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J. E. WILLIAMS, EDITOR.

THE SOUTHERN PLANTER.

DEVOTED TO

AGRICULTURE, HORTICULTURE,

AND THE

HOUSEHOLD ARTS.

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Devoted to Agriculture, Horticulture, and the Household Arts.

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Tillage and Pasturage are the two breasts of the State.—SULLY.

J. E. WILLIAMS, EDITOR. AUGUST & WILLIAMS, PROP'RS.

VOL. XIX. RICHMOND, VA., NOVEMBER, 1859. No. 11.

For the Southern Planter.

Tobacco the Bane of Virginia Husbandry.

No. 5.

Arator, the distingushed leader among the writers upon the subject of Virginia Agriculture, devoted a chapter to the politics of agriculture. It seems equally appropriate to introduce here, whatever can be justly said in relation to the morals of our agriculture.

It may be affirmed of our day and generation, that although wickedness is rampant and boldly makes fearful headway in the world, Christian morality is making comparatively greater progress:—and, that public opinion is conforming itself to the general movement, and wide spread agitation of all the elements of society,—to a higher and higher standard of Christian moral rectitude.

While there has always been an influential class who have contended that mankind has ever been the same in every age, and therefore are destined to go on unchanged to the end,—thus nullifying the consolatory promises of Holy Writ, for the conversion of the world; there has also been an unbroken band of believers, who have protested against this doctrine of the philosophers of the day, and who, in obedience to the commandment of their acknowledged Lord and master, have continued to pray "Thy kingdom come." This band has been of late greatly cheered by the signs of the times—they are honest and ardent searchers after truth, and will follow it, even to conclusions against themselves;—and to make confession of their errors before God and man is part of their sacred doctrine. They have long been known and designated as "the salt of the earth," the true conservative element of civil society, and form the only solid ground of hope for the amelioration of the condition of man. This band of believers, whose recent growth* forms a prominent sign of the times, is the only class likely to give attention to the moral aspect of this subject: they, therefore, may consider themselves as exclusively addressed; because among Christians only can be found the moral courage necessary to accomplish a moral reformation of magnitude and permanency.

Of all the vices which have hitherto gotten the upper hand of our fallen race, it may be assumed without the fear of successful contradiction, that the vice of tobacco-using, now outranks all others in the magnitude and variety of its injurious effects.

* Witness the thousands lately converted by the instrumentality of Christian Union prayer meetings, throughout the Christian world.

Strong drink, until of late, stood pre-eminently the master vice of the day, but, now, must yield the palm—since by the glorious dispensations of Divine Providence, the greatest moral reform of the age, has in a few years wrought the astonishing wonder of converting what was lately esteemed the token of hospitality and testimony of good fellowship, into an acknowledged shame.

Who that feels a decent respect for the opinions of the most respectable portion of society, now makes the offer of an intoxicating beverage a part of the first salutation of every visitor to his house? This custom, which universally prevailed of late, has now been driven out of the best society.

It must be admitted the serpent-demon is "scotched, not killed," but is still received and cherished in upper-tendom,* and the low sinks of vulgarism,—the two extremes of society, which have always been the most inaccessible to the graces of Christian life,—and it is sufficient for our purpose, to leave them as the chief patrons of a vice, which, in the progress of our age, has been proscribed, and in part driven out of the commonwealth of Christian morality; nothing doubting that they too must succumb to the greatest reformation which has yet been inaugurated in the 19th century, and is still making glorious progress.

But it must be allowed that this signal victory over the almost superhuman power of common custom, sanctioned, as it was, under the revered garb of the virtue of hospitality, has not sufficed to stop the growth of other evils: but seems rather to have encouraged a new vice, grown rampant in the land, and of equal capacity for evil with its declining predecessor, with some adaptations to mischievous results peculiarly its own.

Strong drink and tobacco have been aptly characterized as "Twin-demons." Nobody at all acquainted with this pair, will hesitate to allow them the most intimate relationship at least; for they both inebriate,—both produce delirium tremens, and by the testimony of the ablest physicians, and most authentic statistics, both contribute a large quota of subjects to our insane hospitals, and run up the record of premature deaths. Here, then, are four undeniable affinities between the "twin demons" in their leading traits. We shall, therefore, assume, throughout the rest of this essay, that strong drink and tobacco are, to all intents and purposes, kindred culprits, and stand equally liable to arraignment before the tribunal of progressive public opinion.

But leaving here the lately most prominent of the demons, to the instrumentalities by which the great leader of all true moral reforms,—Divine Providence,—has beleaguered him in his strong holds, we must turn our attention to the more recent aspirant, who has already attained an equal empire in the earth, and possesses some peculiarities more favorable to holding dominion over his conquered subjects, by influences hitherto but little investigated, and now acting upon all races of the Earth to a degree which amounts to nothing short of positive fascination. Let a short history of Tobacco testify to the foregoing allegation.

A noisome, poisonous weed—first found among the savages of a country recently discovered,—in comparison with the age of the world—so revolting to the instincts of a man as to nauseate to deadly sickness every one at its first use, and requiring more or less painful repetition to reconcile outraged nature to it; which finally, by perseverance becomes first tolerable, then by the force of habit agreeable, and lastly, an overmastering, indispensable *want:*—which being indulged, becomes so rivetted upon its votaries as to defy their efforts to shake off their fetters, after finding themselves, by their own acknowledgement, cruelly enslaved. Yet, wonder of wonders! they are held, spell-bound, by its fascination, and are reduced to the degrading humiliation of owning themselves powerless to resist their self-imposed task-master—though well known to increase his exactions to the bitter end of delirium tremens, and fell insanity, and premature death, after promptly doing its first work of marring the image of God in his creature man. As witness the discolored teeth and skin, the tainted breath, the extorted stream of tobacconized saliva, filling the once rude spitting box, now being supplanted by the more elegant adjunct in the Idol's temple—porcelain spittoons. This symbol of the Idol claiming an equal place with, and not unfrequently crowding out of the household, the stand and the Bible of the Christian family altar, as if to proclaim by this unmistakable ensign, the inauguration amongst us of this new god of a new

* This new term is now too well understood to need an explanation.

Idolatry. Yes, verily! Tobacco has become an Idol God amongst us, of far more extensive, varied, and baleful influence, than any other of the many Idols of Christendom. For that which occupies the greater part of our time and attention, and which cannot be classed among the duties enjoined by God, but interferes with those He has enjoined, and cannot therefore be the subject of our prayers, is an Idol to all intents and purposes.

All our legitimate duties, to ourselves, to our families, and to society, are enjoined upon us by Divine authority, and are to be performed with diligence: vide Rom. 12, 11, "Not slothful in business, fervent in spirit, serving the Lord;" but even these duties must not be suffered to encroach upon such portion of our time and services as the Almighty claims to himself. Tobacco claims all the time of its votaries, and places its followers in awful conflict with ths Divine announcement: "Ye cannot serve God and mammon." Ye cannot "serve two masters." Math. 6, 24.

It is undeniable that Idols abound in Christendom. All the world acknowledges money is an Idol, found everywhere with innumerable worshippers—from the miser, the high priest of this order, through an infinite number of grades down to the proverbial "Jew." Fame is an Idol also, whose votaries may be counted by thousands—claiming for man-worship the right of prescription. Under this head may be ranged the whole class of politicians, who, with a few exceptions, give their time and talents to the Idol God. Add to these the myriads of devotees to frivolous Fashion, the first class of whose disciples do little else but make every act of life a sacrifice at her shrine.

These are all Idolaters, as justly offensive to the Immaculate God, as the Idolaters of Heathendom who worship stocks and stones. In the light of Gospel truth, our Idolaters of Money, Fame or Fashion, can claim no distinction, but the distinction of pre-eminent wickedness (by the neglect of better opportunities) over the Idolaters of Heathendom: but all these fall short in point of enormity of the Idolaters of Tobacco, as will be made apparent in the sequel. Idol worshippers defend their respective Idols by what they consider appropriate pleas. Money Idolators claim that they promote business and trade, while they only take for themselves their usurious extortions. The devotees of Fame identify themselves with the glory of the country, and glorify themselves under the banner inscribed by themselves, "Public Good:" while the class of Fashionables, quiet their consciences with the plea of encouraging the milliners, merchants, tailors, jewellers and artists, sustained by the disbursement of their superfluous wealth; but the Tobacco Idolaters, while they have necessarily to resort to a greater variety of pleas, have none more available in reason or truth. For example, they plead that they encourage agriculture, by giving employment to the land and labour engaged in producing the increase for the Idol's temple, which has been already shown to be the bane of good husbandry wherever its cultivation has prevailed. Besides, it cannot be received as defence of a nuisance that it provides its own sustentation, especially by the prostitution of Agriculture, (a virtuous and legitimate calling,) to the production of a deleterious drug. Some have the hardihood to claim their use of Tobacco as an "innocent indulgence;" impiously diverting their time, their talents and their money, from the channels of God's service in the promotion of His honor and glory,—the Christian benevolent objects for which He demands them all.

Tobacco has every attribute which constitutes an Idol, and that it is an Idol of most mischievous and fatal character, the following facts demonstrate. It demands for its support an unnatural morbid appetite, which like all other morbid appetites, "grows by what it feeds on." It mars the image of God in his creature man, by discolouring his teeth and skin, tainting his breath, and by a species of salivation, diverting the saliva from its appropriate function, the promotion of digestion, to filling the receptacles of the Idol God, thus undermining the health, and finally overthrowing the constitution of the physical man. Nevertheless this demon fiend is sought after and embraced, although giving promptly these premonitory signs of the ultimate destruction that awaits his votaries, showing it is a fascinating Idol: thus we here have both Idolatry and fascination.

But the peculiar and most formidable feature of this evil is its influence upon the intellectual powers. It inebriates in the most subtile and insidious manner, invading the whole physical fabric, affecting the

nerves and brain, and penetrating the very bones and marrow of the human system, (as has been proven by anatomical investigation,) and through that mysterious connexion of body and soul, reaches the moral and intellectual Being.

For the worship of other Idols, some degrading superstition, as in worshippers of Juggernaut; some sordid passion, as the miser's love of money; or the selfishness of the votaries of Fame, is required; but the Tobacco-Idol demands an unnatural, artificial, deforming bodily appetite, which through the properties of the poisonous aliment that feeds it, pervades the whole structure of the physical man; as is proved by signs manifest, already detailed; but, not stopping here, invades through the media of the stomach, nerves and brain, the empire of the mind: soothing it into a peculiar state of inebriation—inebriation of a different sort from that produced by Alcohol, but not less fatal in the end. It does not madden its victim at once into acts of violence and insanity, but soothes him into a state of dreamy indolence, good for air-castle building, but ending in making him "good for nothing." Herein we see how the Tobacco Idol is the most formidable of the Idols extant in the world, for it leads its deluded votaries to conclude that the speculations of a fuddled brain are really better than sober meditations. And so far does this delusion prevail with many, that they declare they can study and excogitate nothing so well, as in the Idol's temple, with his appropriate sacrifice in their mouths and noses, and his open receptacle at their feet, receiving the exacted tribute of their violated natures. Verily, there is nothing in the History of the Idolaters of the Earth, which looks more like fascination than this smoking, snuffing, chewing and spitting Idolatry, which first poisons the body, then deludes the mind, and finally makes of its victim, a hopeless driveling slave, to an unrelenting master.

But there are other counts in the indictment against Tobacco. It is the most fascinating of all the Idols of man—extending to the perversion of his moral sense and reasoning powers, so much so, as to make men defend the absurdity, that the sin of idleness is an innocent indulgence, and the dreamy castle-building of an intoxicated brain is improved and profitable meditation. Even ministers of the Gospel are known to defend themselves in this vice, upon the plea of innnocent indulgence." What fascination does it evince, to call such an appropriation of time and money, (as is required for the Idol's service,) an "innocent indulgence." If it be granted, as we hear it is claimed by some as an apology for this vice, that it is no obstruction, but a facility to thinking and intellectual labour, this would lead to the rather dangerous conclusion, that thinking can be better done in a state of inebriation than a state of sobriety—to say nothing about the money for cigars, &c., necessary to furnish out the Tobacco—"feast of reason and flow of soul." The results of such thinking could hardly be conceived quite an acceptable offering to the throne of grace. It would be difficult to conceive a stronger caricature of christian devotion, or a more daring mockery of God, than the picture of a human being upon his knees, and in the attitude of prayer, with a lighted cigar in his mouth, and altogether of a piece with Pope Pious IX. taking his snuff while performing high mass. See About's Roman Question, pa. Need we farther proof that the influence of this Idol amounts to fascination, when we see the powers of the human understanding so perverted as to make men,—sober-minded and discreet upon all other subjects,—resort to flimsy reasons and wildest theories to defend their devotedness to their Idol God.

A Reverend and sage professor is known amongst us, who argues that Tobacco is as clearly a necessary of life, to sustain and minister to the nervous system, as meat and bread to sustain the other portions of the body.

It is known to be a settled opinion with the medical faculty that nervous diseases have greatly multiplied, since the inauguration of the Tobacco era, and to be alarmingly increased with the increased use of Tobacco in every community.

Another of the peculiar effects of this arch Idol, is its thorough pervasion of the tissues of the body penetrating even the bones and marrow. No wonder then where this subtle poison has been long, habitually used by both sexes, the children are born with the appetite—smoke in infancy, and thus sensibly dwarf the race, as is notoriously the case with the West Indian and Mexican nations. Witness, the well established opinion, that one Anglo-Saxon in our late war with Mexico was equal to two Mex-

icans. And yet as a farther proof of the character of the Arch Fascinator, our Anglo-Saxons have returned more excessive users of Tobacco than before the Mexican war.

Again, the Tobacco Idol demands constantly increasing devotions from his worshippers, until they can neither live, nor move, nor enjoy their being without the appropriate tribute in their mouths or noses. The natural aversion to the sickening drug, obliges all (except the thoroughly tobacconized Mexican and West Indian races who are now born with the appetite) to begin with the moderate use; but all experience shows a steadily increasing desire for it, until it becomes like the dram, with the habitual toper, the first thing thought of in the morning, and without the usual intermission of the drinking usage until midday occupies every hour until bed time, and then is often taken to bed with chewers and snuffers: but smokers have to rise and soothe their sleepless nerves, by ministering the incense to the unrelenting Idol God in the dead hours of night. Here we have an example of the colorable pretext for the fascinated professor's *nervine theory*.

Again, there is a palpable reason why this Idolatry occupies its votaries more entirely than any other, because it lays hold of the body as well as the mind, and levies a money tax upon its spell bound victims, and amuses by diversifying the worship paid to this Idol; for it has become mixed up with Agriculture, Manufactures and Commerce, and of late, is becoming, in the form of Spittoons, a part of the Furniture of our Churches.

It places the worship of this Idol temple in direct antagonism with the word of God, which says, "ye cannot serve two masters." The other Idolaters of Christendom profess to have intervals of time to devote to the worship of God, but this approprtates all the time, and thus virtually claims partnership in christian duties, and to have discovered, that two things may be done at the same time, better than one thing at a time; reversing the experience of the world, by the practical assertion of an absurdity.

But let us consider what are the advantages claimed by the votaries of this Idol, to countervail the legion of evils known to be in its train. The answers given to the oft repeated question: what good does Tobacco do? are so various and unsatisfactory as only to serve as farther proof of its fascination. Some claim that it is "the sovereign est thing on earth, for the preservation of the teeth," while many are known to have lost all their teeth who use it freely, and all find it fatal to their gums.* But some laud it highly for facilitating the process of thinking, and wonderfully aiding intellectual labor, which involves another absurdity; that mental operations can be better performed in a state of inebriation than in a state of sobriety; to say nothing of the money necessary to provide the material for the incense for the Idol's altar.

Can any influence leading men to such ridiculous absurdities, be anything short of fascination? Let then this wide-spread evil influence, be called by a more becoming and appropriate name; let it be stampt "the fascinating Idolatry," for nothing less can account for its inroads upon and its perversion of the reason and common sense of mankind. Herein is seen, the peculiarly mischievous effects of this Idol over all others; while the time, and attention, and money it demands brings its votaries in direct violation of God's claims to the undivided homage of his creatures, and holds them accountable for the gold and the silver which "are mine, saith the Lord." The inebriated state of the intellect, which is the inevitable effect of the drug, and the essential characteristic of the sacrifice for the Idol's altar, renders the insulting claim of a simultaneous service to God and Tobacco doubly wicked in view of the divine mandate, "ye cannot serve two masters."

But the great and master stroke of this Idol, (which but farther proves its fascinating power,) is to have kept the pious part of its votaries, so long in profound ignorance of their inveiglement. This wonderful delusion is effected in great part by not calling things by right names: the "soothing effect"-----the "innocent indulgence"-----the "pleasant excitement" in common parlance,

* An able writer says, "the pernicious effects of Tobacco on the teeth are easily proved, although it has been pretended by some that Tobacco is a preservation of these useful organs---- the delusion grows out of the fact, that Tobacco is found sometimes to have the effect of benumbing the nerve of the aching teeth. The first and most prominent effect of Tobacco upon the teeth is that it softens them----in some instances they become literally worn to the gums, and in others decay," but as often as either, drop out whole in a sound state from the destruction of the gums

must be baptized with the name of inebriation; for it is inebriation to all intents and purposes, as has been already shown by signs infallible and known to all men, and here in truth and reason may be called by the plainer and better understood name of "Tobacco-drunkenness." Tobacco users may be startled at first, and protest against the boldness of bringing their "pleasant excitement;" their "innocent indulgence," into the same category and under an odious name, which is denounced as sin, but they cannot deny, that although Tobacco inebriation does not drive men to the acts of sudden madness which alcoholic drunkenness does, that its results are equally disastrous, by a slow but not less sure process in producing in the end, dyspepsia, shattered and tremulous nerves, delirium tremens, insanity and premature death. JOHN H. COCKE.

To be continued.

THE TWO GREAT EVILS OF VIRGINIA AND THEIR ONE COMMON REMEDY.

(CONTINUED FROM OCTOBER NUMBER.)

So far as to criminals. But a more general and comprehensive policy should be adopted in regard to the whole class of free negroes. It should be required of all who are of capacity or ability to labor, that they should possess, either in property, or, from the returns of daily labor, the means of living honestly, and of supporting their families, if having any. To furnish this evidence would be no hardship, or grievance, to the honest, industrious, and provident laborers, or to others who had acquired some property by honest means. But for all who could not offer such evidence, it should be inferred, and assumed as proved, that they were living in idleness, and upon the property of others. The penalty should be the hiring out of every such free negro, to the highest bidder, for the term of one year, and for him or her to be on the legal condition of a slave for that time of compulsory service. Also, other notorious or proved offenders, as those habitually idle, improvident, or intemperate, even though still possessing some property—or gross abusers and maltreaters of their wives and children, should undergo the like temporary servitude and obligation to labor. The money obtained from such hirings, after paying, for the town or county, the necessary costs of the system, should next be used, or so much as was required for this purpose, to furnish necessary supplies of provisions, &c., for the dependent and destitute family of any of the offenders so hired out. Any surplus receipts from the hires, and also all net receipts from the sales of free negroes, should go to the state treasury. Regulations sufficiently stringent should be enacted to enforce the legal claim of the employer to the service and labor of a free negro thus hired, for the full term of the engagement. If he absconded within the time, and did not escape to a northern state, (as would occur in many cases,) the time of service so lost should be made up by longer extension of the term.

When the terms of servitude of such temporary slaves had been completed, they would be remitted to their previous condition of freedom. But for every one, male and female, who afterwards was convicted of any violation of criminal law—or otherwise resumed his or her former habits of idleness or vice, and failed to earn an honest livelihood, such second condemnation should subject the offender to banishment from the territory of the State—and if found therein, after 30 days, to be sold to the highest bidder, into perpetual slavery.

Legal officers, or commissioners, should be appointed in every county and town, to make the required inquisitions, and to carry the whole system into full effect. Every care should be used to select just and humane, as well as discreet and firm men for this duty. I admit that there would be great difficulty in having these important services well performed. But the general and more usual erring of the commissioners would be in using too much lenity, rather than causing the too severe execution of the law.

The worthy free negroes, such as are useful and also self-supporting members of the community, would suffer nothing from the most full and strict enforcement of this system. It would indeed be required of them to show that they had means for honest support, and the reputation of good conduct. That could be easily done—and when done, and known, the social position of all who had passed through that ordeal, and continued thereafter to maintain the same good

character, would be greatly elevated. Now, a worthy free-negro is known as worthy, and respected accordingly, by his near neighbors only. To all other persons, and to strangers, he is merely a free negro—a term which always conveys the meaning of a general character of meanness, degradation and worthlessness. The line of distinction proposed to be drawn between the worthy and the unworthy, would serve as a certificate of merit, and an unquestionable claim to respect, which would be the greatest benefit that can be bestowed on any of this class. But this more elevated position would be retained only by continued good conduct, and would be enjoyed by the children of worthy parents only upon the same condition.

But there might be many free-negroes, either adults of good conduct, or children too young to be offenders, who would be incapable of self-support, and therefore would come under the operation of the measures proposed. Among such cases (as well as many of different character,) would be many women having young children dependent for support on the mother alone, and she incapable of supporting them. The system here proposed would generally also subject these to perpetual slavery—because their removal from the state would be either impossible, or would be rejected by the persons concerned, and old enough to choose. In most of such cases, the mothers would greatly prefer enslavement for herself and her children, whom she was unable to support, to exile. And their enslavement would not only be the most politic, but, in every aspect, the most humane procedure that could be adopted in such cases. In these, and all other cases of enslavement at the choice of a free negro, it should be effected under the existing general law—which authorizes such voluntary enslavement to a master chosen by the designed slave, and the purchase money to be one-half of the estimated value, and which is to be paid into the public treasury. All compulsory sales, (not of adults choosing enslavement, or the young children of mothers so choosing for them,) to be at public auction, and to the highest bidder.

If this system of policy were adopted, it would serve, within a year or two, to place in profitable service, as hirelings or as slaves, or would otherwise enforce the emigration of every known idle or dissolute adult free negro in Virginia. Every future violator of the criminal laws, of that class, would be enslaved—and most of these would thus be made productive laborers, and useful members of the community. The worthy members of the class, as before stated, would not only suffer no damage from the operation of the new policy, but would be benefitted by being thereby elevated in position and reputation. But good habits and morals are rare in that class, and still more rarely are they transmitted to children and succeeding generations. And when the children of worthy parents fell into vicious courses, they would meet the same fate with other unworthy members of the class. From this and other causes, even the best and selected portion of the whole class would decrease in numbers continually, until the time will come when very few, if any, free negroes will remain within the boundaries of Virginia.

From the commencement of the operation of this system of policy, there would be full warning, and ample time and opportunity, for any free negroes to leave the state, or, (if so preferring) voluntarily to enslave themselves, and choose their masters. It may be expected that, within a few months, great numbers will resort to one or the other of these different courses—and every case of either will be a relief or a gain to the community. Three years operation of the system will serve to remove, or otherwise to enslave, by choice or coercion, three-fourths of all the present number of free negroes, supposed to be 60,000. After that, any remaining evils of this kind will be reduced more and more, with every succeeding generation, until they will entirely disappear. Every person who deems negro slavery a benefit to Virginia, and free negroes an evil, can appreciate the importance and value of the change. It will be a great gain, even in pecuniary value, to get rid, by their banishment, or their fleeing to the north, of a portion of the present free negroes, which (for obvious reasons,) would include all the worst of the class. It will be another great gain to the public weal, to have the much larger portion of all who remained, converted to slaves, and made either present or prospective useful laborers. This change would be profitable to both private and public interests, even if the new owners bought the new slaves at full price and value, and paid for them to some other interest than the state. But much more

will be the profits and benefits, when but half-price will be paid in most cases, and the whole purchase-money contributed to the treasury of the commonwealth. Further—the intrinsic value of all of our present slaves will be much enhanced, by the greatest cause of moral injury to them, and of discontent with their condition, being removed or extinguished:

THE REMEDY FOR NORTHERN ANTI-SLAVERY ACTION, SO FAR AS OPERATING UPON NEGRO SLAVERY IN THE SOUTH.

So far I have considered the direct benefits only of the policy proposed, in removing the nuisance of a free negro population. But there would be incidental effects and consequences of that policy, necessarily operating upon and effectively controlling the hostile action of our brethren of the slave-stealing states, which would produce to the south security and benefit of far more importance than all the direct advantages of merely extinguishing the original cause of annoyance. The voluntary emigrants, to avoid the expected future stringency of this new policy, and also the later fugitives from the bondage then newly established, would all flee to the northern states—most of which, and all of those near our borders, and on the Atlantic coast, have invited and endeavored to seduce our slaves to flee to them for escape and refuge. The northern states, either by legislation or popular action, have completely annulled the portions of the federal constitution, and law, which guarantied the restoration to their owners, of fugitive slaves. The states of Ohio, Pennsylvania, New York, New Jersey, and New England, all have been willing to submit to the injury of receiving this addition to their previous vicious free-negro population, for the gratification of thus assailing, and endangering the existence of slavery in the southern states. These illegal, and malignant acts, as well as many others still more iniquitous, were perpetrated but as means for the great end desired, of destroying the institution of negro slavery in the southern states. If this end could be attained, one consequence would be to leave in the southern states all their present slaves in the new condition of worthless free negroes. It has been throughout maintained by the northern anti-slavery fanatics, that this change would be beneficial to the south—and to sustain their argument and palpably false assumption, and to preserve the appearance of sincerity, they have been compelled to tolerate the continued influx of negroes (free and fugitive slaves,) into the northern states. Well! Should the new policy proposed be put in operation by Virginia, and the new classes of free negroes and fugitive slaves shall, in consequence, be hastening in thousands to the north, these states, if consistent with their past declarations, must still continue to receive, and to afford refuge and homes for, all these numerous immigrants—not only as heretofore declared useful additions to their population, but also on the score of what they have asserted as being the claims of humanity. If so consenting to receive the immigrants, these states will be thereby justly repaid in evil to themselves, for that which they have inflicted, and still more sought to inflict on us—which result, even in that aspect of retribution, is greatly to be desired. It would be well on our part to forward this movement, even by paying for the transportation of all emigrating free negroes to and across the Ohio river, or the Pennsylvania line—or, by ship loads, to be landed in New York and Massachusetts, or other states on the seaboard, also especially distinguished for active hostility and illegal assaults on the rights of southern slave-owners. Every free negro, or fugitive slave, landed in Boston, would, under the laws of Massachusetts, forthwith become a citizen of that state. It would be especially distasteful and repugnant to her to repel the entrance of persons who have been admitted and claimed to be American citizens in the fullest sense. Nevertheless, Massachusetts, and all the other northern states would be compelled to "eat their words," by passing laws to forbid the ingress of free negroes from the south, soon after we shall adopt the policy of expelling them from our territory, and thus operating to supply thousands of new black citizens to the northern states. But neither the laws nor the people of the north can possibly distinguish between the different kinds of negro immigrants—whether former or later slaves, or free—voluntary exiles, or fugitives from justice, or the prospective penalties of the new law. All, of course, for their better reception, would assume the character of fugitive slaves. Any prohibitory law of the northern states, to be effectual, would be obli-

ged to exclude negroes of every description. And then, these prohibitory laws, necessarily made general in operation, and serving to shut out all fugitive and immigrant negroes, will be as strongly sustained by the popular feeling of the north, as that feeling has heretofore sustained the state laws, or policy, to invite the escape and flight of, and afford safe sanctuary to all fugitive slaves. Thus, the certain and inevitable result, of even Virginia alone adopting the policy of banishing free negroes, will be that every northern state will be compelled to legislate to exclude free negroes, (of which they will expect nearly the whole 60,000 to move northward,) and to do that, they cannot avoid the strict exclusion of every negro from the south, including all fugitive slaves. Our slaves will thus be effectually secured in our possession, by the zealous and earnest legal and police action of each and all of the northern states, heretofore earnestly engaged in stealing them. The guaranty thus afforded to us will be far more ample than the most stringent fugitive slave law that the Federal Government can enact—even if such law were as much and universally respected by the northern states, as the existing law has been denounced, opposed and trampled upon. Either Virginia or Maryland, each of which, more than any other state, has suffered by the slave-stealing of the north, even if acting alone in adopting this policy, may in this manner, completely demolish and extinguish the abolition action of the north upon the south, and turn the strenuous efforts of the north to preventing our slaves from entering their borders, instead of using, as now, every effort to invite them, and to aid their absconding, and protecting them from being recaptured. If this were the only end of the proposed policy in view, it would be better worth approval and adoption for that end alone, than for all the direct and very important benefits to be secured in the entire relief from the presence of free negroes. It is as certain as the result of any untried political measure can be, that the proposed policy and action of one state only, having as many free negroes as Virginia, can completely neutralize the fierce and incendiary abolition zeal, and quell the power for action of the northern states, and make them all our faithful and effective police force, and frontier watchmen, acting (though sorely against their will,) to keep our slaves from escaping, and to secure and strengthen the institution of negro slavery in the south. Pennsylvania, where a Maryland slave-owner was openly murdered, because legally pursuing his fugitive slave—(and his murderers were screened from punishment by the culpable inaction of the Governor as well as of other subordinate authorities of Pennsylvania, and the as culpable wrong action of the highest federal authorities)—and Ohio, still more infamous for systematic and frequent violations of our rights—near whose territory no Virginian can retain slaves, except at risks that take away half of their proper value—these two bordering states, would so diligently guard their most accessible territory from the expected entrance of our numerous free negroes, that no absconding slave could possibly enter, or escape in that direction, from Virginia. Property in slaves would be rendered more secure in the countries bordering on Pennsylvania and Ohio, than now in the interior, or on the upper tide waters of Virginia. And these border counties, now so deficient in labor; and suffering so much loss because of that depreciation, would soon have all of their now few slaves, by the security of their possession, raised to double their present intrinsic value—and safe-guards would be afforded for the landholders to obtain, by purchase, as many more slaves as are needed to cultivate these rich lands—which have long been of less than half their proper agricultural value, not (as alleged by anti-slavery reasoners, both abroad and at home,) because they used slave-labor, but because they could not hold it safely, and therefore could not employ half as many slaves as were needed.

