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J. E. WILLIAMS, EDITOR.

THE SOUTHERN PLANTER.



DEVOTED TO

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AND THE

HOUSEHOLD ARTS.

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CONTENTS.

Slavery and Free Labor Described and Compared, 723
 On the Culture of Wheat—The Necessity of Phosphates, 741
 Planting Fruit Trees, &c., in Virginia, 744
 Richmond, 745
 General Washington, The Model Farmer, 747
 Farming by Steam, 749
 Fruit Garden, 755
 " On Some Points in Agricultural Science," 757
 Proverbs of all Nations, 759
 Progress of Scientific Agriculture, 760
 Forcing, 762
 " How to Make Butter," 763
 Soil, 765
 Sources of Fertility in Soils, 766
 Prof. Mapes' Superphosphates, 767
 Farmers—Take a Hint, 769
 Horse-Shoes Must be Beveled on the Ground Surface, 770
 Politicians and Farmers, 770
 Milk, and Dairy Produce Generally, 771
 Shelter for Cattle in Autumn, 773
 Sealing-Wax for Fruit Cans, 773
 Grinding Feed, 773
 Agricultural Fairs, 774
 The Fairs at Richmond, Petersburg, and Norfolk, 775
 Fine Wheat, 776
 Share's Patent Coulter Harrow, 776
 Hot Feed in Winter, 777
 What Can Be Done With Paper, 777
 Domestic Receipts, 777
 Make Farm Labour Fashionable, 778
 Cheddar and Parmesan Cheese, 778
 Paddy Describes America, 778
 Beautiful Extract, 779
 Number of Seeds in a Bushel, 779
 Worth Remembering, 779
 To My Mother, 780
 Be Kind to Each Other, 780
 The Heart, 780

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THE SOUTHERN PLANTER



Devoted to Agriculture, Horticulture, and the Household Arts.

Agriculture is the nursing mother of the Arts.
[XENOPHON.]

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

J. E. WILLIAMS, EDITOR.

AUGUST & WILLIAMS, PROP'RS.

VOL. XIX.

RICHMOND, VA., DECEMBER, 1859.

No. 12.

Slavery and Free Labor Defined and Compared.

BY EDMUND RUFFIN.

SECTION I.—Slavery, in some form, existing almost everywhere—Political and Religious Slavery—Hunger-Slavery—Pauper Slavery in England, present and in anticipation.

The industrial operations of all the world are carried on much more extensively, and also effectively, by slave labor than by free labor. This truth is demonstrable according to any proper or even plausible definitions of these terms. But as they are generally applied and understood, they convey much more of false than of true doctrine. The word slavery is almost always used to designate one kind of compulsory and strict bondage only—which is the subjection of the will and action of individual to individual, as in the system of negro slavery, as it now exists in these southern States and elsewhere. This kind, whether it be of blacks or whites, may be distinguished as individual or personal slavery. But the most destitute people of nearly all the world—and especially of the more civilized, wealthy, refined and highly improved communities—are, in different modes of subjection and of suffering, held under a much more stringent and cruel bondage, and in conditions of far greater

privation, painful and inevitable coercion, and of suffering, than our negro slaves; and, therefore, should as much be deemed subjects of slavery in an extended and proper sense. It has been found difficult, if not impossible, to offer a general definition of slavery, which shall be comprehensive and yet strict, concise and clear—and I cannot expect to succeed in attempting what so many other and more able writers on the subject have failed to accomplish. What I understand as the general condition that constitutes slavery is the subjection of one individual, or class, to the authority and direction of another individual or class, so that the subjected party is compelled (no matter by what means) to labor, serve, or act, at the will and command, and for the benefit or objects, of the ruling individual or class. This definition will cover our system of negro slavery and that of the white serfs of Russia—and also the political subjection of some entire populations and communities to either resident or foreign despotic rulers—of inferior classes or castes, trodden into the dust by superior and privileged classes or castes—also the (mis-called free) poor laborers of every densely peopled country in Europe, where the supply of labor exceeds the demand of employers or capitalists. The definition would also, and properly, include as slavery

the abject subjection of various peoples to their priests, who, claiming authority in the name and as the ministers of God, established their own unlimited influence and rule over their superstitious, bigoted and ignorant or fanatical believers and followers. And such establishments of either religious or political slavery (of like character, and also operating through intolerant opinion) did not invest the rulers with the less power, as absolute masters, for coercion, despotism, and the infliction of cruel sufferings on the subjected, because the objects sought were not always pecuniary or personal gain, but the power to advance some theoretical doctrine deemed good and holy. Thus the people of France were for a time the completely abased and crushed slaves of the blood-thirsty Robespierre and his immediate supporters, the *commune* of Paris. The early inhabitants of Massachusetts were scarcely less the slaves of their priesthood, whose gloomy and rigid despotism was exercised as being the will of the all-benevolent God, and who were revered and obeyed as if they were scarcely inferior in piety, and in just claims of authority, to the first apostles. Yet, during the respective times of these different despotisms, the people of France deemed that they only, of all the world, possessed a truly republican and perfectly free constitution of government; and the people of Massachusetts, in their form of government, in the absence of foreign influence thereon, and in everything, except the influence and power of their priests, might have deemed (as their descendants still claim for them) that they enjoyed the freest and best government on earth. The now operating rule of the sensual, vulgar and villainous Brigham Young, Prophet, and almost the God of his many thousands of subjects and obedient Mormon followers, is one of the most stringent, efficient and oppressive systems of slavery, both of body and mind, that the world has ever known. Yet this system exists in the midst and under the shelter of our free political institutions of government, and where every slave of this vile tyranny may seek and find protection from the law, and also from public opinion.

Such and many other cases of political and religious enslavement rested upon opinion, and mere change of opinion could relieve the victims of such despotisms. But there is another kind of slavery, founded upon the conditions and circumstances of civilized, and what is claimed as free society—and which in-

creases with its progress and its improvement and wealth—which no change of opinion can alter, and for which (as it has seemed so far) no effectual relief or important alleviation can be found, even by those wise statesmen and patriots and true philanthropists who are aware of all the evil, and who most deplore its existence and prospective increase. This condition, under the general definition stated above, is the slavery of labor to want. It is an obvious truth, and undeniable by those who might object to the wide scope of my definition, that the destitute members of the laboring classes of all dense populations (as of England,) who are eagerly competing with each other for the supply of the partial demand for their labor, and who, when obtaining employment, can scarcely buy the most wretched support with their scant wages, and who, yet, for such wages, undergo the utmost amount of toil that human beings can perform and live—that these most miserable millions are, not only in their excessive toil and suffering, but in reference to their actual coercion, as truly and fully slaves to want, cold, hunger, and every threatened greater misery of destitution, as even *lash-driven* negro servants of Virginia are slaves to their masters. If the former class could be as truly compared with and deemed equal to our negro slaves as to their respective shares of comforts and pleasures enjoyed, it would be a blessing to the falsely termed “free laborers,” as great as any discreet and judicious philanthropist could hope for, and far greater than the most sanguine of enlightened statesmen can even conceive as a possible result of any feasible reformation.*

* Among all the great and well-founded claims of the benevolent and kind-hearted Henry IV. of France, on the love and gratitude of his subjects and countrymen, and to the respect of posterity for his memory, there is not one which has been more often and approvingly referred to, and will be longer remembered, than his expressed wish that “every French peasant might be enabled to have a fowl in his pot for the dinner of every Sunday.” The great improbability of the realization of this benevolent wish (for its fruition was neither attempted nor expected) was what mostly caused it to be noted and remembered. The laborers and most destitute peasantry of France have never reached the condition of ease and comfort to enable them to have a “fowl in the pot” even for so much as one dinner in the week. The laborers of England are not only much below that standard of comfort, but have long been descending, and will continue to descend still lower. It is probable that the (so-called) free laborers” of no

The privilege of the English laborer to choose his employment and his master, even when such choice legally exists, does not prevent his service being truly slavery. For he has no choice but to toil incessantly for wages barely affording a scant and wretched support, or to starve—and no change of pursuit, or of service, can make that condition better. It is true that there is no legal prohibition to the laborer to change his service. But it is rare that any better situation can be found; and more generally, he who would abandon his actual employment in the hope of obtaining better, would be more likely to obtain neither new service or even still lower wages. This must be the case while, for every vacant place of a laborer to be filled, there are two or more idle and starving applicants ready to take the service with half if they cannot obtain whole wages. Such and other circumstances of difficulty in obtaining new employment practically debar the laborer from making the attempt to change his service. And when, after spending the prime of his life and strength as a slave to want and privation, the English laborer becomes, by sickness or age, unable to earn wages on which he and his family can exist, the regular refuge from absolute starvation is the pauper maintenance exacted by law from the parish—to which wretched condition for himself and his more helpless wife and young children, if any there are, every English laborer looks forward as his future destiny, scarcely less certain to occur than death. Under the Poor Laws and the Poor-house regulations of England,

other country of Western Europe are able to indulge in the very limited consumption of animal food that the good King Henry could only venture to hope that his poor peasants might at some future time enjoy. But this blessing, unattained and unattainable by the free laborers of Europe, is truly, literally and fully enjoyed by nearly all of the negro slaves of this country; and it may be asserted in all individual cases, except of the very rare exceptions of slaves being denied animal food. Not only would the usual allowance serve to supply an ample meat dinner for every Sunday, if it were so appropriated, but so much more than that amount as will supply some meat every day in the week to every laborer, and to every child, and to every aged, infirm and useless slave on our plantations. A deficiency of bread, so often suffered by every laboring class in Europe, is a thing almost unknown among our negro slaves. The most unfeeling master, who knew and consulted his own interest, would never permit a deficiency of bread to exist.

every semblance or pretence of what is generally and falsely called freedom disappears. According to the discretion and will of the overseers of the poor (acting under the general direction and authority of the poor laws, and in reference only to the pecuniary interest of the parish,) the man is hired out to whomsoever will pay the largest proportion of the cheap sustenance allowed by the parish—the wife is, by different location, separated from her husband—the young children, as soon as able to perform the lightest service, are “put out” for their support, or a portion of it, to any who will so employ them, and, later, bound as apprentices, for labor of any kind and at any place, to serve their masters (as personal slaves) until they reach twenty-one years of age. In short, there is as much and as rigid coercion of the paupers, as painful to endure, and with as little choice of the place and manner of their service, or of care used for their comfort, as in the exceptional cases of the few negro slaves in Virginia who are, indeed, hardly and cruelly treated. It is not necessary to add, for the information of any who are acquainted with both systems of slavery, that, in comparison to the English pauper, and even to his earlier condition as the overworked, under-fed and suffering hireling laborer, supporting a family on regular wages, the general condition of our negro slaves is one of comfort, ease and happiness.*

But between the times of the early and usual pauper slavery of the English laborer in his childhood and through his minority,

* In PIGAUT LE BRUN's romance, “Mon Oncle Thomas,” designed to satirize the legislation and policy of the revolutionary government of France, he supposes the establishment, in the Island of Juan Fernandez, of a colony with a constitution designed to provide for a perfectly free people. One of the fundamental principles adopted was that no citizen should pay any tax except by his own voluntary choice and individual action. And there was only one general tax imposed by law, which was upon respiration. No citizen was compelled, or even required to pay this tax. He was entirely free to omit the payment, provided he preferred and choose also to cease to breathe. But to breathe, without paying the tax, would be severely punished. This satire would be not at all exaggerated if applied to the “freedom” of the English laborer. He is, by law, entirely free to choose his employer and his employment, and to refuse to labor, except for fair wages, and at his own discretion. But the certain accompaniment or consequence of his attempting to exert this legal privilege is that he must starve.

and his late pauper slavery in the decline of life, there is usually an interval of considerable though uncertain duration, through which it will, perhaps, be claimed that he is truly and completely a free laborer. This time lasts only so long as he still retains his health and the strength of manhood, and is not yet burdened with the support of an infirm wife and helpless children, and therefore, even with the existing inadequate average rate of wages, such an unincumbered and healthy individual laborer may earn more than enough for his daily maintenance. But even then, the disabilities and inflictions of pauper slavery are sensibly and oppressively felt. Every laborer, when possessing most strength and skill, and even when also exhibiting industry and general worth of character, and however healthy, and entirely free from family or other incumbrances, still is regarded by every poor-rate payer and by every parish official as a prospective pauper; or one who, though not yet chargeable to the parish, will surely become so thereafter, when his health fails, or old age approaches, if not much sooner. The most independent laborer regards himself in the same light of a pauper in a state of transition. Therefore, there is an unceasing struggle of all who have to pay poor-rates, and of the parish authorities, to prevent the entrance and legal settlement in their parish of any new laborers from abroad. Such legal settlement, and therefore a future legal claim for support, in infirmity or want, would be obtained by any new-coming laborer being hired by the year, or being the tenant or occupant of any hovel for a home as long. Therefore employment of such persons under longer engagements than as laborers by the day, and, even for them, any fixed residence in the parish, on rent or otherwise, are systematically and rigidly denied to all such outsiders. If induced by greater demand for labor, and the hope of more regular employment, or any other considerations, to seek work in a different parish from his own, the laborer can only do so by walking every morning from, and returning at night to, his legal domicile—often it may be in a crowded, filthy and pestilential village or city. This residence may be miles of distance from his place of employment and daily labor, to be twice walked over every day, and through all kinds of weather. If, by unlicensed intrusion, such laborers continue to occupy any vacant and wretched

huts for temporary shelter, the covering roofs are torn off by the owner, if he cannot certainly prevent such occupancy by more gentle means. Such a general state of things—every parish so defending itself from the entrance of laborers from all others—prevents even the most efficient laborers from obtaining new residences and settlements where better wages are offered, and discourages even the attempt to improve their condition by removal. It is very rare that any such attempt is successful. Thus, great disadvantages, amounting, perhaps, in degree to a deduction of 50 per cent. from the existing average amount of wages to be obtained, are inflicted on all of the only individuals who otherwise, and at any limited time, might be truly denominated free laborers. In this view, it may be asserted that even this class offers no partial and limited exceptions to the general conditions of pauper or hunger-wages slavery—and that there are none free of all the class of day laborers in England. If the laborers who are most independent, and most capable of earning the best wages, are thus subjected, by a system over which they have not the least control, to disadvantages and losses, amounting to the value of half of what might otherwise be their earnings, or even to half of that half, there can scarcely be a question that the laborers so burdened are, to that extent, slaves to the indirect operation of the pauper system of bondage, in advance of its direct and more complete coercion.*

SECTION II.—The still worse Slavery in British Coal Mines—Slavery of impressed British Sailors—Military Slavery—Few free laborers, and many millions of miserable slaves of England—False pretences of England of opposing Slavery.

The foregoing positions, though applying correctly to all the necessitous hiring poor of Great Britain, were designed more especially in reference to agricultural and manufacturing day laborers. But in this broad and deep exposure of slavery, accompanied by

* In an article of "*Chambers' Journal*," most appropriately entitled "The Slave System of England," (republished in the "*Living Age*" of July, 1847.) there are affirmed, on official authorities, both the general system of common usage, as stated in general terms above, and also sundry particular extreme cases of much greater enormity in the cruelty of the inflictions and of the sufferings of these victims of the industrial policy, and success, and grandeur of England.

extreme suffering, there is a still deeper abyss of misery and abasement, for the numerous laborers in the British coal-mines. According to official documents of unquestionable authority presented in reports of parliamentary committees, the severity of the toil, the exposure and the physical sufferings of these laborers, and especially of the women and children, are extended beyond the limits of human endurance; and yet, are exceeded in enormity in the ordinary and general violations of all the laws of decency which should guard female modesty, and of all the restraints which are essential to the very existence of morals, and to defend young children and helpless females from vice and the lowest degradation. Such horrors are of ordinary occurrence and common usage; and, as are stated in these official reports, (and which the system demands, and no husband or father can prevent his wife or daughter being subjected to,) could not exist or be tolerated anywhere except, as are these outrages on humanity, where, hidden from the light of day, and from the sight, and almost from the knowledge of all persons, except the wretched victims, who are the corrupted and brutalized slaves of the system, and their cruel and callous employers, and their underling task-masters and drivers.

Still more manifest examples of slavery, and even of individual or personal slavery, and of cases among the worst for injustice, hardship and cruelty, are presented in the impressment of sailors (and also of many who are not sailors) at discretion, without even a rule of selection by lot, and accompanied by the most brutal exercise of force and violence, by press gangs, to man the British fleets in time of war. In this manner the most worthy and useful men, in their industrious pursuits of an honest livelihood, were seized, and if attempting to flee, or to defend their freedom or their persons from violence, were struck down by bludgeons or the edge of the cutlass, and beaten until powerless or submissive. In numerous cases armed vessels, ordered to make impressments, watched the return of merchant ships from abroad to the ports of England, and the officers used that favorable opportunity to impress as many of the ablest men as could be spared from the crews when entering the harbor. Thus the victims, after a long absence, in sight of their homes, and in the joyful hope of soon again meeting with their families, were torn away for a forced and cruel and dangerous

servitude, unlimited as to time, place or other conditions. This bondage, more usually than otherwise, was ended by death, or grievous wounds. The wife and children of the naval slave had probably passed the time of his service as pauper slaves—with the additional and worst misery of not even hearing from the captive and enslaved husband and father. Yet this system of impressment (and which has not even the direct sanction of law,) has been the custom and general usage of "free" England (professing to detest slavery), and it will be renewed in practice in the next and every naval war.*

Who, unless an impressed English sailor, can be more a wretched and even a personal slave, than a Prussian soldier? Yet to this terrible servitude every Prussian subject is bound for fourteen years, if so long needed by the government, at any time between the ages of twenty and fifty years. And though the duration and hardships of legal military service may be less in the other countries of Continental Europe, yet throughout, all men of the lower classes are subject to suffer this addition to the rigor and wretchedness of their otherwise ordinary condition of slavery to want, hunger and misery.

