeping up its condition, should contain:

"1st. *Starch or sugar*, to supply the carbon given off in respiration.

"2d. *Fat or fatty oil*, to supply the fatty matter which exists more or less abundantly in the bodies of all animals.

"3d. *Gluten and fibrin*, to make up for the natural waste of the muscles and cartilage.

"4th. *Earthy phosphates*, to supply what is removed from the bones of the full grown animal by the daily waste, and—

"5th. *Saline substances*—sulphates and chlorides—to replace what is daily rejected in the excretions.

"Hence the food upon which any animal can be fed with the hope of maintainlng it in a healthy state must be a mixed food. Starch or sugar alone, or pure fibrin or gelatine alone, will not sustain the animal body, because these substances do not contain what is necessary to build up all its parts, or to supply what is daily given off during respiration and in the excretions. The skillful feeder, therefore, will not attempt to maintain his stock on any kind of food which does not contain a sufficient supply of every one of the kinds of matter which the body requires."

There is much in these three lectures to interest the scholar, the man of leisure, or even the laborious farmer, who may read, and read again, and advantageously appropriate the information therein contained, as well as in the preceding parts before published. We will conclude our remarks on Johnston by giving his concluding summary, which, to those who have not read his work, will explain its nature and contents.

"§ 18. Concluding section." (p. 519.)

"I have now brought the subject of these lectures to a close. I have gone over the whole ground which in the outset I proposed to tread. It is the first time, I believe, that much of it has been trodden by scientific men, and I have endeavored in every part of our journey to lay before you, as clearly as I could, every thing we knew of the country we passed over, in so far as it had a practical bearing, or was likely to be susceptible hereafter of a practical application.

"In the first Part, I directed your attention to the organic portion of plants—showed you of what substances it consisted—on what kind of organic food plants live—and by what chemical changes the peculiar organic compounds of which they consist, are formed out of the organic food on which they live.

"In the second Part, I explained in a similar way, the nature, composition, and origin of the inorganic portion of plants. I dwelt also, upon the nature, origin and natural differences which exist among the soils on which our crops are grown, and from which the inorganic constituents of plants are altogether derived. This led me to explain the connection which exists between agriculture and geology, and the kind of light which this interesting science is fitted to throw upon the means of practically improving the soil.

"In the third Part, I dwelt upon the various means which may be adopted for increasing the general productiveness of the land—whether these means be of a mechanical or chemical nature. The whole doctrine of manures was here discussed, and many suggestions offered to your notice, which have already led to interesting practical results.

"In the fourth Part, I have explained the chemical composition of the several kinds of vegetable produce which are usually raised for food—showed upon what constituents their nutritive values depend—and how soil, climate and manure, affect their composition and their value as food. The nature and composition of milk and its products, butter and cheese—the theory of their manufacture, and the circumstances upon which their respective quantities and qualities depend—and lastly the way in which food acts upon and supports the animal body, and how the value of the manures they make is dependent upon the purpose for which the animal is fed—

these subjects have also been considered and discussed in this fourth Part.

"In discussing new topics I have had occasion to bring before you many new views. This, however, I have not done lightly or without consideration, and I feel it to have been one of the greatest advantages which have attended the periodical form in which these lectures have been brought before the public, that it has allowed me leisure to think, to inquire, and to make experiments in regard to points upon which it was difficult at first to throw any satisfactory light. It is gratifying to me to know that the general diffusion which these lectures have obtained, has already done some service to the agriculture of the country."

That country is England, and if the husbandmen of New-York, or other parts of the United States, should purchase and read and study Johnston's Lectures, they would be amply compensated, as believes their friend and fellow countryman,

November 12, 1844. A PRACTICAL FARMER.

AN EXPERIMENTAL FARM—No. I.

IN this great state there are not far from eleven millions of acres under cultivation. In working these lands there is a vast amount of labor—I will not attempt to say how much—annually expended. As a practical question, and one of great moment, allow me to inquire: On what does the productive value of all this land and labor mainly depend?

For agricultural purposes, land without labor is valueless. This is demonstrated by the utter worthlessness of the products of the one thousand millions of acres in our national domain. Labor, then, is the one thing valuable. But the question still returns: Wherein consists the value of agricultural labor? Is it in the mechanical power of human bone and muscle; or in the intelligence of the directing mind? If in the former, as many seem to believe, then the labor of an ox is worth more than that of seven intelligent men. But with no mind to direct it, what is the strength of a thousand oxen, or of ten thousand demented persons' worth? This is a practical question, affecting the intrinsic value of labor, which every one, whether he have labor to sell, or to purchase, should study and understand.

There are at least a million of persons constantly employed in rural pursuits in the empire state. If all this honest toil can be made far more productive than it now is, and hence, be far better rewarded, who will complain? Probably no human being. The value of this rural industry, we have seen, is justly measured by the professional knowledge of those that direct, either wisely, or *unwisely*, all its operations. To increase largely the amount of this professional knowledge, and cheapen its cost to every practical farmer in New-York, there should be somewhere in the state a well conducted Experimental Farm, in connection with an Agricultural School.

Agriculture is essentially an experimental science. Its experiments and complicated details require much skill to decide accurately the value of any system of farming under different circumstances. That great improvements have been made, and that greater still may be achieved, no one can doubt who has investigated the subject. Every practical agriculturist knows that a single grain of wheat will often send up ten or more stems, and that each stem or stalk will bear an ear containing 100 or more seeds. This gives a yield of 1000 fold. Twenty-five hundred kernels of good wheat, and more of corn, have been harvested from one of either.