The northern states, under the influence of their abolition leaders, who have so long had complete control in all matters connected with questions of slavery, could not immediately disavow their former professions, and reverse their established previous course of policy. Some year or two might be expected to elapse before any of the now slave-stealing states would be brought to submit to the new necessity, and to forbid the entrance of all negroes. During that time of doubt, or hesitation and delay, our free negroes, fugitives from the expected pressure of the new policy, would be crowding in thousands to the northern states. These early fugitives will include all the individuals of that class that it is most desirable to be rid of—the most daring, desperate, and

vicious—and especially of the mulattoes, of intellect as nearly related to the white race as in blood. All the worst of the class will be thus conferred on the northern states, before they will have done anything to p event the receiving of them. The longer that these states shall delay the enactment of preventive laws, the more will they suffer from the accession of this worst portion of the free negro population. And when they can no longer avoid the enactment of laws to exclude our negroes, their new policy will do more to defend and secure our property in slaves, than every thing that has been done to defend ourselves in this respect, since the advent of Exeter Hall philanthropy, and northern abolition fanaticism. It is true that this Exeter Hall and Boston fanaticism would be deprived of none of its malignity or its venom at home. It would there not the less loudly still continue to denounce negro slavery, and to curse and calumniate slave-holders. But beyond the borders of their own anti-slavery territory, their opinions would be powerless, because their hostile action, beyond, would be at an end.

It may be objected to this supposed effect on the north of the policy here proposed for Virginia, that Delaware (which is practically a free State) and Indiana have already prohibited the immigration of free negroes—and perhaps some others of the more remote western states—that Missouri and Arkansas have ordered the expulsion of their free negro inhabitants—and that no such effects have been produced as are here predicted for the latter policy if adopted by Virginia. There were but 3226 free negroes (in 1850) in both of the states that have expelled them—too few to produce any sensible effect upon the north. The fugitive slaves of a single year, from Maryland, Virginia and Kentucky, would amount to more than all the free negroes of these two states.* Delaware presents no inducement to fugitive slaves, or to free negroes, and can well be dispensed with as a place of settlement. Indiana is out of their usual route, and its excluding policy has therefore scarcely any practical effect on other states. But let Virginia act, as proposed, and it will at once be inferred by the northern states, (though very erroneously,) that all of her 60,000 free negroes may be expected to rush to Ohio and to the northern states, the usually preferred destination of all our fugitive slaves, and also of the heretofore few emigrating free negroes.

It may also be objected, on this head, that the system of measures and policy here proposed for Virginia, if adopted, would be mainly carried out, and completed, within a few years—and even if the northern states had previously been so constrained as to legislate to shut out the entrance of all of our emigrating or fugitive negroes, yet the pressure would be but temporary, and, with its cessation, the north would return to its previous policy of inviting and aiding the escape of slaves from the south. This might be so, if the action proposed were to end with Virginia. But, if the policy shall operate well here, it is certain that the example will be followed, either soon or late, and necessarily, by all of the other slave-holding states. Maryland and Kentucky may be some years later than Virginia, before concurring, and beginning to act. North Carolina and Tennessee will be still later. And the more southern states which feel less the pressure and evils of their less numerous free negro population, may be much slower in applying the complete remedy of removal. Altogether, it is scarcely to be expected that all the slave-holding states will follow this example before 15 or 20 years shall have passed. During all that time of partial and successive acts of banishment, by different states, the repression of the outside abolition action by the northern states will be compelled to continue. After that length of truce, if it shall again be necessary, the south can find other effectual means to defend its rights and its slaves.

OBJECTIONS TO THE GENERAL POLICY STATED AND ANSWERED.

I will now proceed to consider the most prominent objections to the policy proposed, which would probably be urged by a considerable number of citizens of Virginia, who deem the institution of negro slavery, as here established, to be rightful and expedi-

* Louisiana has also passed a law, which has but very recently (on Sept. 1st, 1859,) gone into operation, compelling the banishment of all immigrant free negroes, or such only as were not born in the State of Louisiana. All the individuals of this class, (not native born,) in 1850, amounted only to 2260, out of 17,462, the whole number of free negro population. This very partial and limited measure of expulsion, as in regard to all of the few free negroes of Missouri and Arkansas, can have had no important effect on northern interests or action.

ent, and beneficial to both masters and slaves, and to the whole community. It is not my intention to defend the policy against the conflicting opinions of either European or Northern negrophilists, of the Exeter Hall school of religion, morality, and political economy—or the very small minority among ourselves who may hold like opinions. The objections to be noticed are such as have been, or may be, urged by those who approve, and wish to maintain in security, the institution of negro slavery.

Objection 1*st*. If the banishment of the free negroes, from Virginia, was enacted, there would be no asylum left for them. Every foreign country would be forbidden to them, on account of the expense of removal, in addition to other great difficulties, of language, religion, and especially of want of means for support in a distant or strange land. All the slave-holding states are properly shut against them—one or more of the non-slave-holding states have enacted like laws excluding them—and all others will do the like, as soon as Virginia shall adopt this policy. Where then can the banished free negroes find refuge?

Answer. This, as a final consequence, has already been admitted as inevitable—and also claimed as the most valuable and important operation of the plan. But it will not and cannot occur so soon as has been supposed. Sufficient time and opportunity would be afforded for all to emigrate to the north, who desired it, and should very early resolve to do so. To all who postponed their departure for a year or two, there might be increased difficulties—and in a little more time, perhaps every northern state would be closed against the entrance of free negroes. All those who then remained in Virginia, would be such as had chosen to remain, and mostly in the condition of slavery. It has already been shown, and the question argued at sufficient length, that all these several occurrences—the early delay, and the final consummation of the northern laws of exclusion—the early emigration from our territory of one (the worst) portion of our free negroes, and the remaining and voluntary enslavement of another portion—will be different, but all highly beneficial incidents of the proposed policy.

Objection 2*d*. The removal of the free negroes would be both an economical and political loss to the commonwealth. Admitting the general indolent and vicious habits of this class, still their labor is of importance to the property-holders, and to general interests, in the localities where free negroes are most numerous. The removal of all, or a large proportion of these, would be a loss to agriculture. In the towns, the loss would be still greater. For there, the free negroes, bad as they are, serve best in many menial and low stations. If these were removed, their places could be supplied only from two sources, both of which substitutions are to be deprecated as injurious to public and private interests. One would be by increasing the already large employment of slaves hired from the country, (induced by the high rates of hire,) which service in towns, and as hirelings, operates soon to corrupt the morals and damage the worth of the slaves so hired, and also to abstract so much more labor from agriculture, for which it is already very deficient. The other source would be the employment of foreign laborers and servants, and new immigrants, which will constitute a still worse nuisance than even free negroes, and a new element of evil and danger to our interests in negro slavery. Further—the removal of the free negroes from the state would, to that extent, reduce the amount of the representative and political power of Virginia in the Federal Government and Union; and even if they remained as slaves, though the political loss would be less, it still would be considerable, in as much as five slaves would count in representation no more than three free negroes. Whether by banishment, or conversion to slaves, this loss upon 60,000 free negroes would be of important detriment to the political weight and interests of Virginia.

Answer. In the first place, all of the most industrious, useful, and worthy of this whole class would be left free as they now are, and even exalted in station and character, and thereby improved in condition. As to the incurably lazy, drunken, or vicious, even if all such were banished, their loss would be an economical gain to the country. To maintain the contrary, would be equivalent to supposing that the many thousands of petty thieves, beggars, and gypseys of England, are elements of wealth and strength, and that the country would lose by their banishment, or entire extinction. In regard to the less worthless, or partially industrious portion of free negroes, now acting as laborers, and to be removed by this policy, it is

admitted that some inconvenience might be so produced at first. But no wide-spread and long-existing evil ever can be abated, without some early and grave inconveniences being felt. Precisely where the free negroes (in country places,) are most numerous, and therefore have been forced by necessity to resort more generally to useful labor, as hirelings, there will operate the strongest inducements for such individuals to enslave themselves under the proposed system, rather than break their social and also business relations (with employers,) and to incur new and untried risks and dangers in exile, to preserve their present very poor privilege of freedom. There can be scarcely a doubt that in such situations, the larger number will prefer to remain as slaves, rather than to leave the state. This would operate to lessen the supposed loss of hireling labor. Further, the new and complete security afforded to property in slaves, would cause many of those now sold abroad, to be retained, and others to be bought elsewhere, and removed to all the border counties of Virginia, where they are now without safeguard or protection—and thus, as well as by the increased general security and value of slave property, every anticipated loss in population, or of representative weight, in Virginia, will be speedily replaced and doubled in amount.

Of another part of the last stated objection, I admit the force. Free negroes, with all their defects, are useful in the towns as labourers and servants—or more so than their substitutes, whether hireling country slaves, or white foreigners. It would be expedient, in any event, to alter our present legal policy, (which confines free negroes to their native town or county, but which prohibition is rarely enforced,) so as to permit them freely to move to the towns, where they are most inclined to go, and to remain, and are most needed. If the new policy here proposed were adopted, the greatest possible influx of native free negroes to the towns could do no harm, as the worthless and vicious there, as elsewhere, would soon be banished or enslaved. Thus the towns would obtain a new and large supply of service and labor, which is greatly needed, from the better and more industrious of the class, and be relieved from the more worthless. Neither would a continued increase, or even the maintenance of the numbers of this population, by procreation, be expected. For reasons, which have been previously stated, and need not be repeated, the free negro population of considerable towns must be always decreasing, unless accessions are received from some outside source of new supplies.

Objection 3rd. The inhumanity of condemning the free negroes who are incapable of self-support, and especially women with their young children, to perpetual slavery.

Answer. In regard to the general question of enslaving any negro, previously free, the justification is found in the general and unquestionable expediency of the measure. The negro is only fitted, and doubtless was designed, to be directed and ruled as a slave—and his best and most humane control, and profitable service and use, is as the slave of a white master. Lunatics and idiots are subjected to strict control, because it is not less required for their own safety and benefit, than for the public good. All children, until reaching legal age as adults, are subject to the control of their parents, or, in other words, are strictly and fully the slaves of their parents. So also are indentured apprentices to their masters —and even woman to man, in a general sense—and more strictly and particularly, wives (however loved, cherished and indulged, still) are slaves to their husbands. If their wishes were consulted, all these subjected classes, except most of women and wives, would prefer to be free. Not only the insane and the foolish, but most children of 12 years of age, would prefer to be controlled only by their own discretion and inclinations. But the ruling authorities, possessing and exercising power, at no time have consulted any of these subjects of control, to obtain their consent. They have rightly and properly, as well as despotically, kept in slavery all these classes, amounting to three-fourths of the people of the civilized world. And so it is best for the negro race to be enslaved. More expecially is it so for the destitute and helpless, who, if left entirely to themselves, would perish miserably before becoming capable of earning a support.

I have not designed to discuss the instituting of slavery as a question of natural

law.* Without appealing to the general sanctions of natural law, I will meet the charge of injustice and inhumanity in the proposed enslavement of negroes incapable of self-support, in another mode of argument, and by the application of like facts to different cases.

Let us suppose that precisely such a case of want, destitution of means, and physical incapacity for enough exertion of labor to provide food and support, were to occur, as such cases do occur in thousands of instances, every year, in England, and in Massachusetts—of a widow or husbandless wife, with more young children than her means or labor can support. What would be, and what is the regular course of procedure in Puritanical New England, or in Pharisaical Old England—of which all the pious and philanthropic loudly offer their thanks to God, that they are untainted by the sin of negro slavery? I assert and maintain, that in all such cases, in both these countries, and under the general operation of their poor laws, all such helpless and destitute mothers, and their children, are consigned to pauper slavery—which certainly differs from negro slavery in several particulars, but in every one to the disadvantage of the former, as being more hard to bear, more cruel, and injurious to all parties, and also growing more extensive in operation, and worse and worse, with the progress of time. One of these differences is that these pauper slaves are in England wholly, and in Massachusetts principally, of the superior race. Another difference is that negro slavery, in its comforts, provision, and protection, as well as its required services, is perpetual on all the individual subjects and their posterity—and so much the better for the value of the service, and the well-being and contentment of the slaves. Pauper slavery is not the less continuing unto death, to the aged, or the incurably infirm. To all such, the bondage is literally perpetual, while the character of perpetuity does not, as in negro slavery, operate to increase kindness or comforts. Another difference, and a certainly occurring incident of every such case of pauper slavery, is, that the children are separated from their mother, and from each other, without compunction, and are put out to labor or service to whomsoever will relieve the parish of the whole, or even the smallest portion of the expense of support for each child. And these children are continued to be held by a succession of masters, as slaves in every respect, but that of having kind and interested care bestowed on them, until they reach 21 years of age. There will, indeed, then occur to each, a time of (so-called) freedom—but, in truth, of a different kind of slavery only, (that of labor to capital, or wages-slavery,) until the individual is again infirm, or incumbered with too large a family to be supported—when recommences the operation of pauper slavery. The greater number of English day-laborers, if they did not begin their lives in the poor-house, expect to close them there, in pauper slavery, severe privation, and misery. The cases, as yet, are fewer in New England—but the suffering and pressure of slavery, in each occurring case, is not less. For these pauper slaves, there can be no operative interest felt by their directors or employers, except that of obtaining from them as much labor as possible, at the least expense of maintenance. The changes and intermissions of this slavery only make its inflictions the more severely felt. The perpetuity of negro slavery makes it the interest of every owner to be careful of his slaves' health and comforts, and produces attachment and kind feelings of regard in both parties. If the young victims of pauper slavery are individually emancipated after a time, and probably only for a time, the system of this kind of slavery is not the less permanent, and increasing in oppression, on the whole class of the infirm and destitute, taken altogether. For every individual who is discharged and released from this grievous bondage, there is another new subject, or more than one, placed under it. Thus, however the individuals may be changed, the full number of pauper slaves is always kept up, and the measure of their suffering is never diminished, and cannot be diminished.

But, it may be further objected, that the mothers and young children, subjected to pauper slavery, were not reduced to a destitute condition by the direct action of the government, as would be the case of negro wives and mothers left destitute by the act

* This interesting question has been ably discussed in the Address of Professor J. P. Holcombe to the Virginia State Agricultural Society, (1858,) on "The Right of the State to institute Slavery," &c.

of government proposed, in banishing or enslaving the husband or father. This cause of the loss of support would not exist, nor the consequences, unless the husband or father had before supported his family by dishonest means. If he had been, not dishonest, but only idle, or drunken, and worthless, he was more likely to have been a burden on an industrious wife, than an aid to her support. But however the destitution of a family may have been brought about, there can be but one of three means of treatment or remedy: 1st. to leave them to starve, or to be saved therefrom by begging, and the precarious aid of voluntary private benevolence; 2nd. to support them by the poor-law system; or 3rd., as proposed here for destitute negroes, to subject them to perpetual slavery—which last is, for the community, the best by far, and for themselves, the most merciful and beneficial course.

But in regard to England, the destitution of numerous mothers and their children, is produced directly and immediately by the acts of government, and that act inflicted illegally, unjustly, and most cruelly. In time of war, every married as well as other sailor is liable to be impressed to serve in the navy, without limit of time or place. This impressment is most generally made on the crews of merchant ships, as they reach their ports in England, and when the sailors were about to meet their families after a long absence. When thus torn away into naval slavery, in addition to every other infliction of mental and physical suffering from this blow, the wife and young children are deprived of their means for maintenance, previously supplied by the husband and father, and must become pauper slaves. How many thousands of such cases have been produced in slavery-hating England, can not be estimated. But the unquestionably very large numbers, and the extreme misery as well as injustice and cruelty of the cases—each one of which has caused more increase of suffering than would 100 cases of free negro enslavement—have had no effect in exciting to action either the philanthropy or the justice of England, to prevent these direct, numerous, and customary causes of slavery of the worst kinds, and the most productive of unhappiness to the victims.

My argument is ended. If the treatment of the subject has been more extended than was required for full and clear exposition and reasoning, I trust that the error may be pardoned on account of the novelty of some of the views presented, and the importance of all. The consideration and disposal of the subject is now submitted, and earnestly recommended, to the care, wisdom, and patriotism of our legislators, who have full authority and power to act in the case. Their choice, or their adoption or neglect of the proper policy and action, will have most important results, for weal or for wo, on the great interests of Virginia, and of all the other slave-holding states of this confederacy.

CALX.

September 17th, 1859.

For the Southern Planter.

Salt a Preventive of the Firing of Tobacco.

MR. EDITOR—As the firing of Tobacco, (as it is called,) is the greatest malady to which the crop is subject, so the discovery of a preventive of it would be of the greatest importance to Tobacco planters. Doctor Spragins, of our county, some twelve or eighteen months ago, wrote an article, published in your Journal, in which he attempted to show, both from reasoning and from facts, that salt was a preventive. As I know nothing of Chemistry, of his reasoning I could not judge. His facts, though, immediately struck my attention, for I had, for several years before his publication, used salt in a mixture of concentrated manures I had applied to my Tobacco crops, and they had escaped firing, except in one instance, and that in a very small degree. In this instance the crop sold at a very high price, showing it to be very little injured.

In support of his opinion I proceed to state facts which have occurred within my knowledge the present year, it being a year in which tobacco has fired very much in every section of the country I have heard from. As to my own crop, I used, as I have already observed, salt (ground allum) in the mixture of manures applied to it. The mixture was applied to the whole crop of 60 or 70 acres, except a piece of 7 or 8 acres, on which Peruvian Guano alone was used, and two beds of land lying side by side, on one of which was applied Peruvian Guano alone, and on the other American alone, to test their comparative value. Now, though the crop was on various soils, red and grey, high land and low grounds, it

fired no where except on the piece of 7 or 8 acres, and on the two beds, the tobacco all around the two beds escaping.

These facts, in relation to my own crop, induced me to make inquiries of other neighbouring crops, and I have ascertained that wherever salt was used, they have not fired, except in one instance, and that in a very small degree on a small part of the crop, and that generally where it has not been used they have fired. I could mention several instances where one crop has escaped, and an adjoining one has fired, as it had been applied or not.

Salt then, it would seem, is a preventive of the disease in Tobacco called firing, and I should certainly so conclude did I not know that it requires a number and a series of experiments to confirm a theory. The facts I have stated, coupled with those stated by Doctor Spragins some time ago, I think are sufficient to induce planters, who have not used it heretofore, to try it hereafter, and therefore they are communicated.

W. M. WATKINS.

October 6th, 1859.

From the Mark Lane Express.

English Feeding.

If the Englishman of the present day is better fed than his ancestors, or than the native of any other country, the same improvement is also extended to his domestic stock; for the wisdom and economy of good nutritious food for laying on fat and flesh are now thoroughly understood. Our cattle and horse kind are not left as in some countries, to collect a scanty provender from rank grasses in steppes, savannahs, or prairies; to munch upon the sprouts or twigs of trees, or to luxuriate upon rank sea-weed or fish upon the sea-coast. The best pastures of natural and artificial grasses are prepared for their special behoof, hay is laid up for their winter store, green crops and pulse are cultivated to a large extent, and the choicest oleaginous food, meals, and various delicacies to gladden their palates, are imported to a large extent, while the best of shelter is also provided for them. We boil and steam their vegetables and roots, and treat them as kindly as our own children. Chemistry is continually brought to bear upon the analysis of the substances to be tried as cattle-food, and those only selected for general adoption which are found to be most nutritious and fattening; while various experimentalists strive, from time to time, to make food-compounds for extensive use, which shall combine fattening qualities with portability. As no other country pays so much attention to the improvement of breeding and fattening cattle for the market, so no country has experimented more on the nature and property of cattle-food. Every useful substance is pressed into requisition, from the chaff or straw of the barn to the more expensive meals or prepared food.

When we look at the numbers and value of our cattle and sheep, the importance of making a due provision for their sustenance becomes evident. It is for this purpose chiefly that the large quantity of 17,000,000 to 20,000,000 tons of turnips and mangel-wurzel are annually grown in the kingdom for feeding our cattle and sheep in the winter. In Ireland 5,000,000 tons are annually grown; in Scotland 6,500,000 tons; and in England fully as much must be grown, although we have no specific returns. When we consider that a beast will eat a hundred weight, and a sheep a quarter of a hundred weight per day, a due provision of this esculent root is certainly very necessary.

But a number of other miscellaneous substances are pressed into service from cheapness, or as being readily at hand. Brewer's grains and malt cummings are readily purchased by some for feeding. Rye-meal, barley-meal, sago flour, Indian corn-meal, rice-meal, anything which can be obtained cheaply and in quantity, comes in useful for fattening calves, &c. Our American brethren have been growing tomatoes to feed their milch cows on; but we should suppose the crop would scarcely be a remunerative one, or indeed in any way so beneficial as our ordinary kinds of food. The sorgho stems would be far preferable, from their saccharine and fattening properties.

But as an element in the meat-manufacture, whether in the building up and development of the young and growing animal, the maintaining of the produce of the dairy-cow, or the final preparation of the animal for the butcher, linseed is of the highest importance to the agriculturist. Linseed cakes have been shown by experiment to be far superior to Indian-corn, pulse, or any description of food, for the production of fat. English oil-cakes are of course preferable, from being fresher, and containing more oil; but the consumption of foreign oil cake, as

we have shown on former occasions, is largely extending, and bids fair still further to increase—our imports now are about 100,000 tons, nearly half coming from the United States, and consisting chiefly of cotton-seed cake. Although all the cake imported is not applied to feeding purposes, some of the rape-cake being used for manure, still the bulk is for stock.

In Ohio and the other leading American States, a large quantity of Indian-corn stalks are used for fodder, and the cob is ground up for feeding; while in the West Indies the expressed stalks of the sugar-cane, and the tops which have been cut off, are highly relished by cattle.

An article of cattle-food that has come largely into use of late years is the legume, known as "locust" beans, being the food of the carob tree (*Ceratonia seliqua*), of which considerable quantities are now imported as cattle-food. They are grown and consumed to a large extent in Spain, Portugal, Crete, and the greater part of Southern Europe. In Sicily the amount gathered reaches 11,000 or 12,000 tons a year. They have long been used as food for cattle in Spain, and other quarters, and are even relished by the inhabitants, when fresh and ripe, from the sweet pulp they contain. About 3,000 tons are grown in Portugal, and 2,000 tons are shipped annually from Crete. The mean of three analyses gives 65 per cent. of sugar and gum, and about 25 per cent of nutritious vegetable matter. They are imported largely at Taganrog, and there is no doubt that their value as a feeding substance being appreciated, a very greatly increased supply could be obtained from several quarters in the Mediterranean.

How much of the science of farming and of all other arts depends upon the saving of material! upon imitating that beautiful law which chemistry teaches us, that in nature nothing is lost! This was well demonstrated by Mr. Simmons in his recent lecture on the utilization of waste substances. We may add another instance pertinent to the subject under notice. In Edinburgh there is a distillery of great extent, where economy of heat and material is especially carried out. The "dreg," a waste product, was produced in such quantities that all the cows in Edinburgh could not consume it, and there remained an enormous surplus which had to be discharged into the water of Leith. This nuisance the modern Athenians protested against as an outrage on their sweet-smelling city. Something had to be done. Seed-cake had been used by farmers, and it occurred to the proprietors that the "dreg," as well as oil refuse, might be pressed into a cake. Machinery was accordingly fitted up, dreg cake was prepared, and now the proprietors realize £60 a week from the waste product, which, although so much despised in Edinburgh, is now sent to the farmers in all parts of Scotland, to be returned in the form of fat cattle and butter and cheese.

A French veterinary surgeon, of the Imperial Guard, has called the attention of the agricultural world to a biscuit-fodder for cattle in times of scarcity occasioned by drought. It is composed of the usual provender—hay, grain and pulse. To these may be added many others—such as the refuse of the wine-press, the pulp of various roots, the stalks of millet and maize, the leaves of the vine, the beet-root and of certain trees, and the sweepings of the barn and hay-loft, which contain a vast quantity of nutricious matter in the flowers and seeds of hay, which are generally thrown away. All these ingredients are bruised and chopped together; a mucilage of barley-flour is added, with a little salt; and the mixture is then left to itself for a few hours until a slight fermentation has set in, when it is put into square moulds, made into cakes, and left to dry in a current of warm air.

Gold and Silver.

The immense specie movement of the present year attracts increasing attention. The imports and exports of these metals in France, Great Britain and the United States for the first six months of the present year were as follows:

	U. States.	France	Gt. Britain.
Imports	$3,101,000	$119,548,101	$96,596,773
Exports	36,901,702	77,440,101	94,763,475
Excess imports		$42,108,000	$1,833,298

The United States, from Boston and New York, shipped nearly $37,000,000 in the first six months of the present year. That, however, which was shipped in the last half of July did not appear in the English returns for the first six months, since it had not arrived. The general result shows that in the aggregate France and England absorb the metals largely, while the United States are undergoing rapid depletion. The exports in the last two months have been

over $20,000,000. The English returns gives $20,779,926 received from the United States in the first six months of the present year, which leaves $16,901,702 as the amount sent hence to the Continent and elsewhere. If we divide the silver from the gold, we find the movement to have been as follows:

	Exports.	Imports.
Silver.		
France,	$51,691,201	$26.179,860
Great Britain,	48,718,556	39,821,018
Gold.		
France,	25,763,321	93,412,101
Great Britain,	46,044,919	56,775,755

Of the English imports of silver $19,-809,162 was from France, which would leave $82,000,000 of silver exported by France and England in 6 months. Of that amount $42,748,371 went from England to Asia. The North of Europe and Central America furnished England with the balance of her import. Asia absorbs a quantity of silver apparently equal to the whole production of California and Australia in gold, while France in the last six months has absorbed $67,700,000 worth of gold—more than equal to the whole production of California and Australia. In the same six months the United States have lost $20,000,000 more than the California product. Taking the two metals together, France is increasing her currency at the rate of $72,000,000 a year. and the United States is losing at the rate of $50,000,000 per annum. This is a strange state of affairs. That the United States should lose the product of California is not remarkable, but that it should lose double that amount, while the premium on gold is 2 per cent. in Chicago and St. Louis, is remarkable.

Since the 1st Jan. 1856, France has lost $150,000,000 of silver, and gained $243,-000,000 worth of gold! The United States are estimated to have $100,000,000 of coin, and at the present rate of export in two years they will not have a dollar! To what extent is the drain to go on?—*U. S. Economist.*

Worldly happiness is but a picture that is seen by the eye of sense in the false light of the present time, and therefore is imperfectly beheld.

Judge not the merits of a man by his great qualities, but by his use of them.

Draining Farm Lands.

The benefits resulting from the underdraining of farm lands has been a settled question for many years in those countries of the old world distinguished for science and skill in practical agriculture. It is also a settled question with some of our enterprising farmers, but with the mass of them it is a new subject, so far as their own practice is concerned. A healthful general interest is now felt in this matter by our agriculturists; and this, we think, must eventuate in good results.

Underdraining consists in cutting deep narrow trenches on lands, for the purpose of tapping undersprings near the surface, and also for carrying off rain water that would otherwise collect and stagnate near the roots of the plants. Some contend that underdrains should also embrace the feature of admitting air and ventilating the under surface of soils. This question should never be touched upon in this connection; the removal of the surplus and stagnant water is the main object of drainage. Underdrains are covered and placed at such a depth from the surface as not to interfere with the plowing or with other mechanical operations in the field.

There are differences of opinion among practical men as to proper depth, and the requisite distance apart at which drains should be laid. This arrangement must depend in a great measure on circumstances. Deep drains are far more expensive to cut than shallow ones, but then a smaller number are required in each field. At one period two-and-a-half feet drains were common in Britain, now five-feet drains are becoming more general. Four-feet drains situated forty feet apart will afford effectual drainage to any field, but the proper depth depends almost entirely upon the nature of the land. If the cutting is through hard-pan, three-feet drains situated thirty-five feet apart will be the cheapest, and answer perhaps as well. They must be placed beyond the reach of frost as an imperative condition; when this is secured, they can be cut deep or shallow, according to the nature of the ground, so long as they are able to carry off the surplus and stagnant water.