According to these views, there are but few countries in the world, and few existing conditions of society, in which the destitute or the poorest laboring classes are not truly slaves, in some one or other form. And of all the various kinds of slavery, the most wretched condition for the slaves (though perhaps the most gainful for the masters) is the slavery to want and hunger, to which are so generally subjected the so-called "free

* Adam Smith, when writing previous to the American Revolutionary War, and when the naval forces of Great Britain had never been near so numerous as since, even then stated that in time of war "forty or fifty thousand sailors are forced (by impressment) from the merchant service to that of the king," so as to increase the wages of sailors in the merchant service "because of their scarcity, from 21 and 27 shillings to 40 and 60 shillings a month." These SLAVES, in the long war with France, were increased to double or tripple--and the number required to be kept up for nearly twenty-five years. In 1810, there were 140,000 sailors and marines serving in the British navy--of whom much the larger number were slaves by impressment; and of these there were thousands who were neither sailors nor British subjects, and with whom, therefore, their being forced into this slavery had not the shadow of a pretext (such as is claimed in regard to British sailors,) of either legal or acknowledged usage.

laborers" of England—and to which, at some future time, must be subjected the laboring poor of New England, and of every other community and country in which negro or other personal slavery does not exist, and where there is dense population, and the arts of industry and the accumulation of wealth are well advanced. Whether negro slavery is considered the greater or the less evil, it is certain that its existence either prevents, or is incompatible with, the presence, in the same community, of class or hiring slavery. If negro slavery does not actually operate to exclude, or long postpone, the entrance of the more wretched and cruel slavery to hunger and misery, the former must necessarily end, before the latter kind can begin to prevail.

With these views I protest against the fitness and truth of the usually received definitions and applications of "slave labor" and "free labor"—and, in contradiction thereto, maintain that, in proportion to the respective populations, there are many more slaves in England, and in very much more suffering and painful conditions, than in all the negro slaveholding States of this Confederation.

Serfdom (or villanage) is a form of slavery (admitted to be such by all) which formerly prevailed through all Europe, and by which there are still held in bondage more than forty millions of persons in European Russia and the Austrian empire. The serf is personally and individually a slave to an individual master, but is so held in connection with the landed estate on which the serf was born. The proprietor has full as much legal or other power to maltreat or abuse his serf as has a master of negro slaves in Virginia. But he must sell or otherwise dispose of his serfs and land together to a new proprietor, and cannot separate the property in the serf from the land. This limitation may generally be some protection to the serf. But in many other cases it may well operate to his greater disadvantage. For when population is crowded, or likely soon to become so, on any one great landed estate or section of country, the continuance in that condition is a privilege to the slaves of very questionable value. The great evil and iniquity of the condition of serfdom, where it still continues to exist, consists, not in its being truly slavery, but in the slaves being of the same superior race as their masters, and equally capable of receiving the highest mental improvement. The serfs of Russia and Austria are of the same Cauca-

sian blood as the nobles who own and rule them as masters, and are naturally as high in the scale of humanity as the families of the Russian Czar and the German Kaiser, and, if free, might rise as high in the scale of intellect and moral worth, with the aid of equal mental culture. Yet the existence of this great outrage on humanity, still maintained in the permanent and rigorous slavery of forty millions of Europeans, of the white and highest race, has not greatly shocked, and indeed has scarcely been noticed by, the English philanthropists, during their hypocritical and unmeasured denunciations of the slavery of the inferior negro race in these southern States of North America; which class has been as much improved, exalted, and otherwise benefitted by their slavery as the European serfs are held debased below the degree of mental and moral elevation to which they might attain, if in a state of freedom.

When considering the long-standing and loudly asserted claim and boast of England of being pre-eminently, and without exception, the "land of the free," and the enemy, the hater, and, as far as possible, the destroyer of slavery throughout the world, it is difficult to pronounce which is most remarkable of these several incidents of that claim—the entire falsehood of the asserted facts and premises, the shameless impudence of the vain-glorious boast, or the pharisaical hypocrisy of the empty pretension to superior virtue and charity.

England was formerly, and down to comparatively modern times, not only the great African slave-maker and slave-trader of the world, but also subjected the captives sent to the British West Indies to such cruel and murderous treatment, that when her late Act of Emancipation was executed (after 178 years possession of Jamaica,) there remained alive, of all the 1,700,000 Africans that had been imported and retained, and of all their increase, but a remnant of 660,000 to receive the boon of emancipation. This was about one slave left for every two-and-a-half imported and retained. Mr. Carey, who quotes this statement from the official reports, ("Slave Trade, Domestic and Foreign," pp. 14,) deems the original importations understated, and that in fact there had been as many as three Africans so imported for each one left alive and emancipated. (Compare this result with the fact that the 300,000 Africans

which were imported as slaves into the now United States, have increased, under their very different treatment, to about 4,000,000!

England—and more and more so since she has become the great advocate for and actor in negro emancipation—has reduced to the most abject and suffering condition of hunger-slavery her own many millions of British born laborers. And this is the necessary element and essential cause and condition of England's success in achieving the great industrial and commercial prosperity and profit in which she stands proudly exalted and unrivalled among the nations of the earth.

England has subjected Ireland to both political and class slavery of the severest and most crushing oppression, and in different modes, from the first conquest to the present time. If at any one time since the complete conquest of Ireland, the whole land had been confiscated at a single and general operation, (as has been done throughout more than once, by piece-meal,) and it had been entirely shared out to new English colonists as proprietors and cultivators—and further, if the whole native population had also been bestowed as personal slaves on these same individual new land-holders, and the natives and their prosperity had been since held and treated in every respect as are the negro slaves in these Southern States—there would have been scarcely more of injustice, hardship and cruelty, than in the actual policy and treatment; and the population would have been placed in a condition not more truly of slavery, and beyond comparison more comfortable and happy, than they have experienced as “free” Irishmen.

Enormous as are the numbers of the miserable wretches made slaves by the home industrial system and policy of England, and of the large proportion of these murdered by the intolerable severity of its exactions, these amounts are small compared to the victims of another kind of slavery—that established by the subjugation of Hindostan. There, a population of more than one hundred and eighty millions of a superior race, though of a dark complexion, and having capacity for a high grade of improvement, has been, and are, politically enslaved, and to a degree of oppression exceeding any that Europeans could live under or submit to, and almost beyond the conception of any civilized and Christian

people. The sole object of the governing and master-power and class, is to draw from the subjected race the greatest possible amount of tribute or tax that can be abstracted by force, and even with the aid and common use of physical torture. No measure of government, or regulation of police, or military severity and outrage, is deemed wrong or inexpedient, unless by its excess of injustice and cruelty it should defeat its object, and be less productive of gain to the Government than would have been a course more mild or merciful.

In the “Coolie apprenticeship” system, hypocritical England first commenced, and has since extended over many thousands of deluded Chinese and Hindoo victims (transported to her African and American sugar colonies) a new form of slavery, which differs in its results from her former system of enslaving African negroes only in its being more cruel. The term of service (if that is regarded and obeyed) is indeed limited to a stipulated number of years—but the obligation is not, therefore, the less rigid, or the less coerced by the scourge, and solely at the will and for the interest of the master—and the infliction of this slavery is on people very far superior in natural capacity, and in actual improvement, to the negro race. The service being temporary, instead of perpetual, operates still worse for the Coolie slave, inasmuch as it is the interest and sole object of the master to get as much work as possible from the slave within his term of service. Indeed, the greater number do not live to the end of their engaged term—and of those who live longer, and might again become free, very few can be able to return to their native land. Even if the limit of the term of a Coolie's slavery is honestly observed (to which contingency there must be numerous exceptions), the very existence and obligation of that limit must operate to prevent any growth of attachment and kindly feelings between the master and the slave, such as must necessarily spring up, and strengthen with time, where slavery is permanent and hereditary—and which condition of mutual attachment is general between resident proprietors and their slaves in this country. This system of limited, but more cruel than continued slavery, has been the fate of many thousands of Africans, re-captured by British cruisers, and thus “apprenticed” in Trinidad and other of the Crown colonies. And this is the so

called "liberation" of the re-captured African slaves!^{*}

Yet, with all this support of slavery in its worst forms by England, Englishmen still

^{*} The re captured Africans added to the Asiatic Coolies did not supply enough of "free laborers," or "colonists," to England for her sugar islands, and in 1851, (thirteen years after the complete emancipation of her West Indian slaves,) after some smaller operations, under authority of the British government, there were from thirty-five to forty thousand Africans bought (precisely as in the former slave trade) and shipped to the West Indies, and there "apprenticed." This transaction was so palpably the renewal, in another form, of the old African slave trade, that the British government was shamed out of it by public opinion; and has lately denounced the like procedure as being such renewal, when the example was followed by the French government. The small probability of any "Coolie apprentice," or "colonist," living as long as his time of slavery, may be inferred from the following fact, quoted by the Hon. J. P. Benjamin, in a speech (1859) in the Senate of the United States: "Out of 4500 Coolies imported into Jamaica in 1846 and 1847, only one-half remained alive in 1851." This system, originated by England, has been adopted in Cuba, as well as by France, and with the same general features and conditions, which must necessarily produce the greatest amount of suffering, and generally also death. From 1847 to 1858, there were shipped to Cuba 28,777 Coolies. Of these, more than 4000 died on the passage. The subsequent annual deaths were at least ten per cent. They were bound to serve ten years, at \$4 a month, one-half of which is retained by the master, to be paid to the Coolie (amounting to \$240) when he is released after ten years service. Of course, few will live to receive their retained wages—which would cost the master much more to pay than to engage a newly imported Coolie, under a like murderous engagement, for every vacancy created by death—to be either complied with, or avoided in like manner. It must not be supposed that the \$2 a month contracted to be paid to the Coolie is to be at his free disposal. Out of that he must pay for clothing, medical service, and other demands sufficient to absorb the whole. It is most likely that both the wants and the ignorance of the Coolie slave enable his masters to keep him always in debt, for advances—and that no money payment is ever made, before the death of the Coolie serves to wipe out all claims of payment for his services. The precise terms of service of the Coolie slaves are not known. No doubt they vary in details in the different colonies. But whatever may be the variations, and whether under the English, Spanish, or French government and policy, the general law and operation of Coolie bondage, whether of Asiatic or negro subjects, has been correctly characterized (by the New York DAY-BOOK) as the rule or receipt "for killing the greatest number of laborers in the shortest time."

continue complacently to listen to, and rapturously applaud, and receive as the justly due eulogy of their country, the often repeated rhetorical flourish of Curran, which will be here again quoted for the purpose of standing in contrast with the true facts of English action and merits in regard to slavery

"I speak [said the eloquent orator] in the spirit of the British law, which makes liberty commensurate with and inseparable from British soil; which proclaims even to the stranger and the sojourner, the moment he sets his foot on British earth, that the ground on which he treads is holy, and consecrated to the genius of UNIVERSAL EMANCIPATION. No matter in what language his doom may have been pronounced—no matter what complexion, incompatible with freedom, an Indian or an African sun may have burnt upon him—no matter in what disastrous battle his liberty may have been cloven down—no matter with what solemnities he may have been devoted upon the altar of slavery—the first moment he touches the sacred soil of Britain, the altar and the god sink together in the dust—his soul walks abroad in her own majesty—his body swells beyond the measure of his chains that burst from around him—and he stands redeemed, regenerated, disenthralled, by the irresistible genius of UNIVERSAL EMANCIPATION."

SECTION III.—The conditions of society in which only the labor of any country can be truly free—and then but temporarily.

The only civilized communities in which the laborers are not yet slaves (and of these the exemption is but a transient condition,) are the northern of the United States, or others (as Canada) under the like rare and peculiar circumstances. The necessary conditions (together with the absence of personal slavery) are, population few and sparse compared to territory, and ready means for subsistence—and, therefore, the demand for labor by employers exceeding the supply of persons desirous to be hired. Such conditions will rarely be found, except in a newly settled or thinly peopled country. Nor can they long continue even there, unless there is also a ready outlet for the subsequently growing and crowding population—and there are vacant lands and greater profits for labor inviting to emigration. The vast extent of vacant, fertile and cheap lands in the West

has served, and may long continue to draw away so much of the increase of population as to prevent in any of the northern States the supply of labor becoming equal to the demand. So long as the demand exceeds the supply, laborers can always obtain from employers fair and usually higher than fair wages. The laborer then may freely select his employer and employment—as more hands are needed for all than can be hired—and, when at work, earning much more than he needs for present subsistence, the laborer is free to be idle (if he so chooses) whenever he and his family are not destitute of the necessities of life. This is the only condition of a country in which its labor and laborers can be deemed truly free; and this condition, but for the peculiar circumstances of North America, could not continue here long. Whenever the valuable vacant lands shall have been all settled upon, and there will be no longer sufficient inducements for emigration; and when, by the retaining and crowding of population, the supply of labor shall (as is inevitable) greatly exceed the demand, then in New England, as already has been effected in Old England, slavery to want will be established completely, rigidly, and in the form most oppressive and destructive to the laborers, but the most profitable of all slavery to the employers, to capitalists, and to the industrial progress, and for the accumulation of wealth for the community. The lower the wages, and the greater the privations to which the laborers can be subjected by their eager competition for employment and bread, the greater will be the profits of the employers, or the lower they can afford to sell their products, and the greater will be the increase of trade, of profits and of wealth to the country. This is the advanced and flourishing phase of the so-called “free labor” system—to the perfection of which system England has now more nearly attained than any other country of Europe, or any people that has heretofore existed—and with which there is also the most of want, toil, suffering and misery to the laboring class, as well as the most of gain, wealth, and luxury to the employing class and to capitalists. Massachusetts already begins to see the dawn of this much lauded splendor, and much coveted economical and social condition. And in truth, if the prosperity and wealth of the higher classes, and the extent of trade and of riches of the country in general, are the only objects

sought, without any regard to increasing the destitution, misery, ignorance and vice of the poor, and the much larger number of the citizens—then I freely admit that the falsely so-called “free labor” system is the best policy, and that its ultimate fruition and results should be desired, not only for Massachusetts and all other “free” States, but also for Virginia, in preference to our existing system and policy of negro slavery.

SECTION IV.—Free labor and negro slave-labor compared in their results, and especially in reference to Massachusetts and Virginia—Causes of high prices of Massachusetts lands—The different operations and effects of the receiving and paying of government bounties and protecting duties.

Thus, the northern States, owing to peculiar but temporary circumstances, are, at this time, free labor communities, and will continue to be so until their population becomes dense enough to make the supply of labor greater than the demand. Massachusetts, as the oldest of the northern States, has longest enjoyed the alleged benefits of this condition of free labor, and has now approached nearest to the next succeeding condition of labor cheapened by competition and the beginning of slavery to want. Virginia is the oldest of the negro-slaveholding States, and has longest enjoyed the benefits and borne the peculiar and incidental evils of that condition. Therefore, when estimating the practical effects of the two systems, these two oldest States will be chiefly used as examples and referred to for comparison. The two different systems of policy and labor have each their unquestionable benefits and disadvantages. Both are good in their general operation, where long and fully established, as respectively in these two States. Yet it would be extremely disadvantageous, if not ruinous, for either Massachusetts or Virginia to exchange its own established labor system entirely for that of the other.

The slave system of Virginia gives much more command and control of labor in a new country of sparse population, and makes it continuous in effort, and therefore, even if slower and less effective for short times of actual employment, it is far more efficient and profitable on the whole than would be free hireling labor. It is more suitable for extensive culture, under one directing and controlling head; and by permitting leisure, and opportunities for much social intercourse,

to the master class, and requiring of them, and inviting to mental cultivation, there is a constant tendency to improvement of that class in mind, manners, and in social advantages and virtues. On the other hand, the facility for obtaining the comforts and pleasures of life also invite to self-indulgence, indolence, and negligent and expensive habits—and these encourage the kindred vices which often follow these errors.

The free labor system, if exclusively in operation from the beginning of a newly settled country (which, however, was not the case with Massachusetts or any of the older northern States,) would subject all employers and proprietors to great straits in the general scarcity and high price of free and hired labor. Hence, every economy of labor would be induced, and employers and proprietors would necessarily be themselves laborious, and frugal to the extent of parsimony. Their children, from an early age, would be trained to the industrious and frugal habits of their parents. No available means for gain would be neglected, nor any expensive indulgence, be permitted. Such circumstances would permit farming only on a small scale—so that the farmer, his wife, and sons and daughters, would constitute the greater number, if not all, of his permanent laborers and servants, for the farm or the house. Thus, every one is always at work, and helping to increase both private gains and the public wealth. But, on this account, none of the hard working rural population will have leisure for a high degree of mental culture, or for the improving pleasures of extended social intercourse. The very long and severe winters of Massachusetts, when scarcely any outdoor labor can be performed, more than anything else, have permitted and invited every person to acquire the lowest branches of school instruction. But this benefit does not prevent a general and increasing want of higher and more useful knowledge, for acquiring which the lower branches of school education are but the useful means.

The system of negro slavery requires large space for the best results, and large farms; and such extensive operations, and the looking to the main and great objects, lead to the neglect of details and of minor advantages. Hence, on one of our large, and also best conducted and most profitable farms—great as are the profits, and excellent the general management—there is yet enough of waste and neglected values, in small matters, to fur-

nish a good income, if saved; and all of which would be saved by Yankee farmers on their small properties. For all these reasons, in proportion to their respective amounts of capital and labor, the small northern farmer would make and save double as much profit and accumulation as would a large southern slaveholder. Nevertheless, of all the before experienced northern farmers who have bought land and settled in Virginia, and who, either with or without slaves, attempted to exercise their boasted northern skill in farming on a large scale, I have never heard of one who did not fail, or, at best, fall much below the results of the ordinary management of his more careless and wasteful neighbors.

The larger space required for farming by slave labor is obtained without much cost in a new colony or settlement. Land is but one (and then the least costly) part of the cultivator's total farming capital, and its market price cannot rise or maintain a subsequent price, higher than the owner can afford to pay, or to retain so invested. If every farmer occupies twice as much land as might serve (with every small economy practised), and such is the usage of the whole country, it will follow that the general price of land will not rise to a rate higher than one-half of what it might be, if every owner would bestow as much labor upon, and derive as much product from, one acre as he does from two. This is one only of the several causes of land being higher priced in Massachusetts than in Virginia; though not a cause necessarily produced by slavery. For in many particular cases there are farms as highly improved in Virginia, cultivated with better knowledge of agriculture, better conducted (notwithstanding the admitted defects of economy), and more profitable for the capital invested, than can be found in Massachusetts, or any other of the old northern States. There are other and more operative causes for the higher prices of lands in Massachusetts, which will now be stated.