By planting wheat with a drilling machine that drops one seed in a place, and at a proper uniform distance asunder, that the air may circulate freely through the whole field, and by supplying each plant with all the ingredients in a soluble condition at its roots, necessary to build up its entire structure, it is believed by some that 100 bushels may be profitably grown on an acre. The raw materials required by nature to elaborate 100 bushels of wheat are not expensive. An experimental farm is needed to demonstrate practically from what sources these ingredients can be obtained at the smallest expense: and how they should be combined so that every plant may have its productive power developed to the fullest extent, and yet the farmer lose not one particle of the raw material not transformed into grain.

A moment's reflection will convince any one that in the production of any organic being, not a particle of matter is created. Every farmer knows that the leanness or fatness of his domestic animals, and cultivated plants, depends, mainly, on the scarcity or abundance of their food. To prepare this food for all our plants and animals, and to work it up without loss, and to the best possible advantage, is a *study* of great practical importance. The manufacture of breadstuffs, provisions, wool, cotton, flax and hemp, from certain raw materials, which God has provided most abundantly in the air, in water and in the soil, must ever be regarded as the most important branches of human industry. There are, however, millions of competitors in the manufacture of all these articles; and it is saying no more than the truth to remark that their numbers and their zeal are alike increasing with astonishing rapidity. Believe it who may, the time is close at hand when the entire profits of agricultural labor will depend on one's knowledge of the unerring laws of nature, his working in unison therewith, and never in opposition thereto.

Look at that locomotive. A knowledge of the laws of nature enables a man to make a little hot water and steam, draw a load for 200 horses, and travel at the rate of 20 miles an hour. Tell me, gentle reader, have the laws of nature nothing to do with the fertilizing of the earth? Have we nothing to learn in relation to the multiplication of plants and animals?

Exclusive of a small portion of earthy matter, all plants and all animals are nothing more than CONSOLIDATED AIR.

Four simple aeriform bodies, carbon, nitrogen, oxygen and hydrogen—the two latter being water—make up the whole catalogue of organic life, including man himself. Thanks to infinite benevolence, the air is full of bread, of meat, of clothing, and of fire! All gratitude is due to that Creator, who has made it impracticable for any selfish mortal to claim an exclusive title to any portion of the ever moving atmosphere, or to the rain and sunshine of heaven. The whole earth too, is full of silica, alumina, lime, potash, soda, magnesia, and the other minerals which enter into the composition of plants, and of animals. With all these materials furnished to our hands, with mental powers that derive their highest pleasure and dignity, from the investigation of the works of Providence, what is gold, what are deeded acres, to that knowledge which renders a rational being so nearly independent for every physical and intellectual comfort, if it do not also give him a higher, stronger hope of something better beyond the grave?

The fact is worthy of consideration that scientific, experimental farming has added more to the population of the island of Great Britain, within the last 44 years, than it had increased during the 423 years ending with the close of the 18th century. This wonderful and sudden increase of the human family has occurred in spite of the wars which desolated Europe for 15 years in this century, till the great battle of Waterloo; and in spite of the tens and hundreds of thousands of native Englishmen, who have emigrated to British colonies, to distant coasts and islands, and to foreign nations. As yet the prolific light of science has hardly begun to shine on the cultivated fields of "old England." It was but yesterday that the governments of Europe saw the folly and madness of human butchery, and wisely resolved "to beat their spears into pruning hooks, and their swords into plowshares." This is now done, and with the increased means for the support of our race, the human family are multiplying on the continent with a rapidity that has no parallel in the history of the world. Labor saving machinery in a thousand forms, serves to keep millions from mechanical pursuits. In all these operations, steam performs the labor of human hands. Hence, rural industry is very cheap, and the price of all agricultural products is constantly on the decline.

Soon to be excluded from all foreign markets, with our vast and fertile prairies under cultivation, can *we*, the farmers of New-York, safely neglect to cheapen, as far as

practicable, the cost of raising whatever we have to sell?

Many of us have sons whose condition in life and standing in society, will depend on their ability to make property by farming; and I will add their ability to keep what their honest labor shall command, from the "itching palms" of those that study to acquire, not produce, the good things of this world. The science of keeping property, as well as that of producing it by the successful cultivation of the earth, I regard as a matter worthy to be taught in agricultural schools. Indeed, I have long contended that instruction in this useful branch of knowledge is too much overlooked in all our public schools and higher seminaries of learning.

Notwithstanding all the improvements in the useful arts, in science, and in labor saving machinery, by which one man performs the work of ten, the statistics of all civilized nations reveal the startling facts that Pauperism, Crime, and Insanity, increase faster than population. It is known that steam in Great Britain does the work of millions of human beings, and yet Mr. Colman states on what he regards as good authority, that there are in England and Wales a million and seventy thousand public paupers! In our own state the expense of supporting the poor last year, if I mistake not, exceeded $700,000. Over $17,000 "poor accounts," or accounts for taking care of the poor, have just been allowed by the board of supervisors in Erie county: nor is this an unusual sum. As God has given to each person but one pair of hands to work and provide food for one stomach, which must be fed three times every day—to work, and provide clothing for one naked back, a shelter for one houseless head, and for all its physical wants in infancy, sickness, and old age, it is plain that, if one person shall acquire a sum equal to the entire earnings of ten pairs of hands, some of the mouths attached by nature to these ten pairs of hands may go hungry. They may lack clothing and lack shelter, simply because they do not know so well how to keep and enjoy the fruits of their own industry, as other members of the society in which they live know how to exchange their shadows for the laboring man's substance.