The material of which the drains are made is an important feature. The oldest drains were formed by cutting to the proper depth, laying up the cuts with a layer of cobble or loose stones, then placing some

brush-wood or straw over these, and filling up with the soil. These drains soon choke up with mud, and they have been mostly superseded by open drains, formed of unglazed tile or earthenware tubes, molded and burned like brick, and having joints or collars where the ends join. They are the most expensive drains at first, but the cheapest in the end. One kind of tile consists of a flat bottom, with a semi-tubular top. They are laid down in such a manner as to lie in perfect line, with a slope of about one foot in the one hundred feet; this fall is sufficient to carry off the water. Tubes of about one and a half inches in diameter answer for the lateral drains; these should lead into one general or main discharing drain of large diameter. Where flat stones are abundant, very good open drains may be made by laying them on edge to form the sides, then covering them on the top with flat caps. Loose stones, if they can be obtained, should be laid upon the top of covered drains before the soil is filled in.

Considerable engineering skill is required in laying out a field for proper drainage, so as to give all the drains the proper incline, and carry off the water by the natural slope of the land. As there are elevations and depressions in most fields, no *particular* directions can be given for laying out all the drains in them—they must be planned according to the circumstances of the case. There are few of our farmers who have not sufficient ingenuity to engineer their own fields and lay out their own drains, if they apply themselves to the work.

All stiff and springy soils should be drained, and especially those which have clay subsoils, as these retain the water and form undersprings which injure the roots of the plants. One great object of drains is to tap shallow springs, and another is to carry the rain water down through the soil, and prevent so much surface evaporation, as it carries off the heat, and reduces the temperature of the plants and ground. Sandy soils with gravely under strata do not require drains, as they afford good drainage from their very constitution.

A recent number of the *Mark Lane Express* (London) contains an article from its American correspondent—Mr. Henry S. Olcott, of this city—a scientific agriculturist and able writer on such subjects, which affords some very useful information on underdraining. He describes the case of Mr. John Johnstone, an intelligent farmer who resides near Geneva, N. Y., as an instance of great success in draining farm lands. He commenced operations about nineteen years ago, and has laid about forty-seven miles of drains upon his farm. During one season, when six of his neighbors raised only seven bushels of wheat to the acre, his fields yielded twenty-nine bushels. This case is cited as positive proof in favor of the profits which may result to every farmer who underdrains his lands thoroughly. We know that the great majority of our farmers have not a sufficient amount of capital to carry out such a system of improved agriculture, but we think that most of them can do something, however little, to introduce and commence the work of progress in this department of practical agriculture.—*Scientific American.*

From Hall's Journal of Health.

Coolings.

To make water almost ice cold, keep it in an earthen pitcher, unglazed, wrapped around with several folds of coarse linen, or cotton cloth, kept wet all the time. The evaporation from the cloth abstracts the heat from within, and leaves the water as cold as it ought to be drank in summer, consistent with safety and health.

Cooling rooms: the least troublesome plan is to hoist the windows and open the doors at daylight, and at eight or nine o'clock close them, especially the external windows and shutters, if there be any, except to admit barely necessary light.

Churches may be kept delightfully cool in the same way, and thus greatly add to the comfort of public worship, leaving the windows open, but the lattice shutters closed, on the north side of the house, which will secure a thorough ventilation.

Still greater coolness may be produced by having a large heavy cotton or linen sheet hung near each open window or door, and kept constantly wet; the evaporation produces a vacuum, and a continual draft of air is the result. In India and other eastern countries, common matting is used; long grass plaited answers a good purpose. In Germany, a broad vessel or pan is kept in the room, nearly filled with water—the pan, not the room—the surface of the water being covered with green leaves.

To have delightful hard butter in summer, without ice, the plan recommended by that ex-

cellent and useful publication, the *Scientific American*, a year ago, is a good one. Put a trivet on any open flat thing with legs, in a saucer; put on this trivet, the plate of butter, and fill the saucer with water; turn a common flower-pot upside down over the butter, so that its edge shall be within the saucer, and under the water. Plug the hole of the flower-pot with a cork, then drench the flower-pot with water, set it in a cool place until morning; or if done at breakfast, the butter will be very hard by supper time. How many of our city boarding-school girls, who have been learning philosophy, astronomy, syntax and prosody for years, can, of their ownselves, write us an explanation, within a month.

To keep the body cool in summer, it is best to eat no meat, or fish, at least not oftener than once a day, and that in the cool of the morning; making a breakfast dessert of berries of some kind. Dinner, light soup with bread; then vegetables, rice, samp, corn, cracked wheat; dinner dessert of fruits and berries, in their natural state, fresh, ripe and perfect. Touch nothing at all at supper, but a piece of cold bread and butter, and a single cup of some hot drink, or in place of these, a saucer of ripe berries, without sugar, milk, cream or anything else, not even a glass of water, or any other liquid, for an hour after.

To keep the head cool, especially of those who live by their wits, such as lawyers, doctors, editors, authors, and other gentlemen of industry, it is best to rise early enough to be dressed and ready for study, as soon as it is sufficiently light to use the eyes easily without artificial aid, having retired the evening before, early enough to have allowed full seven hours for sound sleep; then study for about two hours; next make a breakfast of a piece of cold bread and butter, an egg, and a cup of hot drink, nothing more; then resume study until ten, not to be renewed until next morning; allowing no interruption whatever, until the time for study ceases, except to have the breakfast brought in. The reason of this is, the brain is recuperated by sleep, hence its energies are greatest, freshest, purest, in all men, without exception, immediately after a night's sleep, and every moment of thought, diminishes the amount of brain power, as certainly as an open spiggot diminishes the amount of liquid within. Nature may be thwarted, and her plans wrested from her; and habit or stimulation may make it more agreeable to some to do their studying at night, but it is a perversion of the natural order of things, and such persons will be either prematurely disabled, or their writings will be contrary to the right and the true. As the brain is more vigorous in the morning, so is the body, and vigor of both must give vigor of thought and expression, that is, if the head has any thing inside.

From the Valley Farmer.

Agriculture—Its Importance.

BY C. N. BEMENT.

Agriculture is the body, whilst the other professions are members; and although the body and members are mutually dependent and reciprocally useful to each other, the body can exist without the members much better than the members can exist without the body. For the purpose of comparison, agriculture may be considered as a *trade*, an *art*, and a *science*. The *trade* is mechanical, requiring muscular strength. It is imitative—it is to do a thing as one has been taught to do it before. The ox, in a measure, acquires it. He knows his master and his master's crib. He treads the accustomed furrow, turns at the headlands, and obeys the driver's commands.

The *art* implies co-operation of the mind with physical power. The mind contrives; it is a lever which greatly assists and abridges the labor of the hands. The mind, like the soil, makes returns in proportion to the culture which is bestowed upon it. Both are unproductive without culture. The mind is improved by observation and reading, which makes it familiar with the best models of practice, and enables it to profit by the improvement of others.

The *science* teaches the laws and proportions of inorganic matter—as of rocks, earths, manures, &c., &c.; of organic matter, as animals and vegetables; of their structure, food and uses; and the agency of heat, water, air, light and electricity in their development and maturity; the employment and adaptation of these matters for the best uses of man. It contradicts the experience of ages and the labors of nations upon these interesting subjects, and makes them subservient to our wants and our comforts. The science is a collection of

facts and leading truths, illustrated in practice and confirmed by experience.

Land and labor are the legitimate sources of public wealth. The first, to be productive, must be cultivated; and the labor of doing this is abridged by the culture of the mind, which guides its operations.

Without agriculture there is no wealth. Gold and silver are not wealth—they are its convenient representatives. Commerce produces no wealth—it simply exchanges it. Manufactures and the arts re-combine it. Agriculture is the prolific mother of wealth. The rest simply handle it when produced and delivered into their hands. The earth itself, originally, spontaneously produces wherewith to keep the race of man from starving—only whilst he is making ready to till the soil. Without it he soon degenerates into a wild animal, living here and there in small squads, a little superior to the other beasts of prey. The earth breeds savages. Agriculture breeds enlightened nations. It breeds houses and ships, temples and seminaries; it breeds the manufactory; sculpture, painting and music are its offspring. It would be folly to speak of the existence, or beauty, or power of any of these things, without agriculture.

The pulpit, the professor's chair, the scientific laboratory, the tripod, the library, the ship, trip-hammer, the loom and the anvil—all would go down in one generation. It is by the superabundant produce and stability of agriculture that all things exist. Nor gold, nor silver, nor diamonds could replace it. The state of husbandry, in any country, is the test of its enlightenment. The thermometer of civilization rises and falls as drives the plow. "You must send the plow," exclaimed a man who had traveled all over Christian missionary ground in heathen lands. A barbarian nation needs but to be plowed up—deep, subsoiled, continued, sowed, planted, and the inevitable harvest will be an enlightened empire. A practical, working agricultural society will dig barbarism, and mental and physical and spiritual poverty out of a nation, as effectually as any powerful grubbing machine will "shake out" the stubborn stumps.

A few centuries ago, a learned writer describes the times in these words: "Rude were the manners then, the man and wife ate out of the same trencher; a few wooden-handled knives, with blades of rugged iron, were a luxury for the great; candles were unknown. One, or, at most, two mugs of brown earthenware, formed all the drinking apparatus in a house. Rich gentlemen wore clothes of unlined leather. Ordinary persons scarcely ever touched flesh meat. In noble mansions, a little corn seemed wealth."

This is history. Any one of our neighbors, if compelled now to live as the highest and wealthiest of mankind lived in those days—such a neighbor would excite our sympathies. We would consider him as good as starving; would carry in gifts to supply his wants, and start a subscription among our friends to feed and clothe him.

A few hundred years ago, and all the wealth of a nation could not buy a loaf of bread, such as you will see on any farmer's table at the present time. The fine flour could not be made. The table of our farmer is much more princely in its furnishing, than was the table of a monarch then. We have now in common use several species of most delicious fruits then unknown. We raise several kinds of grain not then in use. The very word corn, then applied to wheat and barley, is now applied to a grain then undiscovered. Men then lived upon a few vegetables, with flesh on extraordinary occasions; and at their greatest feasts, their chief viands were flesh and wine. Their crops, as well as in the palmiest ancient times, rarely yielded over ten or twenty fold. Now a hundred fold is considered a very small return. Then, as in the ancient world, they gathered the harvest by pulling off the heads, pulling up the stalks, or by almost as slow a process of reaping with the sickle. Compare these methods with the great reaper now in use! that sweeps over acres in an hour, and leaves the glorious harvest on the fields of a farm in a day. Thus, formerly, the patient ox slowly trampled out the grain, week after week, and the winds of heaven and the fan in the hands of the laborer slowly and imperfectly separated the kernel from the chaff and straw. Now, the mighty thresher, with tumultuous whirl, takes into its crushing teeth thousands of sheaves in a day, and scattering the emptied heads, and straw, and chaff, in rich streams, the separated golden grain runs out upon the ravished sight, all ready for the marts of trade—for food for man and fowl and beast, and for the hopper and the stones, swiftly driven by the vast and ponderous wheel. From its mighty pouch comes out flour,

white as the driven snow, which makes the kneaded bread better than the fabled ambrosia of the gods.

In short, Agriculture *clothes* all—Agriculture FEEDS all.

From Dickens' Household Words.

Our Bedfordshire Farmer.

It was harvest-time when we went down on our first visit to the friend, whom for anonymous distinction we will call the Bedfordshire farmer. We travelled by railroad of course, and were set down on a platform almost within sight of his hospitable chimney. In this roadside station, which is in effect an inland iron port, to a purely rural district, we have a specimen of one of the mechanical revolutions of modern agriculture. The fat beasts and sheep of this parish formerly required four days to travel along the road to market, at a loss of many pounds of flesh, besides growing feverish and flabby from excitement and fatigue; they now reach the same market calm and fresh, in four hours. If news of a favourable corn-market have arrived by the morning's post, fifty quarters of wheat can be carried from the stack, thrashed out by steam-driven machinery, sold, and the money returned in much less time than it would have taken merely to thrash out fifty quarters by the hand-flail.

The farmer himself met us on the platform—a disappointing personage, considering that he had been more than twenty years getting a living by growing corn and sheep; for he had not an atom of the uniform associated from time immemorial with the British farmer—no cord-breeches, no top-boots, not even gaiters, no broad-brimmed hat, not a large red face or ample corporation—in fact, was not half so much like the conventional farmer as my friend and fellow traveller Nuggets, of the eminent firm of Nuggets and Bullion, who cultivates eight and a-half acres at Brixton, on the most scientific principles, at an annual loss of about twenty pounds an acre. The Bedfordshire farmer looked and was dressed very much like any other gentleman not obliged to wear professional black and white. His servant, too, who shouldered our carpet bags, wore neither smock-frock nor hob-nailed shoes; he might have been the groom of a surgeon or a parson.

The Grange presented what amateurs in French would call more disillusionment. A modern villa-cottage, with one ancient gable and one set of Elizabethian chimneys, planted in the midst of a well-kept garden, with the regular three sitting-rooms of a suburban villa, reminded us that times were changed since Bakewell received crowds of visitors of the highest rank, including royalty, "clad in a brown metal-buttoned coat, a red waistcoat, leather breeches, top boots, sitting in the chimney corner of his one keeping room, hung round with dried and pickled specimens of his famous beasts." The book-shelves in one of our friend's rooms are filled not only with works on agriculture, but with histories, biographies, novels, and poems. The windows, fringed with monthly roses, look out upon the gardens, across a fence where a steep hill of pasture rises, once a deer park, still studded over with fine trees. There Suffolk horses, a long-tailed gray mare, some dairy cows, and Southdown sheep are feeding, and chewing the cud in the shade.

Our first visit was to the farm buildings, divided by a road from the nag stables and offices of the house, which therefore is not troubled with either the smell or the dirt of the farm-yard. A picturesque untenanted dovecote, half covered with ivy, is the only remaining monument of the farming days when five year-old mutton was fed, and wooden ploughs were used. Pigeons don't pay in cultivated countries. On one side of the occupation road leading to the first field of the farm, were the sheds for carts and implements; on the other the cattle yards, the feeding houses, the cart stables, the cow-house, and the barn-machinery and steam-engine. One-horse carts were the order of the day, a system far preferable to wagons, when each horse is well up to his work. Our friend's horses are always in good condition. The implements made a goodly display, eight or nine of Howard's iron ploughs, light and heavy, harrows to match the ploughs, a cultivator to stir the earth, and a grubber to gather weeds, drills and manure distributors, and horse-hoes, a Crosskill's clod-crusher, and a heavy stone-roller, a haymaking-machine and horse-rakes. These were all evidently in regular use; some for strong clay, others for light sand.

The cattle yards form three-sided squares, the open side facing the road and the sun, the other three sides bordered with covered feeding sheds, or verandahs, about which there was nothing remarkable, except that the roofs were all carefully provided with spouts, by which the rain that would otherwise flow into the cattle yards and saturate the straw, was effectually carried away into the main drains. The floors of these yards are dish-shaped, slightly hollow.* In winter a thin layer of mould, covered daily by fresh straw, imbibes every particle of liquid manure. Under the treading of the beasts, which are turned in as soon as grass fails, there to feed on hay, turnips, and mangold wurzel, or corn, or cake, in turn, according to relative price and supply of the last—nothing is cheaper than oil-cake when it can be bought at a penny a pound—the straw made on the farm is converted into manure of the richest quality, which is in due time returned to the fields.

In every yard was an iron tank filled with pure clean water, by a tap and ball, which

regulated a constant supply from a spring-filled reservoir, established on the hill that overlooked the Grange. These iron tanks were substitutes for those foul inky ponds, to be found as the only drinking places on too many old-fashioned farms. In the stable, which was carefully ventilated, we found a team that had done a day's work of ploughing, munching their allowance of clover and split beans. They were powerful, active, clean-legged animals, as unlike drayhorses as possible; the harness of each was neatly arranged in a harness-room, not tumbling above the dirty stable, as too often seen. The feeding house, where twenty-five beasts could be tied up and fed, was placed conveniently near the granary, and here again at every beast's chain-pole a perpetually full tank was to be found. The doors opened, so that the manure of the feeding houses could straightway be added to the accumulation of the yard.

Our Bedfordshire farmer does not indulge in fancy, in purchasing his cattle. Noblemeu and owners of model farms adhere rigidly to some one breed, Devons, Herefords, or Scots, and have to pay an extra price to make up their number. He purchasses every spring or summer, at the fairs where cattle are brought from Scotland, Ireland, Wales, Devonshire, Herfordshire, and Yorkshire, for the purpose, one hundred good two-year-old Devons, Herefords, or Short-horns, or three-year-old Scots or Anglesea runts. These he runs on the inferior sward until winter; then takes them into the yards and stalls, and feeds them well with hay and roots—not exceeding a hundred weight of turnips a day—more would be wasted; to this he adds, from time to time, linseed and barley meal, in preference to oil-cake, which he generally reserves for sheep. He has experimented with cooked food, but has not found the result in weight pay the cost and trouble. In the spring these beasts are put on the best grass, and sent off to market as fast as they become ripe, having left behind them in the yards a store of manure available for all the land within easy carting distance.

On our autumn visit we saw in the empty yards and in the styes a few pigs of no particular breed, but all of that egg shape which betokens rapid fattening. As there is no dairy, the Bedfordshire farmer finds it does not pay to breed pigs, or feed more than just enough to consume what would otherwise be wasted.

Lastly, we came to a compact building forming the one side or wing of the cattle yards, marked by a tall chimney; here was a high-pressure steam-engine of six-horse power, under the care of a ploughboy, which put in motion the barn machinery, threshed and winnowed the corn, separated it into wheat, first and second, tailings, cavings, and chaff, and carried the straw into the straw house, and the wheat into the granary. The same engine also put in motion stones for grinding corn or linseed, or crushed beans, and worked a chaff-cutter.

The steam-driven barn apparatus has more advantages, and creates more profit to the farmer, than can be explained in a few words. Under the hand-flail system, a great barn was needed, where it was necessary to thrash, not when you wanted to send to market, but when thrashers could be had, and then very slowly, with great loss by imperfect thrashing and systematic pilfering. Our Bedfordshire farmer having had the building provided by his landlord, put up the steam-engine and machinery himself, at a cost of five hundred pounds; and now, with coals costing fifteen shillings per ton, his steam-engine thrashes and dresses two hundred bushels of wheat in one day, at a cost of one penny a bushel, which, with horse-power, would cost four pence, and with flail thrashing, six pence a bushel. Besides this economy in time and money, there is an economy in space, as the corn can remain in the rick in the field, until wanted.

Some very pretty things have been said about the flail; and thrashing does make a very pretty picture, although it is a most soul-deadening occupation. But to a thoughtful mind, there is something much more beautiful in the regularity with which the sheaves, delivered from the cart, are consumed and distributed. The steam-driven barn machinery was not a complete piece of work until linked, by the railway, with the corn-market. In Scotland machine-thrashing has long been universal, but in England it makes way slowly, and is introduced with excuses in some counties —our poor-laws having been in the way.

We next mounted our friend's hacks and climbed the hill to take a bird's-eye view of the farms before descending into details.

On our way we crossed a broad belt of grass fields which surround the house and garden, and are always mowed, other fields farther off being always grazed; by this arrangement it is thought that the best kinds of grass for feeding are cultivated on the one, and the best for mowing on the other; while the hay so grown near the yards where it is to be consumed, and near the manure heaps which restore fertility to meadows. Meadows round a house are, it must be admitted, much more agreeable than ploughed land, besides having the advantage of keeping the cattle and horses grazing within an easy distance if not within sight. After ascending a hill, considered steep in the midland counties, we stood upon a sort of inland promontory, marking the division of the farm, all above being sand-land of the character well known as Woburn sand, and nearly all below stiff clay, being part of the rich valley which runs on to the sea at King's Lynn in Norfolk.

From this promontory we could review, as in a panorama, the farmer's crops—wheat in

great fields of forty, fifty, and sixty acres—a golden sea, fast falling before the scythe and the sickle; barley not so ripe, some of it lying here and there in rucks as if a great flood had rolled over it; too much manuring swelled the ears without stiffening the straw enough, and so anxiety to raise a large crop had defeated itself. There were oats too, verdant and feathery; beans, dark, ugly patches on the landscape; mangold, with rich dark green luxuriant leaves; and fields of something that was not grass, though like it in the distance, being, what is called in farmer's phrase, seeds, that is to say, artificial grasses, such as Italian rye grass, red clover, or white clover and trefoil mixed, which form a rotation crop only to be grown once in four or in eight years, according to the soil.

Experience and scientific investigation have but slightly and slowly added any new crops for the use of the farmer. When any one loudly announces a new crop, which will supersede all others in utility and profit, we may as safely set him down as a quack as if he announced a universal medicine. For England, wheat, barley, and oats, are the best cereal crops; rye, except green to feed stock, is not in demand; wheat in many varieties fits itself to suitable soils, the finest kinds cannot always be carried to a distant country without degeneration. The finest barley for malting is grown in a few counties on light soil, while oats attain a perfection in Scotland and Ireland rarely to be found in districts where oatmeal is not the food of the people.

The proportions which a farmer should grow of each crop will depend on his soil and on his market, supposing always that the landlord is, like our friend's landlord, sufficiently intelligent to allow his tenant to make the best of his land. For instance, having six fields on his clay land of about fifty acres each, he has found it convenient to adopt the following rotation:—First year, either a fallow or a fallow crop, such as coleseed, tares, early white turnips, mangold, &c.; second year, wheat; third year, beans; fourth year, barley; fifth year, clover; sixth year, wheat, instead of the Scotch rotation, in which beans stand fifth, and the land becomes too full of weeds for a good crop. On the same land the rotation is—first, turnips; second, barley; third, clover; and fourth, wheat; white and red clover being used alternately.

It will be observed that root crops form the foundation of this style of farming. Root crops do two things for the farmer; they prepare the land for corn crops, and they supply food for a great number of lambs and sheep. Under the old system, two hundred acres of this farm were poor grass pasture. Under the rotation named they feed more live stock than before, in addition to the crops of wheat twice in six years. Of course on six fields two are always in wheat. But on hundreds of thousands of acres of fertile *under-rented* land, the intelligent cultivation of roots is quite unknown; indeed, without security of tenure in lease or agreement, it cannot be practised because it takes six years to complete a never-ending circle of improvement. There are landed baronets, who having gone so far ahead as to adopt the short-horn, which superseded their grandfathers' long-cherished, long-horned, thick-skinned, Craven beasts, still look askance at guano and superphosphate—the best food for root crops—as condiments of revolutionary origin; and as for leases, you may as well speak of confiscation at once.

As we looked down the beautiful fertile valley, and gossipped over the cardinal principles of good farming, we could see the marks of vegetation, and here and there a landmark in a stately tree, where four miles of fences had seven years previously been cleared away, and superseded whenever fences were needed at all by double ditches, and rails arranged with mathematical regularity to protect growing thorns from the assaults of the beasts and sheep feeding around. Before coals came by canal and railway, hedges gave faggots for witter fires.

Turning our nags' heads upwards, we next traversed the sand half of the farm, an undulating four hundred acres, sprinkled over with many pretty wooded dells and bordered deep belts of plantation, where our friend, having the game in his own hands, kept up a fair head of pheasants and hares. Farmers seldom object to the game they may shoot themselves.

On the sand we found a different rotation, viz., turnips, barley, clover, and wheat; neither mangold nor beans.

The prettiest sight was our farmer's breeding flock of South Downs, feeding on a hill of seeds: four hundred black-faced, close-fleeced, firkin-bodied, flat-backed, short-legged, active animals, without a hollow or a bump on any part of their compact bodies, as like each other as peas, and as full of meat.

They were under the amiable care of an old shepherd, a boy, and a dog of great discretion—a real Scotch colley, who also attend to the whole sheep stock. It had cost our farmer twenty years of constant care to bring this flock to their present perfection, during which time he has tried and given up the long-woolled Leicester, of which half his sheep stock formerly consisted, finding the South Down more hardy and profitable on his land and with his market. The total sheep stock always kept on this farm amounts to one thousand herd, of which what are not bred on the farm are bought. Thus in the course of the year about one thousand sheep and lambs, and one hundred and fifty bullocks, are sent to market.

Now we had seen all the raw material for growing corn and wool.

Bullocks fed in yards in autumn and winter, on roots grown on well-drained, and hay on well-manured land, with corn and cake to finish them—these produce while getting fat, and tread down and solidify manure which is ready in the spring to be carted out where wanted, for growing more roots for green or hay crops. On the other hand, light land is consolidated and enriched by a flock penned upon it, and there feeding with turnips, corn, or pulse and cake. If they are store-sheep they are allowed to gnaw the turnips on the ground for part of the year; if they are young and to be fatted, the turnips are drawn, topped, and tailed, and sliced for them by a boy with a portable machine—a simple affair, and yet one of the most valuable of agricultural inventions. Thus feeding in the day, and penned successively over every part of a field at night, the sheep fertilize, and with their feet compress more effectively than any roller, light, blowing sand, and prepare soil which once would scarcely feed a family of rabbits on an acre for such luxuriant corn crops as we saw waving around.

What neither farm-yard manure nor sheep-treading will do toward stimulating vegetation and supply the wants of an exhausted soil, is done with modern portable manures, which do not supersede, but aid the home-made fertilizers of our forefathers.

Cantering on, now pausing to examine a root crop, then pushing through a pheasant cover, then halting to chat with the reapers, we came to a field of wheat on sand inferior to the rest. The choicest seed from the Vale of Taunton Dean had been used: but it seemed that, in this instance, what suited a Somersetshire valley did not thrive on a Bedfordshire hill. Such special experience a good farmer is continually collecting. Again: repeated trials had convinced the farmer that guano, the most valuable of all portable manures, was wasted on the sand; as, in the event of a dry season, the fertilizing powers were evaporated and entirely lost. On another fifty-six acres of wheat a most wonderful crop was being moved, estimated at six quarters to the acre. The extra weight could only be accounted for by the field having been rolled with more than ordinary care with a heavy iron roller. Nevertheless, amateurs must not rush off to roll their wheat fields, because on a plastic soil it would be total ruin to reduce a field after rain to the consistence of smooth mortar.

I have advisedly said, mow, not reap, several times in this narative. The Bedfordshire farmer has no doubt of the superior advantages of the former plan. Nevertheless, he reaps a few acres as shelter for the partridges. Mowing is done by peace-work, at per acre. Formerly the harvesters received so much money per acre, and five pints of beer for a day; but the farmer having one July day expressed his discontent to a party of mowers snugly lying in the shade, pipe in mouth and beer-can in hand, at the slow progress of the work, was answered with fatal candour by a jolly foreman: "Maister, we come here to drink your good beer, and as long as you give us five pints a day we beant agoin' to hurry the work." From that season an additional shilling per acre replaced the five pints of the mowing charter; and there is no lagging. Mowers are not the only people who like idleness and five pints of beer a day.

It was brilliant weather on the second day of our visit. Carts, each drawn by one clean-legged horse, were at work at a pace that would have choked the old harry-legged breed. The picturesque wagon, with its long team, is disappearing fast from modern harvest-fields. The horse-rake, following the binders, leaves little for the gleaners.

While the carts were at work in one field and the mowers and binders in another—for there were two hundred acres of wheat on this farm—in a fallow-field a party of boys were cross-plowing with some of Howard's beautiful wheel plows, which can be managed by boys of thirteen, for such work the object being only to pulverize the land. On almost any land the superiority of the iron-wheel plow is incontestable.

We rode back through a great grass field, well dotted with shady trees, under which shorthorns, Devons, Herefords, and black Anglesea runts were comfortably chewing the cud; all the different breeds being found profitable to feed when bought at a proper price as the account books of our friend, carefully kept for twenty years, distinctly show. From the horned stock and the sheep, a draught of the fittest and fattest were sent to Smithfield every week from May to the following March, and replaced by fresh purchases from the neighbouring fairs.

After dinner, while looking out between rosebushes at the cattle on the hills, we talked, of course of framing past and present—of what practice and science had done, and what it could and could not do for farmers.

In what we had seen there was nothing startling, although the results, as to quantity of produce in corn and meat in a year, would have been incredible if foretold to any brown-coated farmer in seventeen hundred and fifty-four. There was no land wasted by fences or devoured by weeds; there was no time lost—one crop prepared the way for another; there was no labour lost—horses and men and boys were fully employed. The live stock for market was always full fed; the breeding-stock was kept up by retaining only the best-shaped ewe lambs, and hiring or buying the best rams from skilled South-down breeders. So the farm was continually sending

to market a succession of lamb, mutton, and beef.