The tendency of the system of free labor (when the labor is also scarce and dear,) is to reduce the sizes of farms to the least possible extent on which the proprietors can make full use of their capital—and, of course, to increase in proportion the number of farms and proprietors. The unproductiveness of the soil in Massachusetts caused a large proportion of the population to devote their labors to navigation, fishing and

whaling, trade and manufactures; and their natural and proper advantages and profits in these pursuits have been greatly increased by the bounties and discriminating and protecting duties enacted by the Federal Government, and which, raised from the whole country (and as of all taxation, mostly paid by the slaveholding States), yielded their benefits, as bounties, mainly to Massachusetts and the other New England States, because these were best fitted to profit by them. Thus, while the industry of all the agricultural, and especially of the slaveholding States, has been burdened with paying for all this unjust policy (amounting altogether to many hundreds of millions of dollars), Massachusetts has received the largest proportion of the benefits of the bounties bestowed. The direct bounties for the codfishery, paid out of the federal treasury alone, have amounted nearly to \$12,000,000—and nearly the whole of this has been received by Massachusetts and Maine, which was long a part of Massachusetts. As the largest shipbuilder, navigator and whaler, Massachusetts has received the largest proportion of the benefits of the indirect federal bounties to navigation interests, and especially, and to this time, to American shipowners, and to the vessels engaged in the coasting trade. Her greater fitness for manufactures has also served to give her the chief profits derived from the protecting duty system of which the unjust and heavy burden has been chiefly borne by the slaveholding States, which have been unable to obtain any profit from these offered bounties. A protecting duty of 20 per cent on certain fabrics might afford ample protection and profit to Massachusetts' manufacturers, which rate of duty would not guard from loss a southern manufacturer. Thus, a virtual monopoly of the production and sale would be vested in the manufacturers of the section which had the best facilities to use the benefit. If then the duty were raised to 40 per cent, it would still offer so much more advantage to the northern than to the southern manufacturer, that the former, while making still increased profits, could undersell the latter, and retain the principal or exclusive business of production. For all these latter reasons, of far greater operation than better agriculture, the population of Massachusetts has been increased to much more than double of what it would have been if its whole industry were as nearly agricultural as that

of Virginia. And this additional population drew from abroad, and from the government protection and bounties, far the largest share of the profits and wealth of Massachusetts. All this additional population, possessing and expending much more than a proportional amount of the general annual income of the State, afforded to the fewer agriculturists a home market of great and sure demand, and of immense value. The consequent prodigious benefit to the fewer cultivators and land owners may well be conceived, and the necessary effects in increasing the demand for and price of the limited amount of land, none of which was too remote from towns to profit by the peculiar benefits offered. For the demand for land was not to raise grain—for the production of grain and agriculture proper have long been and still are decreasing and declining in Massachusetts—but to raise green vegetables and other products which do not admit of distant transportation, for the supply of the many towns and villages and the population not engaged in agriculture. A "home market," when it is what the term should imply, really at home, is unquestionably of great value to agriculture, and which (in many cases) if justly and judiciously selected, the agricultural interest of a country may well afford to pay for, in consideration of its benefits. But, in the case of Massachusetts, there has been created in this extra and non-agricultural population and its wealth, a vast home market, by which every individual farmer is greatly benefitted, and which home market has been built up and is paid for by the bounty of the Federal Government, and mainly by taxes and losses borne by the slaveholding States. To compare fairly Virginia and Massachusetts in these respects, it would be necessary to suppose for Virginia an additional population of industrious and wealthy consumers of agricultural products, of more than double all the number now engaged in agriculture; and further, that these consumers were mainly supported and enriched, not by Virginia, but by Massachusetts. Under such change of conditions, the prices of land in Virginia would soon be doubled, and those of Massachusetts would sink to less than half their present rates. And if the latter had never had any benefit from the bounty system, and, on the contrary, had paid as much of the costs of that system as has Virginia, at this time, the population and wealth and pros-

perity of Massachusetts, as well as the price of lands, would scarcely be one-fourth as much as are now boasted of, and which are falsely asserted to be wholly the results of the superiority of free to slave labor.

SECTION V.—Other causes of high price of land, and further views of its operation, and that of "free labor." The condition of Massachusetts, so much lauded, is the infancy of a system of evil which is approaching maturity in England, and has fully reached it in China.

There are still other causes for the high prices of lands in Massachusetts, and which operate still more strongly in older "free-labor" countries. These will be now stated, and their peculiar and powerful operation fully admitted. Where the free labor system prevails, and hiring labor is scarce and high-priced, it will be a necessary consequence (as stated above) that the small landed proprietors and their families will not only be regular laborers, but will constitute the much larger proportion of the laborers on all small properties. They will also be the most diligent, hard-working, careful and frugal of laborers—because every member of the family is not only under more perfect direction and control of the proprietors, but also has every additional stimulus to exertion and care that self-interest, family affection, and the pride of proprietorship can offer. Every exertion of a hand, every minute of time given to labor, every smallest saving of products or means, will be so much of addition to the income of the family, and to the accumulation of capital. Such proprietor-laborers—and especially when pressed by poverty as much as if they were hiring laborers on the lands of others, (which is not unusual)—are more industrious, and more saving than any free hirelings, or any individual slaves. Therefore, the smallest farms, thus cultivated, will be made more productive than any others in proportion to extent, and will be held at higher prices than larger properties. Hence, there will be a continual tendency to reduce the sizes of farms, and a consequent enhancement of the market prices of small farms, to the highest rate at which proprietors are content to buy or to hold them. This rate is raised still higher by another cause not less operative than the love of gain, or the pressure of want. Besides the intrinsic and true value which all cultivated land has founded on its actual rate of production, every property has

also an additional element of value, which enters into and increases its market price. This is the gratification and pride felt by and nourished in the owner, because of the mere fact of his being a proprietor of land. This feeling, and its effects, exist everywhere—but in the highest degree where such proprietorship is a rare distinction, and of course where such property is the most scarce, costly, and difficult of attainment. It is felt in Virginia—but with less intensity than in Massachusetts—and in Massachusetts much less than in France, (where the law has only of late permitted, and now operates to encourage and almost compel the extremely minute division of land—) and in France less than in England, where it is rare for land to be owned by any except the very rich. Independent of the products, or pecuniary profits of land, its possession confers a distinction something like the vulgar estimation of a title of nobility—which is still more empty, and destitute of real value and worth. This distinction of ownership may be rated very high in some localities, and very low in others. But everywhere it is something—and its rate is so much added to what would be otherwise the market price of lands. But this value of mere proprietorship is not in proportion to the extent, or to the productiveness or other true value of lands. It is the greater in different countries in proportion to the scarcity of the distinction, or the difficulty of its acquisition. It is also much greater, in the same countries as to small farms than large, or in inverse proportion to their respective extents. For the possessor of but five acres enjoys the much coveted and highly prized distinction and rank of being a farmer on his own land—and the owner of a thousand, or ten thousand acres, is no more. Hence, this pride of mere proprietorship might add \$50, or \$10 per acre, to the appreciation of a farm of but 5 acres' extent—and might not add more than \$500, or half a dollar the acre, to a farm of 1000 acres. Hence the strong inducement, where such demand is strongly operative, to supply it by selling land in small divisions—and so to hold it divided. The present legal policy of France compels the division of the smallest landed property among all the children of a deceased proprietor. Consequently, very many farms, and separate properties, are from five acres to less than one acre in size. From other operating causes, in some parts of Ger-

many the lands are mostly held in similar very small divisions. The owners, the "peasant-proprietors," as they are termed by J. Stuart Mills, (who greatly admires and applauds the system) are as needy as are hiring day laborers, and suffer as great privations. But, for the reasons stated above, they are the most diligent and frugal of laborers, and appreciate their position of proprietors so highly that many continue to hold and to cultivate farms which do not yield, as capital, a net profit of more than two per cent. In other words, if the fair interest of capital is five per cent, these small peasant-proprietors hold their lands (and could so sell them if choosing,) at market prices between twice and thrice the amount of their true intrinsic value, as rated by production. The distinguished (and generally correct) political economist, just quoted, pronounces these peasant-proprietors to be the most productive of all landholders and cultivators, and the most profitable agricultural workers in these countries. And he is right, if the most desirable and profitable end for the individual, and public interests of a State, is to obtain the greatest possible amount of gross products from the land, even if at the greatest cost of labor and privation, and want and misery, to the proprietors and laborers, and with the least of net profit, and of accumulation of increased capital to the proprietors and the State. Lands so held and tilled might indeed produce to the utmost capacity for every rood of surface—would be bought and sold at double prices—might perhaps bear a doubled population, all peasant-proprietors and all industrious laborers. But hand-labor would generally supersede team-labor and labor-saving machines, and net product would be diminished much more than gross product increased. Each proprietor's household would eat or consume nearly all of his own products, and leave a very small excess for sale, and to furnish any addition to the public wealth. The necessity for continual toil and privation of the whole population would forbid any indulgences in social pleasures, or intellectual improvement—and more and more, in each successive generation, extend the prevalence of general and brutal rudeness of manners, and ignorance. And, according to my views, this condition of a country population—such as exists in parts of France and Germany, and to which Massachusetts is tending, (and, if a truly

self-supporting State, would be rapidly approaching, and would soon reach)—is as truly a great and deplorable evil, as it is supposed by many to be a great benefit and blessing. Considered in reference to both private and public interests and well-being—or in regard to the happiness, wealth, and mental and moral position of the whole community, and of every individual, this condition would be far less beneficial, and more deplorable, than that of a negro-slaveholding community, of but half the population on equal space, with a less economical and productive agriculture, in gross, and prices of land less by one-half or more. In this latter condition of things, the negro slaves would enjoy more leisure, freedom from harassing cares, and more comfort and pleasure, than the wretched and hard-working peasant-proprietors and laborers—and the fewer masters of negro slaves would have abundance of leisure, and use it for social enjoyments, and to improve manners and social education. If there were less of gross production, there would be much more of surplus and of net products, and of sales abroad, and of accumulation of private wealth, and contributions to the general revenue and accumulated wealth of the State. It has been admitted that the more that land is divided into small properties, and cultivated by the hands of the respective owners and their families, the more effort and frugality will be used, and more of gross products made and saved. But no important facility to save hard-labor can be made on such small spaces. The farmer on five acres only may indeed obtain from it the greatest possible product—even though his tillage is entirely by the spade and hoe. But he cannot afford to use a good plough or strong team—and still less a reaping or threshing machine. The more that numbers are increased, and even of industrious laborers, the nearer will they be to the eating, or otherwise consuming, the whole annual products of the country. Population, when increased to the most that the industry and products of a country can support, does not add either to the wealth or strength of the country, but the reverse; producing instead, poverty, ignorance, and weakness, and great suffering to all of the laboring class, and destitution, misery and even starvation, to many of the crowded population. Such is the actual condition of China, which, of all countries of the world, is the most industriously and ef-

fectively cultivated, the most productive, the land most valued and high-priced, and which also supports the most dense and laborious and frugal population. Yet this great and rich country barely feeds and sustains its numerous inhabitants, and supplies but a scant amount of the cheapest food to much the greater number—poverty is general, and extreme want and famine are not uncommon—there is but little surplus production to increase the general wealth, or for public uses—and the nation is even the weaker in military condition, because of its great populousness, which is only restricted from greater increase by misery, starvation and systematic infanticide. Yet, while the wretched condition of China is admitted by all, and also the causes for it here alleged, the very same causes, in their earlier operation and progress, and as applied to this country, are supposed by many shallow reasoners to be elements and evidences of wealth, strength, happiness and general well-being and greatness for this country—causes which are alleged to be greatly beneficial to the northern States, and which are even deemed the best examples for imitation, and objects to be earnestly sought by the slaveholding States! China presents the perfection and finality of the operation, of the system of high-priced lands, cheap free labor and dense population, which system is but beginning to be effective in Massachusetts, and is more than half advanced to completion in England.

Population, when near approaching, and still more when having reached its maximum, or extreme limit (of means for subsistence,) in any country, is admitted by all sound thinkers to be an enormous evil. Another great accompanying evil, also admitted, is presented in the wages of labor being too low to support the laborers. To these evils, I would add as another the high price of land, which is always an accompaniment and aggravation of the other two—but which, instead of being deemed an evil, is as commonly as erroneously supposed to be a great and most desirable public benefit, and a certain indication of great agricultural and general prosperity.

Land, as all other farming capital, or stock, has two kinds of value, of entirely different character and operation. The one is the value founded upon, and regulated by, the products and profits of the land under culture. This is the true and only agricultural

and useful value; and which, if known and distinguished separately, will truly indicate the actual measure of the supposed agricultural prosperity of a country, where all the land is occupied. The other value of land is as capital merely, or a commodity of trade and speculation; and which is regulated entirely by the demand of purchasers, no matter for what objects, or under what delusion. There are also two different private interests of land-holders, as such, which ought to be, but are not often considered apart. The land-holder, as a cultivator or agriculturist, is not benefitted, but may eventually be much injured, by lands being priced higher than according to their true productive value. But to those who hold lands for sale; or as capital for trade, the higher the rise of prices, and the more money to be obtained by sale, the greater will be the gain of the individual sellers, in each transaction. But it is certain that such gains cannot be beneficial to agriculture, or to the common weal. For just as much as some members of the community, as sellers of land, may gain in factitious and baseless enhancement of price, is lost by others, as buyers in paying prices too high for the value of land founded on its production. If the lands of Virginia could, and as speedily as is falsely and absurdly maintained by the advocates for substituted free labor, be raised in price to the present rates of Massachusetts, or to four times as much as their true productive value will now justify, the owners might individually profit as much; in that respect, by selling their lands to others who would bear the subsequent loss. But if the sellers remained residents of Virginia, or did not flee the country with their new capital in money, its quadrupled increase would scarcely secure them, as abiding residents, from being involved in the common ruin of the country, to be produced through its prostrated agricultural interests. To the seller of land, and as such only, can the too high price of land be beneficial. To the designed and continued holder, advanced market price is unimportant; and to the buyer, it is altogether injurious.

SECTION VI.—Value of a "home market," if truly at home; and why, and in what manner to be maintained by all the Southern States.

The subject of home markets was incidentally touched upon in a preceding section.

Its importance requires the more full consideration, which it will now receive.

The value of a home market for the products of agriculture, created in the new demand for these products of neighboring resident mechanics, manufacturers, traders, navigators, &c., and their families, I would perhaps rate as highly as do the advocates of the protecting duty and bounty system of the federal government. All reasoners would admit its great value to agriculture, and to all its neighboring country, where the home market grows up naturally, or without any fostering care and aid of government. Still more valuable would be a home market to its neighboring agriculturists, even if created and sustained by legal protection, provided the burden and cost of that protection were borne, not by the community receiving the benefit, but by another and remote community and interest—as are the different conditions of the older northern and southern States under the federal system of protection and bounties. Further: I will admit that, in some cases, it would be good policy for a particular State or community to impose taxes or burdens (and which would be but of temporary operation) on itself, for the purpose of introducing and establishing new and appropriate industrial pursuits, and so far creating a real home market in the demands of new customers, resident in the same community. To insure beneficial results, it would only be necessary that the subjects of protection should be selected with wisdom and judgment, and with a single eye to the interest of the community so taxed, as well as by its legal authority only. Thus, each and all of the southern States—which are almost exclusively agricultural, and have scarcely any important home markets in manufacturers and members of other industrial pursuits—would promote their own pecuniary interest by severally imposing heavy, and, in some cases, prohibitory license taxes on the sales of all such northern commodities as might be as well, or nearly as cheaply produced in the South; and also on all products of foreign countries, of which the prices are much enhanced by federal duties for protection, or which are imported in the South, not directly from abroad, but through northern ports and traders. The certain and indefeasible right of each State to impose such license taxes it is not necessary here to maintain. So far the new policy proposed might be maintained as correct on economi-

cal grounds. But there are much more important political and protective or defensive reasons. Such a system of policy, if adopted by but a few (and more speedily and effectually if by all) of the southern States, and fully and strictly carried out, would not only give to every such southern State valuable home markets and numerous new buyers and consumers (at home) of agricultural products, but would soon serve to bring the northern Abolitionists to their senses by forcing them to see their complete dependence, for their profits and wealth, on southern products and taxation, and on the tribute heretofore levied upon southern capital and industry, and mainly derived from negro slavery.

The arguments of the protectionists in favor of creating home markets by protecting duties, operating to exclude the taxed foreign commodities, if addressed to the manufacturing and bountied States, would be impregnable. For these States pay but a small proportion of the costs, and enjoy nearly all the benefits of the home markets so created. But when such arguments, in favor of federal protection, are addressed by northern advocates to the people of the South, they are both false and absurd. And their absurdity is greatly increased, and made more manifest and glaring, when southern men advocate such protection through federal legislation. When this is effected, as has been through the whole course of the protective and bounty system of this country, the southern people bear much the larger portion of the burdens (as of all federal taxes) and of the whole cost, and the "home markets" so created are not in the southern, but almost exclusively in the northern States, and mostly in New England, where they are no more "home markets" for the southern States and people than they would be if in Europe. Mr. Henry Carey, the most earnest and able recent advocate of the protective system, is entirely correct in regard to the great advantage of home markets which he sets forth, or of what he calls "placing the loom and anvil by the side of the plough;" but for this placing to be for our benefit in the South, the newly introduced loom and anvil should be by our plough, and not by that of Massachusetts. If the southern advocates for protection will direct their arguments and zealous efforts truly for the protection of southern manufactures and mechanical and

other products, through State legislation—and thus, for building up new “home markets,” not in the North but in the South—not for northern but for southern agricultural products; they would, for the first time, have reason and good sense, patriotism and sound State policy, on their side; and then their exertions, concurred in by their former opponents, and so made effective, would redound as much to the wealth, strength and political safety of the southern States, as the federal protective and bounty system has heretofore operated in opposite directions, and with most injurious effects on all these great interests.

SECTION VII.—How the removal of slaves from Virginia would affect the prices of lands and agricultural and general interests. Some absurd and detestable doctrines on this question cited and exposed.

In a preceding article, “On the effects of the high prices of slaves,” &c. (published in DeBow’s *Review* for June, 1859,) I maintained the following positions, which will here be again enunciated, but which will not require to be again proved or argued:

1. That the higher the price, or costs, of the whole of the farmer’s necessary capital, the less must be the net profits of his farm and business, for products of equal amounts and values obtained.