Of what avail is it to a man that the annual product of his labor be increased fivefold, if he despise knowledge and allow his joints to be treated like gudgeons running under water, that never receive one drop of oil?

Farmers are much in the habit of changing work with merchants and professional gentlemen. The exchange is generally made after this fashion: The man who has devoted his life to the study and practice of agriculture, gives six days of his labor for one of the merchant or of the dealer in law or medicine. If either of the latter can find employment at this rate throughout the year, he may consume the entire product of one pair of hands, and lay up a sum equal to the whole earnings of five tillers of the soil. Estimating the value of this agricultural labor at $200 per hand, or at $1,000 for the five, instead of paying $70 a year to the laboring man who created this property, in the shape of interest, the man who has *acquired* it, lends it to the very men that produced it, and to their children after them, as a fair equivalent for 100 days work every year at 70 cents a day!

Let me suppose there was property sold in the year 1820, at 150 millions of dollars, in this great state, subject to an interest (less than 7 per cent) which would double the principle in 12 years. Call the population of the state at that time 1,250,000, which is not far from the truth. Since 1820 the population has doubled, or it is now 2,500,000. Look now after the property of $150,000,000 at interest. In 1832 it was 300 millions, in 1844 600 millions. While this dead matter, called sometimes gold and silver, at others something else, which can neither move, think, nor do the least thing whatever, has increased fourfold, and drawn from human thought and muscle 450 millions, without paying the debt, the number of laboring hands in the state to work and pay the interest on 600 millions is only double the number which had to pay the interest on the original debt of 150 millions. If the tax on labor increase twice as fast as population, what but increasing poverty and crime can result?

I have stated the above facts to demonstrate the reason *why*, pauperism is increasing so rapidly in the Empire state. In this free and civilized land we call the *annual service* of $5,000 in gold, which needs no food nor raiment, and which will last a thousand years, worth $7 per cent, or $350. To pay this, in the plenitude of our kindness to humanity, which unfortunately must be fed and clothed, we usually allow for labor one dollar a day. In England they lend gold at 3½ per cent, and credit labor fifty cents a day. In France and Germany gold is loaned at 2 per cent and labor credited about 25 cents a day.

The great error in all this matter is committed by the borrower, not the lender, in each of these countries. No man, as a general rule, is compelled to run into debt, when he begins in the world. If all interest on money were abolished, it would not prevent in the least, ignorant or foolish men, from selling their labor, or its products, at a price less than their value. *Knowledge* is the one thing indispensable, not less to keep, than to produce, the comforts of life. By trading and gambling a man may draw a prize; but the chances are that he will buy a blank. When every human intellect shall know how to make one pair of hands work to the best advantage; and also how to keep and enjoy what they produce, to bless himself and his own household, pauperism, crime and insanity will be nearly banished from the world. When no man can obtain wealth except by the sweat of his own face, over and above what he consumes, he will no longer cherish that morbid "love of money" which the Bible denounces as "the root of all evil." The equality of condition, which would result from every man's keeping the fruit of his labor or a fair equivalent, would remove the exciting cause of much of the pride, envy, extravagance, idleness, vice and disease, which now afflict those that needlessly violate the laws of their being. If our Maker designed that one rational being should consume the entire products of three hands, and another live on the products of one hand, would he not have given three hands to the body which needed their mechanical service, and only one hand to the body which required the labor of one only?

Buffalo, Nov. 27, 1844. D. Lee.

INJURIOUS EFFECTS OF IRON IN SOILS.

L. Tucker, Esq.—Much has been said and written, not only on the source whence plants derive their substance, but on their ability (instinctive?) to select their appropriate food and to reject all other.

I think there are some *facts*, which go to show that plants are not much more intelligent than animals in this respect. We have lately had statements in relation to the effects of common salt on fruit trees, good or bad according to quantity or other circumstances, and in one instance it has been averred that the salt went into and destroyed the flavor of the fruit.

I have about two acres on one side of my farm, lying about two feet below the general level, which, when first cultivated, had a dark brown, and what was thought an extremely rich appearance. But, alas, nothing valuable would grow on it. I satisfied myself that the sandy loam contained large quantities of iron, (perhaps sulphuret of iron or pyrites.) Most of this I have thrown into ridges, and drained it as well as the position admits, and supplied it pretty liberally with quick lime. It has produced a good crop of oats and peas, and the clover on it looks well.

Now for a *fact*, which I think is a proof that plants absorb by their spongioles or rootlets, substances which are not only poisonous, but which they can neither reject nor expel. My cornfield had a small corner project into this low plat, which had not been limed. Until the plants were some inches high, no difference was observed; but then it began to falter, and soon the leaves were beautifully striped with various shades, from a crimson to a corboo or reddish brown color. In another spot, some rods distant, in the midst of a healthy growth, was a patch of about a square rod, in which the appearance was the same. On this, the plants never exceeded 12 or 15 inches in height. On examining the roots, they were found corroded and eaten off in all directions, and thou-

sands of little lateral rootlets thrown out to be corroded in their turn, and so on till death decided the struggle. Perhaps I shall be told the coloring matter in the leaves was not oxyd of iron. I have not said it was, and as I did not analyze it, I shall not so affirm; but I have no more doubt in my mind that some compound of that metal was the cause of both the color and death of the roots, than I should have with any proof short of positive.