All this requires for success some considerable skill and experience, and not a little expense. Twelve or thirteen hundred pounds a-year for rent, and as much more for wages; two hundred a-year poor's-rates, no tithes; three hundred a-year for corn and cake purchased; one hundred and fifty pounds for portable manures. A capital laid ont in two hundred store beasts, which cannot be bought for less than ten pounds each, and four hundred breeding ewes, worth two pounds ten shillings each—also thirty carthorses, worth forty pounds a-piece on the average, and all the agricultural implements, too. So, in round numbers there was evidently without asking impertinent questions, some ten thousand pounds invested.

The labour of this farm would in its number astonish a farmer of the old school of anti-steam-engine prejudice, as much as the implements. It consists of about twenty men and thirty boys. Of these, six men are plowmen, and have the care of four horses each, being assisted by two sets, of which the younger consists of fifteen boys between the ages of eleven and thirteen, who are under the command of a steady experienced farm-labourer. He never has them out of his sight; under his orders they do all the hand-hoeing of wheat, thin out turnips, spud thistles out of grass-land, gather the turnips into heaps for tailing, carry away the straw from the threshing-machine, bring the sheaves from the stack to the man who feeds the machine, and do other work suited to their strength. When the harvest is off, and repeated plowings have brought the couch-grass roots to the surface, they gather it in heaps and burn it. A great bare field dotted over with heaps of this troublesome weed, each on fire, and each industriously fed and tended by an active little boy, presented a very amusing sight to us in a second visit to Bedfordshire, in October.

Thus these boys are trained to work regularly at all kinds of farm labour, and form a regiment of militia from which the regular army of the farm is recruited. The most intelligent are promoted to be plowboys, and grow up to be very useful men.

They receive three shillings a-week wages, and every week, if well-behaved, a sixpenny ticket, which, once a year, in September, is converted into money to be laid out in clothes. The stoppage of a ticket—a very rare occurrence—is considered not only a loss, but a disgrace. In harvest time they receive double wages, and double tickets.

Such is a short view of the system on a well-manured corn and wool farm.

If able to lay out the needful capital skilfully, and manage the men, boys, and horses needed for a thousand acres of average corn and sheep land, the farmer, on an average of years, can reap a fair return for his risk and labour. He cannot under ordinary circumstances, expect to make a fortune except by saving out of ordinary income; for there are no patents, or secrets, or special undiscovered markets for farmers, as there are for clever manufacturers. Those who undertake to do wonderful things in agriculture invariably sacrifice profit to glory. But the skilful farmer is not tide to a day, a week, or even a month, except at harvest or seed time; he lives among pleasant scenes, socially and hospitably, and runs not the risks and endures not the sleepless nights of the manufacturer, whose fortune depends on the temper of a thousand hands, and the honesty or good fortune of debtors on the other side of the globe.

From the Kentucky Farmer.

Sheep Husbandry in the West.

Sheep are among the most valuable domestic animals subjected to the use of man, feeding him with their flesh, clothing him with their wool, and enriching him by their rapid increase; and, although they do not either draw or plow for him, yet, by proper management, they will greatly assist him to clean the weeds and briars and bushes from his farm, as they will devour almost every green weed but the mullen and pork.

Though they do not appear to be of equal value in the West to the horse, or the cow, or the hog, yet it may be confidently asserted that in no other mode could our agricultural wealth be so suddenly and so greatly increased as by the general slaughter of dogs, which would certainly be followed by the universal introduction of sheep on the farms of our cultivated districts, and also by the general dissemination of millions of them over all the hilly and mountainous regions; and quickly wool would become one of our largest exports, and millions of acres of waste lands would become a source of great revenue to the Commonwealth.

But, notwithstanding the loss, vexation and insecurity occasioned by dogs, (which are the only obstacle to this unbounded success,) still almost every farmer will find it advantageous to keep at least a few sheep; and the period of shearing is a good time to take a new, or an improved position on the subject. He who has no sheep should buy some now, and he who has some will find this the best time to improve them by selection, for now the bad ones appear in all their "naked deformity," and the good ones are seen in unexaggerated excellence.

Every sheep which is in declining years or is defective in size, form, thrift, or fleece, should now have a mark put upon it, and be in process of preparation for being converted into mutton before the next winter.

An animal which will thrive in the open air, without shelter, with a constitution able to resist disease, and with power to cope with murderous dogs, with a large carcass of good mutton, clothed with a close and heavy fleece of wool of medium fineness—this is the animal which we want in sheep, and nothing short of this will meet the public taste. This we have already got; or, if we have not, we may certainly obtain it, for a skillful, careful and persevering breeder will find the animal almost as plastic in his hands, from generation to generation, as the potter does his clay.

In the selection of a breeding flock the maxim that "like will produce its like," should be ever held in bright remembrance, and especially no male or female should be accepted which has the taint of hereditary disease upon it, for it will be probably transmitted to the offspring. Let the ewes be from one to five years old, with small heads without horns, and with rather long and smooth faces, straight broad backs and full round bodies. The fleece should cover the whole body up to the face and forehead, under the belly, and down to the knees; and it should be as uniform in length and fibre, over the whole body, as possible; and as free as possible from coarse and hairy locks on any part. A waivy appearance is not objectionable, but it should not amount to kinking and curling. A moderate degree of yolk is evidence of health, and conducive to health by rendering the fleece impervious to rain, and it preserves the texture of the fibre; but an excess of it is exhausting to the animal, and promotive of foulness in the fleece, and should therefore be avoided.

During the summer, the ewes should run apart from the bucks, and they should frequently be changed from one pasture to another, by which their fondness for roaming will meet with innocent indulgence; they will subsist almost entirely on weeds of different sorts, and on briars and bushes; and the health of the flock will be greatly promoted. When they begin to huddle together in the shade, and to hang their heads and stamp their feet for protection against the *sheep fly*, additional exemption will be secured by smearing some tar on the forehead, and also on the nose, in the mucus of which the fly seeks to deposit her eggs.

They should at all times have access to salt, and the best plan is to place it around the roots of some tree which you wish to kill, or some stump which you wish to extract. The salt is made more conducive to health by the occasional addition of flour of sulphur, and also of wood ashes.

A table-spoonful of flour of sulphur and and a pint of hog's lard mixed together, and a little of it smeared on the backs of each sheep when the fleece is short, will be the best protection against ticks.

The mean period of gestation with ewes is about one hundred and four days; and in this latitude the best time for impregnation is about the middle of October, so that the lambs may come after the cold weather has passed, and the ewes may have green food in abundance when suckling their young. To facilitate copulation many very wooly ewes will require some clipping about the tail, (which should not be omitted,) previous to the introductions of the ram.

He should, if possible, be a paragon of excellence in every respect; for every quality which he has, good or bad, will be impressed, with almost unfailing certainty, upon his progeny. Those qualities of fleece or carcass which are the chief object of the breeder, should by all means be developed in the ram in the highest degree, and they should be deeply implanted in his character. He should be not less than one year old, and should by no means be in declining life or health.

He should especially excell in the peculiar qualities of his breed, whatever they may be. He should have commanding size, and masculine appearance, broad shoulders and rump, wide back, full round body, deep brisket, and he should be covered all over with a full, close, uniform, soft and golden fleece; and be in all respects the best of his breed; and it should be remembered that breed or blood is of no value except so far as it possesses and insures the qualities which are desired. When more than one ram is used in the same season, the ewes should be carefully selected, and be so bred that the superior excellence of each ram shall compensate, in the progeny, some fault or defect in the ewes; for example,

the smallest ewes (other things being equal,) should be bred to the largest ram, &c.

Notwithstanding the astonishing fecundity which has been ascribed to the ram, I would not recommend (from my own experience and observation,) over fifty ewes to be allotted to one ram; and that not more than ten should be put with him at the first time, and ten more be added at the expiration of five days; and so on until the whole fifty are put with him. The energies of a buck will be greatly spared by putting each lot of ewes with him late in the evening, so that he will have the cool nights for his operations.

To be sure that the ram is copulating well, it is desirable to smear his breast, before introducing him, with some lamp black venetian red, or spanish brown, mixed with hog's lard, so that each ewe will be slightly colored on the rump after copulation. When two rams are used they should be kept in different enclosures, and should be smeared with different coloring matter; and when it is desired to know their progeny apart, the ram and his ewes may have similar holes put in their respective ears, by round force used for that purpose, and the similar holes in the ram's ears should be put in the ears of his lambs.

When two or more bucks are used in the same season, this precaution will be necessary to prevent a ram from being bred to his own progeny in future, which should never be done if it is possible to avoid it, no matter how great is the excellence of the ram in question. Even after the ewes have all been bred and put together, it will be well to allow the best ram to continue for a while with the flock, for some ewe may have missed conception; he will be a protection to the flock, and even after conception his constant presence may not be without its effect in impressing his qualities and appearance on his progeny. The other bucks may be put with the wethers, or even together, by noticing that they do not fight for a few hours after being put together.

During gestation the ews want no better keeping than the range of a woodland pasture well set with blue grass, with a fresh and plentiful allowance of stock fodder scattered on the ground to them every other day during the snows and cold of winter; and during the severest weather they will need no other protection than their own fleeces, if they have been bred with systems and constitutions properly adapted to such treatment in this climate.

They should be kept as quiet as may be convenient; and the constant presence of fat bullocks, or of cows and calves, will be a protection against rascally dogs, which should not be allowed to run among them. In the absence of all other and better laws to prevent this, strychnine may be the indispensable though disagreeable resort.

The ewes being thus kept in good condition during the winter, as soon as they begin to expand their udders in the spring they should be put on a good pasture of fresh blue grass, timothy or small grain. If the meadow is luxuriant it will not be hurt by allowing the sheep to graze the foliage for awhile, but it should not be closely pastured.

If any of the ewes become loose in their bowels and foul behind, they should have all the wool carefully cut away, and the affected parts should be carefully rubbed with dry ashes. For this purpose it is well to have, convenient, a pen large enough to contain the flock, in which should also be a few close and sheltered pens, in which to put a ewe which in future might disown her own lamb, or be made to take that of another.

If any of them should be lame, they should now be carefully caught and examined by at least two hands, to avoid worrying them in catching, or hurting themselves by struggling. Should the horn of the hoof have grown too long at the toe, or be turned under the sole of the foot, pare it off carefully and closely with a sharp knife. Should a sore be found in the cleft on the heel of the foot, cleanse it well, and apply spirits of turpentine; or an ointment of alum, bluestone, or verdigris, mixed with lard, tallow or tar, according as the reason and circumstances may require. Should malignant foot-rot appear, pare with a knife, and then wash the diseased places well with a solution of chloride of lime to purify them, and apply and wash well with chloride of antimony and spirits of hartshorn a few times. But the better plan is to prevent all diseases by wide and frequent crossing, by keeping the sheep in the open air, and by often changing the feeding and sleeping grounds, and by keeping them on the highest and driest and poorest points of the farm.

As the period for yeaning approaches, the

ewes should be put on good green pastures, and they should be kept on the best which can be afforded them after the lambs have come. They should not be allowed too much range, or be subjected to any unnecessary disturbance, while the lambs are coming, which might often cause them to loose or abandon their lambs while they are quite young.

When the lambs begin to come, (which will be about the middle of March,) a careful and observant man should pass quietly among the flock at least twice a day, to render such protection and assistance as may be needed; and for this purpose he may have some work, of any sort, not far from the flock.

Should any crows be about, they should be well supplied with strychnine put on an *after-birth;* or on the eyes and bowels of a dead lamb. Of course no honest dog or hog will have access to this pasture, and all others will deserve the same fate as their murderous brother crow. Let the dead trophies be hung up by the legs, and the other crows will soon take warning, and give that pasture a wide berth.

A case of natural labour will not last over two hours; and in a natural presentation the fore feet will first protrude, and be followed by the nose, &c.

Should any difficulty be noticed by the shepherd the ewe should be driven to the pen, and be carefully laid upon her side, and the required assistance be given before the lamb has died. If twins present simultaneously, one of them must be pushed back until the other is safely delivered; when, after ten or fifteen minutes rest, the other may be assisted, if necessary. Some improper presentations may be *turned* successfully; and where a large head is the only obstacle, all the assistance required will be slow and gentle pulling, in unison with the efforts of the ewe. At the close of such labours, the parent and offspring should be left together on a straw bed, in the warm pen, for an hour or two; and should the lamb fail to suck in that time, assistance should be given to it; and as soon as the lamb is able to walk a little, it and the mother may be quietly removed to the pasture again. If a ewe should desert her own lamb, penning them together, and feeding the ewe bountifully for a day or two, will generally be all which will be necessary; but it will be proper to halter also a ewe to which a motherless lamb may be given, until she shows attachment to it.

As soon as the lambs have generally come, and not later than the first of May a cool evening should be selected, the flock, should be slowly driven to the pen, so as not to warm the blood of the lambs by undue exercise, and the shepherd should proceed to castrate, dock and mark them as quietly and as rapidly as possible.

To perform the first operation, the attendant should hold the back of the lamb, head upwards, firmly against his breast, while he stands erect, holding the right legs in his right hand, and the left legs in his left hand, and holding the hind legs open. The operator should take off with a sharp knife, about one half of the scrotum at a stroke, when the testacles will protrude; a gentle stroke with the knife will bring the testacles through the inner skin, from which another cut will disengage it, and another will separate the cord, well drawn out, and near to the body; and so proceed. Mark the ears, and then cut the tail off close, at a stroke; and then smear some tar and greese on the scrotum, head and tail, with a small paddle, all of which a dextrous operator will perform in from one to two minutes for each lamb. They should be laid quietly over the fence, out of the pen; and the ews had better be kept within small range until morning, by which time the cool night will have closed up the veins and stopped the flow of blood, and the lambs will have regained their strength, and will be able to follow. Now will be a good time to attend to any ewes which will again require tagging and rubbing with dry ashes.

The lambs should be smeared on the back at shearing time with a little sulphur and lard mixed together; or about two weeks after shearing time they may be dipped, up to the eyes, in a decoction of tobacco, made just strong enough, by experiment, to kill a tick, should they be infested with these vermin.

After docking, &c., the lambs should be noticed to see if any flies have deposited their eggs on the bloody places, and the skippers, if any, should be carefully washed off with a strong decoction of alder leaves or bark and soap, and more tar be added.

About the first of August all of the buck lambs should be taken from the flock; but

the ewe lambs may be suffered to remain a month longer, when they should be removed; and they should not be bred to a ram until the fall after they are one year old.

With these simple precautions and this little care, one hundred ewes have raised from one hundred and ten to one hundred and twenty lambs; and, by having taken the trouble of raising by hand, still more might have been raised.

Nothing has been said about washing sheep. It is a troublesome operation, and a dangerous one to the health of both the sheep and the operator, and therefore should be avoided if possible. Such sheep with such fleeces as have been described, do not require to be washed before being shorn. The wool has just enough yoke in it to aid it in giving adequate protection to the sheep, and enough to prepare it to be carded and spun into coarse fabrics just as it is taken from the sheep. It will also receive bark and other domestic dyes, except indigo, without being washed. Such sheep will yield from eight to fourteen pounds of wool, which will readily sell at from twenty-five to thirty cents per pound. The fat weathers will sell as from ten to twenty-five dollars per head, as the mutton is equally as good as that of the South Down and there is much more of it.

The shearing of the sheep is an operation of so much importance that it will be made the subject of a separate article, at some future time.

R. W. S.

New Frankfort, Ky., June, 1859.

[The Beneficial Influence of True Science.]

Every one is aware of the beneficial tendency of genuine science; but it is not, perhaps, always duly remembered, that every practical application of the principles of mathematical, mechanical, chemical or physiological philosophy, is a new affirmation of the Divine benevolence towards man. Shall we say, it is a fresh text, translated from the unwritten Bible of God's creation, corroborating our faith in the paternal care of Him in whom we live, and move and have our being? And this might be said even if these beneficial discoveries were the results of chance. But when they come to us as the product of laborious intellectual operations, they assert the same great truth with a peculiar emphasis, in as much as they not merely declare the Divine purpose—that man should be well accommodated, and aided, and comforted, in this his terrene abode; but that he should win every advantage by the exertion of his higher faculties. Each benefit derived from a better knowledge of nature is a premium of mind—a boon given as the reward of intellectual effort: and while it declares in one of its inscriptions that the maker of the universe is the friend of man, in the other it exhorts man to be his own friend, by the diligent employment of his mental powers.

Every branch of modern science abounds with instances of remote correspondences between the great system of the world, and the welfare of man in the artificial (*the truly natural*) condition to which knowledge raises him. If these correspondences were single or rare, they might be deemed merely fortuitous; like the drifting of a plank athwart the track of one who is swimming from a wreck. But when they meet us on all sides and invariably, we must be resolute in atheism not to confess that they are emanations from one and the same centre of wisdom and goodness. Is it nothing more than a lucky accommodation which makes the polarity of the needle to subserve the purposes of the mariner? Or may it not safely be affirmed both that the magnetic influence (whatever its primary intention may be) had reference to the business of navigation—a reform incalculably important to the spread and improvement of the human race; and that the discovery and the application of this influence arrived at the destined moment in the revolution of human affairs, when, in combination with other events, it would produce the greatest effect? Nor should we scruple to affirm, that the relation between the inclination of the earth's axis to the conspicuous star which, without a near rival, attracts even the eye of the vulgar, and shows the north to the wanderer on the wilderness, or on the ocean, is in like manner a beneficent arrangement. Those who would spurn the supposition that the celestial locality of the sun, immeasurably remote from our system, should have reference to the accommodation of the inhabitants of a planet so inconsiderable as our own, forget the style of the Divine works, which is to secure some great or principal end, compatibly with ten thousand lesser and remote interests. Man, if he would secure the greater, must neglect or

sacrifice the less: not so the Omnipotent Contriver. It is a fact full of meaning, that those astronomical phenomena (and so others) which offer themselves as available for the purposes of art; as, for instance, of navigation, or geography; do not fully or effectively yield the aid they promise, until after long and elaborate processes or calculations have disentangled them from variations, disturbing forces, and apparent irregularities. To the rude fact, if so we might designate it, a mass of recondite science must be appended, before it can be brought to bear with precision upon the arts of life. Thus, the polarity of the needle, or the eclipses of Jupiter's moons, are as nothing to the mariner, or the geographer, without the voluminous commentary furnished by the mathematics of astronomy. The fact of the expansive force of steam must employ the intelligence and energy of the mechanicians of an empire, during a century, before the whole of its beneficial powers can be put in activity. Chemical, medical, and botanical science is filled with parallel instances; and they all affirm, in an articulate manner, the two-fold purpose of the Creator—to benefit man, and to educate him. * * *

[ISAAC TAYLOR.]

A Good wife who Found "Good in Everything."

A farmer was once blessed with a good natured, contented wife; but it not being in the nature of man to be satisfied, he one day said to a neighbor, he really wished he could hear his wife scold once, for the novelty of the thing. Whereupon, his sympathising neighbor advised him to go to the woods and get a load of crooked sticks, which would certainly make her as cross as he could desire. Accordingly, the farmer collected a load of the most ill-shaped, crooked, crotchety materials that were ever known under the name of fuel. This he deposited in its place, taking care that his spouse should have access to no other wood. Day after day passed without a complaint. At length the pile was consumed. "Well, wife," said the farmer, "I am going after more wood; I'll get another load just such as I got last time." "Oh yes, Jacob," she replied, "it will be so nice, if you will; for such crooked, crotchety wood, as you brought before, *does* lie around the pot so nicely."

From the New York Observer.

Scientific.

THE DAY PROBLEM.

The variation of clock time with the difference of longitude, presents to a mind not accustomed to reflect upon it, a somewhat serious puzzle. Yet I think it can be so unfolded, as to be plain to the most ordinary capacity.

Clock time is relative, and varies in different places as they vary in longitude. Taking any given point, all places east of it are in advance, and all places west of it, behind, in relative time; the difference being just one hour for every fifteen degrees of longitude; and for every greater or less number of degrees, in the same proportion, greater or less than one hour.

It is easy, therefore, to see, that if one journeys eastward or westward from any point, having with him the true time of his place of departure—say New Orleans—when he has reached Philadelphia or Santa Fe, or any places on their respective meridians, by travelling east or west; in the former case he will have gained one hour in relative time, and in the latter, he will have lost just one hour. And so of all greater distances, in the same proportion. Now let us apply these principles on a larger scale.

A ship sails from the harbor of New York *east* 180 degrees of longitude, say to Batavia, near the western end of the island of Java. In that distance she will *gain* in relative time, 12 hours; that is, when it is Saturday, 6 P. M., at New York, her point of departure, it will at the same time be Sunday, A. M., where she now is, at Batavia—reckoning the days, in both cases, by the apparent revolution of the sun.

Another ship sails from the same port of New York, westward, around Cape Horn, through the Society Isles, &c., passes north of Australia, and reaches at length the same point, the city of Batavia, making 180 degrees of longitude. She has *lost* in relative time just 12 hours; that is, when it is Saturday, 6 P. M., at New York, it will be 6 A. M., of the same day, at the place where she now is.

Therefore, in general, persons sailing in opposite directions, east or west, and arriving at the same meridian, whether in the same or in different latitudes, if they have

each kept a true account of the days of the week, by the rising and setting of the sun, will differ just twenty-four hours in relative time; that is, whatever may be the day, and the hour of the day, in the reckoning of those sailing westward, it will be the same hour of the day, but one whole day in advance, with those that sailed eastward. And should the two ships, in the cases above stated, after a temporary stay at Batavia, pursue their respective courses; the eastward bound vessel doubling Cape Horn, and at length making the harbor of New York; while the one westward bound reaches the same point by the Cape of Good Hope, their difference of day-reckoning would amount to two whole days exactly; that is, if to the sailors arrived by the way of the Horn, it is Monday, 11 A. M., to those who arrived by the other way, it will be the same hour of Saturday, while to the citizens it will be neither Monday nor Saturday, but the Sabbath day, and the church-going bells will be summoning the multitudes to worship God in his earthly courts.

Again: suppose a company of Russian emigrants to sail from the port of Archangel, on the White Sea, *eastward* through the Arctic Sea, along the coast of Asiatic Russia, and through Bherrings' Strait, until at length they reach the *western* shore of North America. Suppose other companies, from time to time, to make Holland, France, Germany, and England their starting points, and committing themselves to the Atlantic and sailing *westward*, to find their way to the *eastern* shores of the same North America, and thence to spread westward, until they at length arrive at nearly the same meridian with the Russian emigrant. As both the eastward and the westward emigrants would carry with them the days of the week, reckoned by the rising and setting of the sun, it would of necessity result, that the Russians, in the case supposed, would gain in relative time, in proportion to the longitude traversed, while the other emigrants would lose in the same proportion; so that, if they all at last should settle on the same meridian, no matter what their latitude respecttively, they would differ just one day in day reckoning; yet both would be right. Now the above supposition has been realized, and is a plain, historical fact. Russia, of the one part, and Great Britain and the United States of the other part, have together practically wrought out the geographical problem of the discrepency of day reckoning, under the above conditions.

In the light of these facts one can easily understand,—what must seem an anomaly to the person who has not reflected on the subject,—why, at New Archangel, on the island of Sitka, near the western coast of North America, the day-reckoning should be one day in advance of the reckoning of Victoria, on Vancouver's Island, and of Washington and Oregon, just a little to the south. The one place being a possession of Russia, was settled by eastward emigration; while, with respect to the other places, the current on whose bosom was borne the precious freight of letters and Christianity, pursued a westward course. The discrepancy in the above instance, and in the similar one which obtains between the southern and the central islands of the Pacific, will ever remain as incontestable and most striking memoriats of the great fact, that the tide of civilization reached those distant parts of the world, by flowing in opposite directions. W. P. V.

Manipulated Guano.

We notice by the last Southern Planter that Frank G. Ruffin, Esq., former editor of that journal, has commenced the Manipulation of Guano at Richmond. We also learn that several very respectable houses in Petersburg, Alexandria, and other places, are also engaged in the same business. In this city there are five or six establishments for the same purpose, and during the last spring we were induced to enter into it also, but on a very limited scale. The number of persons engaged in it will, no doubt, create a competition which will soon bring it to a fair paying price. Were it not for the difficulties thrown into the trade, by the attempts of the Peruvian agents to prevent manipulators from obtaining supplies of the Peruvian Guano—which is the main basis of the manipulated—and thus causing a heavy outlay of capital, which, under other circumstances, might be avoided, we think there would soon be room for a reduction in price. We have uniformly advised farmers to buy the ammoniacal and phosphatic guanoes and manipulate for themselves; but if they are indisposed to take the trouble, then we will supply them with an article which we flatter ourselves will be found at least

equal to any prepared, from the effects of which on the spring crops we have some very flattering accounts. We make this statement at the risk of again being charged with being actuated by *selfish* motives, in our efforts to counteract the late monopoly in Peruvian guano. This mixture of Peruvian and phosphatic guanoes has been found eminently successful in England, as well as in this country, and we have for years past been urging its adoption upon our farmers. We believe that the results of this article in England is the cause of the early and persistent efforts of the Peruvian agents and government to obstruct its free use here, and every means have uniformly been used by them to prevent the manipulators from obtaining supplies for their purposes.

Rural Register.

Manufactures.

The principle of association in production has been invoked in many ways by writers and theorists, and various plans have been laid down, by which the profits of labor might be increased in the hands of those who do the work, but without much success. The result has been almost inevitable, that some individuals get all the profits while the mass of laborers get only a precarious living. The principle of association in a division of labor is no doubt sound, and the greatest good has been derived from it. It is only its application which has been injurious. The communist principle of having all the workmen proprietors, has been tried in France thoroughly, and has failed completely. It was found that the talents, capabilities and business energy necessary to success, must be centred in a directing head, and that a small per cent. on the amount earned by each workman, did not more than compensate the owner for his services and risks. The workmen obtain more for their work where the owner is prosperous than where they are all proprietors, and divide the profits. In the United States, on the other hand, the corporate system has been tried, and may be said to have failed because the non-working officers get all the profits of the concern. A corporation is always a monopolizer. It is born of speculation. It commences in a grasping spirit, by purchasing large tracts of land, in the midst of which it sets up its mills. It then draws to its mills, by promise of good pay, constant work and facilities for cheap living, whole families, and large number of single men and women, who find that the promise of "constant work" is faithfully kept, but that the promise of "good pay" and "cheap living" are kept only to the ear, while they are broken in reality.

As the corporation grows, it erects new offices, to which enormous salaries are attached. These opening and increasing leaks draw largely upon the profits, and seriously threaten to swallow up the dividend that stockholders are expecting. But it will not do to disappoint them. Accordingly, to meet the exigency which the managers of a corporation have produced, the price of labor must be reduced to the lowest possible figure. Hence we see able bodied men working for an average of 80 cents a day, while parasites upon the corporation are receiving $5,000 a year for doing nothing; hence we see, when a crash comes, deficits of hundreds of thousands which cannot be accounted for.

The true system for cheap production seems to be that which has been so successful in England. Individuals with their own means conduct each his own branch of any particular manufacture with increasing skill and economy. The general result is quality and cheapness of goods, which the corporate system cannot rival under any tariff.

U. S. Economist.

The Oldest Inhabitant's Opinion of Rail-Roads.

The last number of the Knickerbocker Magazine, in the editor's table, gives the opinion of the "oldest inhabitant" in one of the far-off shore towns of Massachusetts Bay, touching railroads—his experience consisting in having seen the end of the road laid out and the cars running upon it. He remarked to a visitor—"What kind o' 'commodation be they? You can't go when you *want* to go; you got to go when the bell rings, or the noisy whistle blows. I tell you it's payin' tew much for the whistle. Ef you live a little ways off the deepot, you got to pay to *git* to the railroad; and ef you want to go anywheres else, 'cept just to the eend on it, you got to pay to go arter you get *there*. What kind o' 'commodation is *that?* Goin' round the country tew murderin' folks, runnin' over cattle, sheep and hogs, and settin' fire to bridges, and every

now and then burnin' up the woods. Mrs. Robbins, down to Codpint, says, and she ought to know, for she's a pious woman, and belongs to the lower church—she said to me, no longer ago than day 'fore yesterday, that she'd be blamed if she didn't *know* that they sometimes run over critters *a purpose*—they did a likely shoat o' hern, and never paid for't, 'cause they was a 'corporation,' they said. What kind o' 'commodation is that? Besides, now I've lived here clus to the deepot, ever sence the road started to run, and seen 'em go out and come in, but *I* never could see that they went so dreffful *fast*, nuther!"

From the Tobacco Plant.

Are Birds Worth their Keeping?

Beecher is very good on birds. It could be wished he was as orthodox on other subjects as on ornithology. Some farmer complains to him through the Independent, that he can't get his ripe cherries, for the birds, and what must he do? Shoot the pretty things, and have cherries instead of songs? The following is the reply:

There is no unmixed good in this world except dying, which cures all ill and inherits all blessing. But while living, what is there without an admixture of evil? Even that wife, who properly restrained you from harming the birds, and evidently a good woman, has probably some slight infelicities of disposition. The very children that carry the doubled excellencies of their parents, have they not some strokes of mischief? Indeed, sir, do you not find that you are obliged to take even yourself with some grains of allowance? Why, then, should you demand that birds should be more perfect than anything else in the world?