2. That after the market prices of agricultural capital and stock have been duly adjusted and proportioned to the products and profits, if thereafter one large part of that capital, as slaves, should rise much in price, without a corresponding and equal increase of the value of subsequent products, then the market price of the other capital stock, the land, must be as much reduced, leaving the market value of the whole capital the same as before—or, otherwise, no new investments will be made in agriculture (capable of returning the ordinary profits of capital,) and no previous owners of farms can continue to hold them, unless to operate for less than fair profits on their capital, rated at its then market appreciation.

3. That the now greatly enhanced price of slaves (caused by their more profitable use and greater demand in the more southern States) has already operated to forbid new investments in agricultural capital in Virginia—and has begun to reduce, and will more and more reduce, the prices of our lands.

What was maintained, in arguing these propositions, as the effect of an undue high price for slaves, in lowering, in equal degree, the prices of lands (the only other great subject of our farming capital), would be equally true if these two subjects could be made to change places. That is, if, because of any artificial or extraneous influence, our lands could be raised to, and maintained at, for a time, a much higher rate of price than their products would justify, or than could return fair business profits, then the other great subjects of farming capital must be reduced in proportion—or otherwise investments in agriculture would cease, until the price of capital, in some other parts, or generally, for want of purchasers, had fallen low enough for profitable investment. As such reduction of price could not occur as to slaves, (because their price is regulated by the great and increasing foreign demand), the necessary and inevitable fall of price would take place in regard to lands, which therefore would soon lose all their recent undue or factitious appreciation, if not further sink below their former and then fair market value.

It will be a subject for separate and later consideration, whether (as usually supposed) the high price of land of itself is advantageous to agricultural interests, or the reverse. But the opposers of negro slavery having assumed as true the affirmative of this proposition, have eagerly seized upon the actual difference of the prices of lands in the northern and southern States, to use as their great argument for the destruction of negro slavery and its substitution by free labor. To strengthen this argument, the actual differences of prices have been greatly exaggerated, and the great and especial causes of high priced lands (as in Massachusetts) have been entirely overlooked, or designedly ignored. Further: It has thence been inferred, no less foolishly than falsely, that the removal of all the slaves from Virginia by sale (or, as many have contended, even by gratuitous emancipation,) would have the simultaneous or speedy effect of introducing as much free labor from abroad, and thus speedily and greatly would the prices of our lands be raised, and all to the great benefit and gain of the agricultural interest and of the commonwealth. Formerly, when theoretical anti-slavery opinions were general in Virginia, many persons, otherwise intelligent and judicious, would have readily concurred

in this false doctrine. That time of general delusion in regard to negro slavery, happily for Virginia, has passed away. Recently and now there are but few who still entertain such opinions. But, lest I should be charged with contending against shadows, and exposing errors and absurdities for which no respectable authority or voucher can now be found, I will quote two passages from editorial articles of Virginian newspapers, holding different political creeds, and respectively attached to the two great opposing political parties. One of these is the *Norfolk Herald*, the oldest newspaper, and still conducted by the oldest editor of the commonwealth. In an editorial article of this paper (of 1853, as supposed) there was the following passage:—

“Let those who are lured by the prospect of gain, or who really believe that they can better their condition by emigrating to the new States, follow their bent, and take their slaves along with them. The vacuum may cause a momentary weakness, but it will be only to recruit with two-fold vigor. The places of every slave will in time be filled with hardy, industrious, tax-paying, musket-bearing freemen, of the right stuff to people a free State, which Virginia is destined to be one of these days, and the sooner (consistently with reason) the better for her own good.”

This passage is but a strongly expressed enunciation and repetition of the old and hackneyed general proposition of the anti-slavery school, and therefore needs no further notice. The next quoted authority requires more consideration, though upon other grounds than that of respect due to the opinions advanced, or the reasons on which they are placed. The following passage is part of an editorial article in the *Richmond Enquirer* of 1858, commenting on the movements in the then recent session of the Southern Convention. It was deliberately set forth and cautiously worded, and was subsequently reaffirmed by the editor:

“If a dissolution of the Union is to be followed by the revival of the slave trade, Virginia had better consider whether the south of the northern Confederacy would not be far preferable for her than the north of a Southern Confederacy. In the Northern Confederacy, Virginia would derive a large amount from the sale of her slaves to the South, and gain the increased value of her lands from northern emigration; while,

in the Southern Confederacy, with the African slave trade revived, she would lose two-thirds of the value of her slave property and derive no additional increase to the value of her lands.”

The *Enquirer*, in former years, and for a long time, was one of the ablest and certainly the most influential of the political journals of Virginia, and, perhaps, of all the southern States—and even now may retain something of the remains of that deference which formerly was due to its then influence if not to its always asserted claim (not always, however, even formerly, well founded) of being the zealous and faithful advocate of the rights and interests of the southern States. Further: in recent and at the present time, and in States other than Virginia, this paper may have acquired undeserved consideration as a supposed exponent of now prevailing public opinion, or of the opinions of some of the leading politicians of Virginia, founded on the known family as well as partizan relations of the chief editor. But for these different circumstances, either or all of which may operate abroad to invest the *Enquirer's* doctrines with some factitious and undeserved importance or false *prestige*, the several propositions above quoted would not, for their own worth or influence at home, demand either reply or notice. As it is, some comments will be submitted on the main and also the incidental positions of the editor. And first, before adverting to the older fallacies of the removal of slaves serving to bring in free labor and to raise the price of lands, I will ask attention to some other opinions expressed in this notable passage, which ought to excite indignation or contempt in the mind of every Virginian who is true to Virginia and to the South.

So far as I know or believe, there is not any other editor, or any respectable and known individual writer in Virginia, who would endorse and support these doctrines of the *Enquirer* in regard to preferring for Virginia a northern rather than a southern political connection. If there are any persons in Virginia, except the few northerners in feeling, and the still fewer abolitionists or incendiary northern emissaries and agents, who would, in any contingency, prefer that Virginia should be attached to the northern rather than to the southern States, there is yet no evidence of such preference—or at least of any but in the above-quoted declaration. If all the votes of Virginia could

be polled on this particular question, at least nineteen-twentieths of them would strongly oppose the choice implied in the words quoted. And if there can be as many persons as one-twentieth who would, in any contingency, prefer political connection with the northern States to the southern, the fear of public indignation would prevent the avowal of that opinion, which would be so generally deemed hateful and abominable.

There is great virtue in an "if." It is easy enough to see that the "if" of the *Enquirer* was designed to serve as a safe passage through which to crawl out of the difficulty; which, without the "if," would have been obvious to every reader. The *Enquirer's* implied preference and recommendation for Virginia, in the event of a dissolution of the Union, to side with and remain attached to the northern rather than the southern States, were presented as if based on a condition precedent—the re-opening of the African slave trade—which was then, and is even now, so unlikely to occur soon, that such a test of the *Enquirer's* principles was not likely to be practically applied. For various reasons, good and bad, strong, feeble, or entirely fallacious—the great body of the people of Virginia are strongly opposed to the re-opening of the African slave trade; and by very many of them that policy would be held in detestation and abhorrence. With all of this large number, and also with other very cursory readers, the words of the *Enquirer* might well pass as a mere indirect assertion that the re-opening of the slave trade would be an evil greater than the separation of Virginia from the South and her adherence to the North; or, in short, as but a hyperbolic expression of disapprobation of a policy that could not be too strongly denounced. Further, it is only upon the occurrence of the contingency that the Union is about to be dissolved, and, as a consequence, the African slave trade to be reopened, that the *Enquirer* recommended to Virginia to side with the North against the South. Until this very improbable and double contingency shall occur, the *Enquirer*, by virtue of its "if," will still assert its claim to be strongly southern, both in principle and in every doctrine advocated. But whatever may be claimed for it, the "if," of the *Enquirer* should not be deemed of the slightest value as protection from the general indignation which would be incurred by a naked and unconditional avowal of prefer-

ence for the connection of Virginia with the northern States rather than the southern, in the event of a dissolution of the Union. The "if" is as worthless as a part of the argument, as is the entire series of propositions false as a whole. If the possible occurrence of the reopening of the African slave trade, after a separation of the Union, will indeed render it expedient and preferable for Virginia to separate both her natural and political connection from the more southern States and to adhere to the northern, then there would exist precisely the same reasons for such preference and action, without the re-opening of the slave trade, or any prospect or possibility thereof. What are the alleged reasons? In the "northern confederacy," as says the *Enquirer*, "Virginia would derive a large amount from the sale of her slaves to the South, and gain the increased value of her lands from northern emigration, while in the southern confederacy she would lose two-thirds of the value of her slave property, and derive no additional increase to the value of her lands." Now, if the latter portions of these assertions were true (as they are not), then they would operate as strongly, as reasons, without the revival of the slave trade. Without its being revived, the prices of slaves will be, as now, much higher—higher by two-thirds, the *Enquirer* says—than if the trade were reopened. Therefore, according to this doctrine, there are not only as great, but greater reasons and inducements operating now to sell off all our slaves, and have the vacuum so caused, in population and labor, filled by northern or European free laborers. And if by selling all our slaves, it were true, as the *Enquirer* maintains (and as I deny), there would be gain to Virginia in the (thereby caused) increased value of her lands, effected through northern emigration, then it is no less desirable now to seek that end, and through the means stated, and before the possible reopening of the African slave trade shall begin to diminish the present high prices of our slaves. Further—even if admitting fully the argument of the *Enquirer*, stripped of its non-essential contingencies—that it would be good State policy to sell all our slaves, and so invite immigration—yet as this can be done generally and completely only by legislative and coercive enactments, it is a legitimate deduction that this proper State policy ought to be so enacted and enforced, and thus that Virginia shall be, and

as speedily as possible, freed from the presence of negro slaves, and rendered in policy, and, of course, in sentiment, one of the hiring-labor, Abolition and northern States. It the propositions of the *Enquirer*, fairly argued and carried out, do not lead inevitably to these conclusions, it would throw much needed light on the propositions asserted for any other legitimate deductions from them to be maintained by legitimate argument.

In pursuing the main course of the discussion, there were some important side issues passed by, which would well deserve the consideration of those who have faith in any of the propositions above quoted. Even if the contingencies supposed by the *Enquirer* had actually occurred, or were manifestly about to occur, *i. e.* "a dissolution of the Union, to be followed by the revival of the slave trade," it may be asked whether Virginia, if waiting so long to act, as recommended by the *Enquirer*, could then, even on the false grounds assumed, obtain the promised profit in selling her slaves to the South? Would the then all-powerful non-slaveholding and slavery-hating States of the northern confederacy (even now, eighteen or nineteen in number) permit the only two adhering slaveholding States, Virginia and Maryland, to continue the "iniquity" of either selling or holding slaves? And even if there would be any possible ground to suppose such permission to be granted, and the involved rights to be respected by the then all-powerful northern States, there is still another as important difficulty in another quarter, *viz.*: What possible interest would the people of the more southern States then have to buy all the negroes of Virginia, at prices three-fold greater (as estimated by the *Enquirer*) than would be required for other slaves that they could then freely buy from Africa? And, even if pecuniary interest did not forbid so absurd a preference, what other inducement would there be for the more southern States to minister to the benefit and profits of Virginia by buying her slaves at higher, or even at any prices, and so facilitate her change to free labor, after Virginia had deserted and basely betrayed her section and her principles, and for this absurd hope of pecuniary profit, had chosen alliance with, and political bondage to, the northern States?

To be concluded.

From the Rural Register.

On the Culture of Wheat--The Necessity of Phosphates.

The lamented Professor Norton, shortly before his decease, delivered an address before the Seneca (N. Y.) County Agricultural Society, which we find in the Transactions of the State Society—from this address we make the following extracts, upon the culture of the Wheat plant:—

"This is a wheat county, and it is of much importance that the yield of that crop be increased, in place of continuing to decrease, as it has certainly done on many farms. I think that some light may be thrown on the cause of this decrease, and on the nature of the crop, by a brief account of the wheat plant in regard to the structure of its several parts, and their chemical composition, finally bringing the information thus collected to a practical bearing upon various questions connected with its cultivation. It will be seen that there is a very great number of points to which attention may profitably be directed. These will, in the present case, be impressed by the great value of this crop to our country generally. I will first devote a few words to the structure of the plant, and of its various parts.

"That part to which our attention is first naturally directed, is the seed. Viewed externally, this is merely a small brownish or whitish oblong mass, presenting a white interior when broken. If kept perfectly dry it will remain unchanged for a thousand years; but when exposed to moisture and warmth, a change speedily occurs. The seed swells and soon opens its outer covering to permit the root and stem to shoot forth. This is all very simple in description, but it is only after years of study that we have arrived at even an imperfect knowledge of what really takes place at this time. I do not purpose to go at length into a scientific account of germination, but will mention in few words the changes that occur. The seed in its natural state contains a dry white substance, which is for the greater part insoluble in water; this is mostly starch. Now the young shoot, until it reaches above the surface of the earth, and until its leaves begin to expand, must draw its nourishment from the seed, but since the principal part of the seed is insoluble, how is this done? It is found that at the time of germination, a substance called diastase is formed, which has the power of rapidly converting the starch into a species of sugar, or a species of gum. Both of these are soluble in water, and consequently go immediately to nourish the young plant. Now this change will not take place properly, save under certain conditions. The soil must be moist, and not very cold, and the seed must

be buried at such a depth as to be accessible to air. If there is no communication with the air, the seed will not germinate, even though the earth be warm and moist. Without air, the change by means of diastase, of the starch into sugar or gum, will not occur. This fact is often illustrated when we bring up earth from a distance beneath the surface, if thrown upon one side in the middle of a grass or grain field for instance, it will soon be seen covered with plants, and these in many cases entirely different from any growing in the immediate neighborhood. There seems no way in which we can explain many curious occurrences of this kind, except upon the supposition that these seeds may have lain in the ground buried deep, and consequently only grew when brought near the surface; warmth, air and moisture are thus seen to be necessary adjuncts to successful germination; but if we bring the seed immediately upon the surface, even under these conditions, it will not grow, thus showing a fourth requisite—the absence of light. Unless the position of the seed is such as to ensure all four of these conditions, it will not produce a healthy plant, and usually will not grow at all. This explains to us why so small a portion of the seed sown ever comes to anything.

“It has been shown by some authors from actual counting of the seed in a bushel of wheat, and by comparison with the yield obtained when a given quantity is sown, that when the greatest crops known are obtained, little more than half the seed sown vegetates. In the case of ordinary crops, the produce is not more than ought to be afforded by about one-third of the seed sown; the remaining two-thirds are lost, some buried too deep, some not covered at all, some destroyed by insects. One great advantage of the drill machine for sowing is, that the seeds are all deposited at an equal depth, and at an equal distance apart; the growth is consequently regular, and the plants are much less liable to be luxuriant, in some spots, and scanty in others. Covering with the cultivator or gang plow, produces something of the same effect. A considerably reduced quantity of seed will thus answer the same purpose, as none of it is lost. The saving of half a bushel or a bushel of wheat per acre becomes of immense importance when we consider the number of acres sown in any one year.

“When the young shoot has reached the surface of the ground, and has begun to expand its leaves, it is no longer dependent for food on the parent seed. Its roots have by this time begun to collect food from the earth, and there is a constant flow of sap upward through them. In good soils these roots will go down for several feet, and of course in penetrating so great a distance are much more able to draw abundant supplies for the plant; this

shows the importance of artificially deepening the soil, when the subsoil is not naturally mellow, and of draining when this portion is constantly filled with water. In either of these cases, the plant might almost as well endeavor to extract food from a pavement, as from the subsoil, until it is improved. But if the plant finds a soil of proper depth, and well supplied with its requisite food, its growth is rapid, and opening its leaves it begins to receive food through the pores, with which a microscope shows their surface to be covered. These during the day draw in certain kinds of air, which in the interior of the plant, are converted into solid portions of its substance. That this is the fact, has been proved by numerous experiments. The part of the plant which thus comes from the air, is of course a clear gain to the farmer, as it does not exhaust his soil at all; and here is an advantage which the good cultivator obtains over the poor one; his plants had a rich soil well prepared for the supply of their wants, and shooting vigorously up, are able to spread out broad luxuriant leaves in the atmosphere, drawing in far more food from this source than the small yellow leaves of a poor crop could possibly absorb. The very air, then, is more bountiful to the man who treats his soil liberally.

“With all the appearance visible in the external growth of the wheat, every one is familiar. There are many points that have been ascertained, relative to the internal changes which occur in the stalk at different periods, and also during the formation of the grain, which time will not permit me to notice now. While the grain is ripening, the materials for its composition gradually leave the stalk, and that part loses by degrees its nourishing properties, until finally, nearly all the nutriment is concentrated in the grain.

“It now becomes necessary that we should enquire particularly into the composition of the grain. If in the first place we burn it, we shall find that nearly all of it disappears, so that from one hundred pounds of wheat there will not remain more than two pounds of ash. This ash has evidently all come from the soil; the other portion which has burned away was originally air, drawn in mostly from the leaves, in the manner that I have before mentioned, but also in part through the roots. This combustible portion being by far the largest part of the whole weight, we will attend to it first. By means of various chemical processes, the substance composing this part of the grain may be separated from each other, and with a tolerable degree of accuracy.

“The following analysis is an instance of the proportions in which they are found to exist in wheat:—

COMPOSITION OF THE GRAIN AND STRAW OF WHEAT.

Org'c part of grain.	Ash.	Grain.	Straw.
Starch, 62.29	Potash, 23.72	12.44	
Gluten, 13.00	Soda, 9.05	0.16	
Gum, 1.21	Lime, 2.81	6.70	
Oil, 1.02	Magnesia, 12.03	3.82	
Sugar, &c., 6.40	Oxide of Iron, 0.67	1.30	
Epidermis, 7.20	Sulph'ic Acid, 49.31	3.07	
Water, 9.79	Sulphuric Acid, 0.24	5.82	
	Chlorine,	1.09	
	Silica, 1.27	65.38	
		99.50	99.78

"The first analysis is from Dr. Emmons' Agricultural Report, and agrees pretty well with most of the examinations made by other chemists. Starch, it will be perceived, is the leading substance, and next to this is Gluten. The latter is the only body in the grain that contains nitrogen, and is consequently the source of muscle in animals that live on wheat. Take away this constituent of the grain, and feed an animal exclusively upon what is left, and it cannot thrive, cannot increase or even maintain the bulk of its muscle in the body; its strength will gradually decrease. Whenever we find any food which contains, according to chemical examinations, much of substances like this gluten, it may be asserted without fear, that such food is eminently nutritious.