My wish is to make this subject, not only one to stimulate investigation, but, as I know many hundred pieces of such soil, to advise those who have it, to apply quick lime in autumn, and mix it to a moderate depth with the soil in the spring. Yours truly,

Norridgewock, Me., Nov. 25, 1844. JAMES BATES.

SUGAR CANE—ITS CULTURE IN LOUISIANA.

MR. L. TUCKER—The plants we cut and matlay in beds, during the autumn, usually in October, previous to the sugar making season, and before the canes are injured by frosts. Often the unripe tops, which would otherwise be thrown away, are winrowed for plants. The best plant cane we usually save for plants; because they are the easiest put up, and the quickest planted; for time and saving of labor are money. Besides, by planting the whole stalk, it grows more vigorously than the tops, especially in a dry season.

After the sugar making season is over, which usually is about the first of January, we prepare our land, designed for cane, by plowing and harrowing, breaking it from four to eight inches deep: the stiffer the land, the deeper the plowing is necessary to protect it from drouth. Thus prepared, the ground is laid off in rows, with a two horse plow, about 6 feet apart, (some plant as close as four feet.) In these furrows, a double mould board plow, with one horse, is run; in order to clear the furrows of lumps and sods, and also to deepen and widen the furrows; as it is necessary to put the plants several inches below the surface; otherwise the cane would require too much hilling, especially the second and third years.

The plants are now taken from these mats, and the leaves stripped off, placed in carts, carried and tipped out on the prepared land, and laid lengthwise in the furrows. We plant three canes side by side, or triple; some say one and a half is sufficient. The closer the rows, the less each would require. We now pass along with a cane knife, and cut the cane in pieces, say from two to three feet in length, in order that the canes may lay more level, and because more eyes will vegetate. Being thus placed, they are covered with a plow to the depth required, from one to three inches; over which, a light harrow may be passed. Many prefer to cover with the hoe. Soon as the freezes are over in February, the cane is plowed; running the bar each side the cane, and throwing the furrows from it; the cane, beginning to come up, is scraped, (so called); if covered too deep, the earth is taken off, usually with a hoe, sometimes with a harrow or other machine, and cleaned from grass and weeds. In a few weeks it is again plowed and hoed, and again when necessary, a little earth put to it when required.

The cane by April or May has come up thick in the rows, but usually not so thick but that the stalks, when about a foot and a half or two feet high, send out many new stools or shoots from the bottom of the stalk; and if they come out early, grow and mature equal to the main stalk. It is usual to give it three or four workings and in the last to hill the cane three or four inches, and sufficiently high to protect the lower eyes on the stalks from freezing during the winter. Those eyes vegetate next season, and produce nearly equal to the first season, on fresh land, and so again the third year, and often longer. Cane is injured by hilling before the stools are sufficiently high; and should receive the last working soon after it is about three feet high; in order to afford more time for ripening. After this period, say in June, it grows very rapidly; the joints begin to appear, and the lower joints begin to ripen, to sweeten; and by the middle of October usually ripen from two to four feet from the bottom, and continue to ripen about a joint, or six inches, a week, till they are cut for the mill; or till the freeze comes; or till they are cut to winrow, in order to secure them from an anticipated freeze. About the middle of October we commence making sugar. Each hand takes a row, first cuts the tops of the stalks off just below the green leaves, and drops them on the ground or lays them in winrow, if designed for plants; then, with the knife, (the blade of which is about 18 inches in length and two inches in breadth), the dry leaves are stripped from the stalks, and the cane is cut close to the ground, the left hand at the same time has hold of the canes thus cut, and places them in small heaps, convenient for loading into carts, drawn by horses, mules, or oxen. Other hands load the cane, and it is hauled to the mill.

The cane fields are all ditched, usually every acre in width, with cross ditches about every five acres. No water is allowed to remain on the surface. The cultivation is as simple as that of broom corn, and the young shoot far more vigorous.

Cane stalks usually grow from 6 to 9 feet high. The leaves shoot up two or three feet higher. Cane ripens in favorable seasons within 12 or 18 inches of the top. You will perceive we plant one-third of our cane land or crop yearly; two-thirds coming from the rattoons.

New River, La., Aug. 1844. S. TILLOTSON.

POTATO ONIONS.

FROM some remarks upon this species of onion, in the October number of the "Cultivator," it seems that farmers generally are not much acquainted with it. A brief description of its qualities and the mode of cultivating it, may therefore be acceptable to some of your readers.

Its mode of propagation is peculiar. A large onion, set in the ground early in spring, breaks into several (5 to 15) separate onions, which grow in a cluster of three or four good sized bulbs at the bottom, and a number of small ones lying on the top. These last vary in size from that of a nutmeg to that of a small hen's egg. The small ones are the seed for the next year's crop. The smallest will grow into very large, single bulbs; while the larger ones will grow into two or three middling sized onions. The average annual increase, taking large and small together, is about tenfold.

This description will readily suggest the proper mode of cultivation—which is to set out the small onions for the purpose of producing the large ones, for table use—and to set out a sufficient number of large onions for the purpose of producing the small ones for seed. The first should have a moderately rich soil, the last a soil rather barren.

The onions should be put into the ground as early in spring as the season will admit. After the ground is made mellow, set the onions in rows far enough apart to allow a hoe to pass between them. They may stand 3 to 4 inches apart in the rows. Just cover them with earth. They may be stuck into the ground with the thumb and finger. They need no further care, but to be kept free from weeds.