Let us state the case. Although birds undertake to furnish you with the most admirable amusement, and with music such as no orchestra could be hired to give, they do not charge you a penny for their services. You never have to wake them. You have no care of their toilet. You are asked to provide nothing for their breakfast, nothing for dinner, nothing for supper. They draw on you for no linen for their beds, and no space for tenement room. They come to you early in the spring; they stay with you till the red leaves grow brown, and even then they leave a rear-guard to watch the winter, and every bright day till after January is sentineled with some faithful, simple bird on duty.

And what is the service they render? A thousand sparrows there are, without remarkable song, but whose very name recalls to you the memorable words of Christ. There is not another truth more needed and doubted by sorrowing and hard used men than that of God's personal care over human interests. There is scarcely a land on the globe, now, where the Bible does not say to men, "Are not two sparrows sold for a farthing? And one of them shall not fall to the ground without your Father." And there is scarcely a rod of ground on the earth where this little bird does not flit before our eyes every day, tiny, homely, with only a chirp for a song; but a text-bearer, a mission-bird, a remembrance to every discouraged soul of Christ's words of sweet assurance. I would feed a thousand sparrows with all the cherries that their little crops could carry, for the sake of that very truth God has associated with their name, and which they recite to me every day. For what cherry or currant or berry that they pluck from my trees can be worth to me what that fruit is which they bring to me from the Tree of Life?

But there is another sparrow—the tribe is large—the song-sparrow, whose note is sweetest, we sometimes think, of all the summer's birds. It is a perpetual songster. It comes early and stays late. It sings all day. We have heard its soft, clear and exquisitely sweet little snatch of melody from out of trees overhead, at two o'clock on a sultry day, with the thermometer at ninety degrees, and no wind stirring! Is not that fidelity? Dear little soul, I would give it all the cherries on the place for itself and fellows, and bushels more if it will deign to confer upon me still the favor of such sweet utterance! For, in good sooth, men are the beneficiaries and birds are the benefactors! It is arrogance and egotism for us to regard insects, birds and innocuous beasts as honored in our mere tolerance! They, too, are God's creatures. They, too, are a part of the filling up of the grand picture of his earthly cathedral. They have an errand of their own, a place of honor; and no one is to despise or patronizingly to *condescend* to notice that which God made and makes, and rejoices over in every land and field upon the globe!

Next to these, we hear every day, just

now, the *wren*. A pert, *petite*, smart, brave little animated spark is he! His song is a twisted thread of sweetness. His amazing assiduity in doing nothing is quite edifying. He is brave in battle, as human bustling do-nothings seldom are, and will whip twice his weight of martins and swallows.

But none of these mentioned birds are particularly fond of fruit. Seeds and insects form their diet in chief. The same is true of that artist, the bobolink, that sings at the North in black and white livery; but going South changes his coat and his note, and, like many another Northern-bred black-coat, drops into good living, and grows fat in the rice swamps, and forgets to use his voice except to call for food, or raise an alarm cry when there is some danger of losing what he has got. The chief depredators of the garden are, the robin, blue jay, the oriole, and the pea bird, or wax-wing.

A man that would shoot a robin, except in fall, when, in flocks, they are gathered together, to caravan the air in their long pilgrimage to Southern glades and forests, and then really and conscientiously for food, has in him the blood of a canibal, and would, if born in Otaheite, have eaten ministers, and digested them too.

Indeed, if it were not too much trouble to re-write what we have said of the song-sparrow, we would say that the robin is our sweetest summer singer. This universal favorite has a variety of songs. All are sweet, but one rises far above the rest. At evening, the sun gone down, the cows returned from the pasture, the landscape radiant in its salient points, but growing dim and solemn underneath, then, as you sit musing in your door, you shall hear, from a tree on the lawn, a little distant, a continuous calling song, full of sweet importunity, mingled with sadness. It is the call for its absent mate. Sometimes it rolls and gurgles for but a moment, when a shadow flits through the air, and a sudden flash of leaves, the song stops, two birds glide out upon the sky, and fly to their home. But at other times the bird's grief is your gain. No coming mate shortens his song. Some remorseless boy has brought him down, to sing, and build, and brood no more; some cat or hawk or gazing snake has dined upon the fair thing. And so, though the twilight falls, and the evening grows darker, the song calls on, pausing only to change the manner, throwing in here and there coaxing notes and staccato exclamations of impatience, but going back soon to the gushing, pining, yearning home call. Take all my strawberries, O singer! Come to-morrow for my cherries! You pay me in one single song for all that you can eat in a summer! and leave me still in your debt! For there is no such thing as *paying* for that which touches your heart, raises your imagination, wings your fancy, and carries you up, by inspired thoughts, above the level of selfish life. The heart only can pay the heart for good service! As to cherries, I'll take my chance when my betters are served. Eat what you wish, sweet sir, and if there are any left, I will think them all the sweeter, as a part of your banquet.

All the cherries on earth could not be so sweet in the mouth as are the notes of robins in our ears. These drops of sound are the true fruits, and the wide air is that garden of universal fruits which rears and shakes them down for all those whose senses are refined enough to know how to feed by the eye and the ear, more than by the mouth!

From the Bedford Sentinel.

Fowls—How to Make them Lay.

First, take all the hens and have them washed of the vermin with soft soap and warm water, and let this be done on a warm day. At 5 o'clock have them all put in the hen-house for safe keeping. If they remain out, they are liable to cold, which will prevent their laying at the start. The washing must be done properly, as if any vermin are left, they will look drooping, and cease to lay. Good health is the most essential thing to make hens lay. Feed yellow corn regularly every day, at a regular time. Give no animal food of any kind, as this gluts the gizzard, and prevents the grinding of corn. It makes the fowl sleepy and feverish all the time that the gizzard is checked in grinding. Fowls are grain-eating birds, and their nature is for grain alone. To keep them healthy is the great secret of making hens lay. Who ever heard of a sick hen laying? Wheat is too heating for them; buckwheat is very good mixed with corn, but not alone. The corn must be of the best kind. Persons generally feed their fowls on old damaged grain. They cannot keep in health on that which is not wholesome; they must eat what you give them if

they cannot get better, and then their owner blames the poor hen for not laying.

Your hens will never lay much on this kind of management. I have kept hens laying ten months by this process, and in winter have lots of eggs. They want the greatest attention. Give them the same attention as you do your horses, and they will soon know their keeper.

Never put straw in the nests, as this is one of the things which causes vermin. Make your nests on boxes out of cedar, and put the boxes full of tobacco stems, and then you will have it vermin-proof. The hens now washed clean, and the tobacco stems, the cedar nest and a new house, you can depend on your eggs. Health and cleanliness are all that you want. Now you may ask what are the best breeds for this purpose—Black Spanish cocks and pure Shanghai hens will be first-rate stock for winter; Black Spanish cocks and Black Poland hens for summer. But these fowls must be the genuine breeds or they wont do. You must be careful to procure the fowls in the best of health, for if you should introduce one of bad health, your trouble will commence and all success is ended. One sick fowl will prevent all the rest from laying, as in a short time they will all, more or less, be affected with this malady. Clean cold water and gravel should be placed in front of the house—water from a spring is best. See that the water is put in an iron vessel, as this will improve the fowl more than any other kind. Lead or zinc cankers, and stone or earthenware gets too dirty. When a hen wants to set, take her away, put her by herself in another yard for a day or two, give her a teaspoonful of castor oil, and in a day or two from this put her back. Every three months change your cocks, if you keep two kinds, and then eggs will be plenty. Six hens for one cock is my rule. I keep two kinds with two yards, and find that it is the best plan that I have yet discovered during all my experience of seventeen years in raising domestic poultry.

The fowls treated in this way will lay two eggs in three days, and continue to do so upwards of ten months. After having laid from twenty-five to thirty eggs, the hen prepares for the tedious process of incubation; then you must give her oil. In the more northerly climates, as Greenland and Siberia, the fowl does not breed. This shows that the climate is one of the principles on which the production of eggs depends. As has happened to other animals that have undergone a long domestication, their varieties have been greatly multiplied, and their native abodes are not ascertained with precision, but they are seldom found in a wild state, except in the warmer regions of the globe, particularly in the forests of Southern Asia, where they subsist on worms and insects, but principally on seeds and grain.

J. J. Bower.

From the Southern Field and Fireside.

Pear Culture in the South.

An Essay, written at the request of the Aiken Vine Growing Association, of South Carolina, and read before that body on Thursday, July 7th, 1859, by L. E. Berckmans, *of Augusta, Ga.*

Mr. Chairman:

By resolution of the Society, communication of which has been sent to me, June 16th, you have appointed me to prepare an "Essay on the Culture of the Pear."

The duty conferred upon me by said resolution should be more thankfully accepted if I felt myself better qualified to carry out the views of the Society. However, I hope to be able to throw some light upon the subject, by the result of over thirty years' experience in fruit culture, on this and the other side of the Atlantic, and by my almost exclusive attention to the pear cultivation in the South during the past two years.

The object of the Society in calling up the subject of the Pear culture is undoubtedly, to discuss thoroughly the advantages, inconveniences, profits, and drawbacks of the cultivation of that class of fruit, in reference to its value as a market produce, and as a reliable crop among the different fruit crops.

In taking this view of the subject, our first duty must be to divest ourselves of all prejudice in discussing matters of public interest; and as the production of such an important class of fruits as the Pear is at the eve of assuming large proportions, I cannot but highly approve the opportunity of putting the question before the public, under sanction of your authority, with a view to open the field to impartial discussion and better information.

The culture of every comparatively new, or not sufficiently tested fruit, or cereal, destined to occupy a prominent place upon our markets, and to exercise a marked influence upon the general diet of the people, is well worth the earnest consideration of the Agricultural and Horticultural Societies of the Union. It is, in case of success, a benefit conferred upon the community; and, in case of failure, heavy losses of time prevented and money saved; for individual prejudices and hobbies, not to say anything about less worthy motives, are hard to be overcome; and were it not for such unique and far-famed institutions as the American Agricultural and Pomological Societies, the now almost cleared field of pomology should be a wilderness of confused notions, inaccurate informations; and, worse than all that, of bitter personalities and disputations, where light and impartiality could hardly be expected to find their way.

Much as the Pomological Society has done for the selection and promotion of good fruits, we cannot expect to find among the documents sufficient information in regard to the South, where, indeed, the cultivation of the Pear is still in its infancy. Even in the North it is, and will be for some time to come, a much controverted subject—the result of which has been a general uneasiness, misgiving, and doubt, in regard to the probability of raising large crops of Pears; and, considering so many should have to be discussed, so many objections to be overcome, our task becomes more difficult, and our wish to be brief and concise must yield to the necessity of conveying all possible information.

To proceed in a regular and logical order, we have to indicate the principal points to be discussed in due succession, and in regard to their respective importance.

1. The first question to be examined seems to be: Is the Pear Tree, as a standard or as a dwarf, suited to the South as far as Florida and Louisiana?

2. The second is: Can it be cultivated with profit to a certain extent?

3. Third: Is it durable, and not more exposed to diseases than other products?

4. Fourth: Can we expect to sell the crops with prospects of regular profits? Then what varieties and seasons are to be selected for the market?

5. What soils and aspects, local conditions, manures, and treatment are the best to insure a successful cultivation of the pear?

If I am not mistaken, these must be the main points to be examined in making up an essay—not a treatise. Around these main questions other remarks will occasionally find place.

It must be well understood that the Pear tree is, all things considered, of a more refined, and consequently of a more delicate and weak constitution than the Apple, Peach, and Cherry—the improved Pear tree of our modern times is so far removed from the original wild parent, found in the forests of the old continent, as to be altogether a different thing, and hardly bearing any likeness to that original wild type. Long since have I supposed that this may be the cause of its weaker and more refined habits; for, we all know that the more we make plants and trees recede from their original type, the more they become delicate and subject to various diseases. This law of nature is universal, and in accordance to it, the more refined the fruit, the flower, or the foliage, the more delicate will be the plant. This rule admits of but few exceptions.

But let the cause be what it may, it is a generally acknowledged fact, that the Pear tree is more fastidious, less hardy, and requires a better management than most other fruit trees. It succeeds, however, where almost any fruit tree of the temperate zone does succeed, and it seems rather to be suited to a more Southern latitude than the Northern States. More Pear trees are killed by the mediate or immediate effects of the severe frosts of the North than by any other cause acting farther South. The blight, almost the only fatal disease inherent to the Pear tree, is not worse here than in any other part of the Union, whilst the ravages of intensely cold winters are never witnessed here.

That the Pear tree seems to feel better at home this side of Mason and Dixon's line, is proved to me by three facts which I have closely observed during the last three years. The first remark is, that weak and outworn varieties, only fitted for *Espaliers*, in their native climate, and but ill adapted to the severe winters of the North, are in fine condition here in Georgia.

The other fact is, that some European varieties, although very new or of recent origin, will not do in the North, while they

recover all their native strength and beauty here.

The third remark applies to the size and quality of the fruit which, in most all cases, is superior in the South to what I have ever witnessed it to be in other parts. My seedlings show their propensities or characters sooner; their maturity is promoted in less time; their foliage is often double the size of what I found it to be in the North, especially many of the inedited but most prominent seedlings of Van Mons and Dr. Brinkle.

In regard to the Southern limits to be assigned to the Pear, I have not heard of a climate where it did not grow. I had occasion to unpack and to plant the Pear trees sent to our worthy Pomologist, Dr. Brinckle, in Philadelphia, as varieties from Brazil, Peru, and Mexico; they were esteemed there as fine fruits, but they only proved to be inferior varieties of the old catalogues when growing here. This is another conclusive fact in regard to the adaptedness of the Pear to the very lowest latitude, as the same result took place in that instance, to wit: the improvement of an inferior sort to a fruit of good quality. To quote a few facts, I will state that the Bartlett is decidedly better here than in New York or Pennsylvania: that the White Doyenne is more hardy, more certain, and rather too rich; the Flemish beauty, the Pratt, the Buffum, the Van Assche, are larger and better here than in the North. So with most all the Pears I had occasion to test in Georgia and South Carolina, except the old Winter Pears.

Varieties of doubtful quality in the North, as the Parfum Aout, Fondante de Semtembre, Bellissime D'Ete, Belle de Bruxelles, which I found to be of uncertain or of second quality in Boston, New York and New Jersey, are almost of first quality in my grounds in Georgia. So much for the influence of a Southern temperature upon the Pear. And, as for the so much dreaded action of the Southern sun upon the bark, let me remark that I found it not to be so prejudicial as it is commonly thought to be. I have planted all sorts of trees, and some with highly denuded bodies; I have not found any of them to suffer from that cause. The only pernicious effects in such cases is owing to the rash process of suddenly removing the protecting limbs from a fruit tree, when the body has not been exposed and inured, from its early youth, to the Southwestern rays of the sun.

That the Pear Tree will and must succeed upon the quince stock, I have most satisfactory and convincing proofs—provided the quince stock be not exposed to the air and sun. As a tree is not so weak—it is then complete in its organism; but checked and deprived in its organic structure, it becomes feeble and liable to diseases. When the quince stock, below the bud, is destroyed by worms, it is owing to the following causes:

1. Unfitness of the budding variety to grow well upon the quince stock. (We have many of these.)

2. Exposure of stock, or too deep planting.

3. Excess of moisture, of want of proper food in the soil.

4. The vicinity or presence of old decayed wood, roots, or sticks, carelessly dug in with the tree when planted.

In all these cases it is sickness, either inherent or accidental. Once *fairly* started, there is no more danger for the dwarfed tree.

And now we must examine the much controverted subject: Can the Pear be grown with profit?

This is rather a complicated question, and I do not know how to answer as briefly as I should wish to do. As far as my personal conviction is concerned, I have no hesitation in replying in the affirmative, provided we stick to the following rules:

1. The selection of a proper soil. All soils are not suited to the Pear tree.

2. A locality sufficiently free from excessive moisture, and rather rolling them too level and flat.

3. The judicious and careful selection of hardy, handsome, productive and good varieties, selling not only as good, but also as fair and inviting fruit.

4. The selection of stock. Some Pears, if not all, growing upon the quince, are better upon that stock than upon the free or wild Pear stock. No Pears are nor were ever good upon the Hawthorne, Amelanchier, Mountain Ash, &c. We have tried that twenty years ago, and never succeeded in producing any good fruit, although we made trees grow finely for the first two or three years.

5. The proper attention and care bestowed to the tree, which must be more than that given to the apple, peach or plum. Next to the grape, the Pear requires the greatest attention and skill. It is not everybody's business to raise handsome fruit, and to *form* trees which, in a season of abundance, will have their fruit so equally set and distributed all over the trees as not to split and break the limbs, as is often the case.

Let us remark that the greatest care is only needed when the tree is very young. After it is once well-shaped and sets to bearing, it sends out less rank wood and takes better form and habits.

It would take more words than I can compress in an essay to lay down the rules of judicious pruning, without which there is no future for the Pear tree, at least in most cases, and among the most refined sorts. We must confine ourselves to a few remarks upon the profits and the choice of varieties suited to the market.

In the vicinity of Boston, for instance, most handsome profits are realized from the Pear crops. Although, judging from the quantity of Pears growing around that city, we should deem the market to be overstocked; still, Pears sell in Boston from 50 cents to over $4 a dozen. Some cities, as Philadelphia, have only a few inferior Pears in the market, and would pay any price if they could get these in some quantity. Two years ago the editor of the *Horticulturist* wrote me: "Much is written about Pears, but we cannot buy any in our Philadelphia market—please let me have some, for love, for begging, or for money!" In fact, the Pear is considered such an aristocratic fruit, (if I may use that term,) that those who grow them keep them for their own families, friends, and visitors, as one of the finest luxuries. I have seen as much as $6 paid for a dozen of handsome Pears in Boston, (in December.) No party is fashionable among amateurs without at least one fine dish of Pears. Messrs. Hovey, Austin, and many others, sell Pears in large quantities, with very handsome returns. From New Jersey, Western and North-western New York, large quantities are sent to New York city. Col. John Hebron, in Mississippi, makes his Pear trees pay, and over.

And when we consider that Pears, *to be good*, must be picked a few days before ripe, it seems just the article for transportation to distant markets. I have no doubt I can pick fine full grown Bartletts, pack them in barrels, send them to New York, or Quebec, or Havana, and when they will be at the port of destination, and leisurely unpacked, they will just be in the very best condition to go to the market or to the table. In regard to the facility and security for, and the very improvement of the fruit *by* transportation, no other fruit can compare with the Pear, not even Oranges and Lemons—the Pear and some Apples being the only fruit which *requires* picking from six to eight days before maturing, to bring it up to its true quality. To make a Pear orchard pay, we need only the necessary skill and care, a well cultivated soil, and a climate where the bud is not exposed to be killed by 20 degrees below 0, or by the uncertain springs of the North. We have not to care about markets—for such fruit they are everywhere, because it bears, and rather demands transportation.

Let those who have the means, time, skill, and a little patience, try the experiment. They will find out that a well-planted and well-directed Pear tree comes into bearing sooner than an Apple, and almost as soon as a Peach tree; that in this climate the crops are more regular and certain; that the Pear tree can be considered as an annual bearer, while Apples are not, and Peaches are very uncertain. The season of blossoming for the hundreds of varieties of Pears is so protracted, that only a score out of a hundred will be in blossom when a spring frost sets in, and the others will either have set their fruit, or be dormant, and consequently out of danger, with an ordinary slight spring frost. I have reasons to consider the blossoms of a Pear tree more hardy than that of a Peach or Apricot. Few worms attack the Pear—the rot, the ordium, and the curculio, are strangers to it.

But is a Pear tree lasting? I have seen many a Pear tree over a century old; and, with proper care and management, it will last as long as any other fruit tree. As I stated before, the diseases are mostly confined to the blight, which affects some varieties more than others—the old varieties more than the new ones. We can, in the actual state of science, not even indicate a remedy, but we cannot ascertain the origin

and cause (or causes) which produce that troublesome disease. All I have been able to do is, to direct my attention and studies to the wood, foliage, and general characters, which seem to render a given variety more liable to the disease. The class of Bartlett foliage and bark seems to be the most exposed, as I remark in the very seedlings bearing those characters. So is the Glout Moreau and the Vicar—notwithstanding that the bark and foliage are very distinct in the three varieties. To prevent the disease in old trees is impossible—for young trees there is a better chance—close watching and pruning, the prompt removal of the diseased wood, longitudinal incisions when the appearance of the bark is not sound, a good supply of special *wood forming* manures, are the best means, if not to prevent the blight altogether, at least to stop its further progress, and in most cases the tree can be saved.

We have, it is true, a diminutive borer, which sets in just above a bud or a spur, and working down a few inches, circles or girdles the wood from inside out, and destroys part of a limb in growing, or the body in very small trees. But this insect is scarce, and only injures part of the wood or unsound trees. I found it most active in some shrubs, as the Spireas, Deutsias, Seryngos, and chiefly in the Lagerstromia. Among thousands of young Pear trees in my grounds perhaps not fifty have suffered from that insect, and those were only partly injured. The blight will be found the worst in rich bottom soils, where the tree takes up too much ammonia instead of the proper constituents of the wood and organs of the tree—those are ashes, lime, phosphate, iron, silicates, plaster or gypsum. These substances, with the carbon of the atmosphere, form the proper basis and food of all the trees. Ammonia and nitrogen, promoting a too luxuriant growth and porosity of the bark, seem also to promote the blight. I have been told by Mr. Downing that seasons have been witnessed at the North when at least every tenth Pear tree was destroyed or injured by the blight. Still, Pear growers have not been discouraged; and, indeed, it never has proved a disease as fatal and destructive as the borers, the yellows, the black knot, and the ravages of the curculio, from which the Pear tree is altogether free. Thousands of Apple, Peach, and Plum trees are destroyed by these evil causes, and their crops very uncertain if not complete failures. This tells much in favour of the Pear tree.

The best season to bring Pears into the market would seem to be from the months of September to December, (Winter Pears being better suited for amateurs, as requiring too much watching and extra care;) then, the Peach is scarce, the Plum and Figs are gone, and the Winter Apple has not yet taken its place in the market. This remark applies to our home markets. For the markets of the North the very earliest Pears are the best.

I have partly answered the question of soils and localities. I shall only add, that deep sandy loam soils, rather dark than light coloured, Western, Eastern, and Northern aspects, and rather elevated localities, seem to be the best for the health of the tree and the setting of the blossom; and that Southern latitudes agree better with the Pear than higher latitudes, where often winters from twenty to thirty degrees below zero prevent all reliance upon a fair crop of refined fruits, such as Pears, Peaches, and Grapes.

I shall not see the time when the South, from Virginia to Alabama, shall be considered the fruit garden of America, but I am fully convinced that such a time must and shall come, and that thousands of acres, unfit for cultivation of cotton or rice, will be converted into remunerative orchards.

All we want is a little patience—a rare thing with a *fast* people. We must consider that fruit trees are different from sweet potatoes, although they do not require more, if as much care, and that the planting of rows of fruit trees in the field, at convenient distances, will not materially interfere with the crops of potatoes, cow peas, or vegetables, or any low growing crops that will not smother the young trees. If, moreover, we will consider that soils exhausted for ordinary crops still do retain a great deal of the constituents required for a tree, it will be evident that fruit can often be obtained where other products must fail.

We have yet to find out what sort of Pears are best suited to our Southern latitude. Every season, almost, brings us new Peaches, Grapes, Pears, and Apples, superior to the old varieties, which will slowly work their way to the head of the list of

prominent fruits. Among the native and foreign varieties, many have been found to be well adapted to our climate. We have a great deal more in expectation, and among my select seedlings, collected from this and distant countries, many give fair promise of being ranked, at some future day, among our best and certainly our most hardy and vigorous varieties.

Permit me to conclude this already too long chapter on Pears with some remarks upon the different opinions about this fruit.

The mistakes and deceptions which have so often occurred, and have discouraged many zealous amateurs, are mostly the result of unwise selections of the worn out varieties, discarded and given up in their native localities and here, not as refuse and unsaleable stock but under good sounding, or false names, and which must have proven, as they did prove, indeed, failures. The newly obtained varieties are undoubtedly (and with some few exceptions,) the most vigorous, symmetrical, and hardy. Of all the Pears cultivated at present as leading varieties, a few only can be traced as far back as Duhamel, or even Poiteau, (editions from 1785 to 1810.) The Duchess, the Beurre Superfin, the Beurre d'Anjou, the Belle Lucrative, the Clairgeau, and many others of our best leading sorts, were not known twenty-five years ago. I have hundreds of seedlings, selected from among thousands, with which I would not part for any consideration, so sure do I feel that some day they must take the place of such varieties as I do not consider as perfectly adapted to our latitude, or to our wants. We must have hardy, beautiful, vigorous, productive trees, easily cultivated in all soils, and more easily kept in the right form and shape, with good or best and large fruit. What the last twenty or thirty years of experiments, or good chances, have done in that way, will be compared to what is at present going on in our great Union. Seedlings are brought to notice every season from Maine to Alabama.

It has been my good fortune to be connected with many influential and well-informed gentlemen, and thus to have got a chance to test most all the novelties here in the South, at the same time that they are submitted to the judgment of amateurs in other parts of the Union. Let us not judge the *Cultivation of the Pear* by the worthless varieties which have induced people to say Pears will not do in —— (no matter what State,) it was the same in all States. When I first became acquainted in New Jersey, I was told "Pears would not do well just there," and now Professor Mapes, Doctor Ward, William Reid, and many others, realize handsome profits, and have fine, almost certain crops every year. And why? Because they wisely discarded the old, sickly, and run out varieties of the catalogues, when Pear culture was in its infancy, and took to the new sorts endowed with all the vigor, beauty, and fertility of renovated products.

I have thus far spoken of the Pear tree as a producer, in competition with the other fruit producing trees of our latitude; but if we come from the orchard to the garden, we will find the Pear tree the most indispensable, ornamental, and convenient tree to be placed around dwellings and among our flowers and shrubbery. What is equal in beauty to a well managed and sound Bartlett, Superfine, Michel Archangel, Buffum or Urbaniste?

But we must conclude, and we will do so with a wish that more effectual and persevering efforts should be directed to that branch of rural economy. In a climate and with such a soil as ours, we must have the best Pears, as we have already the best Peaches and Grapes, to say nothing of our delicious Apples. We have the choice of localities, plenty of room, and the means to try experiments. We shall not remain behind when all the North, much less favored by nature and climate, is fully alive to the importance of this question.—*Southern Field and Fireside.*

Editorial Life---A True Picture.

Did it ever occur to you, most agreeable reader, that editorial life is not an unruffled sea. Did you ever pause in looking over a newspaper to think of the ceaseless toil that is necessary to provide for you the columns and paragraphs you so easily scan? This editorial writing—what a ceaseless tapping of man's brains it is! No matter how he feels—the paper must be out at the appointed time, and his usual contributions must fill the accustomed niche.

The limited space of a newspaper column does not allow the editor to treat any subject at large. He must not attempt an extended discussion, no matter what he writes

about; but he is expected to touch on a variety of themes every week, and to just touch them—nothing more; so that his readers may not be wearied by long articles. To write a long essay or series, would sometimes be a great relief. But if he does either, ten chances to one he will hear of it. Once or twice, in a long editorial service, we have ventured to do this dangerous thing. Fortunately we heard no complaints, though we have no doubt many were uttered. Now and then, however, we have been complimented by a brother saying to us: "That was a very good article in last week's paper, as far as I read; but it was so long, I was called off before I had time to finish it!"

Editorial writing is pleasant enough and easy enough to a man accustomed to it—when he has once determined what he shall write. But this selection of topics is not easy. For a single paper or two, any man will find subjects at hand; but when it comes to writing to the same readers year in and year out—when one calls up the subjects already presented, some briefly, others more elaborately, either by himself or by correspondents, the difficulty of selecting so as to avoid self-repetition, is quite embarrassing. As to waiting till something suggests itself—till it comes to you—that is out of the question. The respectable but ill-named boy is at your door already. He is calling for copy. You must sit down and write at once. What if half a dozen persons in the office are earnestly discussing Church matters or politics? What if you are interrupted every moment by some irrelevant interrogatory, urged with singular indication of obliviousness of what you are about? You must hold on to the thread of an idea, if you happen to have one, and still do the agreeable to your friend; you must write with some appearance of understanding what you are saying, whether, in reality, you know what you are about or not; you must feel your way through, like a man walking in a narrow pass during a dark night; and, having reached the end of your sheet, you may take a long breath, and turn away in search after some other subject. And there is no end to this, for as soon as you have succeeded in arranging for one number, the burden of another is upon you from the first of the week in January till the last in December.