"The other substances, the starch, impure sugar, gum, and oil, are of use in forming the fat of the animal, and also in keeping up respiration. This is one of the most curious and important facts discovered by modern chemists and physiologists. At every respiration, a portion of the starch, gum, &c., of the food, is consumed in the lungs, and in the blood-vessels of the extremities, for the purpose of keeping up the animal heat.

"Every one is familiar with the fact, that if he labors hard, especially in cold weather, he requires more food than with the same amount of exertion in warm weather, and that if he is hungry at such a time, and deprived of food, he soon begins to suffer from cold; this is because he needs a fresh supply of material to burn in the lung for the purpose of keeping up his vital warmth. Every farmer knows, or ought to know, that if his animals in winter are kept warm, and sheltered, they do better than those that are exposed in the open air to the cold. This is because in the latter case, a large part of the food which would otherwise have gone toward fattening the animal, is used up in the increased respiration necessary to keep him warm.

"It is worthy of notice, that in this grain, which if taken in fair marketable condition, there is according to the table, about ten pounds of water in each one hundred of grain. New wheat frequently contains from twelve to sixteen pounds in one hundred.

"I may here say a few words as to the vari-

ous practices which are followed in cutting wheat. If allowed to become dead ripe in the field, a considerable portion of its starch and sugar is changed to epidermis, or woody fibre, that is the skin. The grain will then yield more bran, and less fine flour, than it would have done if cut ten days or a fortnight earlier. The result of many careful experiments has shown that when cut at about the above time before entire ripeness, the grain is heavier, more plump, and actually measures a greater bulk. The skin is thinner than it would have been if allowed to stand, for the causes mentioned above, and therefore more fine flour is obtained to the bushel.

"The same reasoning applies to the straw. It is well known that if wheat be mown and fed to stock while green, even with heads cut off, it is an excellent fodder; and it is equally well known that if allowed to stand in the field till the grain is ripe, the straw consists of little but dry indigestible woody fibre. Now the same change takes place, to a certain extent, in the straw, as in the grain; it also contains some gum, sugar, &c., and is therefore nutritious while green, but as it ripens, nearly all of these are converted into woody fibre, in the manner that has been mentioned.

"By cutting the grain, then, before it is quite ripe, a double object is gained; its own quality is improved, and the straw when cut up with hay, &c., is readily eaten by stock, and has really some nutritive properties.

"We all know that it is the *grain* which is sold and carried away from most farms, the *straw* in one way and another, usually getting back to the land. It is then clearly to the composition of the grain that we must look for an explanation of our difficulties, in attempting to restore our exhausted land to fertility. What was the substance which was found to be most abundant in the ash of this part?—all will remember that it was phosphoric acid. This is one of the least abundant substances in the soil, and is, therefore, likely, under the demand upon it for the formation of the grain, to be soonest exhausted. Ordinary manures contain phosphates, but the great bulk of them is straw, which is from the Table, not rich in phosphoric acid. There is a special deficiency in the soil, a common manure does not contain enough of the particular substance needed to supply it in sufficient quantity for the wants of the crop. Much more must be present than the plant actually needs, in order that it may be obtained with facility.

"On all worn out or failing wheat lands, the experiment of adding phosphates, may be tried with great probability of success; that is, some combination of phosphoric acid in addition to half or two-thirds the usual allowance of common manures. The cheapest and most convenient source of phosphoric acid for farm purposes, is found in bones, which con-

sist in great part of phosphate of lime. Two or three bushels of these, dissolved in sulphuric acid, or in place of this seven or eight bushels of bone dust, or ground bones, will be an ample application for an acre; it is a cheap remedy, and one that, as all can now see for themselves, can be tried with strong probability of success. Guano, where it can be had, is also an excellent special manure; it is to be used at the rate of about two hundred weight per acre, with half the usual dressing of barn-yard manure. Good guano contains about one-third of its weight of phosphate of lime, and some samples much more than that.

"It is to be observed that I do not recommend phosphates as a specific in all cases; the defect may in some instances be of another character entirely, but I do say for the larger portion of our land they will be found remarkably efficacious."

Planting Fruit Trees, &c., in Virginia.

The season is rapidly approaching for planting fruit trees, shade trees, and shrubbery in general, and we take advantage of the occasion to address a few words of exhortation, caution and warning to our country readers. We rejoice to know that far more interest is felt among our farmers in this connection now than formerly. They are waking up to the importance of planting orchards and beautifying the homestead, and we sincerely desire to do somewhat to increase their zeal in this good work, and to give it proper direction.

Every farmer, be his means ever so large or little, ought to have his farm abundantly stocked with the choicest fruit trees, and will find every such tree a source of both profit and pleasure. The large demand for fruits of every kind in our large cities, insures a profit to the fruit raiser, and we need hardly remind our readers of the pleasures which are dependent upon the products of the orchard. Every family in the country knows something of this, and many sigh for enjoyments which are denied to them by the stinginess or shortsightedness of the head of the family. A good supply of apples for winter use, is no mean item in the provision of every household, wanting which nothing can be substituted that will meet the wants and wishes of the family.

The first cost of a good orchard is small. Nurseriesmen in all parts of the country are raising large supplies of trees to meet the increasing wants of the farming community, and as well for the sake of heavy sales as to promote the cultivation of fruits, these trees are offered at very low prices. Twenty or thirty dollars will buy a hundred of the best fruit trees, and the additional cost of carriage and planting is hardly worth reckoning. Who would grudge the payment of so small a sum, when so much is to be gained by

the expenditure? What Virginia farmer can plead inability, as a reason for not having an orchard, when the lack can be supplied at so small a cost? Very few we apprehend can be found who are not abundantly able to buy a few hundred trees, to be planted at some convenient place upon the farm, and we urgently advise all our readers who are without orchards, to make immediate arrangements to supply themselves with trees.

But even those who are raising fruit, ought by no means to rest contented with what they have done already. Fruit trees, like forest trees, are subject to decay, and in the progress of years, orchards die out, unless they are constantly supplied with new trees. That is according to the course of nature, and the true policy for the farmer is to plant trees from year to year and every year, so that as one tree attains its maximum and dies, there may be another, young and vigorous, to fill its place. From the neglect of this prudential arrangement, we have known farmers to find themselves at the end of the year entirely without fruit-bearing trees in their orchards. Every man should plant a few trees every year that he lives and cultivates a farm.

Whether making a new orchard or replenishing an old one, be sure of one thing, that none but the best trees are planted. And by the best trees, we mean not only that they shall be of the best variety of fruit trees known, but also that of the variety there be selected healthy, thrifty trees, which promise well when planted in the orchard. It is always true economy to buy the best, even, if the original cost is more. The best plough, the best harrow, the best threshing machine, the best reaper, is cheaper at a high price than a more indifferent article, which costs less money, and the same is true of whatever a man has to buy. Nothing is gained by the purchase of an inferior article at a low price, when a superior article is to be had even at a somewhat higher prime cost. This is eminently true of every description of fruit tree, as is well attested by the universal experience of all fruit growers. Many a man has repented of the penny wise and pound foolish policy which led him to plant in his orchard worthless trees because they cost something less than good trees would cost.—*Virginia Index.*

TO COOK BEEFSTEAK.—A very good way for cooking beefsteak is to take slices of beef, hack it with a knife instead of pounding, and then lay it in a spider, add pepper and salt, turn and press it while cooking. When done, lay the meat on a platter. Add butter to the gravy, a little flour and water, stir it until it thickens and pour over the meat. This is better than broiling, as it saves the juice and flavor of the meat.

From the Richmond Enquirer.

Richmond.

Richmond is the largest city in Virginia, and we believe one of the most beautiful in the Union. The situation of the city, and the scenery surround it, combine, in a high degree, the elements of grandeur and beauty. The river, winding among verdant hills, which rise with graceful swells and undulations, is interrupted by numerous islands and granite rocks, among which it tumbles and foams for a distance of several miles. The city is built on seven hills, the largest of which are Shockoe and Church Hills, which are separated by Shockoe Creek. It covers an area of about three miles long and one mile wide. The Capitol and other public buildings are situated on Shockoe Hill, the top of which is an elevated plain on the West side of Shockoe Creek. The Capitol stands on the centre of a public square of about eight acres, is adorned with a portico of Ionic columns, and contains a marble statue of Washington by Houdon, taken from life, which is considered a perfect likeness. The Governor's mansion is situated on the East side of the Capitol Square. Northward of the Capitol is the colossal equestrian statue of Washington by Crawford, elevated upon a granite monument of hexagonal form, resting upon a circular base. At each corner of the hexagon is a small pedestal, upon two of which stand the statues of Jefferson and Henry; the four remaining are to be occupied by statues of Mason, Nelson, Lewis and Marshall. The Square grounds are artistically laid out, and adorned with trees, shrubbery and fountains. On the four sides fronting the Square, are the City Hall; the First Presbyterian church; St. Paul's Church; Mechanics' Institute; Custom House; Goddin's Hall—all elegant and costly buildings, representing as many different styles of architecture. The intermediate lots are occupied by the Central and Powhatan Hotels, offices and beautiful modern dwellings.

The other public buildings are thirty-three churches of different denominations, and two others in progress of building (and an effort now making to raise funds to build two more); three Jewish Synagogues; a Medical College, Female Institute, Orphan Asylum, Masonic, Odd-Fellows and Temperance Halls; a State and a County Court House, Jail, Poor House, Hospital, Theatre,

four bank buildings, two market houses, and three public halls owned by private individuals or associations; a State Armory 320 feet long by 280 feet wide, and a Penitentiary. There are sixteen periodicals, daily, weekly and monthly; thirty-seven private and public schools of various grades; seventeen societies for the promotion of religion, such as Bible, tract and missionary; five public charitable institutions; eight divisions of Sons of Temperance; eleven Masonic lodges; nine lodges of the Independent Order of Odd-Fellows; seven German Societies, musical, beneficial, &c.; fourteen various public institutions and societies, such as the Board of Trade, Virginia Historical Society, Mechanics' Institute, School of Design, Medical, Colonization, Agricultural, Mechanic's societies, &c., &c.; three public libraries; Water Works and Gas Works.

Richmond possesses an immense water power derived from the James river, which, from the commencement of the rapids five miles above the city, descends 116 feet to tide level. By the James river and the Kanawha Canal, on the North-side of the river, and a canal owned by the corporation of Manchester, on the South-side, this power is made available at a very moderate rate, and is now used by extensive Flour Mills, Cotton Factories, Rolling Mills, Iron Works, &c., &c., leaving power and territory sufficient for the accommodation of an increase of a thousand fold upon the machinery in present use.

The population of Richmond is variously estimated from 42,000 to 60,000. Our estimate is:

Whites,	30,000
Blacks,	15,000
Total,	45,000

This estimate includes the suburbs—a large portion of which are *outside* of the city corporation.

In 1858, the assessed value of real estate, within the corporate limits, amounted to

\$18,423,348

Assessed value of personal property within the corporate limits, 9,876,371

Estimated value of real estate outside of the corporate limits, 4,000,000

Carried forward, . . \$32,299,719

Brought forward, . . .	\$32,299,719
Estimated value of personal property outside of the corporate limits,	1,000,000
Estimated value of real estate belonging to the U. States and State Governments, and the corporation property and State stock held by citizens, exempt from taxation, . . .	6,859,000
Estimated value of slaves, . . .	7,644,000

Showing the total value of real and personal property of Richmond to be . . . \$47,802,719

The above estimates do not include the value of the various manufacturing establishments of tobacco, flour, cotton, iron, &c., owned and managed in Richmond, but located in Manchester, on the South-side of the river, and located on the Canal above the suburbs; nor does it include several millions of dollars invested by citizens of Richmond in Western lands, cotton and sugar plantations in the South, tobacco factories in the West, and in various other ways out of the city, which, added to the above, would swell the sum to the amount of not less than fifty-five millions, and showing a wealth, in proportion to the white population, greater, probably, than in any city of its size, in the United States.

The employments of our population, with the capital invested, and gross products, as ascertained last year by us upon the most minute and careful examination and enquiry, we found to be

MERCHANDISING, including principals, clerks, &c., 2,284 persons.

Value of stores and warehouses,	\$3,962,800
Amount of current cash capital,	6,000,000
Amount of sales,	37,142,286

In ascertaining the sales of merchandise, we excluded all re-sales, as far as could be done, intending to estimate but a single sale, no matter how often an article might have changed hands.

MANUFACTURES, including Principals, Clerks and Operatives, 11,832 persons.

Value of tools and machinery,	\$1,822,193
Value of real estate used in,	4,641,270
Amount of current cash capital,	6,000,000
Value of product,	19,520,896

The number of the various mechanical and manufacturing establishments is over 500, comprising 91 different kinds.

There are employed as Auctioneers and Agents, with their Clerks, 133 persons.

Value of real estate used, . . .	\$116,000
Amount of their business, . . .	8,236,042
Current cash capital,	1,000,000

HOTELS and BOARDING HOUSES, 477 persons.

Real estate used,	\$364,000
Amount of gross income,	559,000

INDUSTRIAL—such as livery stables, omnibuses, wagons, drays, carts, &c., 740 persons.

Invested in real and personal property,	\$465,080
Earnings,	599,101

PROFESSIONAL.

Ministers of the Gospel, . . .	35
Teachers and assistants, . . .	85
Physicians,	73
Lawyers,	82
Dentists,	12

Total, 287

Value of Libraries,	\$139,900
Value of Real estate used, . . .	310,000
Estimated income,	394,450

OTHER EMPLOYMENTS.

Those not included in any of the classes named before, are

Bank officers and clerks, Exchange brokers and clerks, Insurance officers and clerks, Railway and canal officers and clerks, Officers of city government, Inspectors of tobacco, flour, lime, lumber, fish, plaster, &c., &c., including the laborers employed by them, numbering 426 persons.

Value of real estate,	\$150,000
Estimated income,	270,807

GENERAL RECAPITULATION OF THE EMPLOYMENTS, ETC.

	No. of persons.	Tools machinery & real estate.	Value of produce.
Merchandising,	2,384	3,962,800	37,142,286
Current cash capital,		6,000,000	
Manufacturing,	11,832	6,463,463	19,520,896
Current cash capital,		6,000,000	
Auctioneers, &c.,	133	116,000	8,236,042
Current cash capital,		1,000,000	
Hotels and boarding houses,	477	364,000	559,000
Industrial,	740	465,800	599,101
Professional,	287	449,900	394,450
Other employments, 426		150,000	270,807

Total persons, 16,275	
Total value tools, machinery and real estate, \$24,971,963	
Total am't of business in 12 months, \$66,722,582	

From the Southern Field and Fireside.

General Washington, the Model Farmer.

We have the satisfaction of laying before the readers of the *Southern Field and Fireside*, a letter never before published, of that great man, who was "first in peace, first in war, and first in the hearts of his countrymen."

For this privilege we are indebted to the courtesy of Mr. Thomas Gardiner, Bay Street, Augusta, who has the original in the bold, clear and legible autograph of the immortal author. It was given to the present owner, who holds it in priceless value by his friend, the late H. B. Gwathmey, Esq., who married a daughter of Mr. Howell Lewis, the nephew of General Washington, to whom it is addressed. Mr. Lewis was at that time a young man, and had the charge of his uncle's extensive and well managed farm at Mt. Vernon.

We publish this letter, not to gratify a prurient curiosity as to the "inner life" of Washington the farmer, but for the salutary and most useful lesson it teaches. It is a volume of valuable thought and instruction to the agriculturists of the South. Every planter and farmer should read it. He should read, mark, and inwardly digest. It discloses the secret of Washington's great success in that peaceful and noble calling in which he so much delighted. It shows system, a lucid order, close economy, and accuracy of accounts, even to the minutest things. It shows a desire to improve on past ideas by careful experiments. It shows tireless vigilance in supervising each department of business, guarding against neglect and waste, and holding each person in his employment to a just responsibility.

This letter was written while Washington was President, and at Philadelphia, immersed in affairs of State. How marvellous that then and there, with all the cares of the Young Republic on his mind, at this most exciting period in the world's history he should have found time for such close and skillful attention to his farming operations!

Men who thus understand the value of time, of method, of accuracy—men who truly appreciate the importance of minute attention to business, have in them the sure elements of success in all their aims. They are the born rulers of the world.

PHILADELPHIA, Aug. 18th, 1793.

Dear Sir:—Your letter of the 14th inst., and enclosures, came duly to hand.

I am glad to hear you had a fine rain on the Thursday preceding the date of your letter, even if the corn should receive no benefit from it, because it would put the ground in good condition for the reception of wheat. I hope it was followed by another good rain on Wednesday night last. At this place it rained the whole night.

I want to make an experiment with respect to taking the tops from corn before the usual time. I know that if the tops of a whole field were taken off before the dust has fallen, so as to impregnate the grain, that there will be *no* corn; but as soon as this function is performed, the tops, in my opinion, serve only to participate in the nutriment which otherwise would be more abundant for what remained. I believe, also, as the dust from the tassel impregnates equally with its own; *all* the corn (through the tubes of the silk) it falls upon, that if every other row, throughout a whole field, was deprived of the tops, the corn notwithstanding, would be equally good; and this is the experiment (although it is late for it) that I want to have made. Tell Mr. Crow, therefore, that it is my desire that he would immediately cut the tops from every other row of corn in No. 5, to the amount of twenty, beginning on the side next to No. 2, by the barn. Let the first row retain the tops—the second, 4, 6, and so alternately, to the 40th to lose them. He need not go beyond the old ditch which formerly divided the fields. Particular care must be taken to cut the tops above the second joint, that is, above the one from where the corn proceeds. Experiments of this sort are easily made, and without risk or expense, and the result may be important. I do not mean that the blades are also to be taken off, for this might expose the stalk to the sun, stop the circulation of the juice, and of course injure the grain.

What arrangement have the overseers made for exchanging their wheat, and of kinds does each sow agreeably to my former directions to them? The barley from hence has been delayed beyond my expectation—the vessel by which I intended to have sent it, having sailed sooner than was expected. I do not suppose now it can go earlier than in the *Ellwood*. But as soon as it is received, it must be sown, in order

to give it an equal chance in point of season. Whether to begin on the center side of the fields which are sowing with wheat at the time of its arrival or otherwise, I scarcely know, at this distance, how to direct. I would wish to have neither better or worse ground, than what is allowed for wheat, and it would appear odd to have it in the middle of a field of grain. The overseers, knowing what my design is, must dispose of it in the best manner they can to answer it.