To preserve them, they are gathered with a potatoe hook, as soon as the tops are dried, and then spread for a few days on the barn floor, or some other dry place. I formerly kept them over winter on a scaffolding in my barn; but having lost about 70 bushels by the severe winter of 1834–5,* (thermometer 23° below zero,) I have since put them into my cellar, which happens to be a very dry one, where they keep perfectly well, on a crib with a bottom of laths far enough apart ($\frac{3}{4}$ of an inch) to permit a circulation of air through them. Thus managed they keep longer than any other species of onion. I have them suitable for cooking the year round.

In their eating qualities, I do not discover any difference between them and other onions. But for cheap-

* A curious fact in physiology came under my notice, the spring following, that deserves to be mentioned, though it is foreign to my subject. The rotten onions were thrown out in the spring into the barn yard, where some of them were eaten by hens. This strange food *gave their eggs* a most unimaginable taste—loathsome and nauseous beyond all description.

ness of cultivation, certainty of crop and amount of produce upon a given space of ground, they surpass all others.

There is a sort of Eschalot, that has been cultivated and sold for the potato onion. Wherever this fraud has been practiced it has given the onion a bad name. The genuine article, properly cultivated, has, I believe, been universally approved and highly valued.

NOYES DARLING.

New-Haven, Ct., November 19, 1844.

MANAGEMENT OF THE PEACH TREE.

THROUGH the medium of the Cultivator—which my neighbor Tyson says, "finds its way every where," I wish to make known a new theory with regard to the cause of the premature decay of the peach tree; suggesting a mode for the prevention of a malady that has pervaded our orchards, in many instances, to their annihilation; the evil spreading far and wide, and exhibiting an inveteracy of character, that bids defiance to the thousand-and-one *cures* that have been guarantied to follow the adoption of about as many applications, external and internal, that have been made public. I lay it down as a melancholy fact, then, that the evil, whatever it be, and proceeding from whatever cause, has never yet been fully understood, or met by a proper antidote. And this conclusion will be more readily admitted, than the novel doctrine, "that the yellows and the worm proceed from the same source, both being *effects* and not the immediate *causes* of disease;" it being now generally conceded, that our trees are as effectually destroyed by the former as the latter; nay, that trees affected by the yellows, will assuredly be destroyed by it, without the intervention of the worm in any of its stages, and at about the same period of time. Here, then, is one step gained. Then comes the idea that the disease is contagious, and to prevent its spreading, it will be necessary to remove the tree the moment its effects are visible; as, also, that a cure may be effected, by careful culture of the soil, or a top-dressing of alkaline substances, to correct the acidity produced by the putricity of the juices of the tree, it being admitted that oxygen is its basis. But although this treatment might be beneficial as a preventive, the expectation of a radical cure would be hopeless.

A residence in this peach-growing district, affords incidents of the greatest variety, and cases for "practice," innumerable; indeed, it might be regarded as analagous to "walking the hospitals," by the medical student; while frequent examination of the orchards of the large peach-growers of Delaware and elsewhere, have abundantly satisfied me, that the evil is progressing, maugre all the care and industry of men, superlatively endowed by knowledge, experience, intelligence and untiring perseverance, "to the contrary notwithstanding." Now these individuals have religiously kept their orchards under constant tillage, for the sole purpose of preserving the health of their trees; convinced, that without such incessant and careful culture, they could not be kept in existence; yet they find the disease is there, and with all their marling, manuring, and plowing three times a year, that it is rapidly progressing; the only question being, how long has the death of the trees been delayed by a process at once so tedious and expensive? So then, at all events, the disease is neither prevented or eradicated by any means now in use—will they, therefore, permit one who is deeply interested in the result, to suggest a mode of treatment, by which it is believed the evil is to be met and overcome.

In late visits to several of the nurseries of peach trees, both in Delaware and New Jersey, I have observed with wonder and astonishment, the gigantic size to which the trees are forced by every means of human ingenuity, many acquiring the height of 8 feet and 3 inches in circumference, from the bud of last autumn. And if to this be added the first year's shoot from the seed—say 6 feet, which is amputated in the spring, we have the enormous growth of 14 feet from the seed, in a year and a half! Now I would ask, does not this extravagant drainage from the root, or whence so ever it may be supposed to proceed, produce a laxity, and a disorganization of the sap-vessels, sufficient to engender disease in the plant, which might then be compared to an overgrown youth? If so, putricity must follow, and then blight, in the shape of *life*—the worm; and the yellows, of necessity and according to the law of nature. And is it not a fact, that the trees now raised by our nurserymen, are twice as large in their growth as formerly; and do not these men pride themselves in the art of producing them of enormous size, purchasers also, generally preferring those that are so? I lately saw trees from the nursery of a person at Moorestown, N. J., measuring more than 8 feet in height, an inch and a half in diameter, with roots sufficient in growth for trees of ten years old, one year only from the bud! Now, of what advantage is all this? None whatever, but a decided injury; productive, it is believed, of the very evil so much complained of. I know that some persons do not covet these large trees, prefering those of a smaller size; but if these are taken from the same nursery, they are, then, those that have sprung from small and weak seed, or been overgrown by larger plants, and are to be rejected, for the same reason that small apples, from among those of larger growth on the same tree, are always inferior, being generally diseased, or immature; so the evil is by no means avoided, or rather it is augmented.