But to the writing of editorial is to be added the aggregate of other duties. Here is a correspondence well meant and full of sensible sayings. But is badly written, perhaps badly spelled, perhaps poorly put together. You must go over it. You must dash out an unnecessary word here and put an omitted word yonder. You must be a grammarian for the writer, who either has never learned grammar, or has permitted himself to write without revision; you must, in short, prepare his irregular composition for the press, and where you cannot make out precisely what he intended to write, guess at it, and let your readers have the benefit of your guessing.

To read a newspaper for pastime is a very inviting employment. But here are twenty received by the morning's mail. You take the scissors in hand and glance over them. What a treat would these be to some people—people who have leisure to read them through. But your work is scissorise. You are looking for scraps. Here is one, but you had it in your paper last week. Here is another, but it is too sectarian. Here is a third, but it is one of last year's creation that has lodged awhile on the shores of forgetfulness, and is now swept again on the tide of news to float until it can find another standing place. After another hour or two of search you gather the result. It is your column of clipping from the exchanges. What a search for so meagre a reward.

Well, have you done? See, there is a roll of proofs. The type is set, and the foreman wishes to make up the form. Here is a letter up side down—there is a word you never saw before—here is a sentence without a meaning. What are you to do? Look at every letter—read every intended correction, and send it back to be printed after your alterations shall have been made. You must do this at once. Delays are dangerous. You must not take half a day for it. Drop everything you have before you, and read your proofs. The press will be waiting for you, and unless you are in time, your place will be taken by another, and your issue delayed. Happy the editor who, when his sheet is out, does not find a dozen errors that he could not find before. Thrice happy he, who, besides all this, does not find many that he did not see still glaring upon him in all their ugly deformity and provoking calmness, despite of all his care.

Balt. U. S. Journal.

The Crow.

[The following article on the habits and natural history of this sagacious bird is copied from the *Atlantic Monthly*, which is, by the way, the finest magazine in the United States. Familiar as the Crow is to all our readers, yet the article cannot be perused without exciting fresh admiration of his qualities.—EDS. FARMERS JOURNAL.]

The Crow may be considered the representative, in America, of the European Rook, which he resembles in many of his habits, performing similar services, and being guilty of the same mischievous deeds. It is remarkable that in Europe, where land is more valuable than in this country, and where agriculture is carried on with an amount of skill and nicety that would astonish an American farmer, the people are not so jealous of the birds. In Great Britain rookeries are regular establishments, and the Rooks, notwithstanding the mischief they do, are protected, on account of their services to agriculture The farmers of Europe, having learned by repeated observation, that, without the aid of mischievous birds, the work of the farmer would be sacrificed to the more destructive insect-race, forgive them their trespasses, as we forgive the trespasses of cats and dogs. The respect shown to birds by any people seems to bear a certain ratio to the antiquity of the nation. Hence the sacredness with which they are regarded in Japan, where the population is so dense that the inhabitants would feel that they could ill afford to divide the produce of their fields with the birds, unless they were convinced of their usefulness.

The Crow is one of the most unfortunate of the feathered tribe in his relations to man; for by almost all nations he is regarded with hatred, and every man's hand is against him. He is protected neither by custom nor superstition; the sentimentalist cares nothing for him as an object of poetical regard, and the utilitarian is blind to his services as a scavenger. The farmer considers him as the very ringleader of mischief, and uses all means he can invent for his destruction; the friend of the singing-birds bears him a grudge as the destroyer of their eggs and young; and even the moralist is disposed to condemn him for his cunning and dissimulation.

Hence he is everywhere hated and persecuted, and the expedients used for his destruction are numerous and revolting to the sensibilities. He is outlawed by acts of Parliament and other legislative bodies; he is hunted with the gun; he is caught in crow-nests; he is hoodwinked with bits of paper smeared with bird-lime, in which he is caught by means of a bait; he is poisoned with grain steeped in hellebore and strychnine; the reeds in which he roosts are treacherously set on fire; he is pinioned by his wings, on his back, and is made to grapple his sympathizing companions who come to his rescue; like an infidel, he is not allowed the benefit of truth to save his reputation; and children, after receiving lessons of humanity, are taught to regard the Crow as an unworthy subject when they carry their precepts into practice. Every government has set a price upon his head, and every people holds him up to public execration.

As an apology for these atrocities, might be enumerated a long catalogue of misdemeanors of which he is guilty. He pillages the cornfield, and pulls up the young shoots of maize to obtain the kernels attached to their roots; he destroys the eggs and the young of innocent birds which we should like to preserve; he purloins fruit from the garden and orchard, and carries off young ducks and chickens from the farmyard. Besides his mischievous propensities and his habits of thieving, he is accused of cunning, and of a depraved disposition. He who would plead for the Crow will not deny the general truth of these accusations, but, on the other hand, would enumerate certain special benefits which he confers upon man.

In the catalogue of the services of this bird we find many details which should lead us to pause before we consent to his destruction. He consumes, in the course of the year, vast quantities of grubs, worms, and noxious vermin; he is a valuable scavenger, and clears the land of offensive masses of decaying animal substances; he hunts the grass-fields, and pulls out and devours the underground caterpillars, wherever he perceives the signs of their operations, as evinced by the wilted stalks; he destroys mice, young rats, lizards, and the smaller serpents; lastly, he is a volunteer sentinel about the farm, and drives the Hawk from its inclosures, thus preventing greater mischief than that of which he himself is guilty. It is chiefly during seed-time and harvest that the depredations of the Crow are committed; during the remainder of the year we

witness only his services; and so highly are these services appreciated by those who have written of birds, that I cannot name an ornithologist who does not plead in his behalf.

Let us turn our attention, for a moment, to his moral qualities. In vain is he accused of cunning, when without this quality he could not live. His wariness is really a virtue, and, under the circumstances in which he is placed, it is his principal means of self-preservation. He has no moral principles, no creed, to which he is under obligations to offer himself as a martyr. His cunning is his armor; and I am persuaded that the persecutions to which he has always been subjected have caused the development of an amount of intelligence that elevates him many degrees above the majority of the feathered race.

There are few birds that equal the Crow in sagacity. He observes many things that would seem to require the faculties of a rational being. He judges with accuracy, from the deportment of the person approaching him, if he is prepared to do him an injury; and seems to pay no regard to one who is strolling the fields in search of flowers or for recreation. On such occasions, one may get so near him as to observe his manners, and even to note the varying shades of his plumage. But in vain does the sportsman endeavor to approach him. So sure is he to fly at the right moment for his safety, that one might suppose he could measure the distance of gunshot.

The voice of the Crow is like no other sound uttered by the feathered race; it is harsh and unmelodious, and though he is capable, when domesticated, of imitating human speech, he cannot sing. But Æsop mistook the character of this bird when he represented him as the dupe of the fox, who gained the bit of cheese he carried in his mouth by inducing him to exhibit his musical powers. The Crow could not be fooled by any such appeals to his vanity.

The Crow is commonly regarded as a homely bird; yet he is not without beauty. His coat of glossy black with violet reflections, his dark eyes and sagacious expression of countenance, his stately and graceful gait, and his steady and equable light, combine to give him a proud and dignified appearance. The Crow and the Raven have always been celebrated for their gravity—a character that seems to be the result of their black sacerdotal vesture, and of certain manifestations of intelligence in their way and general deportment. Indeed, any one who should watch the motions of the Crow for the space of five minutes, either when he is stalking alone in the field, or when he is careering with his fellows around some tall tree in the forest, would acknowledge that he deserves to be called a grave bird.

Setting aside the services rendered by the Crow to agriculture, I esteem him for certain qualities which are agreeably associated with the charms of Nature. It is not the singing-birds alone that contribute by their voices to gladden the husbandman and cheer the solitary traveler. The crowing of the Cock at the break of day is as joyful a sound, though not so musical, as the voice of the Robin who chants his lays at the same early hour. To me the cawing of the Crow is cheering and delightful, and it is heard long before the majority of birds have left their perch. If not one of the melodies of morn, it is one of the most notable sounds that herald its approach. And how intimately is the voice of this bird associated with the sunshine of calm winter-days—with our woodland excursions during this inclement season—with the stroke of the woodman's axe—with open doors in bright and pleasant weather, when the eaves are dripping with the melting snow—and with all those cheerful sounds that enliven the groves during that period when every object is valuable that relieves the silence or softens the dreary aspect of Nature!

From the Southern Cultivator.

Improved Land and Increased Value.

We would call especial attention to the following letter from Hon. B. P. Johnson, the able Secretary of the N. York State Agricultural Society. It is of peculiar significance and value at the present time, when the subject of improving our lands is beginning to receive the earnest attention of our people:

Editors Southern Cultivator—I received yours of the 27th ult., in due time, and, perhaps, I cannot better answer your inquiries, as to the improvement made by farmers here and the increased value of lands from improvements made, than by giving you the statements of some individuals which have come before our Society, and are entirely reliable.

A farm, situate in this county, which, for fifty years, had been under a system of destructive cultivation, taking everything off and returning nothing to sustain the land, came into the possession of a farmer in 1845. The land was so exhausted that, for the first two years, little could be raised; but, by a judicious system of manuring, rotation of crops, &c., this farm, consisting of 185½ acres, gave a gross income of $4,852, and a net income, after deducting expenses of cultivation, of $2,678 16, in 1851—six years from the time it was entered upon.

The method of improving this land (a sandy loam soil) was by plowing under green clover—plowing at least 8 inches deep—applying manure generally as a top dressing (twenty to thirty loads per acre) to grain crops. The manure, mainly made from the droppings of cattle and horses kept on the farm, averaging about 300 loads (of 30 bushels) per year. Lime and plaster, used plentifully—stable manure and lime considered the best manure for this land. The increased fertility of this land was secured by judicious culture.

To show you what was the condition of the land when the farmer took possession of it, I give the statement of the former occupant:

"I occupied the farm 16 years previous to your purchase; the farm was all the time in market; I was a tenant at will, and had no incentive to improvement, so that the farm rather deteriorated under my management. *I farmed it with a view of getting the most out of it at the least possible expense.* I paid one hundred dollars a year rent; some of the land was new when I went upon it and it paid me very well, but for the last few years the land was so worn down that I no longer considered it an object at the price I paid. With regard to the amount of sales of produce, I should think I must have sold about 400 dollars worth yearly. I do not think I left *the farm any better off* than when I *came* upon it 16 years before. I did not suppose the *farm was capable of doing what I see you have made it do.*"

It will be seen that the reason this man did not accomplish anything was, that *he had no inducement*, as he thought to farm well *because* the landlord would have the benefit of the increase as well as himself, and so he labored for his board and lodging for 16 years—the best part of his life. There are multitudes of such men who are owners of land and pursue the same depleting system this man did, and *then say farming don't pay.* *'Tis true*, and always will be, *that such farming will never pay*—it is but using land as if it was a plaything, and after a little time may be thrown away. It is proper to say, that this farm was advantageously situated as to market; but that *was as good* for the tenant, during his 16 years, as the *owner after him.* It does not militate against the *certain success* of the farmer by his pursuit, if he will avail himself of the means adapted to secure the result. Evidences are abundant that the fertility of the land cannot only be maintained, but increased in richness; and there is no necessity of having this exhausting process continually going on.

Another case in the interior of the State—a farm redeemed from the forest. In 1839 the farmer commenced his operations in the wilderness—land purchased, probably, at not more than $5 per acre. The forest had to be removed and the land brought under culture, which was a work of *time.* A plan of gradual improvement was adopted in clearing the land and preparing the soil, which has resulted in success. The hard crust underlying the native soil was attacked year after year by plowing deeper each season, bringing it up to the influence of air and water, forming a deeper and more valuable soil. While crops, formerly of wheat, averaged 10 or 12 bushels; corn 20 to 25 bushels; now wheat (before the insect appeared) averaged 20 to 25 bushels, and corn full 60 bushels; and an equal advance in meadows—and this all accomplished by the labor of the farmer and his judicious management.

In January, 1857, this farm, of 60 acres, of which 20 acres are in woodland and five acres in buildings, highways, &c., leaving only 35 acres under culture, gives the following result:

Value of the stock, implements, &c., on hand, $1,065; value of grain and other products sold, $1,210; leaving, after all the expenses of the farm and family had been provided for, $468 to the credit of this little farm.

During the period of its occupancy, and since the forest has been felled, it has been paid for, thoroughly drained, good and sufficient stone and other fences erected, weeds eradicated, neat and commodious buildings erected which are most attractive. And

ere the value of this land from its nominal rice in 1839 (when it was bought) has been rought to its present condition by a careful nd judicious management, ever keeping in iew that it must, each year, be increased in ts value for cropping—judicious rotation of rops so that no one crop should exhaust nd run out the land.

This farm is now worth $40 to $60 per cre.

I could multiply these evidences, especially in our dairy districts, were it necessary. The system of *scourging the land* and exhausting its life blood and then abandoning t for little, and fleeing to the cheap lands at he West, there to repeat the same course of xhaustion, is being arrested, and the mangement of farm land is greatly improving nd the occupation of the farm is giving as nuch real and substantial comfort and indeendence as any other pursuit. And it will ontinue to be more and more successful, as nore skill and intelligence are enlisted in this ursuit.

I regret I could not answer your letter nore fully and at an earlier day; but a presure of engagements is the only reason. I hall be pleased to answer any inquiries that ou may desire, as far as I can. I desire to lo all the good I can to the great agricultual interest of our country—the foundation f our prosperity as a nation, the conservaive element in our population, which will e proven in the hour of peril, should it ver come (which may God in his infinite nercy prevent.)

I am most truly yours,

B. P. JOHNSON.

State Agricultural Rooms, Albany, N. Y.,
May 25th, 1859.

From the Southern Cultivator.

Low Price of Southern Lands---Remedy Etc.

EDITORS SOUTHERN CULTIVATOR:—I am not farming to much extent, and it may, therefore, be thought presumption in me to give my views on the following subject; but after carefully and anxiously reading the article commenced in the May number and concluded in the June number of your valuable journal on "the Cheapness of Lands at the South, its Causes and Remedies," I have determined to trouble you with my thoughts on that subject. If this article has but the effect to excite the minds of those capable of unfolding that subject, I have effected my object. With this spirit I send you this, which, should you think it worthy, give it a place in the *Cultivator*. I admit, with that article, the evils exist, and would gladly see them remedied, but differ as to the causes and remedies.

There are four causes of exhaustion to our soils, and, consequently, of lessening their value, viz:

1st. Our long hot summers.
2nd. Our heavy washing rains of winter.
3rd. The things cultivated.
4th. The mode of cultivation.

The first and second are peculiar to the South. They are the dark side of the picture of our snowy fields and sunny skies. They cannot be removed, but may be greatly warded off. With them the North has little or no trouble. Any one who will carefully observe the effects of one of our long summer drouths on the soil, will, unhesitatingly, say that it injures the soil more than any crop raised by us. By it nearly every liquid and volatile particle is evaporated. So great is this heat that in places it cracks the earth to the depth of twenty feet. In parts of Texas, well-diggers have seen traces of these cracks even deeper than that.

2. *The Washing Rains of Winter.*—The whole South is subject to tropical changes. The rainy season coming in winter. When it sets in, the rain falls in torrents. The earth is never frozen during our winters, but completely softened by these rains. In Texas, when rain sets in, it fills these deep cracks with the top soil, leaving gravelly ridges between, resembling huge potato ridges. When these do not exist, owing to the unfrozen state of the ground, softened by the rains and our method of cultivation, the remaining portions of the soil are mostly washed away.

In the North their summers are short and warming—not burning; and in the winter the earth is mostly frozen, the rain by freezing and the snow, instead of washing, forms a mantle of protection.

3. *The things Cultivated.*—The principal objects are cotton and corn raised from year to year on the same ground without change, unless it be from cotton to corn and from corn to cotton. Annually extracting from the soil the ingredients which compose the food of those plants until the soil is exhausted of them, however plenty in other ingredients, and then thrown away. The author of that article says that "cotton, of

all our crops, is the least exhausting," &c. Cotton, as it has but few lateral roots and is sustained principally by one large tap root, may, of itself, take least from our soil; but its clean culture and continued turning of the fresher soil to the burning sun makes it the most exhausting of all crops. Its clean culture and few lateral roots leaves the soil without anything to hold it together, and in the worst condition possible for our heavy winter rains.

In the North, the principal objects of cultivation are grasses and the cereal grains, the stalks of which shade the ground in summer, and their rootlets form a complete tie to the soil against their thaws of spring. The stubble and stalks which they turn under in the fall after the injurious heat of summer is over, forms a coat of manure which, by rotting, keeps the soil warm and mellow.

4. *Our System of Cultivation.*—As the author of the article truly remarks, "lands in the South are bought with the calculation of being worn out and deserted." The clearing is about one-fourth done. For the first two years no crop is raised from shade and unbroken soil. As soon as trees die and the roots rot, the soil, for want of something to hold it together, from scratching instead of plowing, and that up and down hill, washes in a most frightful manner. Deep and horizontal plowing and hill-side ditching are ridiculed. Manuring is almost wholly neglected except a handful of cotton seed in the hill. A very light and temporary affair. Our plowing averages from two to six inches deep.

In the North, notwithstanding they have none of our winter washing rains, they horizontalize their plowing and efficiently hill-side ditch their lands. Their plowing averages from 5 to 15 inches deep. In addition, they harrow and roll their lands after plowing until the soil is completely pulverized, and smoothed as near as may be. They manure without stint.

REMEDIES.

That author recommends stock and their raising as a remedy, by furnishing manure, &c. Although I am a strong advocate for stock-raising, the idea that stock enriches the soil seems to me merely speculative. True, stock are great collectors of manure, but do not create a particle. The richness scattered over a great extent of country they bring home to their resting places a night, but what they bring there they hav taken from their feeding quarter, so tha while they enrich their pen they impove ish their pasture. Add to this, more tha half their food passes off in insensible pe spiration. Of that which remains a grea deal passes into bone, blood and flesh, whil no inconsiderable amount is consumed i keeping up the wear and tear of the ani mal system. Of all they eat and drin there remains for manure but the indigesti ble parts, and the decayed portions of th animal which pass off in the form of dun and urine—perhaps not a tenth.

It seems to me the reason of the thin suggests the following remedies:

1st. Deep horizontal plowing and ditch ing. This will keep what you have an what you add.

2d. Turning everything into manur which will make it, husbanding it as yo do your gold, and scatter it over your fiel with a liberal hand.

3d. Shade the soil. This cannot be don to better advantage than by sowing, in abun dance, grasses, clover and small grain, peas planting potatoes and fruits of every kind These will shade the earth in summer an their rootlets act as ties to the soil in win ter.

Shade induces gentle showers. These grasses, grains, &c., will extract food and richness from the atmosphere—from the soft showers and pearly dews—and their roots from the decomposing subsoil which deep plowing will enable them to reach. All the parts of the earth unshaded and exposed to the direct and continued rays of the sun have and would become sandy deserts. Let us learn from and imitate Nature.

After raising grasses and small grain, stock-raising becomes of value to a farmer. They change these into pork, milk, butter, cheese and beef, wool and mutton. In a word, they are machines by which he can extract from the bulky and raw material, the prepared and valuable portion; leaving the insoluble parts in the form of manure—bring everything into use at once.

5th. Since we must raise cotton, let it be done amidst a rotation of crops, and as much as can be, on land too level to wash when thrown up in ridges and deprived of rootlets.

6th. Let our farmers raise everything

t home necessary for home consumption, which the soil will, either directly or indirectly, produce, and there are few things which it will not. This will give farmers n opportunity to rotate their crops; enrich nstead of wearing out their soil, and save he freight and carriage of the articles back and forth which they buy for home se. They will have less cotton for sale, it s true, but what they do have will be clear ash—not spent in expenses and buying the ext year's support. It seems our farmers re in a whirl, "making more cotton to buy nore negroes to make more cotton to buy nore negroes," &c. They should make and (not negroes) the standard of value; rnament and cherish home as a patriotic nd christian virtue; live there—not stay, s at a tavern—and cease this everlasting noving "Westward, ho!"

PUBLIUS.

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[We commend the above article (with hose previously published on the same subect, to the especial attention of our readrs; and, in this connection, cannot refrain rom giving the private note which our riend "PUBLIUS," sends us with his very xcellent article. It is as follows:

JUNE 1st, 1859.

Dear Sir:—Enclosed I send you an article, suggested by reading the article commenced in your May and concluded in your June number, on "The Cheapness of Lands at the South—its Causes and the Remedies." A subject fraught with the dearest interest of the South, and one, in my view, which cannot be too much agitated. Should you think the article worthy, give it a place in your valuable journal. It is longer than I should wish, but, owing to the extent of the subject and the many causes and remedies connected with it, I could not express my views in a less space.

I am not farming as a primary pursuit, but was raised on a farm in the South *and love it better now than the strife and chicanery of Court.* You will see by your list that I am a subscriber to the *Cultivator*, and have been for some two years. Everything contained in it, even to the advertisements, is carefully read not only by myself, but by my wife also. No visitor is more welcome.

Very respectfully, H.

The Cotton Crop of the Commercial Year just past, and its Prospects in the Future.

The Cotton crop of the commercial year 1858 and 1859, just closed on the 31st of August, will sum up in round numbers 3,700,000 bales—it may perhaps reach a few thousand over those figures; and the market closing in Mobile at 11 to 12 cents for middling cottons. These figures are encouraging, decidedly so to the cotton planters of the country; they prove beyond a doubt that neither a *four million* crop nor a European war can very materially affect the prices of cotton. Our information, from all sections of the cotton growing region, give us the most flattering accounts of abundant corn crops, which is now safe beyond all the contingency of seasons. The growing cotton crop is good—remarkably so generally; it is now, however, at the critical period of its growth. The worm is in it, and the clouds are lowering and rainy; it is therefore the extreme of folly to attempt any calculation as to the extent of the cotton crop, until the dry weather, after the equinoctial period. On this subject our experience has been—and few have watched the subject more carefully—that the more flattering the growth of weed at this season the more hazardous the crop.—*Cotton Planter and Soil.*

A Useful Table.

Counting plants one foot apart each way, we shall have forty-three thousand five hundred and sixty upon an acre, because an acre contains that number of superficial feet. Take the figure in the first column of the following table as the distance apart, and an acre will contain the number of plants in the second column:

1½ feet	19,360	12 feet	302
2 feet	10,890	15 feet	198
2½ feet	6,969	18 feet	134
3 feet	4,880	20 feet	109
3½ feet	3,530	23 feet	90
4 feet	2,722	25 feet	69
5 feet	1,742	30 feet	48
6 feet	1,200	35 feet	35
8 feet	680	40 feet	27
10 feet	435	45 feet	21

Southern Cultivator.

Foreign Trade.

The development which has been given to the foreign trade of the country, since the tariff of 1856 came into operation, may be seen in the following table of the leading exports, the specie movement, the net imports of goods, and the duties collected in each year of the present ad valorem tariff:

UNITED STATES IMPORTS, EXPORTS, AND CUSTOMS' REVENUES.

	Export bread-stuffs & Provisions.	Cotton.	Total of all Domestics.	Specie Import.	Specie Export.	Goods Imported.	Duties Collected.
1845	16,743,421	51,739,643	98,455,330	4,070,242	8,606,495	105,599,541	27,528,113
1846	27,701,121	42,767,331	101,718,042	3,777,732	3,905,268	110,048,859	26,712,668
1847	68,701,921	53,415,848	150,574,844	24,121,289	1,907,739	116,257,595	23,747,864
1848	37,472,751	61,998,294	130,203,709	6,360,224	15,841,620	140,651,902	31,757,070
1849	38,155,507	66,396,967	131,710,081	6,651,240	5,408,648	132,565,108	28,346,738
1850	26,051,371	71,984,616	134,900,233	4,128,792	7,522,964	164,032,033	39,668,686
1851	21,948,652	112,315,317	178,620,138	5,453,981	29,465,752	207,618,003	49,017,568
1852	25,857,027	87,965,732	154,930,443	5,503,544	42,674,135	195,072,695	47,339,326
1853	32,985,322	109,456,404	189,869,162	4,201,382	27,486,875	251,071,358	58,931,865
1854	65,941,323	93,956,220	215,156,304	6,918,184	41,436,456	275,955,893	64,224,190
1855	38,895,348	88,143,844	192,751,135	3,659,812	56,247,343	231,650,340	53,025,794
1856	77,187,301	128,382,351	310,586,330	4,207,632	45,745,485	295,650,938	64,022,863
1857	75,069,634	131,575,857	278,906,713	12,461,799	69,136,922	324,452,725	58,879,620
1858	52,439,089	131,386,661	251,351,133	19,274,496	52,633,147	251,727,008	41,789,619
1859	30,000,000	165,000,000	225,000,000	4,000,000	60,000,000	225,000,000	49,101,204

It is observable that the import and consumption of goods followed the increase of domestic exports, as a matter of course. The year 1847 was that of large exports of breadstuffs, as well as of the operation of the present ad valorem tariff; in that year the value of breadstuffs exported increased $41,000,000, and the aggregate value of exports $49,000,000, while the imports of goods increased but $6,000,000, and the federal revenue showed no increase. The explanation is found in the specie column, which shows over 24,000,000 imported in that year. In 1848, the gold discoveries reversed that state of things, and the United States became gold producers, but not considerable exporters until 1851, in which year cotton rose in exportable value, carrying the aggregate domestic exports to an extraordinarily high figure. This was enhanced by the gold exports, and the result was an importation of goods in return that produced an unexampled revenue. In 1852, the value of cotton fell materially, and breadstuffs did not increase, involving a decline in imports of goods and of revenue.

In the year ending June, 1853, there was a recovery in the exports of breadstuffs and cotton, carrying the domestic exports to a very high figure, although the gold export declined as a consequence of the larger exports of breadstuffs and cotton. The proceeds of these latter having been sufficient, with railroad investments, to keep the balance in favor of the interior, setting the current in that direction, and at the close of the year leaving the government with $23,000,000 in its vaults. The fiscal year 1854 set in with an enormous deficit in the crops of France and England. The usual wants of the latter had been about 64,000,000 bush, of which France supplied half, leaving both countries dependent on third markets for about 30 million bushels. In that year, however, the two countries required 170,000,000 bushels. The United States exported all they could spare at high prices, and in the Winter of 1854, exorbitant prices were obtained in New York. The exports of domestic produce reached an unparalleled figure, and the government collected upon the returned proceeds the largest amount of customs it ever received. In 1855 the United States crop failed, and prices were very high. The improved products of the succeeding years admitted of still greater exports of breadstuffs, while cotton rose to an unprecedented figure, making an aggregate of exports of domestic produce far in excess of any former one. This upward movement culminated in 1857, which was the year of the largest exports ever made of domestic produce, including specie, as it was the last year of the operation of the tariff of 1846. The year 1858 opened with a panic originated in the Stock market, but the series of bad harvests abroad seemed to be terminated, and a series of good crops, which cut off the American demand, set in. The figure for breadstuffs

and provisions has declined greatly, but cotton and gold marked higher figures than before. The revenue of the government has been materially disturbed, however, by the low rates of duties under the present tariff, and there seems little chance that for the next few years, at least, the unaided action of the customs will overtake the expenditures of the government. The value of cotton rises in the double ratio of larger quantities and higher prices, and this development is greatly aided by the cheap food, cheap money and transportation of Europe, which usually compensates in increased purchases of cotton for diminished demand for food. The value has increased 100 millions in ten years, and the prospect for the next ten is far more satisfactory than was the prospect at the close of the Mexican war. The continent of Europe was then plunged in a political chaos which threatened the very existence of civilization. At this moment national interests are apparently consolidated on a permanent and favorable footing; commercial liberality seems to be the rule of governmental policy, while abundant harvests and abundant capital, with multiplied means of communication, seem to offer the broadest foundation for a new period of commercial and industrial prosperity. If the value of cotton has tripled in the last ten years, it may reasonably be expected to show the same progression in the next ten years.

The annual product of gold does not increase, but it is to be remarked that in the first six years of the gold discovery, the amount in the United States accumulated, in other words, the product was more than the export. In the last three years the reverse has been the case, and the amount in the country undergoes reduction. This seems to result from financial operations independent of the operations of commerce. During the years of railroad excitement, capital flowed towards this country and to the West for investment, carrying with it the current of the metals. Since the panic the reverse has been the case, and even the large exports of produce has not sufficed to redress the adverse balance caused by financial transactions.—*U. S. Economist.*

Hope soothes under sorrows, supports under afflictions and difficulties, and anticipates under trials.

45

A Profitable Forty Acre Farm.

To show what "much labor on little land" accomplishes, we present a brief statement drawn from the Hampshire Co. (Mass.) Agricultural Society's Transactions, there given in the statement of Mr. Stebbins, of South Deerfield, on entering his farm for the premium of the Society.