Mr. Lear insits upon it, that he put the clover seed (in a cask containing about seven bushels) into the store himself, on the left hand of the door. If it is not found there, you may tell Mr. Butler I shall look to him for the value of it, unless he can discover what has gone with it. The reason I had it put into the store was for safety; and he will find, by the written instructions I left with him, that the key of that house was not to remain in his possession longer than whilst he was in the act of giving things out. If the clover seed then is not there, Butler must have disposed of them *himself*, or by retaining the key in his possession, contrary to my orders, have given the roguish people about the house an opportunity to come at them; in which case, as I have observed in a former letter, there can be no doubt of their taking everything else that was saleable. If no clover seed was gathered before you found the rake or comb, were not both seed and clover lost by standing too long? And why this, ask Butler, when both are so essential to my wants. Is the clover, which, by the report, is brought from the oat field at Dogue Run, that which was sown last spring? If so, was it rank enough to cut?

I do, in earnest terms, enjoin it upon you to see that the hay is used with the greatest economy at the Mansion—and particularly to guard against Mrs. Washington's Charles and her boy in the stable, both of whom are impudent and self-willed, and care not how extravagant they feed, or even waste, for I have caught the boy several times littering his horses with hay. Except her blind horse, (which may be endangered by running at large) I see no sort of necessity there is for feeding the others with either grain or hay, when they are not used, or any other horse that is at liberty and able to provide for itself; those that are kept constantly in the house, constantly at

work, or under the saddle must be fed, or they would perish. I can plainly perceive that in a little time, (after saving what oats I want for seed another year) there will be nothing either for my negroes or horses to eat without buying, which will neither comport with my interest or inclination. By Stuart's report, I find he still continues to feed horses with corn instead of cut oats, as I directed. What two saddle horses are those that stand in the Mansion House Report? I know of none but the one which Mr. Whitting used to ride.

Has Mr. Stuart received any aid in getting in his wheat? and have you, as I directed some time ago, furnished him with plow beasts in place of those which he says have colts, and are unable to work; and the other two, one of which, according to his account, cannot, and the other will not work? Those which cannot, or will not work, had better be turned out for breeders and their places supplied out of the brood mares—and those which have colts ought to be favored. As to having their hearts broken, I do not wonder at it, considering how they are treated, and I fear rode of nights.

I see by the report respecting the ditchers, that one of them is working on Union Farm, in the place of Cupid; but no mention is made of the latter, whether sick, absent or dead. Consider always that these reports are intended for information, and ought, therefore, to be plain and correct; one part should always correspond with another part. In the Mansion House Report you make Godfrey sick six days, (which is the whole week,) and yet he appears to be engaged in business some part of the week. I mention these matters not with a view to find fault, but to show you that advantage of correctness; and as a young man, just advancing into life and business, to impress you with the propriety and importance of giving attention and doing whatever you undertake well.

How do the potatoes at the Mansion House look? Let the ground be kept clean and in fine order—that is well pulverized, not only at top, but to a sufficient depth for grass.

Unless Isaac is engaged about things, the execution of which cannot be delayed, order him, and whoever is with him, to join Thos. Green, and the whole of them to stick to the barn at Douge Run until it is

ompleted. It appears to me that the whole or greater part of the time of these people, is employed about one nonsensical job or another, which is the very thing Green is delighted with, as they afford him pretext to be idle or to be employed in matters which more immediately relate to himself. I wish this may not be the case also with Isaac, as I find he is very desirous of getting by himself always. When I said the whole were to be employed at the new barn at Dogue Run, I did not mean to leave the dormant windows in the stable (both back and front) unfinished, as they have been begun, which would not have been the case if I could have conceived they would have taken half, or even a quarter of the time they have. In front of the stable I ordered two, one on each side of the pediment, dividing the space equally between the latter and the ends of the house.

Davis, any more than the carpenters, ought not to be taken from the above work for every little trifling that might as well be done by that lazy scoundrel, Charles, who might as well be employed in white-washing, painting, or putting up bedsteads, as to take Green or him for these purposes. Idleness will be his ruin, for I have no conception of his employing himself otherwise than idly; and when this is the case, besides the bad example it sets to others, he will be in mischief or making a disturbance in the family.

I do not recollect telling you in any of my letters, that the Ream of writing paper which went by the Ellwood, was for the purpose of supplying the overseers, &c., with paper to make their reports on. Give each, (if you have not already done it) a quire and let them know that it is to be applied to this purpose only.

I did not expect an accurate account of the hogs from the overseers at this time; but if they do not keep a pretty good eye to them themselves, I shall have but a flemish account of them when they are called for as porkers.

I see by the mill report, for the last week, 23 bushels of meal was brought to the Mansion House, when the usual quantity for that place is 10 bushels. Why was this done? If 30 bushels was brought them it would, I am persuaded, be consumed, or otherwise disposed of in the week.

Your Aunt and all here are well, and I am your affectionate uncle.

G. WASHINGTON.

MR. H. LEWIS.

From All the Year Round.

Farming by Steam.

The poets of modern agriculture, the happy souls who farm a little, write a little, and talk a great deal of semi-agricultural, semi-scientific, and wholly social gatherings, are crying out in joyful tones with more fervour than ever—for it is not the first time—that at the doom of the plow has been sealed, and that in five or six years those Clydesdale and Suffolk two year old colts that now sell readily for 50*l.*, will be sold for 20*l.*, and, as for the old harry-legged breeds, they will be to be had for the asking! The more sober, like most of those who live to learn and live by learning, can't go quite so far or so fast. We remember that after more than twenty years' experience the broadcast sheet and the flail still even in England find usage and defenders within sight of the drill and the threshing machine, and that in Scotland crack farmers insist on doubling the work of their men, and putting ten per cent. of it on their horses, because they won't condescend to examine the value of the Southron-invented Bedford plow. But, although believing that as railroads have not in thirty years closed highways or filled up canals, it is not likely that steam power will ever entirely banish horse power, or even horse-drawn implements from our fields, we must with pleasure admit that 1859 has seen a scratch made on mother earth by the steam cultivation that will in future years be turned to as the mark of a practical advance in a theory that had very long been under the harrows of projectors and inventors.

A thick volume might be filled with the guesses that, in the shape of projects or patents, have preceded almost every really useful invention. The reaping machine may be traced back to the time of the Gauls, wheeled plows are to be found depicted in Saxon manuscripts, and something like Crosskill's clod-rusher is described as a home-made instrument one hundred years before the Royal Agricultural Society gave the Yorkshireman the clod-crushing gold medal. The French amuse themselves with

setting against the triumph of Watt's steam-engine the ingenious hints of Salomon de Caux, and have written a play, in which the Marquis of Worcester, who was not then born, is made to converse with and rob of his invention the maniac philosopher. Even of the electric telegraph faint traces are to be found in some ancient philosophical manual.

Steam-cultivation is one of those long-sought, although only recently caught, arrangements. For two hundred years projectors and inventors in two hundred patents have been guessing without success at the agricultural steam truth; but it does not seem that any attempt was made to cultivate land by steam power on a scale of importance, or in a continuous manner, until 1832, when Mr. Heathcote, of Tiverton, with Mr. Josiah Parks for his engineer, commenced reclaiming Chatmoss by draining and steam plowing. The reclaiming did not pay, and the steam plowing, although continued for two or three years with great labour and ingenuity, did not answer, but the work indirectly led to the construction of the Parkesian theory of deep drainage, by which agricultural England has been revolutionized, and at least doubled in productive powers. The system adopted by Mr. Heathcote and Mr. Parkes of dragging implements by ropes attached to and revolved by a stationary steam-engine, is the only system which, up to the present time, has been found to answer, although the arrangement of the details and the materials of the ropes have been modified and improved.

In the following twenty-five years sixteen patents were taken out for cultivation by steam power, none of which were carried into execution, and in the last ten years nearly one hundred patents have been provisionally registered, and more than half that number specified. But out of this long array, in March, 1859, not more than six were before the agricultural public as at work, and not more than three prepared to make and sell their patented machinery. But intermediately, two noblemen, Lord Willoughby D'Eresby, in Warwickshire, and the Marquis of Tweedale, in Scotland, had expended large sums unprofitably in endeavouring to cultivate by steam traction.

In 1848, the celebrated Talpa, in his *Chronicles of a Clay Farm*, one of the most charming books ever devoted to agricultu-

ral disquisitions, suggested that the problem of steam cultivation should be sought, not in the traction or propulsion of the established implements of the farm, but in a rotatory machine, which should dig as it travelled around, and propel, or, as it were, hoe itself forward "with a sort of lobster's tail." On this ingenious idea a great number of inventors have been at work ever since, some at vast expense, but up to the present time not one successfully in an agricultural point of view. On one, the best of the attempts to realize Talpa's poetical notion of perfect steam cultivation, and which often worked admirably for an hour or two, more than ten thousand pounds were expended; but it could never be made to work without the hourly and costly attention of an army of mechanics, and, in spite of their aid, it continually broke down. If it were strong it was too heavy; if it were light, it was too weak; and there the rotatory locomotive theory of steam cultivation rests at present.

By a curious coincidence with the story of the origin of modern agricultural draining, told in the *Quarterly Review* of April, 1858, the most profitable system of steam cultivation was suggested by an attempt to substitute machinery for manual labour in laying draining tiles. The inventor, Mr. John Fowler, produced before the Royal Agricultural Society, at Gloucester, in 1858, a contrivance for forcing a mole plow, drawn by a team of horses, through the ground at four feet depth, followed by a rope on which a line of drain tiles were strung. Step by step, he substituted a wire rope (a modern invention) for hemp, and a portable steam-engine for horses, but when in 1855, at Carlisle, he had succeeded in laying pipe tiles with great accuracy in soils tolerably level and free from stones, he began, we imagine, to suspect that the great elements of success in machinery—that is, to supersede manual labour, speed, and economy—were wanting. Hence he was induced to moderate his ambition, and be content to plow a few inches instead of burrowing three or four feet; and there, after four years of enormously costly experiments, he has achieved the measure of success we shall presently relate. But he had a successful precursor in a self-taught mechanic—as far as he is a mechanic—and a real farmer, in the person of a gentleman bearing the not remarkable name of Smith, and

herefore now distinguished by the title of his farm, as Smith of Wolston; a name which, in three years, has become deservedly famous throughout the English-speaking agricultural world.

The general effort of the agricultural improvements of the last twenty years has been to increase the *pace* at which agricultural operations are executed. The first change was to substitute fallow crops, such as roots, for instance, for the absolute barrenness by which land was formerly rested after an exhausting crop—a plan which is still all but universal among the peasant proprietors and *métayers* of France and South Germany. The second change consisted in making strenuous efforts to execute in autumn a greater part of the cultivation, which until recently it was the custom with the great majority of farmers to execute in spring. It was observed that weeds brought to the surface in the autumn naturally died more easily than in the spring, while the subsoil brought to the surface, and tough clay under any circumstances, was mellowed and ripened by winter frosts and winds.

Mr. Smith of Wolston, was one of the many converts to the system of autumnal cultivation, and in studying the best means of carrying it out he came to the conclusion that the plow which buried the weeds, and left a large per centage to grow again in the spring, was a mistake, and that an instrument which would more nearly approach the action of the spade was the right implement. With this view he invented his subsoil plow, which stirs without turning over the soil, and his cultivator with curved lines which breaks up the topsoil without reversing it.

But every farmer who has turned his attention to breaking up strong soils for autumnal cultivation has found himself beaten by the want of power to move the most useful kind of implements, and by want of pace to execute his work during and immediately after harvest before the autumn rains set in. A farmer holding twelve hundred acres of land in two farms, of which four hundred acres are arable land, in a stiff clay district, writes us on this subject:—“To get these worked up, I should require the power of seventy horses from the middle of August to the middle of September, but fifteen would do all my work for the rest of the year!”

The Farmer of Wolston tells us, in his letter to B. Disraeli, M. P., “that a report of the Royal Agricultural Society on implements called his attention to the resources of steam power.” At the Carlisle Show of 1855 he was awakened to the power of steam—ordered a steam-engine from Messrs. Ransome and an iron rope and tackle from Mr. Fowler, whose reputation had been established by his tile-laying machinery. Soon afterwards, arose fierce disputes as to priority of invention or adaptation between these two gentlemen; but to the public there is no interest in disputes, the merits of which, as far as the mechanical part of the question goes, few if any can understand or care to understand. As in the old gold and silver shield story, the Farmer and the Fowler are both right, and have separate and not opposing merits.

One certain fact is, that the Man of Wolston first saw and acted on his sound conclusion, that it would be much more easy, simple, and economical, to apply steam power to “cultivators and grubbers,” which, to use his own expressive phrase, “smashed up the soil” and brought the weeds to the surface, than the old system of plows, which turn over the soil and bury the weeds; and in 1855–6 he successfully applied this system to the cultivation of about one hundred acres of his own farm.

At the Chelmsford Show, in 1856, Mr. Fowler produced his steam plow, which was strictly a plow, being a frame on which six or eight shares were arranged, of which half were at work while the others were alternately carried in front in the air. This he worked with such a measure of success on Mr. Fisher Hobb’s farm, that Mr. Hudson, the celebrated agriculturist of Castlacre, Norfolk, and a cautious man, there and then declared himself a convert to steam cultivation, and offered to contract for having a good many acres plowed if a machine were sent.

But, although ever since that day Mr. Fowler’s steam plow has been constantly before the public, it was not until the beginning of this year, and until he had become the possessor of some score of patents, and until more than twenty thousand pounds had been expended, that he was able to make a decided stand, and announce that he was ready to take any number of orders at a price that farmers could afford to pay.

At Salisbury, in 1857, when the Royal Agricultural Society repeated their offer of a prize of 500*l.* for a steam-plow, Mr. Smith of Wolston, was excluded from the competition by a mistake in the conditions, (whether intentional or not we are not able to say,) which made it essential that the implement should *turn the soil over*, while, as already observed, it is an essential feature of the Wolston system that the soil should be thoroughly "*stirred and smashed up*"—not turned over.

The ground for the Salisbury trial, was not favourable to steam cultivation. Fowler's plow alone, of three competitors, did creditable work: so creditable that the judges and stewards concurred in recommending that a part of the prize-money should be awarded to it. But this recommendation was rejected by a majority of the council. And certainly, up to that date, Mr. Fowler had not produced a commercially useful machine—that is to say, a machine that could be trusted to work on without breaking down, that could be easily moved and set to work, and that could be sold at a price within the means of first-class rent-paying tenant farmers.

In February, 1858, a paper was read before the Society of Arts by a gentleman of well-deserved reputation as a contributor of Prize Essays to the Journal of the Royal Agricultural Society, which will become a curious bit of history in a few years; for, the author, wild and wide of the reality of the subject notices in succession, not only the successful Wolston and since successful Fowler, systems, but half a dozen others, and praises and encourages almost all: even such mechanical absurdities as the Elephantine Traction Machine, which wears itself out hourly as it travels: and a scheme for bottling up compressed air and letting out from mains and elastic tubes to be laid down under and over a farm! and he concludes by recommending an entirely new implement, with a new "cutting and inverting movement," something like a barrel armed with sharp discs driven endways. In fact, the idea of an uninvented machine—a sort of mechanical nightmare to be propelled by an impossible motion!

At the Chester Exhibition of the Royal Agricultural Society, in July of the same year, Messrs. Howard exhibited Mr. Smith's machinery manufactured by them, and Mr. Fowler his latest modification of his steam-

plow. After a serious trial the prize of 500*l.* was awarded to the latter, and the large gold medal to the former. It was considered by the engineers that Fowler had a better mechanical arrangement, and by the agricultural judges that he did a one operation what Smith did at two.

Smith's system, as exhibited by Messrs. Howard at Chester, consisted of two operations. The first with a strong speed-time cultivator of a sort of anchor shape, which penetrates the ground six or seven inches tears it up, stirring much deeper than it tears. Secondly, with a larger instrument of the same kind, which travelling in transverse direction at the same depth clears away any portions surrounded by the first, and reverses the whole topsoil, exposing a rough, unequal surface to the action of the atmosphere; the two operations being completed at the rate of three and half acres per day.

The comparative position of these rival cultivators at the close of 1858 was this. Mr. Fowler with a costly and ponderous arrangement of machinery, doing very good and rapid work, had won prizes from the Highland, the West of England, the Irish, the Yorkshire, and the English Agricultural Societies in the order named.

Mr. Smith, with an ordinary portable steam-engine, a wire rope, and machinery that cost some 200*l.*, had cultivated his own farm, and reduced it to a tilth and degree of fertility that excited universal admiration, and had sold some twenty or thirty sets of his tackle to purchasers who also worked it successfully: especially in Worcestershire, Staffordshire, Beds and Bucks.

Thus, while by a series of changes and improvements Mr. Fowler contrived to obtain a greater amount of power and work out of a steam-engine and rope drawing set of plows, better arranged than any of the previous experimenters in the same direction, the Wolston Farmer had better appreciated the capabilities of steam cultivation, and, with the assistance of the most eminent plow-maker of the day, had produced a set of steam cultivating implements admirably calculated to carry out a system which, for distinction, we should like to name Wolstonizing.

"On the Wolston Farm one hundred and ten acres of stiff clay arable land, by drainage and Mr. Smith's peculiar yet simple

mode of cultivation, has become as fine and deep in tilth as a market garden, and requires just as little trouble to keep it in a clean and healthy condition." A writer in Bell's Messenger describes a field of ten acres at Wolston from which a tenth crop was about to be taken, in 1858-9, *without fallow*. "For five years this field had never been turned over on the old principle of plowing."

Agricultural public opinion having been thus ripened, a great step in advance was made the other day by Mr. Fowler, which reduced the weight of his apparatus, exclusive of the steam-engine, from three tons and a half to about twelve hundred weight, and the price from about 450*l.* to less than 250*l.* for a set of tackle and implements capable of performing every process of cultivation on arable soil, still retaining everything that was valuable in his successive improvements. If this be so—and we believe it is—then we may expect to see steam cultivation, within a very few years, introduced on every farm of deep retentive soil which now possesses a portable steam-engine, and on hundreds of farms to which it will make its way, bringing with it the steam-engine and divers other contingent improvements.