At Manyunk, on the Schuylkill, I saw, some time since, a small nursery of peach trees, situated on an eminence; the soil thin, and resting on a bed of disintegrated rock, but dry and healthy. Here I found the trees about four feet in height from the bud, close and vigorous in their form, with no rampant leader; the wood, hard, well ripened, and of a deep red color. The owner observed, his trees were sought after at double price, for besides being of the best sorts and true to their kind, they were sure to grow, when transplanted; their roots being small and compactly formed around the body of the tree; besides this, they are free from disease, and would remain so, pointing to the well-ripened wood, and the compact growth of the tree, as indicative of health and vigor of constitution. The following course of treatment is, therefore, with much confidence, recommended for adoption.

First, raise the trees on a healthy and elevated spot, without the aid of manure or extra culture with the view of forcing their growth; shortening all large and vigorous shoots that may be thrown out, even during their first and second season. The operation of budding is too well understood, to require either note or comment. At the time of planting out, let the branches, leaders as well as side shoots, be headed down to within three inches of the body of the three, removing the tap root, and others of overgrown size; taking care that the southerly aspect, which it bore in the nursery, is given to it in its new location. And from this period, let a rigid system of pruning be adopted, without fear of evil consequences. No tree bears the knife so well as the peach; and to its regular and systematic use, is a cure of its diseases to be looked for. Let, therefore, every overgrowing branch be shortened, keeping the head of the tree of regular dimensions. It is seldom, indeed, that we see a peach tree that is not top-heavy; yet the order of pruning must be the reverse of that practiced on the apple tree, where it is customary to thin out the middle branches, for in the peach, the bearing wood should be there retained, as also on the sides of the larger branches; by these means, much breakage would be prevented, and thousands of the finest trees be saved from destruction—it is the healthiest trees which fall, crushed by the weight of fruit hanging at the ends of long branches; not those affected by the yellows.

The perpetual cultivation of the peach-orchard was resorted to, for the purpose of preventing the evils complained of, but would those who have practiced it the most vigorously say, if in any instance it has been found effectual? To those who still advocate such a course, as necessary to the well-being of the trees, the production of fine fruit, the eradication of the weeds, the destruction of the worm, and the prevention of the yellows, the following facts, fully to be relied upon, speak volumes.

Major Reybold, of Delaware, has an old peach orchard of about three acres, that has not been cultivated for five

or six years, having been used as a hospital for sick sheep; yet from thence, for several years past, the finest fruit sent to market has been picked. While speaking of the orchard, the Major said, a few years since I had peaches here, when my friends had none; my family ate $300 worth, after which I sold the remainder for $2,700.

Mr. Caleb Brinton, of Pequea, Lancaster county, Pa., has an orchard, one half of which has been kept under constant culture, the other half being meadow. While searching for worms the past season, full 20 for 1 were found on the cultivated half; the trees sickly and dying of the yellows.

Mr. Mahlon Kirkbride, of Morrisville, Pa., writes, by constant culture and laying lime to the roots of the trees, he has been able to keep the worms at bay; but, spite of all his care and attention, the yellows have carried them all off, and he has not now a peach tree on his whole estate.

But none of these gentlemen have tried the effect of a thorough system of pruning, commencing with trees in health, youth and vigor, and that had not been prematurely forced in the nursery—a system which is advocated as likely to be far more important than the most careful cultivation, and all other "appliances and means to boot." If at any time, it be thought advisable to refresh the trees, this can be done by top-dressing, far more beneficially than by the plow, the use of which, in the estimation of those who adopt it, "gives fresh vigor to the growth of the tree"—the very thing to be deprecated. The peach orchard then, will become a sheep-walk or a hog-pasture, affording a profit instead of a loss, in seasons when fruit fails: the sheep performing the labor of pruning the lower branches of the trees, on which the fruit is always inferior, and keeping down the weeds far more effectually than can be done by the plow; while the hogs will do all the *cultivation* that is necessary, and clear away the diseased and fallen fruit; all stock being removed before the time of ripening. I lately observed on the farm of Mr. Bryan Jackson, of Newcastle county, Del., that a portion of the peach orchard had been thrown into the hog-pasture; here the trees were most vigorous; and under each, the tramping of the hogs had done, in the way of cultivation, as much as was deemed necessary. The trees are four or five years old; and I was glad to find that the intelligent owner intends at once to lay down the whole orchard to permanent pasture, for the purpose of grazing sheep and swine. J. C. D.

Salem, New Jersey, 12th Nov. 1844.

A VARIETY.

Luther Tucker, Esq.—I obtain something from almost every number of your paper that is of value to me, and in return, could I state a few things that would be serviceable to some of your readers, I should esteem the reward ample for the trouble of writing.

To stop the Scours in Sheep or Lambs.—Give them a small quantity of salt pork: if administered soon after they are attacked, two or three doses will generaly effect a cure. I have given it to neat cattle for the same complaint and with good effect.

To prevent Colts chewing their Halters.—Take the scab from the wart or issue on the inside of the leg, rub the halter thoroughly with that, and they will not be caught chewing their halter very soon. I have tried pepper, tobacco, &c., but nothing to so good purpose as their own or kindred musk.

To Destroy Ants and Prevent their building their Mounds upon Meadows.—I take a bog-hoe just as the ground is about to freeze in the fall, cut the mound off even with the ground, then sprinkle on the spot where the mound stood, about a shovel full of unleached ashes. The ants having burrowed a little below the surface, the lye of the ashes causes their utter destruction. The part taken off should then be removed from the meadow to the compost heap, or placed in some ditch or hole for the purpose of making the meadow smooth and level.