The farm in question contains 41 acres, ten of it worn-out sandy land, when he came in possession, over twenty years ago. But he "resolved to have a better farm." To this sandy field (three acres the first year,) he applied clay at the rate of fifty loads per acre, followed by twenty-five loads of manure and 200 pounds of plaster. This was all plowed in together, the land planted to corn, and a fair crop was the result. After corn, oats were sown, and the ground seeded to clover. "By the use of clay and manure," he says, "I have made all my land as good as the best, and increased my pastures one hundred per cent. in quantity and quality of product.

As to deep plowing, he finds the best way to be to employ the subsoil plow. He turns under his manure four or five inches deep, and then subsoils the bottom of the furrow as deeply as possible. Corn is planted two years in succession, the better to mix soil and manure, and to fit the land for grass, and he now sows barley instead of oats, as a more profitable crop.

The secret of his success lies in the fact that instead of one hundred loads of manure as formerly, he now makes three hundred and fifty loads, supplying his yards freely with absorbent earths, and using salt, lime, and plaster, to a considerable extent.

In 1854, the products of the 41 acre farm, in usual farm crops, were worth a fraction under $2,000, and the net profits $1,116 75. There were twenty-three acres in mowing; thirteen acres in corn and potatoes, three in barley, and two in wheat. The reader may here see that a large farm is not an essential requisite to profitable management.

How to Keep Cows.

George Hull, of West Springfield, is the owner of five very profitable cows. Mr. Hull buys all his cows eat, and sells their milk. He has tried the various kinds of food usually fed to the milch cows, and concludes Indian meal to be the best and

cheapest. Each cow receives six or eight quarts daily, according to her size, and about ten pounds of cut hay. Stalks and boiled roots are sometimes given, for a change. The meal is always scalded, as it goes much further than when raw. The meal is placed in two barrels, and boiling water enough poured on it to moisten the mass. Then the barrels are filled up with cold water and it is ready for use. Three pailfuls of the mixture are given to each animal, every night and morning, and as the mangers are water-tight, he turns it into the manger upon the cut hay. The cows get no other drink than this, the winter through. Boiled roots, he thinks, will not make milk taste, and one bushel boiled, is worth for milk, one and a half barrels raw. This he considers a healthy and cheap food for his cows. The secret of making cows milk free, and holding out till near calving time, lies mainly in these dire tions, viz: milking regular, feeding regular, and keeping them warm.

An Eloquent Extract.

Generation after generation have felt as we do now, and their lives were as active as our own. The heavens shall be as bright over our graves as they are around our paths. Yet a little while and all this will have happened. The throbbing heart will be stilled, and we shall be at rest. Our funeral will have wended its way, and the prayers will be said, and we shall be left in the darkness and silence of the tomb. And, it may be, that for a short time we shall be spoken of, but the things of life shall creep on and our names shall be forgotton. Days will continue to move on, and laughter and songs will be heard in the room where we died; and the eyes that mourned for us be dried and animated with joy, and even our child will cease to think of us, and will remember to lisp our names no more.

BLOWING OUT A CANDLE.—There is one small fact in domestic economy which is not generally known, but which is useful as saving time, trouble, and temper. If the candle be blown out holding it above you, the wick will not smoulder down, and may therefore be easily lighted again; but if blown upon downward, the contrary is the case.—*Scientific Artisan.*

From the American Stock Journal.

Cross Breeding of Cattle.

One of the first things upon which breeders need correct ideas is the outward *form* of the perfect animal. The wide hips, straight broad back, full pendant hams, deep chest and ample shoulders, should be known and appreciated. They should acquire a correct eye, study the points of value, and then select the parents of their stock, with a view to their best physiological development. The truth is, that the zeal for *imported blood* has thrown out of sight the true points in good animals which are furnished in our own home-yards. But *form* is not all that careful breeding may secure, the dairy value of stock may readily be enhanced. In effecting this, we have to select good milkers, capable of transmitting the same qualities to their offspring; a fact to be ascertained only by actual test. When a good breeder is found, the strain may be kept up. Native breeds are as permanent as thorough blood, that is their progeny are as likely to prove good in the same points, as the progeny of blood stock. This is an important subject, one that deserves the fullest attention at the hands of the dairymen and stock growers. If such a course would be pursued, in a short time there is no doubt that we should have a breed of cattle as celebrated for their milking qualities as some breeds are for their fattening qualities.

"Were I," says J. S. Seabright, in his "Observations on Stock Growing," "to define what is called the *Art of Breeding*, I should say that it consists in the selection of males and females intended to breed together with reference to each other's *merits and defects*." A breed of animals may be said to be improved when any quality has been increased by art beyond what that quality was in a state of nature. It is for this reason that we should not breed from an animal, however excellent, unless we ascertain it to be what is called *well-bred*, that is, descended from a race of ancestors who have, through several generations, possessed in a high degree, the properties which it is our object to obtain. "It ppears that the most important method of improving the *form* of animals, consists in the selecting of a well-formed female larger than the male." The principle depends upon the power the female has to supply her offspring with the nourishment in proportion to her size, and the power of nourishing

herself from the excellency of her constitution. It has been remarked by high authority, that the size of the fœtus is generally in proportion to that of the male parent, and so vice versa, and that, if the nourishment is deficient, the offspring has all the disposition of a starveling. If the female is larger, there is a larger quantity of milk, and her offspring is more abundantly supplied after birth. We all know that it is necessary to have abundant nourishment from the earliest period of an animal's existence, until its growth is complete, to produce the most perfect *form*. The power to prepare the greatest quantity of nourishment from a given quantity of food, depends principally on the magnitude of the lungs, to which the organs of digestion are subservient. It is much more easy to select large-sized, well-formed females from a variety, than well-formed females of a variety that is smaller, as the shape of the chest depends upon the lungs; hence arises that remarkably large chest which is produced by crossing with females that are larger than the males.—This has been particularly noticed with horses that have been bred in this way.

In the breeding of cattle there are three objects to be kept in view: the form well adapted to fattening; the form for producing milk, and the form for labor. These objects have engaged the attention of the British agriculturalists; but experience has not hitherto justified the expectation that has been entertained of combining all these desirable properties in an eminent degree in the same race. That form which indicates properties of yielding large quantities of milk, differs materially from that which we know from experience to be combined with early maturity, and the most valuable carcass; and the breeds which are understood to give the greatest weight of meat for the food they consume, and to contain the least proportion of offal, are not those which possess in the highest degree the strength and activity required for labor. A disposition to fatten and a tendency to yield large quantities of milk, cannot be united in the same animal. Says George Culley, in his Observations on Stock, "t e form of the animal most remarkable for fattening is high-sided and light-bellied—in a word, barrel-formed—while that of a great milker is downward." Experience has shown the Ayrshires and Devons to be the best for the dairy on the poor and sterile soils of New England, and the Short Horns as a breed to be indifferent milkers, requiring more food; but they improve by crossing with the native breeds when judiciously done.

G. TROWBRIDGE.

Camden, N. Y.

How to Test the Quality of Wool.

An experienced raiser of wool gives the following certain test of fine wool. The wavy folds of wool have been noticed by every one. Take a lock of wool from the sheep's back and place it upon an inch rule. If you can count from thirty to thirty-three of the spirals or folds in the space of an inch, it equals in quality the finest electoral or Saxony wool grown. Of course, when the number of spirals to the inch diminishes, the quality of the wool becomes relatively inferior. Many tests have been tried, but this is the simplest and best. Cotswold wool, and some other inferior wools, do not measure nine spirals to the inch. With this test, every farmer has within himself a knowledge which will enable him to form a correct judgment of the quality of all kinds of wool. There are some coarse wools which experienced wool-growers do not rank as wool, but as hair, on account of the hardness and straightness of the fibre.—*U. S. Economist.*

LIME WATER FOR APPLE TREES.—A French Journal relates of a landed proprietor near Yvetot, that he had in his garden some old apple trees which produced no fruit. Two winters ago he took some lime, which he steeped in water, and with a brush washed the old trees all over. The result was the destruction of all the insects: the old bark fell off, and was replaced by new, and the trees bore an excellent crop. Most of them have now acquired such renewed vigor, that all appearance of age has disappeared.

The United States Economist, in speaking of the cotton crop, says that the prospects are very favorable, and that it is not impossible that the exports of the coming year may be pushed to three and a quarter millions, at a price equal to that of 1858, say, average $65 per bale, which would give an export value of two hundred and ten millions of dollars, and impart to the Southern section of the country a greater degree of prosperity than ever yet fell to its lot.

From the Working Farmer.

On Rearing Calves.

BY HENRY C. VAIL.

In our last article we gave several methods for rearing calves. Mr. Emerson says:—"In Pennsylvania, heifers intended for milch cows are generally put to the bull at 15 or 18 months of age, in preference to leaving them run to a greater age." Mr. Isaac W. Roberts, of Montgomery County, has been very successful in raising and fattening cattle, chiefly of the Durham breed. It is his practice to take the calves of this fine breed, and, when two or three weeks old, put them with common native bred cows. He weans at three or four months old, when the calf is able to thrive well on grass alone, and the native cow going dry, is soon fit for the butcher, at a price which will nearly, if not quite, pay for her first cost and a fine allowance for pasturage. He thinks that calves thus raised and entering the winter in good condition, being properly housed and fed during cold and inclement weather, gain nearly a year on such as are prematurely weaned or fed on skimmed milk. He entirely disapproves of letting calves run three or four months with valuable cows intended for breeding, and especially where milking properties are to be retained.

With all those who desire to possess an improved and select stock, it is deemed highly important that they should raise their own calves: and this is rendered the more important, from the high prices usually to be obtained for calves of the best breeds. Mr. Colman gives the following information upon this subject, derived from his observations in Massachusetts: "A farmer of my acquaintance in the interior, raises all his calves from a large stock of cows. His cows are known to be of prime quality. His heifers are allowed to come in at two years old, and are then sold with their first calf, generally for $35, which he deems a fair compensation for raising. His calves are fed mainly on skim milk and whey, until they can support themselves on hay and grass. His steers pay a proportional profit when sold at three to four years old."

The English authorities say, that upon two cows calving at different times, seven calves may be fattened for the butcher in the course of the year. More than this may be done if the calves are to be reared for stock, and if some little meal or vegetables is added to their food.

Mr. Jaques remarks on the subject of feeding calves, that he generally lets them take a portion of milk from the cows for about three months, and prefers keeping them in the stall until they are about a year old, thinking that he gets better forms, rounder barrels, straighter backs, greater broadness in the loin and hips, by this management. Calves turned to grass at two or three months old become pot bellied, their backs bent, acquire a narrowness in the loins, and seldom get over the defect entirely. I believe it is better to raise them in the stall or yard the first season, as their feed is much more uniform, and their growth not interrupted by sudden changes. They soon learn to eat hay; and carrots or potatoes cut fine for them, will be highly beneficial. In all cases the calf should be taken from the cow as soon after its birth as the cow's udder is brought into good condition and her milk fit for use, and then he should be fed by hand. "In my opinion," says a very intelligent farmer of Stockbridge, "calves raised for other purposes than veal, should be early weaned from the dam, and nursed at least one year upon food adapted to give firmness and expansion of muscle, rather than to fatten them." Says another farmer, "One of the most important points in the feeding of the calf, is to feed him well when the grass first fails in the fall by frost. If suffered to fall off then, he does not recover, and suffers more by scanty food than other animals."

Some "premium" calves have been produced by allowing them to take the cow's milk for several months. We saw a large display of fine Devon stock in a western county of New York last year; the young animals were larger than any of the kind we have before examined. On inquiry we found their great size and beauty owing to the fact that they had been allowed to run with the cow and consume all the milk. Some of the calves were seven or eight months old. This practice soon dries up a cow, and where milking qualities are to be kept up, should not be encouraged.

On the farm of a celebrated breeder of Durham cattle, we saw several cows not able to supply milk enough to feed their calves. In such cases the whole energies of the ani-

mal seem to be given to beef making, common cattle being provided to supply milk for the calves.

The rearing of calves requires the exercise of a vast deal of common sense, which, in other words, means the exercise of judgment based on a perfect knowledge of their wants and capacities, kind of breed, structure of system, and future uses to which they are to be put.

Every farmer should bear in mind a few points.

1. No calf of decent proportions should be killed, as the country at large requires a greater amount of stock, and it will be a source of individual profit.

2. No calf should be allowed to run long with a dam intended for milking.

3. Such food should be selected as will develop the strength and size of the animal, rather than fatten it.

4. Never overfeed at any one time, and feed often enough to prevent absolute hunger.

5. Remember the necessity for shelter, and that it in part represents food.

6. Do not forget that a young animal should be kept gradually, but surely improving, never receiving any check from ill-treatment and mismanagement, and it will be impossible to forget at the end of five years' trial the

7th Rule—Pocket the profits sure to result from these hints.

How to Fatten Chickens.

It is hopeless to attempt to fatten chickens while they are at liberty. They must be put in a proper coop, and this, like most other poultry appurtenances, need not be expensive. To fatten twelve fowls, a coop must be three feet long, eighteen inches high, and eighteen inches deep, made entirely of bars. No part of it solid—neither top, side nor bottom. Discretion must be used according to the sizes of the chickens put up. They do not want room; indeed, the closer they are the better, provided they can all stand up at the same time. Care must be taken to put up such as have been accustomed to be together, or they will fight. If one is quarrelsome, it is better to remove it at once; as, like other bad examples, it soon finds its imitators. A diseased chicken should not be put up.

The food should be ground oats, and may either be put in a trough or on a flat board running along the front of the coop. It may be mixed with water or milk; the latter is better. It should be well slaked, forming a pulp as loose as can be, provided it does not run off the board. They must be well fed three or four times a day—the first time as soon after daybreak as possible or convenient, and then at intervals of four hours. Each meal should be as much and no more than they can eat up clean. When they have done feeding the board should be wiped, and some gravel may be spread. It causes them to feed and thrive.

After a fortnight of this treatment, you will have good, fat fowl. If, however, there are but four to six to be fattened, they must not have so much room as though there were twelve. Nothing is easier than to allow them the proper space; it is only necessary to have two or three pieces of wood to pass between the bars, and form a partition. This may also serve when fowls are put up at different degrees of fatness. This requires attention, or fowls will not keep fat and healthy. As soon as the fowl is sufficiently fattened it must be killed, otherwise it will still get fat, but it will lose flesh. If fowls are intended for market, of course they are or may be all fattened at once; but if for home consumption, it is better to put them up at such intervals as will suit the time when they are required for the table. When the time arrives for killing, whether they are meant for market or otherwise, they should be fasted, without food or water, for twelve or fifteen hours. This enables them to be kept some after being killed, even in hot weather.—*London Cotton Gardener.*

From the New England Farmer.

Thorough Draining.

BY HENRY F. FRENCH.

Heat will not pass downward in water. If, therefore, your soil be saturated with water, the heat of the sun in spring cannot warm it, and your plowing and planting must be late, and your crop a failure.

Count Rumford tried many experiments to illustrate the mode of the progagation of heat in fluids, and his conclusion, I presume, is now held to be the true theory, that heat is transmitted in water only by the *motion* of the particles of water, so that if you could stop the heated particles from rising, water could not be warmed except where it touched the

vessel containing it. Heat applied to the bottom of a vessel of water, warms the particles of water in contact with the vessel, and they rise and colder particles descend, and so the whole is warmed.

Heat applied to the surface of the water can never warm it, except so far as the heat is conducted downwards by the vessel containing it.

Count Rumford confined cakes of ice in the bottom of glass jars, and covering the ice with one thickness of paper, poured boiling hot water on top of it, and there it remained for hours without melting the ice. The paper was placed over the ice so that the hot water would not be *poured* on to it, which would thaw it at once. Every man who has poured hot water into a frozen pump, hoping to thaw out the ice by the means, has arrived at the fact, if not at the theory, that ice will not melt by hot water on top of it. If, however, a piece of lead pipe be placed in the pump, resting on the ice, and hot water be poured through it, the ice will melt at once. In the first instance, the hot water in contact with the ice, becomes cold, and there it remains, because cold water is heavier than warm, and there it will remain, though the top be boiling. But when hot water is poured through the pipe, the downward current drives away the cold water, and brings heated particles in succession on to the ice.

Heat is propagated in water, then, only by circulation, that is, by the upward movement of the colder particles, to take their place.

Anything that obstructs circulation, prevents the passage of heat. Chocolate retains heat longer than tea, because it is thicker, and the hot particles cannot so readily rise to be cooled at the surface. Count Rumford illustrated this fact satisfactorily, by putting eider-down into water, which was found to obstruct the circulation, and to prevent the rapid heating or cooling of it. The same is true of all viscous substances, as starch, glue, and so of oil. They retain heat much longer than water or spirits.

The November number of the *Horticulturist* has an article, with a cut explaining this subject, and applying the above theory to wet land. The experiment was made with a box of peat saturated with water, and it is satisfactorily proved that it is not possible to warm the earth at the bottom, by putting boiling water on the surface, so long as no water is drawn out at the bottom.

As soon, however, as water was drawn out at the bottom, the hot water passed down, and the earth at the bottom was warmed.

"In this experiment, the wooden box may be supposed to be the field; the peat and cold water represent the water-logged portion; rain falls on the surface and becomes warmed by contact with the soil, and thus heated descends. But it is stopped by the cold water, and the heat will go no further. But if the soil is drained, and not water-logged, the warm rain trickles through the crevices of the earth, carrying to the drain level the high temperature it had gained on the surface, parts with it to the soil as it passes down, and thus produces that bottom heat which is so essential to plants."

Thus is shown one of the advantages of draining land. Many others might be named, did time and space allow. Since my article on Draining with Tiles was written, I have completed my work and plowed the drained land. The water disappeared from between the drains, as fast as they were opened. The low, wet places, where rushes had started up, and where the surface without the drains would have been covered several inches deep, became dry, through the whole space of fifty feet, between the drains. A springy side-hill, which we could not plant till the 6th of June, because it was so wet, and where my potatoes needed life-preservers in dog days, is as dry and friable as an old market garden. The 100 rods of tile drains which are laid in this field empty at one opening, and although the field has so dry and innocent a look, we find a large flow of water at all times, and after a short storm, a stream that nearly fills a three-inch tile.

B. F. Nourse, of Orrington, Maine, has been kind enough to send me a report of a Committee of the Bangor Horticultural Society, showing his operations in draining. Mr. Nourse writes me that he has this season extended his work, having now about 3½ miles of drains laid, two miles of which is with tiles from Albany.

I cannot make a better contribution to the cause than by giving extracts from that report:

"At the time of our visit in early summer, there was but one expression of satisfaction, not only from each individual member of the Committee, but from all the invited guests, at the appearance of the farm, the buildings, fences and crops. Although the season had been wet, yet the land was dry; the grass, grain, corn and trees were making a vigorous growth, being clothed with a richness of verdure which gave promise of abundant harvest. They all bore testimony to a careful, intelligent, scientific culture. Comparing this land with certain other portions of similar character in the vicinity, which had not received the same treatment, the contrast was very perceptible. The one was light, porous, arable, and free from water: the other hard, lumpy, cohesive and miry. The one had been drained, the other drowned.

The whole farm lies upon the northerly inclination of a hill several hundred feet above

tide-water, and extends to the summit. The super-soil is generally clay loam with some gravel; the latter is present in some places in sufficient quantity to constitute gravelly loam. Near the top of the hill, the loam rests directly upon a ledge of rock similar to that which crests the neighbouring hills, and this ledge appears at the surface in a few spots of one or two rods extent each. When cleared and plowed, enough loose stones and boulders of granite were exposed on the surface to build the external wall. It might be called a 'rocky' farm. With the exception of two places, each of about two acres, the whole farm was wet and 'springy,' unfit for plowing or other agricultural process until quite late in spring or early summer. Water is found everywhere quite near the surface. The deepest well on the premises, dug in the dry season of 1854, extends down only thirteen feet. The excess of water made it cold and rather discouraging for any crop except grass, and even this was too readily killed by the action of winter frost. The surface soil is underlaid throughout (except immediately on the ledge of rock) by an impervious sub-soil or hard pan of stiff clay, quite retentive of water.

The first draining was done in 1852, on a piece of about 1½ acres, designed for a pear orchard. Thirteen drains fifteen rods in length, and twenty feet apart were opened down the hill. The duct or channel was made by placing two flat stones apart on the edges, and letting the upper edges fall together; these were wedged in place filled above with six or eight inches of small cobble and broken stones. Inverted turfs or boughs were spread upon them, to prevent the washing of earthy particles into the drain, and the earth was returned over all. These drains empty by bending at an acute angle into a main drain which is at right angles with the general course of the former, following a more gentle inclination westward, and laid with flat stones resting upon side stones covered and filled in as the others. This main discharges the water at the road-side which has never ceased flowing from it during the coldest winter weather. The land was then plowed across the drains with six oxen and the largest plow obtainable, opening a furrow twelve inches deep, in which followed a sub-soil plow drawn by four oxen, cutting twelve inches deeper.

Upon this piece of land the frost comes out some days earlier, is later in fall, and of less depth in winter than in contiguous land undrained. The whole is dry enough for spading or plowing as soon as the frost is out in the spring, or within two hours after any heavy rain. During the drought of 1854, there was at all times sufficient dampness apparent on scraping the surface of the ground (with the foot in passing,) and a crop of beans was planted, grown and gathered therefrom, without so much rain as will usually fall in a shower of fifteen minutes duration, while vegetation on the next field was parching for lack of moisture.

The small drains were laid with sole tile that cost $24 50 per thousand, delivered at the farm, (double the cost in Albany, where manufactured,) and the mains with flat stones, filled in and covered as before described, the earth being returned easily with a two-horse scraper. A field of one acre and two-fifths 'thorough drained' in this way, forty feet apart, three and a half feet deep, required one hundred and five rods, including main, and cost $67 50 per acre completed. This field was plowed and sub-soiled each about ten inches deep, and a hoed crop taken off last season. During the heaviest rain no running or standing water could be seen on its surface. When your committee made its visit, we were shown an acre of this field, which had been manured and partly plowed for corn, when a protracted rain came on. The seed being in soak and manure wasting, after the second day's rain, it was resolved to prosecute the planting, and the plowing was finished, the land harrowed, furrowed, dressed in the furrow, and planted in a drizzling rain, working easily and well. The corn all came up, and has grown well; and still we did not see many clods or other appearances of wet weather working. Yet this was a clay loam, formerly as wet as the adjoining grass field, upon which oxen and cart could not pass on the day of this planting without cutting through the turf and 'miring' deeply. The nearest neighbour, a member of your committee, said 'if he had planted that day it must have been from a raft!'

In 1855, provisions were so high that such labour as ditches rendered could not be cheapened in cost per rod; but an experiment was tried on a field of three acres by laying tile drains three and a half feet deep, four rods apart, leading into a stone main, all of them covered and filled as before. An acre required forty-five rods—average cost 90 cents per rod, or $40 50 per acre. More time is needed with wet and dry seasons to test the efficiency of drains so far apart.

This field was plowed, but not sub-soiled last fall. It was in good working order in three days after the frost was out, two weeks earlier than the adjacent land was ready to plow. If not so thorough in laying the land dry and given it such an open, porous soil as is desirable, its evident benefit at so small a cost per acre makes the experiment worthy of imitation.

Appended are some statistics of the cost, as ascertained, in draining this farm.

MAINS.	Per Rod.
Digging 4 feet deep, 2 feet wide at bottom,	44 cts.
Hauling stone for channel,	15
Laying same,	12
Hauling and picking small stones for filling,	12
Sods, boughs or moss,	5
Returning earth with scraper,	12
	$1 00

SMALL DRAINS.	
Digging 3½ feet deep, 20 inches at bottom,	37½ cts.
Hauling stone for channel,	12½
Laying same,	10
Hauling and picking small stones for filling,	12
Sods, boughs or moss,	4
Returning earth with scraper,	10
	86 cts.

TILE—TWO INCHES CALIBRE.	
Digging 3½ feet deep, 6 inches at bottom,	33 cts.
Tile,	33
Laying same,	4
Stone fitting,	10
Sods, &c.,	2
Refilling,	6
	88 cts.

In conclusion we would represent that the concurrent testimony, of all in this country and Europe, who have tried this system of draining, proves that the following benefits are obtained: It obviates the bad effects of drought, because the roots of plants and trees can descend more deeply for nutriment and moisture; by removing excess of water, it renders soils earlier in spring, and allows work to be done sooner after rains; it averts the effects of cold weather later in autumn; it prevents the heaving of grass and grain in winter, and the frost from penetrating so deeply; it enables us to deepen the surface soil, it accelerates the disintegration of the mineral matters in the soil, and improves its mechanical condition by promoting the finer comminution of the earthy particles; it hastens the decay of roots and other vegetable matter; it allows the fertilizing gases of the atmosphere and the water from rains to percolate deeply, and be deposited among the absorbent parts of the soil until the necessities of plants require them; it causes a more even distribution of nutritious matters among those parts of soil traversed by roots; by removing stagnant water, it prevents the cooling process of evaporation, and the abstraction of heat; it contributes to the warmth of the lower portions of the soil; it prevents meadows from becoming impoverished; it causes the poisonous excrementitious matter of plants to be carried out of the reach of their roots; it prevents the formation of acetic and other organic acids, which favour the production of sorrel and other noxious weeds, and it makes the surface soil of heavy lands light, and free from incrustation.

From the preceding facts, your Committee are fully of the opinion, that this system of underground draining would be of great public utility, and we cannot too strongly recommend it to every Horticulturist and Agriculturist."

Several of my neighbours have used some of the tiles which I procured from Albany, and although they cost us twice the Albany price, the freight exceeding the first cost, we are satisfied that they are cheaper than stone at the cost of hauling. One thing we have determined on, that we will have the tiles at a cheaper rate, and if nobody offers them at a fair price, some of the members of the Rockingham Fair will establish works and make them for ourselves, before many months. Probably we may have to pay something for an education, as most people do, who engage in new enterprises, but the tiles are to be supplied at a cheaper rate than double the Albany prices.

From the Rural Register.

The Four Organic Elements.

OXYGEN, HYDROGEN, NITROGEN AND CARBON.

Many farmers are not familiar with the full meaning of chemical terms used frequently by writers in agricultural works. The able editor of the *Scientific American*, is giving a brief description of the four organic elements, which we intended transferring to our columns, in order to assist such as are not familiar with chemistry, to understand their import. We commence with:

I.—Oxygen.

Nine pounds of water consist of eight pounds of oxygen and one pound of hydrogen; 342 pounds of red-lead consist of 310 pounds of lead and 32 pounds of oxygen; 100 pounds of atmospheric air consist of 77 ponnds of hydrogen and 23 pounds of oxygen. One of the most curious facts of nature is the change in the properties of substances which results from their chemical combination. Oxygen and hydrogen combined together assume the liquid form; but oxygen on being combined with lead becomes solid, and the lead is no longer malleable, but may be pounded into powder. Oxygen, when separate or uncombined, has yet been obtained only in the gaseous state; but it is found in by far the largest quantities, in combination with other substances, forming either solids or liquids. It has

strong affinity for more substances than any other of the elements. There is a great difference among them in respect; gold and platina are not disposed to combine with other things, they are old bachelors, but oxygen is a perfect Brigham Young—it wants to marry everything that it meets. It surrounds us on every side, but generally wedded to some other substance. It forms a portion of almost all the rocks which we see, and which make up the crust of our globe. Of 50 pounds of marble, 24 pounds are oxygen. In the three constituents of granite it forms 40 per cent. of the feldspar, just half of the mica, and more than half of the quartz.

All changes in chemical combination are accompanied by alterations of temperature. When oxygen especially combines with any other substance there is always a great exhibition of heat, and generally of light. Almost all fire is produced in this way. Burning a body is generally simply oxydizing it. This was the great discovery of Lavoisier. He found that when a body is burned in oxygen the body is increased in weight precisely as much as the oxygen is diminished. If we take a tight jar full of oxygen gas and drop a piece of sulphur into it, the sulphur burns with intense brilliancy and disappears. But if we weigh the jar we find its weight exactly the same as the sulphur and the jar of oxygen added together weighed before. The sulphur was not destroyed by being burned, but combined with the oxygen to form sulphurus acid, which is a transparent and invisible gas. If we heat the end of a piece of iron wire red-hot, and introduce it into a jar of oxygen gas, the wire burns with the most brilliant scintillations, throwing down black scales. If we collect these scales and weigh them, we find that for every 117½ ounces of iron that were burned, we have 141 ounces of iron scales; and if we weigh the jar of oxygen, we find that that has lost 24 ounces of its weight.

When Lavoisier announced his discovery, all the chemists in Europe immediately supplied themselves with delicate scales; and the weight of various substances, as compared with each other, has now been ascertained by different observers, thousands of times. A young chemist would ask no better passport to universal fame than the detection of a material error in one of these weights.

The combustion of a gas or of a volatile substance, like sulphur or phosphorus, produces flame; while, if the substance is solid and not volatile, it burns without flame.