The following is an attempt to describe the working of the two systems—a very difficult task without the illustration of diagrams.

Mr. Smith uses an ordinary agricultural portable steam-engine of from eight to ten horse power, which he fixes at one corner of a field, for choice of from ten to twelve acres. In front of the engine is a windlass, or capstan, with two drums, of a peculiar shape, with a coil of wire rope around it; and this rope is led over four anchored pulleys, one at each corner and along each side of the field. The windlass attached to the fly-wheel of the steam-engine by a driving band can be instantaneously driven in either direction. Four different plows, or cultivators, are used, as occasion requires. To the bow of the one in use, two ends of the rope are attached. An engine-driver, a man at the windlass, a plowman, an assistant to shift the pulleys, and a boy, are the staff required. The plow cultivator begins by travelling along the more distant side of the field, between the two anchored pulleys; at the end of the first journey the pulley in front is shifted, the engine is reversed, and

in thirty seconds the plow is travelling back; and thus, by alternately shifting, bringing up each of the two most distant anchors, strip by strip the whole field is "smashed up" in parallel lines to the spot where the engine stands.

His plow No. 4 consists of a very strong frame, in which are fixed three subsoil plows, with a pair of wheels in front to guide it, and above the centre another pair to regulate the depth. The shares for breaking up clay soil in autumn are set to work six or eight inches deep (a depth impossible with horse power.) The "points of the shares become imbedded in the subsoil, and the whole mass, nearly a yard wide and six or eight inches deep, is torn from its position, and more or less mingled together, leaving for the most part the weeds or grass which it is desirable to destroy near the surface." An implement of greater breadth and more tines on light and moderately tenacious soils has been made to move more than ten to twelve acres in a day. But for a description of the four Wolston cultivators those further interested must refer to the inventor's own pamphlets and pictures. The obvious drawback of the system consists in the loss of power by the friction of the rope along four sides and consequent indirect traction. Common farm labourers have been repeatedly and easily taught the duties of Smith's system of steam cultivation. According to universal testimony, nothing can exceed the quality of the work and the satisfactory result in crops of all kinds.

Mr. Fowler employs a portable steam-engine with a series of drums whose axle is fixed vertically beneath it; a wire rope, passed round the drum of a movable anchor, is stretched across the field to be plowed, and the two ends are made fast to the plow, thus forming an endless rope. In working, the engine and the anchor move along the two headlands in parallel lines, and the plow before described, or any other implement—Mr. Fowler has been converted to the cultivator—moves forwards and backwards between the engine and the anchor by the reversing gear of the engine. It is evident that under this arrangement the action is more direct, less rope is required, and less power lost by friction than in the Wolston system. It is to be regretted that an arrangement has not been made by which Smith's admirable cultivators could

be attached to Fowler's steam power; for Smith wisely repudiates plowing, and "takes his stand on cultivation;" and it seems likely that on farms with fields of moderate size, and soil of not the most tenacious character, the Wolstonizing plan will continue to be preferred. The results of Fowler's cultivation before he had succeeded in reducing the cost and weight of his apparatus to a portable and saleable standard, is well described in Morton's Farmer's Almanac, in a report of the Highland Society's trial at Stirling, in November, 1857: "The trenching plow (Cotgreave's) excited the greatest enthusiasm. Everybody knows the difficulty and expense of plowing two furrows deep, and the time and labour necessary to reduce enormous furrow slices into a comminuted state. But this implement drawn at a speed of three miles an hour, turned down not a tough whole slice, but one of loose mould into the trench left by the preceding bout, and lifted up from an average depth of twelve and a half inches, and spread upon the top, not heavy, unwieldy masses, but divided and pulverized, a stratum of subsoil, equal to good digging by hand, at one-third or one-fourth the price." Now, in a paper read at the Central Farmers' Club in June, 1857, by Mr. Bond, which had the effect of giving an extraordinary impetus to the practice of autumnal cultivation of clay soils, and indirectly to steam cultivation, he described himself as using a common plow with two horses, followed immediately by a scarifier with six or eight horses, working at harvest time, as soon as the sheaves were shocked in rows, and these two implements went over the land twice: that is to say, they required labour equal to from sixteen to twenty horses to do less than two acres a day; and he added, thus confirming the theory and practice of the Farmer of Wolston: "The common plow is not suitable for autumnal cultivation; it buries the weeds instead of bringing them to the surface."

With these extracts we pause, and sum up with the following elementary information for the benefit of our bread and beef eating non-agricultural readers:

Stiff clay soils were the favourite farms of our forefathers in the days of the rudest agriculture, because they gave good crops in dry favourable seasons, with very little or no manure, and received on the rest of a fallow more quickly than light, or sandy,

or chalky soils, for reasons which the chemists of this last quarter of the nineteenth century have discovered. But sheep-treading, root cultivation, or, as it is commonly called, the Norfolk system, brought light and chalk soils into favour, as arable farms and clays were neglected and left to poor farmers. When the Parkesian system of systematic, deep, thorough drainage was completed and established by an almost solitary successful instance of Government interference in a daily bread business (we mean Peel's Drainage Loan,) retentive soils regained a certain degree of favour. With the help of pipe tiles corn could be secured even in wet seasons, and sheep fed where sheep were unknown in the days of shallow bush drains. But retentive clay soils, in spite of systematic drainage, had, and have, a disadvantage which was little felt a hundred years ago, when a farmer could afford to go to sleep for half the year, before "rapid concentrative," or what the French happily call intensive culture, was known. It requires extra horse power to work it; it can scarcely be worked at all when it is damp; and in damp weather the treading of horses' feet on clay does incalculable damage. Modern requirements insist on every acre being continually under crop, or seed, or labour. Clay districts, from their peculiarity, have fewer working days than less retentive soils. Clays, modern experience tells, as shown above, should be cultivated deeply, and in the autumn, as they are neither mellow nor clean in the spring, and the clay farmer who misses his autumn is running after his work all the following year, and never overtakes it.

It is not then necessary to enter into the question affirmed by the Royal Agricultural Society's Judges at Chester, and disputed by some skeptics, that steam cultivation is cheaper than horse labour—although we believe it; but we may rest the success, the triumph, the progress of steam cultivation on the fact that it can do an essential work of deep autumnal cultivation, which no number of horses practically yokable could do at all, with the rapidity peculiar to steam power, and without the enormous disadvantage of the consolidation of trampling horses' feet. Thus the drill saves the dry days of the sowing season, the reaping machine saves the harvest season, the threshing machine saves and supplies the market, and the steam cultivating engine

saves the cultivating season and multiplies by six or eight fold the value of every day, dry enough to stir the soil on the old plan at the rate of an acre a day: thus increasing the crops to a degree that it is scarcely safe to state. With that unanswerable conclusion we will conclude content—although inclined to agree with the Farmer of Wollston that on most farms of three hundred acres and upwards, of tolerably level land, a well-applied steam-engine will save one-third of the horse power, and do the work twice as well as horses can do it, even on light land.

A friend inquires, "What about Hallett's Guide system of steam agriculture—the railway farm system?" Why, this only—that it is perfectly practicable, but would cost to apply about one-third more than the fee simple of most farms.

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From the Gardener's Monthly.

Fruit Garden.

Either for pleasure or profit, nothing is more interesting than fruit growing; and if what is worth doing at all is worth doing well, it is more particularly so at the hands of the orchardist. As to whether fruit growing will "pay?" that question is very easy of solution. Anything will pay for which there is a demand, and which none of our neighbors can raise cheaper than ourselves. When fruit growing once becomes a regular business, prices will rise and fall with the abundance and scarcity of the crop,—and except in cases of total unproductiveness, it will be the consumer instead of the producer who pays the difference. Will Pear growing pay? is like asking, will the Ice crop pay? More danger, I judge, should be apprehended from its superabundance than its scarcity. Still, we would all rather split on the rock of superabundance, and, with this view, now is the time to prepare for next Spring's operations.

First and foremost, an orchard should be thoroughly underdrained, in order to obtain a moist subsoil—should your trees escape a late frost in a bad season like the last—if the subsoil is dry, the fruit will fall in a drought, or if the fruit does not fall, the leaves will, when the fruit may as well—for as soon as the leaves fall, or in any way become extensively injured, the fruit will be worthless, if it even seems to ripen. Whatever is added to the soil in the shape of

manure, should be done as much with the view of affording a moisture-retaining property to it, as of supplying any mineral or gaseous element; heating or excessively stimulating manures are very injurious, especially to the pear, and many failures in its management have originated entirely in this mistake. All fruit trees require a soil which is deep and dry in winter, but cool and retentive of moisture in summer,—and if not so naturally, must be made so, before much success can be hoped for. It "pays" better to have but half an orchard thus well done, than a whole one as we usually see it. Agriculturists now lay down the rule, that "there are few soils not improved by under-draining," to which I will add, "especially for fruit orchards."

When drained, subsoiled, and moderately manured, the ground may be left rough all winter, when it will be lighter in the spring than if smoothed off at once. For an orchard of Pears, Plums, Cherries or Apples, twenty feet apart is a good distance to set the trees, which should be in straight lines. Peaches or Apricots may be planted between these if on a south or warm aspect, as they are there short lived, and will be about done when the others come into bearing; on a north or northwestern aspect, however, especially if the trees are clothed with branches to the ground, they will often live to a great age, but they may be cut away when the others grow. Dwarf Pears are sometimes planted between standards; but these require rather higher culture than orchard trees, and are best grown by themselves. The ground for an orchard, if prepared as above advised, may be sown down after planting next spring with orchard grass. Immediately about the trunk of the trees, the grass should be kept away, the better to guard against harboring the larvæ of borers. Every second year, the orchard under the trees—should have a good top dressing of guano or very well rotted manure. I mention this here because it is often recommended to keep an orchard under culture in order to supply manure to the trees. The system I recommended is better.

Established orchards, on thin or impoverished soil, may be renovated in the following manner:—If a tree has been planted, say fifteen years, and attained the size we might expect in that time,—get, say ten feet from the trunk, and dig a circle two

feet deep all around it, and fill in with a good compost, the effect the next season will be quite marked. If the tree is older or younger, the distance to start with the circle, from the trunk, will, of course, be proportionate. A top dressing will also be of great assistance, as well as a vigorous pruning out of all weak or stunted branches. Moss and old bark should be also scraped off, and if the trunk and main branches can be washed with a mixture of sulphur and soft soap, much advantage will follow. Old decayed bark, on fruit trees, is always a sign of a want of vigor. When a tree is growing thrifflily it cracks this old bark so freely, as to make it easily fall off; but when the tree is weak and enfeebled, the bark often becomes indurated before it has got cracked, and in this state the tree becomes what gardeners call "hide bound," and artificial means must be afforded to aid the tree to recover. In the cherry and plumb trees this is easily done, by making longitudinal incisions through the bark with a sharp knife. In the Peach and Apricot also, I have employed this process with advantage, in spite of learned theories which have attempted to show up the absurdity of the practice.

Sometimes fruit trees are unproductive from other causes than poverty of the soil, or neglect of the orchardist. They often grow too luxuriantly to bear well. In this case root-pruning is very effectual, and is performed in a similar way to that described above, by digging a circle around the tree, except that the circle is made closer to the trunk of the tree. A fifteen year old tree for instance, may be encircled at five feet from the trunk. No rule can be laid down for this. Judgment must be exercised. If cut too close, the tree may be stunted for years, and if too far, it will not be effective. The aim should be to reduce the roots about one-third.

Almost all established orchards should have an annual visit from the pruner at this season. Weak growing trees, or those which have over-borne, will be benefitted by a vigorous application of the pruning knife. Free growing trees, on the other hand, will need only those branches taken out that are likely to cross and interfere with others. Many recommend cutting off large branches in summer, because the wounds heal over at once; but if the wounds are painted, as they should be, no

injury will accrue from that source; while the injury to the tree from the sudden loss of a large mass of foliage, will not occur.

In planting fruit trees, the Pear, Apple, and Cherry, invariably do better fall-planted, than when deferred till spring, north of Philadelphia. The Peach, Plum, and Apricot, should not be planted till spring, if not done before the first of November. All fruit trees, when set out, should be vigorously shortened in. Trees should not be planted deep—no deeper than they grew before removal. It is better to draw a mound of soil about them for the winter, to be removed early in spring; it preserves from frost, and throws off superabundant moisture. Dwarf Pears must be set below the Quince stock—and in selecting these, choose those that are budded near the ground—where a long-legged quince stock has to be buried so deep, the tree makes but a poor growth for some seasons afterwards, and is, in other respects, injured. In severe climates, Cherries of very luxuriant growth are liable to be winter-killed. To obviate this, the weaker growing kinds, as the Duke and Morello, and the Mahaleb, are used for stocks to graft them in. This checks their vigor, and renders them hardier. It, however, always keeps them dwarf,—and superior sized fruit is not so probable. Where danger of winter-killing exists, these strong growing kinds should not have a highly manured soil, and where they yet grow very vigorous when young, they may be root-pruned as already described. If they can be got through the first ten years of their life, till they lose their youthful vigor, they will not suffer in severe winters afterwards.

Much attention is now given to small fruits. They who have depended the past year on their orchards, have been driven for fruit to green Tomatoes and Elderberries, and will now plant Currents, Gooseberries, Raspberries, Strawberries, and Blackberries. These can generally be depended on—and near a large city, are always a source of profit.

The three first named like a moist sub-soil, and a situation not exposed to drying winds. The Strawberry and Blackberry will do in a dryer soil, and warmer situation. The Blackberry has now become an important fruit, but should not be planted where its creeping roots will be an objection. There are always "odd corners," where such

plants become just the required thing to fill with. The Strawberry, Blackberry, and Raspberry, should be protected in winter, north of Philadelphia,—most kinds are hardy enough to stand without this care, but it is better to employ it nevertheless. Strawberries may have leaves or straw litter thrown over them, and a little soil, thrown over to keep the wind from blowing them away. Raspberries and Blackberries should have their last seasons' bearing shoots taken out, the young canes pruned so that three or four of the strongest only are left, and then laid down and covered with soil. To do this without breaking them, dig out a spade full of earth on one side of the hill, and with the heel press the stock over. The inclination will be sufficient to prevent breakage.

Fig trees may be preserved in the same way. Sometimes they are taken entirely up, and placed in a moist cellar, secure from frost.

I cannot close this chapter without the advice to the orchardist, that when he can spare time from any other pressing occupation, his pastime should be to "hunt" insects. Not nearly as much time is spent in the pursuit as there should be. It is not worth while to stop to inquire which is the best mode of dealing with them. Employ all modes—every enemy killed is so much gained, and practice will soon show which is the best. Whatever borers may have been permitted to get into the trunks of peaches, plums, apples or quinces, should be at once looked after. Some use a wire, running it down the hole to the end where reposes his grubship; but my favorite plan is to follow him with a jack-knife. The wounds should be afterwards painted well to keep out the wet, till the new bark grows over next year. After they are all got out and painted, oiled canvas, or leather, or brown paper, to be afterwards tarred, should be tied around the trunk, some four inches above the ground, and two or three below; gas tar is preferable. The trees will then be ready for the borer next June, who will hesitate to storm so formidable a defence.

This part of "pomology" is very important, and with each month, as the season arrives for such precautions, much valuable information will be given not generally known, whereby many orchards and trees, now utterly worthless, will be a source, to their owners, both of pleasure and profit.

From the Genesee Farmer.

"On Some Points in Agricultural Science."

Such is the unpretending heading of an able article in the last number of *Silliman's Journal*, from the pen of Prof. S. W. Johnson, of Yale College. It will be recollected that we have frequently alluded to the experiments of Way and Thompson, "On the Power of Soils to absorb Manure." That the soil has the power of absorbing odors, has long been known. Hence we bury garments upon which the fetor of the skunk has fallen; and it is said that the Indians sweeten the carcass of the skunk, and render it fit for eating, by the same simple process. Dogs and foxes bury bones and meat in the ground, and afterwards exhume them in a state of comparative freedom from offensive odors. But by what means these effects were produced, we had, previous to Way's investigations, only very vague conceptions. The absorbent power of the soil, like that of charcoal, was referred "to the surface attraction of porous bodies." Way discovered that it was due to the presence in the soil of double silicates. He found that ordinary soils possess the power of separating from solution in water the different earthy and alkaline substances presented to them in manure. Thus, when solutions of salts of ammonia, or potash, magnesia, &c., were made to filter slowly through a bed of dry soil, five or six inches deep, arranged in a flower-pot, or other suitable vessel, it was observed that the liquid which ran through, no longer contained any of the ammonia or other salt employed. The soil had, in some form or other, retained the alkaline substance, while the water in which it was previously dissolved passed through.

It was also found that the combination between the soil and the alkaline substance was rapid, if not instantaneous, partaking therefore of the nature of the ordinary union between an acid and an alkali.

In the course of his experiments, several different soils were operated upon, and it was found that all soils capable of profitable cultivation possessed the property in question in a greater or less degree.

These double silicates were found to have a strong attraction for ammonia—lime, soda, or potash silicate being decomposed when ammonia in solution is filtered through the soil—the ammonia being retained. But it

would appear that the lime silicate alone has the power of attracting ammonia from the air; and hence, perhaps, one of the advantages of liming land.

These important experiments not only opened up a new field for investigation, but materially affected our views in regard to the action of manures. Thus Way found that the ammonia-silicate was much more soluble in water to which a little common salt had been added than in pure water; and he suggested that the effect of salt on some soils might be ascribed not to its furnishing chlorine and sodium to plants, but in increasing the solubility of ammonia in the soil. In the experiments on wheat, at Rothamstead, Mr. Lawes found that though the increase of the crop was, other things being the same, always in proportion to the quantity of ammonia supplied in manure; yet the quantity of nitrogen (ammonia) in the increase of wheat and straw was far less than the quantity of ammonia supplied in the manure; and therefore concluded that ammonia or its elements was evaporated from the wheat plants during their growth. When Way made his important discovery of the formation of ammonia-silicates, he suggested that the large quantity of silica found in the straw of wheat and other cereals, was taken up as an ammonia-silicate—the silica being deposited on the straw and the ammonia evaporated into the atmosphere. Hence the loss of ammonia in growing wheat.