Coalpit dust I think has proved beneficial to my Fruit Trees, by placing a few shovels full about the roots of each tree; it keeps away the grass, prevents the borer from entering the bark, and withal makes an excellent manure. I am trying an experiment with coalpit dust about some young apple-trees this winter, to see what effect it will have in keeping the meadow mice from them, which are very plenty here, and often prove destructive to young trees, during our long winters of deep snow. Last winter I placed ashes about the roots and body of the young trees; they were not injured by the mice, but I found I had made so free use of the ashes as to injure the bark of the trees in a number of cases.

The Cause of Rot in the Potato.—Accounts of the disease of the potato differ in different sections of the country; some attribute the difficulty to wet heavy soils—some to soils light and porous—others to much wet, and the extreme heat of the season. The month of September in this vicinity, was both warm and dry. The farmers here think their potatoes came off best on clay and heavy soils—many that harvested early and put them in their cellars were obliged to carry them out. I think those left in the ground late, generally proved best, the weather being more favorable than usual for such experiments, though early digging did not prove fatal in all cases. I dug about 50 bushels and put in the cellar on the 19th Sept. They were the Leopards, grown on a heavy sand and clay soil; there was not a dozen infected ones in the whole. I put them in an airy cellar; they kept well. About the same time I was passing a farmer who was harvesting his potatoes in a neighboring town. I stopped and went into his field. I found him digging on a beautiful fine sandy soil. They were a mixture of Leopard and Kidney potatoes, and about half destroyed by the rot. There were many hills that had not a sound potato in them. About two miles from this place in the same town, I found a farmer harvesting potatoes on a limestone ridge. He told me he had not found a single rotten potato. His were the Leopards. About the 10th of Oct. I dug the remainder of my Leopards. They came out about the same as those first dug. I then began digging my Mercers; here I found more diseased potatoes: about one bushel in thirty were lost. They grew upon a ridge; the soil a dry gravel. The disease in this case I am sure could not be occasioned by too much wet, for there had not been sufficient rain here from the 1st of August to the 29th of September, to half wet a potatoe hill, had it all fallen at one time. They appear to be keeping well in the cellar. I found some that were diseased, that had become dry and somewhat resembling starch. From what information I can gather, and from what I have seen, there remains much mystery with me as to the cause of the disease. J. N. Smith.

Chimney Point, Vt., Dec. 1, 1844.

CORN-STALK SUGAR.

In our May number of the volume for 1844, we gave a communication on this subject from Mr. John Beal, of New Harmony, Indiana. It appears that Mr. B. has been still more successful the present year than he was last. We are informed that he has made three hundred and ninety-five pounds of good sugar this season, from the corn stalks which grew on three quarters of an acre, which is at the rate of five hundred pounds per acre. His plan is said to be as follows:—"When the ears begin to form they are pulled off. When the leaves are dead about half way up, the stalk is stripped of leaves, cut up at the root, the top cut off, and then ground in a sugar mill. Twenty stalks will yield about one pound and a half, and of this three-fourths is grained sugar. Mr. B. made eighty pounds in a day, with a simple apparatus of his own construction. Five hundred pounds, at four cents per pound, is twenty dollars per acre. It would have produced, say 50 bushels of corn, at 25 cents, or $12.50.

Thrifty and Unthrifty Farmers.—The grand difference between a thriving farmer, and one who does not thrive, is, the one looks out for the *fractions*, the other does not. In farming, nothing should be lost; nothing should be neglected; every thing should be done at the proper time; every thing should be put in its proper place; every thing should be performed by its proper implement. When these rules are observed, the farmer will surely prosper—though his gains may be slow, they will be certain and sure.—*Proctor's Address.*

WINTER.

See, WINTER comes, to rule the varied year,
Sullen and sad, with all his rising train;
Vapors, and clouds, and storms. Be these my theme,
These! that exalt the soul to solemn thought,
And heavenly musing.

SEED AND IMPLEMENT STORE,

At Rome, Oneida Co., N. Y.

COMSTOCK & JOHNSON, proprietors of the above store, will be happy to receive orders for seeds of any kind, and also for all the most approved implements used by farmers.

January, 1845—tf

FOR SALE.

THE subscriber offers for sale his fine Durham bull Osceola. He is now two years and a half old, and has taken the 1st premium at two successive State Fairs; for pedigree and further description, see Cultivator, Sept. 1843.

Also, his thorough bred Stallion Young Florizel.

Watervliet, Dec. 16, 1844—tf. CLARKSON F. CROSBY.

PLOWS

OF the most approved patterns now used in this State, will be constantly kept for sale either at wholesale or retail at the Rome Plow Factory, corner of Dominick and Washington streets. The *Diamond Plow*, which received the State Society's first premium last fall, is made by us in good style. Farmers in want of Plows, Cultivators, Cradles, Scrapers, &c. are invited to call.

A liberal discount to those who buy for retailing.

Jan. 1845—tf BRAINARD, COMSTOCK & CO.

HUSSEY'S REAPING MACHINE.

THE subscriber has now brought his Reaping Machine to the highest state of improvement. The cutting of four harvests has proved the last improvements to be permanent and durable. The four horse machine is warranted to cut from 15 to 20 acres per day—price, $170. The light two horse machine is warranted to cut from 12 to 15 acres per day—price $100. Medium size, price, $140. Farmers who intend getting machines to cut their next harvest, will please send their orders soon. References are given in the Dec. number of the Cultivator, 1844. Also for sale, my corn and cob crusher, an improved article; price 25 dollars.

Baltimore, Nov. 1844—4t* OBED HUSSEY.

SPLENDID FARM AND COUNTRY SEAT FOR SALE.