The heat of our bodies is kept up by slow combustion or oxydation. The air, on entering the lungs, is spread through thousands of cells, where it is separated from the blood by exceedingly thin membranes, through which the oxygen of the air is absorbed by the blood. Here it enters into combination with the carbon which has before been brought to the blood from the food taken into the stomach, burning the carbon as literally and truly as the coal is burned in the grate, and producing the same substance as the burning of the coal produces, that is, carbonic acid gas. Our lungs are perfect furnaces, which warm the body by a constant though slow combustion.

II.—Hydrogen.

Hydrogen makes its most common appearance to us in flame. Whenever we see a blaze, there are many chances to one that there hydrogen and oxygen are entering into combination; in other words, that hydrogen is being oxydized or burned. There are a few exceptions: sulphur, phosphorus, and other volatile substances, as well as those gases which burn at all, burn with a blaze; but most of the flames that we see—the blaze of an oil lamp, of a candle, of illuminating gas, of bituminous coal, of a wood fire, of nearly all fire—are, wholly or in part, the result of the combination of oxygen and hydrogen. In a blaze, the heat and light are all on the outside, as it is here alone that the burning gas can come in contact with the oxygen of the air. If we take a blow-pipe and blow the air through the flame, we set the whole body of the jet of gas on fire, and increase the heat enormously. In the compound blow-pipe, pure oxygen gas is mixed with pure hydrogen gas as they issue from the pipe, in the proportion of eight ounces of oxygen to one ounce of hydrogen, and the most intense heat is produced which it is possible to produce by combustion.

Oxygen and hydrogen combine to form water in the proportion of one pound of hydrogen to eight pounds of oxygen; or more exactly, 1,000 pounds of hydrogen to 8,013 pounds of oxygen. Oxygen and hydrogen also form one other combination, in the proportion of 1,000 pounds of hydrogen to 16,026 pounds of oxygen. This compound is a syrupy liquid of a nauseous bitter taste, which does not become solid even in a very intense cold. Without the interposition of other substances it is impossible to make oxygen and hydrogen combine in any other proportions except these two. If we mix 8,013 ounces of oxygen with 1,000 ounces of hydrogen, and touch the mixture with a spark of fire, the two gases combine with a flash and a report, forming water. There is so much heat developed that the water at first is expanded in vapour and is invisible, but it soon cools and condenses into the liquid form. If there is a single grain of either oxygen or hydrogen more than the proportion above stated, such surplus will not enter into the combination, but will remain separate and will retain the gaseous form. The other combination, which forms the syrupy liquid, is of

just twice the quantity of oxygen to the same quantity of hydrogen.

Water may be decomposed by means of a galvanic battery, and the oxygen all carried into one jar and the hydrogen, though eight times as heavy, occupies precisely half the bulk of the hydrogen.

High Farming—Prof. Mapes' Farm—Super-Phosphate.

BY JUDGE FRENCH.

The following, by Judge French, of Exeter, N. H., we copy from the *New England Farmer*. Judge F. has recently returned from Europe, after having critically examined the methods pursued in England, France, Belgium, and elsewhere.

Not many weeks ago, we published a pretty careful criticism upon the farming operations of Mr. Sheriff Mechi, of Tiptree Hall, England, one of the highest farmers of that country, and our conclusions were, that although Mr. Sheriff Mechi might make money in England by underlying 170 acres of poor land with iron pipes, and pumping through them all his manure with a steam engine—by under-draining five feet deep, and doing other things accordingly—yet that his own statement showed that with American prices for the labor he charged, with American prices for crops he credited, he would run his farm ruinously in debt. His success, we said, results through the low price of labor mainly—the price there being about half our New England prices.

In the New York Weekly *Tribune*, of March 26, 1859, is an account of the farm of Prof. Mapes, near Newark, New Jersey. The account is very interesting to farmers, because of its encouraging results. The farm contains 121½ acres, and the statement shows that the expenses upon it for the year 1858 were $3,152.-60, and the income from it was $11,627 88,—leaving a net profit of $8,475 28, after paying all expenses and a fair rent for the land! Only 33¼ acres of the farm were in cultivated crops, the rest being grass and woods. The account below gives the items of income and expenses, with a balance which may challenge competition on either side of the water.

Having some acquaintance with Prof. M., having seen his farm, though not in the growing season, and having met his foreman, Mr. Quinn, both on and off the farm, and talked with him about the farm operations, we feel some confidence in our ability to form a correct opinion of this statement.

That the Professor is a man of great scientific knowledge of agriculture, and of wonderful tact in his application of science to the culture of his crops, everybody who sees him and his farm will at once admit. He understands the theories of farming, and his farm shows that he makes his knowledge practical. He raises the very crops that pay the best in his market, and he gets the largest crops and the highest prices. His farm is not indeed a regular farm, but a little market garden, a nursery, a seed establishment, and a fruit garden.

Yet these are departments open to many of us, and why cannot we make profit of them as well as he? To be sure, we cannot expect to get *eight and twelve dollars per hundred* for pears, if we could raise them in any great quantities, but our impression is, that nobody can show in this country better dwarf pear trees than Prof. Mapes.

He is the inventor of Mapes' Super Phosphate of Lime, and it is not strange that his rivals in patent manures should detract from him and his successful farming.

Five thousand tons of this manure have, some seasons, been manufactured at the works in which he is largely interested, near his place. His farm is manured almost exclusively with this preparation, and acres were pointed out to us, on which were the finest fruit trees and beds of strawberries, besides the ordinary crops, which had received, for many years, no other manure.

The Professor stated in our hearing, at the New York Farmers' Club, that stable manure could not be sold in his neighborhood for $1,50 a cord, to be hauled one mile, because the super-phosphate is cheaper, and his neighbors who were present suggested no doubt of his correctness. Yet at Exeter, it costs $5 a cord, besides hauling, and this is probably an average price in the larger towns in New England.

After all our *buts* and *yets*, and apologies for Prof. Mapes' astonishing profits, there is a large balance of credit to be divided between his mode of culture and his super-phosphate. "How does he get so large crops at so little cost?" is the question. His explanation is found in three points—thorough drainage, deep and fine culture, and the use of super-phosphate.

He under-drains with tiles from four to five feet deep; he sub-soils eighteen or twenty inches deep, and works his roots and hoed crops constantly in summer, and with a little sub-soiler, drawn by one mule, and with the horse-hoe; and he applies to every acre at the start 600 pounds of super-phosphate, and a less quantity in after years, according to the crop. That this manure does wonders on his farm is not to be doubted. We have ourselves tried it several years, and always with favorable results, some of which have been published. We propose to continue our experiments the present year with one ton of the Nitrogenized Super-Phosphate now on hand.

And a word, by the way, upon this subject may not be amiss. We do not believe that farmers should in general purchase their manure, unless they are selling their crops. If they are, they must replace them by bringing on to the land the elements of fertility which have been carried away. This can only be

done by buying some or other of these fertilizers. Super-phosphate of lime is admitted everywhere to be, excepting guano, the very best of fertilizers, and guano is difficult to apply properly, and is not adapted to all crops. The best farmers in England buy immense quantities of super-phosphates for their root crops in particular, and many of our farmers use it upon their potatoes and corn. Prof. Mapes has no secret as to his mode of manufacture, but publishes it as follows:

"The Improved Super-Phosphate of Lime was first invented, and was composed of 100 pounds of bone dust, dissolved in 56 pounds of sulphuric acid, to which was added 36 pounds of Peruvian guano, and 20 pounds of sulphate of ammonia; 100 pounds of this mixture were found to be equal in application, both in power and lasting quality, to 185 pounds of the best Peruvian guano.

"The Nitrogenized Super-Phosphate, which is found to be practically superior to the Improved Super-Phosphate, is composed of equal weights of Improved Super-Phosphate and dried blood ground."

Probably any chemist in the country will pronounce a fertilizer, consisting of the above elements, valuable for almost all cultivated crops, and we trust our farmers, in their progress in agriculture, will not forget that there are manures, besides what are found in their barn cellars—manures which contain no seeds of weeds, which are light of freight and cheap of application. In a garden of vegetables, we should hardly know how to raise our crops, without a bag of super-phosphate at hand. A cabbage will fatten on it, like a pig on corn-meal. We have tried every variety of fertilizer, and have more faith in Mapes' Super-Phosphate than in any other manufactured article of the kind.

We give the statement from the *Tribune*, as to Prof. Mapes' farm. Can any man show a better one? Does farming pay or does it not?

The following excerpt from the farm book of Mr. Patrick T. Quinn, the manager of the farm, which has been duly certified to by him as correct, will show the actual sales and expenses of the last year:

Sales from April 1, '58, *to April* 1, '59, *inclusive.*

Timothy Hay, 50 tons,	$750 00	
Salt Hay, Sedge and Black Grass, 91 tons,	564 20	
Asparagus,	40 00	
Beets, 500 bus. (some sold by bunch,)	250 00	
Greens, (Spinach, Sprouts, &c.)	108 00	
Cabbage, early and late Cauliflower,	675 00	
Kohl Rabi,	19 50	
Carrots, 900 bushels, at 43c.	391 30	
Celery,	195 20	
Corn, shelled, 550 bushels, at 85c.	467 50	
Corn, sweet,	60 00	
Egg Plants,	51 00	
Lettuce,	120 00	
Melons,	43 50	
Onions,	149 20	
Parsnips, 250 bushels, at 3s.	93 75	
Peppers,	6 00	
Squshes,	55 00	
Rhubarb,	310 00	
Radishes,	65 00	
Salsify (Oyster Plant),	25 00	
Tomatoes,	45 00	
Turnips, 1,200 bus. at 35c.	420 00	
Potatoes, (mostly sold for seed,) 700 bushels, at $1,	700 00	
Seeds, (all kinds,)	2,520 16	
Hot-bed and cold frames,	315 17	
Rhubarb plants, Grape vines, Raspberry, Blackberry, Currants and Strawberry plants,	1,017 00	
Grapes, Strawberries, Raspberries and Blackberries,	375 00	
Pears: Sales, 1857—$805 / 1858—$496 } av. sales,	610 40	
Fruit wines on hand,	470 00	
Corn fodder—Sorgho stalks and green rye,	240 00	
Hogs, Milk and Butter,	386 00	
Two choice Calves,	50 00	
Total,		$11,627 88

EXPENSES.

Eight workmen, 8 months, at $20,	$1,280 00	
Five workmen, 4 months, at $20,	400 00	
19,825 lbs. Super-phosphate of Lime, at 2 cents,	396 50	
Rent for 53¼ acres, at $8,	426 00	
Rent for 52 acres salt grass, at $1.25,	65 00	
Taxes,	31 50	
Wear and tear of tools,	100 00	
Use of team, at $3 per day,	453 60	
Total,		3,152 60
Total receipts,		11,627 88
Deduct expenses,		3,152 60
Net profits,		$8,475 28

New Use of the Stereoscope.

Professor Dove, a Prussian, has discovered that the best executed copies of steel or copper-plate engravings can be distinguished from the originals by placing them together in a binocular stereoscope, when the difference between the print, produced by the original plate, and the spurious copy, is seen at a glance. This will be a sure method of detecting counterfeit bank bills.

The Southern Planter.

RICHMOND, VIRGINIA.

Stock.

In our last number we called the attention of our Southern farmers to the fact, that we are annually paying out large sums of money to neighboring States for our supplies of mules, horses and hogs, which we thought could be raised at home at a cheaper rate than we have to pay for them. We will again urge upon them the importance of giving the subject some attention, and offer some remarks upon the sort of stock which we should raise, in order to be remunerated for our trouble. First, as to mules and horses. Mares of good size, compact, and well ribbed out, may be worked upon our farms for most of the year, and with a fair share of attention to their feeding and comfort, may be kept in good order, and these may produce a colt every spring, which, if a mule, is ready at two and a half years of age for use. Its value depends upon size and form: but may be set down at a figure over $100—while, if the owner has cared for it properly, and supplied it with food sufficient to keep it always in a growing condition, it is no high estimate to put the sum it will bring in market, or be worth at home, at nearly $200. The country *farther South of us* is so busily employed in making cotton at prices very remunerative, that they can afford liberal prices to the stock raiser for animals supplied to them; but we of Virginia cannot afford to raise our staples, wheat, corn and tobacco, at the present prices received for them, and buy mules at the sums they will bring even under the auctioneer's hammer.

We must have them, and we cannot afford to own them unless we raise them ourselves. If a mule at three years old will bring $150, is there not a handsome profit to the breeder who raises him? We believe so, and hope the farmers of Virginia will speedily ascertain for themselves whether it is so or not. We have among us many mares of good size, and well formed for raising mules—many of which are never put to breeding unless they become unfit for farm use by some accident. They might raise a colt every year, and still perform almost, or quite as much labor as they now do, without any injury to them—while the owner would be greatly benefitted by the receipt of a sum every year sufficiently large in most cases to defray all the expenses of the keeping, leaving him as clear profit, the amount of labor performed by the mare. We hope that the Executive Committees of our various Agricultural Societies will offer at their annual Fairs a large premium to the man who shall exhibit the largest number of good mules raised on his own plantation, and thus draw the attention and excite the enterprise of our farmers to undertaking an important work of economy and improvement among ourselves.

Of the science of breeding stock, we shall have but little to say, as the subject is so often thoroughly discussed in the columns of agricultural journals, by men of experience as well as science. We wish rather to aid the breeder in his efforts to promote *real and permanent improvement in all classes of his domestic animals*, by replacing the disgusting counterparts of "Pharoah's lean kine" by well-bred and thriving stock, which would redound to his convenience, pleasure, and profit. We do not mean to praise any particular kind of stock, or to exalt the merits of one class at the cost of another—but merely to beg every man who raises an animal on his premises, to try and have it of the *best quality* by bestowing on it the care which it requires to insure such a result. He must of course have a standard by which he shall measure excellence, and be regulated by it according to the use he expects to put this animal to—while he has no right to expect to raise animals possessing "good points" which cannot be found in their progenitors. "Like begets like"—and, consequently, he must select breeders with an eye to the almost certain transmission of their qualities to the offspring. Improvement in stock raising may be gradually accomplished by not very costly experiments in buying occasionally a good animal with the form and qualities we wish to copy, and crossing it with the best of the same kind we may have on the farm. The stock breeder who raises entirely with a view of selling such animals, is compelled to have the *very best quality* of every sort of stock; and should be honest enough to sell only the good ones

of his flocks and herds, that the breed be not quickly depreciated and ruined. He cannot therefore sell animals intended for breeders at common rates, or in other words, for a price only equal to what the same amount of meat would bring in market. But every farmer may work a great change in the appearance and profits of his stock by incurring only occasionally, the expense of purchasing such breeders, and crossing judiciously and carefully. Who has not often seen the improvement manifested in our native stock by one cross with some of the improved breeds? and on the other hand, the ill effects of turning out as breeders, every animal who could be traced to a blooded ancestry, whether it possessed the "good points" or not, have been equally manifested by the rapid deterioration of the breed, and its decline in public favor. Witness the excitement that once pervaded the country in favour of "Berkshire" hogs, and the speedy reaction produced against them.

The first of the race imported to this country by Lossing, Brentnall, Allen, Bement and others, were really superior to any swine we had ever had in this country up to that time. But the ignorance of many breeders in turning out "culls and runts" together with the cupidity of some persons who wished to secure the high price for pigs which good ones did, and ought to have commanded, soon brought the whole stock into public odium, because under such circumstances, every man who bought an indifferent animal, laid his faults to *the breed instead of the breeder, or his own want of skill in selecting.* The "Short Horns and Devons" (without any reference to any of the other breeds of improved cattle) serve to show to what a degree of perfection animals may be brought by painstaking and proper diligence in selecting and developing certain points which may be desired for beauty, utility and thrift. These, with the different classes of horses, sheep, swine and poultry, serve to show that we can raise animals which shall be faithful copies of the models used—and hence the necessity of skill and attention in choosing proper models to copy.

If a farmer has a fondness for stock, and likes to see and examine thoroughly every individual member of his flocks, and possesses the requisite amount of knowledge to discover their good and bad points, it will always prove an interesting and profitable source of amusement to him. Many a weary hour will, in this way, be robbed of its ennui, and many a small leak which would otherwise happen to his pocket-book, be stopped. The man who has no fondness for domestic animals, and who cannot appreciate their beauty or good qualities, ought to be deprived of them until his taste is developed by the want of the comforts and conveniences, which their possession now affords him. No man should own a horse who cannot ride him or minister to his wants—no man should have milk to drink who pays no attention to his cows.

Let the farmers of old Virginia begin at once to take the necessary steps to raise at home, such animals as they want. Import (whenever it is advisable) such animals as may be needed to impart fresh vigor and value to the stock we now have, by proper crossing—but to all, of every variety, give that attention and care which will insure certain, steady and rapid improvement.

Fine Horses for Virginia.

We have had the pleasure of seeing two fine stallions of the "Black Hawk" stock, and a mare and filly of good pedigree, which Mr. S. W. Ficklen, of Albemarle, has just brought on from Vermont, for the purpose of improving the breeds of horses here.

The Black Hawks are deservedly, we think, popular in public estimation, and we are glad whenever we hear of a fresh importation of them among us.

Mr. Ficklen spares no pains or expense to procure the best animals for stock breeding, and we hope may always meet with success in his laudable efforts to improve the animals and agriculture of his native State.

Several catalogues and papers (which we designed to notice) have been received, but in our efforts to get the paper printed and mailed before the beginning of the exhibition of the Virginia Central Agricultural Society next week, we are compelled to defer them to a more convenient season.

For the Southern Planter.

Culture of the Chinese Potato.

MR. EDITOR:

The following is my experience of the culture of the Chinese Potato. Three years since, I sent $5 to a New York nurseryman and received 25 seeds enclosed in a tin box filled with sand, which was placed in a drawer near a fire place in which fire was never extinguished during the winter. In

the spring the seeds were planted, but only one germinated, the remainder being killed, notwithstanding their warm situation during the winter. The first and second years the vine of this forlorn hope grew, but neither bloomed nor bore. This, the third year, little seed appeared—such as those I purchased,—about on the vine, and in a month or two, pretty, little white blossoms burst forth, which were soon followed by pods filled with fine seeds. The plant is certainly a curiosity, but to me not a profitable one.

By this time the root is supposed to be "*some*," perhaps requiring a stump extractor to bring it up. If such be the case I will inform you.

I have waited, you perceive, a long time for my first taste of the "*lattattar*," and if it should prove as good as old, I will send you a slice. Yours sincerely,

YANG SING.

BRUNSWICK CO., VA., Sept. 1859.

The Points of a Good Hog.

A writer in the English Farm Herald very correctly describes the points of a good hog, according to our ideas of what they should be. The Suffolk is our favorite breed, to which the points here laid down will apply very correctly, except pendulousness of the ears. The ears of the Suffolk stand erect, and at about right angles with the forehead.

1. Sufficient depth of carcass, and such an elongation of the body, as will insure a sufficient lateral expansion. Let the loin and chest be broad. The breadth of the latter denotes good room for play of the lungs, and a consequent free and healthy circulation, essential to the thriving or fattening of any animal. The bone should be small and the joints fine; nothing is more indicative of high breeding than this; and the legs shall be no longer than, when fully fat, would just prevent the animal's body from trailing on the ground. The leg is the least profitable portion of the hog, and we require no more of it than is absolutely necessary for the rest.

2. See that the feet be firm and sound; that the toes lie well together, and press straightly upon the ground, as also that the claws are even, upright and healthy. Many say that the form of the head is of little or no consequence, and that a good hog may have an ugly head; but I regard the head of all animals as one of the very principal points in which pure or impure breeding will be the most obviously indicated. A high bred animal will invariably be found to arrive more speedily at maturity, to turn out more profitably than one of questionable or impure stock: and such being the case I consider that the head of the hog is by no means a point to be overlooked by the purchaser. The description of head most likely to promise, or rather to be concomitant of high breeding, is not one carrying heavy bone, but too flat on the forehead, or possessing too long a snout; the snout should be short, and the forehead rather convex, curving upward; and the ear should be, while pendulous, inclining somewhat forward, and, at the same time, light and thin. Nor should the buyer pass even the carriage of a pig. If this be dull, heavy and dejected, reject him on suspicion of ill health, if not of some concealed disorder actually existing, or just about to break forth; and there cannot be a more unfortunate symptom than a hang-down, slouching head. Of course, a fat hog for slaughter, or a sow heavy with young, has not much sprightliness of deportment.

From the Rural Register.

The Value of Bone Dust.

Prof. Johnston, in one of his Lectures before the New York State Society, presented the following views in regard to the action and effect of Ground Bones. We wish the farmers in every district of the country, would induce store-keepers at every cross-road and every village, to hold out inducements to the poorer classes to gather up the bones which are scattered about the road sides and commons, and have them either ground at home, or shipped to the nearest factories. The great difficulty in the use of bones, is the *obtaining a supply*. At some seasons of the year, there is no getting them for love nor money, unless engaged long before required. Prof. J. remarked:

"I pass on to the subject of mineral manures. Of these, first I shall speak of Phospate of Lime. I showed you a certain form of mineral phosphate of lime, which was capable of being applied to the fertilizing of land. This phosphate of lime is brought in the form of bones, from abroad. These bones are boiled, crushed, and sold in the form of dust, which is applied to the land, and found to be exceedingly fertilizing. These bones contain about 33 per cent. of animal matter or cartilage, which will burn away, or when boiled forms a glue, phosphate of lime and magnesia. These bones, therefore, are fertilizing, because of the animal, as well as mineral matter contained in them; hence they will raise good crops where mineral phosphates would not, for if the plant requires organic as well as mineral matter, these bones supply it. But if the soil is rich in the form of organic matter which supplies nitrogen, then mineral matter alone without the animal would be more suitable; but if the soil be poor in both, then bones are better than either animal or

mineral matter alone. This is the explanation of the failures of a trial of phosphate alone, or of burnt bone alone, instead of the natural bone. Some have found one better than another, and persons who have found the mineral part to produce good effects, have assumed that that is the only fertilizing substance in the bone--others, have found the converse to be true, and the two classes are at loggerheads about it. But both are, in fact, consistent with each other; for the bones contain two elements, both of which are necessary and valuable, and either of which, under certain circumstances, will be found to be so. Bones are applied, not only in a crushed state, but in a fermented state, and on the principle that if the food of an animal must be in a state in which the animal can digest it, so if you put into the soil any substance on which the plant is to feed, it must be in a condition to be dissolved by water and thus capable of entering the roots of the plant. That this may be so, bones are boiled and applied to land, in that state, for it is found that a bone when crushed will remain for years in the land, apparently unchanged. In Manchester, bones are used in the manufacture of glue, which forms a sizing for fabrics. The bones thus boiled come out soft, full of water. They are then easily crushed, and decompose easily when put in the soil. But to secure the easy dissolution of bones in the soil, fermentation has been introduced. The crushed bones, being mixed up with earth and allowed to ferment until the mass is reduced to a fine powder. This method is found greatly to facilitate the growth of crops. Thus a small quantity of the dust goes farther than in the other form. But there is one form in which bones are used with great profit—that is, when dissolved in sulphuric acid. The pulp is dried, sometimes mixed with gypsum, powdered and applied to the growth of turnips, and with great effect. In England and Scotland, it is the only manure for the turnip. But these dissolved bones are applied as a top-dressing for wheat and other grain, and when strewed over the surface are found to be very effectual. I may mention one instance, where 600 weight of dissolved bones were applied to a crop of wheat, and the product was raised from twenty-nine to fifty-three bushels an acre. Farm-yard manure applied under the same circumstances, raised the product to within six bushels of that amount per acre. This is an illustration of the superior effects of this bone manure. Bones are applied in this form to the grass lands of Cheshire, and with great profit. The lands there have been under dairy husbandry for many centuries. You will recollect, that the substances contained in milk when burned, are, some of them, the very materials which the bones leave when burnt. The cow extracts them from the soil on which it feeds, and it appears again in the milk, and is found by analysis. This has been going on for centuries, and this continual drain of the soil going on, it became impoverished. But the application of the bone was found to produce remarkable effects in restoring the soil, though the principle was not understood. The explanation, however, is found in the fact, that the milk and the bones, contained essentially the same substances, and that the latter restored to the soil, what had been taken from it by the animal. Here you see an illustration of the application of the knowledge acquired by the analysis of the bones and the milk, to practical husbandry. The discoverer of the value of this kind of manure, applied to the grass lands of Cheshire, may be estimated from the fact that lands which once paid but five shillings, an acre of rent, have been made to yield forty shillings rent, besides a good profit to the dairyman. You see from this, how important it is to know the effects of certain kinds of husbandry upon land. *Dairy husbandry produces a special exhaustion of the soil*, and knowing this, and what substances have been taken out of the soil and carried off in the shape of milk, you know what to put in to reclaim it."

How to Shield the Grape Vine in Winter.

In looking over a back volume of the Maine Farmer, we find the following method of protecting the grape vine in winter. The writer claims to be a "live grape-grower—raises bushels of nicely ripened Isabellas every year."

"My method is this: I pinch all the growing shoots off the vine, as early as September. Then, in November, say 20th, (not too early) the canes are pruned exactly as they are to grow the next year, and every shoot that looks light-coloured and badly ripened, is cut back to a good sound wood. After pruning, all the canes are gathered together and loosely tied, or 'stopped' with woollen list. Then a good lot of leaves, or old strawy litter, is spread along on the ground where the canes are to lie, with a few sticks of wood to keep them out of the ice, comparatively dry; the canes are then bent and covered slightly, two inches, with the same leaves or litter; then heave over the whole some old matting, straw, or a thin covering of green boughs, and you are all right for the winter. Don't meddle with any of this rigging till April 10th, certain, and remove it after that time, at the commencement of a rain storm, or in cloudy weather. Let the vine still recline on the ground, and don't put it upon the trellis until the buds push, say May 10th; you will find out that year, whether or no this advice has been of any service to you."

American Ruralist.

From the Christian Enquirer.

Nothing but Leaves.

Nothing but leaves; the Spirit grieves
Over a wasted life;
Sin committed while conscience slept,
Promises made, but never kept,
Hatred, battle and strife—
Nothing but leaves

Nothing but leaves; no garnered sheaves
Of life's fair ripening grain;
Words, idle words, for earnest deeds;
We sow our seeds—lo! tares and weeds;
We reap with toil and pain
Nothing but leaves.

Nothing but leaves; memory weaves
No veil to screen the past;
As we retrace our weary way,
Counting each lost and mis-spent day,
We sadly find at last
Nothing but leaves.

And shall we meet the Master so,
Bearing our withered leaves?
The Saviour looks for perfect fruit—
We stand before Him humble, mute;
Waiting the word He breathes—
"Nothing but leaves."

The Bucket.

How dear to this heart are the scenes of my childhood,
When fond recollection recalls them to view:
The orchard, the meadow, the deep-tangled wildwood,
And every loved spot which my infancy knew:
The wide-spreading pond, and the mill which stood by it,
The bridge, and the rock where the cataract fell,
The cot of my father, the dairy-house nigh it,
And even the rude bucket which hung in the well—
The old oaken bucket, the iron-bound bucket,
The moss-covered bucket, which hangs in the well.

That moss-covered vessel I hail as a treasure,
For often, at noon, when returned from the field,
I found it the source of an exquisite pleasure,
The purest and sweetest that nature can yield.
How ardent I seized it, with hands that were glowing,
And quick to the white-pebbled bottom it fell,
That soon, with the emblem of truth overflowing,
And dripping with coolness, it rose from the well—
The old oaken bucket, the iron-bound bucket,
The moss-covered bucket, arose from the well.

How sweet from the green mossy brim to receive it,
As poised on the curb, it inclin'd to my lips,
Not a full blushing goblet could tempt me to leave it,
Tho' fill'd with the nectar that Jupiter sips.
And now, far remov'd from the loved situation,
The tear of regret will intrusively swell,
As fancy reverts to my former plantation,
And sighs for the bucket that hangs in the well—
The old oaken bucket, the iron-bound bucket,
The moss-covered bucket, which hangs in the well.

"Bringing our Sheaves with us."

The time for toil is past, and night has come:
The last and saddest of the harvest-eves;
Worn out by labor long and wearisome,
Drooping and faint, the reapers hasten home,
Each laden with his sheaves.

Last of the laborers, thy feet I gain,
Lord of the harvest! and my spirit grieves
That I am burdened not so much with grain
As with a heaviness of heart and brain;
Master, behold my sheaves!

Few, light and worthless: yet their trifling weight
Through all my frame a weary aching leaves,
For long I struggled with my hapless fate,
And staid and toiled till it was dark and late—
Yet these are all my sheaves.

Full well I know I have more tares than wheat,
Brambles and flowers, dry stalks and withered leaves;
Wherefore I blush and weep, as at thy feet
I kneel down reverently and repeat,
"Master, behold my sheaves!"

I know these blossoms clustering heavily,
With evening dew upon their folded leaves,
Can claim no value nor utility—
Therefore shall fragrancy and beauty be
The glory of my sheaves.

So do I gather strength and hope anew;
For well I know thy patient love perceives
Not what I did, but what I strove to do—
And though the full, ripe ears are sadly few,
Thou wilt accept my sheaves.