I NOW offer for sale my farm, consisting of 170 acres of the richest of the Mohawk Flats, all under improvement and in a highly productive state, together with the substantial and superbly finished brick mansion erected by the late Gen. John G. Weaver, at an expense of about $10,000. It is one and three-quarter miles from the city of Utica, on the north bank of the Mohawk, over a McAdam road. It has a beautiful orchard, garden, farm-house, barns, stables, sheds, &c., and is finely watered, and now stocked with choice Durham and grade cattle, Bakewell and Southdown Sheep, and all necessary farm implements; all of which will be sold at a great bargain to the purchaser. D. SKINNER.

Utica, January 1, 1845—3t*

AGRICULTURAL MACHINERY, &c.

MANUFACTURED BY R. SINCLAIR JR. & CO.

Baltimore.

CORN Mills,* $30 to $10.

Baldwin's Corn and Cob Crusher,‡ $65.

Sinclair & Co's ditto, particularly adapted for plantation use, with one set extra plates, $30.

Goldsborough's Corn Sheller and Shucking Machine, for horse power. A powerful and efficient machine. $40.

Threshing Machines and Horse Powers, warranted strong and durable.

Cylindrical Straw Cutters, 4 sizes, for hand and horse power, price $:5, 30, 45 and $75.

25 sorts Plows, embracing the *Wheel*, Self-sharpening, Subsoil, and various preferred kinds.

Also, a general assortment of FARMING MACHINERY AND TOOLS, GARDEN and FARMING Seeds, Books, Ornamental and Fruit Trees, Shrubs and Plants.

Catalogues of the above will be furnished to applicants, giving descriptions, prices, &c. of all the above, and other articles not enumerated. R. S. Jr. & Co.

* See cut and description at page 17 of this paper.

‡ A cut of this will appear in the next number of the Cultivator.

FINE FARMS FOR SALE AT AUCTION.

THE property known as the Stimson Farm, situated at Galway in the county of Saratoga and State of New-York, will be sold at auction, at the Court House in Ballston Spa, on Wednesday the second day of April next, at 12 o'clock noon. It contains in the whole about 325 acres and is so divided as to make three farms, each having on it the necessary farming buildings. The roads from Schenectady to the Fish House, and from Saratoga and Ballston to Johnstown, run through the property at right angles, dividing it into four parts. The two pieces lying north of the road, said to contain about 190 acres, will be sold together. On this part are, a large hotel, capable of accommodating one hundred boarders, with the most extensive and convenient buildings for agricultural purposes. It is a favorite place of resort for families in the summer season. This part of the property will be a most desirable investment for any person desiring to connect the business of farming with that of keeping a hotel of this description.

The south-eastern portion, said to contain about 90 acres, has a farm house and the necessary out buildings, with a wagon maker's and a blacksmith's shop. The south-western portion, said to contain about 50 acres, has on it a store and dwelling-house attached, farm house and barns, and is a most desirable property for any person wishing a small farm. Each farm has on it the proper proportion of woodland, and the whole is of the best quality for farming, there being no waste land, and in the highest state of cultivation. The situation is high, commanding a most beautiful and extensive prospect in all directions.

The sale will be positive and without reserve, to the highest bidder, and perfect titles will be given. The terms will be 5 per cent cash, to be paid to the auctioneer at the time of sale; 50 per cent may remain on bond and mortgage for five years, or a longer term, at 6 per cent interest, payable half yearly in the city of New-York, on the first of May and November, and the balance to be paid in cash on the delivery of the deeds. For further particulars, apply to JOHN W. THOMPSON, Esq., Ballston Spa, or to J. OAKLEY, No. 77 Nassau-street, New-York.

Dated New-York, Dec. 9, 1844—3t.

FARM IN ILLINOIS.

FOR SALE—A good farm, with valuable improvements. The subscriber being about changing his business, will sell a great bargain. Also has in immediate vicinity, 2,000 acres choice land, which he will sell at a discount from government price. Address ISAAC HINCKLEY, P. M., Audubon, Montgomery Co., Illinois.

Dec. 1, 1844—tf.

THE CULTIVATOR,

NEW SERIES, VOL. II, FOR 1845.

GRATEFUL for the liberal patronage his paper continues to receive in every section of the United States, the proprietor has determined to add a new and attractive feature to the volume for 1845, by giving two or more beautiful STEEL PLATES, engraved in the first style of the art. Various other improvements are also contemplated, which, with the constantly increasing list of correspondents, will, he trusts, render "THE CULTIVATOR" a most welcome visitor with every farmer and horticulturist.

Each number of the Cultivator contains 32 large octavo pages, and is published at the low price of $1.00 a year—Seven copies for $5—Fifteen copies for $10.

"We do no more," says Rev. Dr. Bond, editor of the Christian Advocate and Journal, "than strict justice when we say we believe the Cultivator is considered the best work of its class in the United States, and we have seen nothing equal to it from Europe."—"THE CULTIVATOR is," says the Auburn Journal, "by all comparison the best agricultural paper in the Union."—"We speak advisedly," says the Northern Advocate, "when we give *The Cultivator* the pre-eminence in point of maturity of agricultural knowledge, in every thing which appertains to the farmer or the farming interest."

☞ Any person wishing to obtain the Cultivator, can do so by handing a dollar to his Postmaster, who is authorized to forward it, free of postage, to the proprietor.

All orders must be accompanied with the cash, and be addressed to LUTHER TUCKER, Ed. Cultivator, Albany, N. Y.