If the fact of the loss of ammonia in growing wheat was admitted, the celebrated "mineral manure theory" of Liebig fell to the ground; and accordingly, in Liebig's Reply to Lawes," he pronounced the experiments of Way, and the opinion she based upon them, "*all self-deception; not reality, but theatre decoration.*"

Prof. Johnson, who translated Liebig's attack on Lawes, from which the above is an extract, and who is therefore familiar with the views of Liebig on this important subject, now bears testimony to the general truth of Way's results. He says: "The recent experiments of Eichhorn have cleared up the discrepancies of Way's investigation, (which is itself one of remarkable interest,) and have confirmed and explained his facts." And again: "These observations of Way and Eichhorn promise to yield the most fruitful results, not only to the theory of chemical geology, as elucidating the for-

mation and alteration of minerals, but also to the science of agriculture. The explanation of the retentive power of soils which Way first proposed, thus acquires an incalculable significance. It is plainly a true explanation, as now relieved from the constraint of a fixed order of affinities or replacements; though not the only or a complete explanation."

The fact is now clearly established of the existence of double silicates in the soil, and also that it is to these that the soil owes its power to retain ammonia and other soluble elements of plants. We must no longer regard the soil as a mere receptacle for holding the food of plants, but rather as a stomach which digests, so to speak, this food and prepares it for assimilation.

Prof. Johnson concludes his article as follows:

"While the researches of Eichhorn are of the utmost value in aid of the theory of the absorption of fertilizing matters by the soil, they do not suffice to give a full explanation of this process. Doubtless all the reactions that occur between hydrous silicates, sesquioxids, and saline solutions, may take place in the soil; but in addition to these, a number of other changes must go on there, as the soil is so complex and variable a mixture. The organic matters (the bodies of the humic acid group,) which are often, though not always, present in no inconsiderable quantity in the water extract of fertile soils, can hardly fail to exert an influence to modify the action of the silicates. I have found that a peat (swamp-muck) from the neighborhood of New Haven, (containing when fully dry 68 per cent. of organic matter,) which is highly prized as a means of improving the porous hungry soils in this vicinity, and which when drained grows excellent crops, is capable of absorbing 1.3 per cent. of ammonia, while ordinary soil absorbs but 0.5 to 1 per cent.

"The great beneficent law regulating these absorptions appears to admit of the following expression: *those bodies which are most rare and precious to the growing plant are by the soil converted into, and retained in, a condition not of absolute, but of relative insolubility, and are kept available to the plant by the continual circulation in the soil of the more abundant saline matters.*

"The soil (speaking in the widest sense) is then not only the ultimate exhaustless

source of mineral (fixed) food to vegetation, but it is the storehouse and conservatory of this food, protecting its own resources from waste and from too rapid use, and converting the highly soluble matters of the animal exuviae as well as of artificial refuse (manures) into permanent supplies."

Proverbs of all Nations.

Upon the wisdom contained in proverbs, one need not dilate; "he who runs may read" it and profit by it. We have a little book of these bitter-sweet nuts of literature, compiled by Walter N. Kelly, which offers a choice selection of proverbs of all nations, with an entertaining comment. To us it is "something new under the sun" to find a readable work of this class; we give our readers a chance to judge for themselves, by making liberal extracts. Mr. Kelly's book consists of British proverbs, which means English, Scotch and Irish examples, grouped together and fraternized with continental equivalents, and sometimes with oriental examples, all of which are translated and explained by the compiler.

Under the heading of "Youth and Age," one among many proverbs given by the author, tells us that

"A man at five may be a fool at fifteen."

In the days when cock-fighting was a fashionable pastime, game chickens that crowed too soon or too often were condemned to the spit as of no promise or ability. "A lad," says Archbishop Whateley, "who has to a degree that excites wonder and admiration the character and demeanor of an intelligent man of mature years, will probably be that and nothing more all his life, and will cease accordingly to be anything remarkable, because it was the precocity alone that ever made him so." It is remarked by greyhound fanciers that a well-formed, compact-shaped puppy never makes a fleet dog. They see more promise in the loose-jointed, awkward and clumsy ones. And even so there is a kind of crudity and unsettledness in the minds of those young persons who turn out ultimately the most eminent.

Since the days of Poor Richard, the proverbs that have circulated in almanacs about the country, and which are the most respected by farmers, are those which engender thrift and economy; it is a question

whether in a too faithful adherence to proverbial injunctions of this class, people do not become mean rather than economical, close instead of moderate, lean instead of fat. Few farmers eat poultry of their own raising, but sell it and buy salt mackerel, which keeps better and lasts longer. The consequence is, that while the purse fills with the profits of fresh food, the body, for lack of it, becomes scrofulous and wastes away in consumption. Thanks to the researches of physiologists, science is getting to have more moral power than Poor Richard's proverbs or an old almanac!

"Enough is as good as a feast."

"A bird can roost but on one branch; a mouse can drink no more than its fill from a river" (Chinese.) "He is rich enough who does not want" (Italian.) But the difficulty is to determine to a nicety the point at which there is neither want nor surplus. Practically there is no such point, however it may exist in theory.

Whoever gave birth to the following proverb was a rare genius:

"Hell is paved with good intentions."

A great moral conveyed in a bold figure. What is the worth of virtuous resolutions that never ripen into action? In the German version of the proverb a slight change greatly improves (?) the metaphor, thus: "The way to perdition is paved with good intentions." A Scotch proverb warns the weak in will, who are always hoping to reform and do well, that

"Hopers go to hell."

The following proverb and comment from "Law and Lawyers," may go for what it is worth:

"He that loves law will get his fill of it."

Lord Mansfield declared that if any man claimed a field from him, he would give it up, provided the concession were kept secret, rather than engage in proceedings at law. Hesiod, in admonishing his brother always to prefer a friendly accommodation to a law-suit, gave to the world a paradoxical proverb, "The half is better than the whole." Very often, "A lean agreement is more than a fat law-suit" (Italian.) Lawyer's garments are lined with suitors'

obstinacy" (Italian,) and their houses are built of fools' heads" (French.)

Of "Physicians" it is said,

"If the doctor cures, the sun sees it; if he kills, the earth hides it."

"The earth covers the mistakes of the physician" (Italian, Spanish.) "Bleed him and purge him; if he dies, bury him" (Spanish.) It is a melancholy truth that "The doctor is more to be feared than the disease" (French.) "Throw physic to the dogs," is in effect the advice given by many eminent physicians, and by some of the greatest thinkers the world has seen. "Shun doctors and doctors' drugs if you wish to be well," was the seventh, last and best rule of health laid down by the famous physician, Hoffman. Sir William Hamilton declared that "Medicine in the hands in which it is vulgarly dispensed, is a curse to humanity rather than a blessing;" and Sir Astley Cooper did not scruple to avow, that "The science of medicine was founded on conjecture and improved by murder." It is a remarkable fact that "The doctor seldom takes physic" (Italian.) He does not appear to have a very lively faith in his own art. As for his alleged cures, their reality does not pass unquestioned. It is true that "Dear physic always does good, if not to the patient, at least to the apothecary" (German); but "It is God that cures, and the doctor gets the money" (Spanish.) Save your money, then, and "If you have a friend who is a doctor, take off your hat to him, and send him to the house of your enemy" (Spanish).—*The Crayon.*

From the *British Farmers' Magazine.*

Progress of Scientific Agriculture.

Any one who looks back upon the progress of the past half-century, will not refuse to admit that Agriculture has shared largely in the advantages resulting from scientific inquiries and improvements, and their practical application. The time has gone by when men were skeptical on schemes of novel innovation and doubtful expediency, or resolutely objected to every new suggestion or modern improvement. But there are those among us who have lived long enough to remember the days when gas was unknown, save as the mysterious term of

philosophy, or when steam-boats were deemed an impossibility, when railroads and their speed were not appreciable either in practice or utility by the minds of even intelligent men of the day, and when the man who would have hinted at ploughing by steam would have been looked upon as a madman; yet all these things have come to pass, and are now to us household words, while science has tamed the very lightning to our uses.

"Now wide the sun of Science flings his beams, And Wealth her liberal fertilizing showers Diffuses; while Industry, all nerve, but waits, Impelled by them, to work such wonders, as In days long flown and dark, had miracles Been deemed."

The present method of British farming, is based on great natural laws, which require men versed in science to explain and enforce, and men with enterprising, yet patient and obedient minds, to carry into practice.

The science of Chemistry, applied to Agriculture, has furnished analyses of soils, and by determining the nature of the elements or constituent parts of the various kinds, and the combination of these also in the vegetable productions, has enabled many to judge as to what are the elements needed to be applied in the form of fertilizers. Similar investigations have been made into the character of the substances generally used as manures, and the result has been to develop the principles which constitute more especially the nutritious parts of these fertilizers of the soil. Many substances before unknown, as respects their practical bearing in this point of view, have, on trial, proved to be very valuable; and, after the analyses have been completed, and the elements known, it has been found that new combinations still more effective may be made at a less expense than the natural ones. In bulk, too, manures are thus greatly reduced, as the essence of the principle by which the plant is nourished is extracted and applied without the adjuncts which are usually found with it. How much of the success of farming and indeed of all other arts and manufactures, depends upon the economy of waste substances, upon the saving of material, upon imitating that beautiful law, which chemistry teaches us, that in nature nothing is lost! It is by means of waste substances, decaying animal and vegetable matters, weeds, and bones, and every such material, that the soil is enriched, or if exhausted re-

deemed, and its annual produce increased. With what care are not bones collected here and on the continent, every grain of bone-dust being gathered up like gold, and commerce bringing us thousands of tons, whether it be from the pampas of South America, the prairies of North America, the battle-fields of Europe, the interior of Africa, or the cities of Australia! What fortunes have not the gathering of bones realized! and how has the turnip-fly been cheated out of his favourite morsels by the application of bone-dust!

Cultivation is the economy of force.—Science teaches us the simplest means of obtaining the greatest effects with the smallest expenditure of power, and with given means to produce a maximum of force. The unprofitable exertion of power, the waste of force in agriculture, in other branches of industry, in science or in social economy, is characteristic of the want of true civilization. We sow, we reap, and we thrash by machinery, and steam has been harnessed to the plough, and by proper drainage, the skilful rotation of crops, the application of guano, and various artificial manures, applied in due proportions according to the nature of the soil, as shown by analysis, we double and treble our grain crops.

Agriculture in this country is advancing in all its branches, and in none more than in such as are promoted by, or depend upon, the use of improved machinery.

Already the colonies are beginning to be alive to the advantages of steam husbandry, for British Guiana offers a premium of £1,000 for the successful introduction of a steam plough into that colony, and a similar amount for the successful introduction of a steam-digging or grubbing machine.

The wheat grown in Great Britain (Ireland not reckoned) in 1801 to 1810 was but sufficient to supply at the average rate of 8 bushels per head, 11,000,000 of persons: at the present time the land produces sufficient wheat to feed more than 17,000,000, to say nothing of the additional quantities of other produce raised. Agricultural chemistry has enlarged the domain of knowledge in that important branch of scientific research.

Combination and discussion have done much good. They have driven away the old lethargy and apathy, the bigotry and ignorance which often prevailed among those

engaged in husbandry. The proceedings and transactions of the Royal Agricultural Society, the Royal Dublin Improvement Society, the Highland and Agricultural Society of Scotland, the Farmers' Club, the local agricultural societies, and the numerous journals devoted to agriculture, have all diffused a large amount of practical and scientific information.

How much has been done, too, in the introduction of new plants and seeds—whether for forage or for food—in the selection of new varieties of wheat, barley, oats, and turnips, &c. The choice of suitable varieties is even of more importance than the choice of a good soil. Our scientific agriculturists no longer regard the plant as a mere machine, acting a mechanical part, and guided by certain chemical changes: it is a far more subtle thing, it is guided in its development by the laws of life, which overrule all chemical action. Thus chemistry is no longer the solitary guiding star of the scientific farmer: physiology must go with it, hand in hand, in all that relates to improved cultivation. When improved varieties are once obtained, high cultivation is necessary for the continuance of those properties that render them valuable. When cultivated plants are neglected, and allowed to grow in a poor soil, they soon revert to their wild condition. It therefore requires a continuance of suitable conditions to perpetuate those peculiarities which render them useful to man; hence the great attention requisite to keeping up the supply of those elements essential to the building up of the structure of the plant. If they are not present naturally, they must be supplied in the form of manure, which may be of various kinds, according to the circumstances of the case. As Sprengel observes, "a soil is often neither too heavy nor too light, neither too wet nor too dry, neither too cold nor too warm, neither too fine nor too coarse; lies neither too high nor too low, is situated in a propitious climate, is found to consist of a well-proportioned mixture of clayey and sandy particles, contains an average quantity of vegetable matter, and has the benefit of a warm aspect and favouring slope;" but although possessed of all these advantages, it is yet unproductive, because it wants some mineral constituent required for plant food. In new countries there is a strong tendency to carry off annual crops from the land, without giving anything back. This was

especially the fault, for a long time, in Canada, and Australia, and in the tropical islands of the West Indies, Ceylon, Mauritius, &c. Little or no manure was given to the coffee trees. The stalk of a sugar-cane, after being pressed for the juice, was burnt for fuel, instead of being returned to the soil. Now, however, better practice prevails. The sugar planters of Barbados, Mauritius, &c., find their interest in importing large quantities of guano and other manures, and by high cultivation succeed in obtaining enormous annual returns of sugar.

In a comparatively short time, systematic draining has completely changed the aspect of extensive tracts of country in Britain, converting the cold morass into fertile fields, and greatly increasing the annual produce, even on soil which was before bearing crops sufficient to satisfy the most exacting expectations.

The late Professor Johnston, in his lectures in America, pointed out the following among the greatest practical improvements in the treatment of land, by means of which British agriculture has been advanced to its present condition: The alternate husbandry, a judicious rotation of crops; the introduction of thorough drainage and deep and subsoil ploughing; the judicious and continued application of lime, and the use of bones in various forms—generally what is called "high farming," comprehending the culture of green crops extensively, the making of rich loams, and the purchase of valuable foreign manures of various kinds, to a great extent; the rearing and feeding of improved breeds of stock; the custom of full feeding both for plants and animals; the introduction of lighter and better contrived implements, and of machines to economise labour, and horses having a quicker step.

Such, then, are generally the practical methods or processes by which British agriculture has been advanced to its present condition. To most of our readers these are well known facts, which it may almost seem superfluous to recapitulate and comment on; but the new settlers in distant colonies, and the rising generation at home, interested in agriculture, may well be reminded of the great practical improvements which have enabled the British farmer to sustain the prolific yield of his soil, and to compete with the abundant produce obtained with little trouble in new lands, requiring at present but little care, culture or science. The lesson

of perseverance and progress, in the successful adoption of new processes of culture and new machinery, whether for ploughing, sowing, hoeing, or reaping, &c., will at least not be lost, and may stimulate further invention and enlarged experiments.

From the *Gardener's Monthly*.

Forcing.

Few subjects are better worth the attention of nurserymen, market gardeners, and amateurs, than this very interesting branch of gardening; but it has been strangely and unaccountably, neglected. Whether as a source of pleasure or profit, it is an equally delightful occupation; and the considerable space we intend to occupy with the subject, will, we trust, be the means of awakening some enthusiasm in its behalf.

Potatoes, Peas, Beans, Cauliflower, Radishes, Lettuces, Tomatoes, Asparagus, Rhubarb and Parsley, are the chief vegetables usually forced; and, among fruits, the Apricot, Cherry, Fig, Grape, Nectarine, Peach, Plum and Pine.

Grapes, every one wishes to grow. For early forcing, they are the best grown in pots, that is, where fire heat is used; when a "cold graperly" is employed to produce them, they are usually grown in the open ground. This is a good season to prepare for the latter mode of culture, so as to have everything ready to plant out the vines next spring. Houses can now be constructed from one to three dollars per running foot, and capable of growing grapes to perfection, and in many places, from fifty cents to one dollar a pound, can be very readily obtained for the fruit. The borders for the vines need not be expensive. A dry bottom is essential, which must be obtained either by draining, or, what is better, elevating the borders above the surrounding soil. A very durable and substantial border may be made by taking out the soil two and a half feet deep, and filling in with bones and broken stones, lumps of charcoal, brickbats, or any coarse material, to the depth of one foot, then filling in the remaining three inches deep with sods from an old pasture, to which, about a third of well decomposed cow or horse manure has been added. The border may extend under the vinery, and some ten or fifteen feet beyond. Pot vines are usually fruited the

year following that in which they are raised. Plants struck last spring, and grown all summer, will now be ready, either to put away till wanted in spring, or started at once, where sufficient heat is at command. They should be at once pruned to the desired length, usually about six feet, the laterals taken off, the canes painted with a mixture of sulphur and soap, to destroy insects; and those not just now required, either put in a cellar or shed, secure from frost to avoid danger to the pots. Those desired to fruit early, should be at once placed in a temperature of 55 to 60 degrees, and the canes bent down to aid in causing all the buds to burst equally. This, however, depends on the condition of the cane itself. A vine with badly developed buds will not break well, no matter how well managed. The buds will only swell under the above temperature; but it is not well to start with much heat.

In a house of this character the Fig may also be started at the same time, and the Pine grow very well. The other fruits named will not do so well started with these, unless in the hands of greatly experienced gardeners, as the heat necessary to ripen the grapes so early, is too much for them. Dwarf Beans, Tomatoes and Cucumbers, would, however, do very well. These may be sown at once for this purpose. Peaches, Nectarines, and Apricots, do very well planted at the back wall of vineries, and especially do they do well in tubs and pots. For the latter mode it is best to grow them one season before forcing, as better and handsomer specimens can be made from one year grafted plants. Now is the time to select those that we may desire to force the next spring. They should be lifted and potted very carefully, and afterwards placed in a cool cellar till February. Those that were potted last spring, and have a good growth, and are established sufficient to warrant an early forcing, may at once be started in a heat of from 45 to 50 degrees, and the heat increased to 55 degrees in the course of a few weeks. They should be previously cleaned, as already recommended, for grapes. Plums and Cherries do not do very well forced. The difficulty is in getting them to ripen well. I have usually had the best success when started with peaches at this time. Strawberries force easier than any fruit, and in my opinion, when gone into properly,

will pay even better than grapes. They may be had all the year round when a heat of 60 degrees can be maintained, simply by bringing forward a few every two weeks. The pots of plants should be prepared in September, six inch sizes being employed. They should be started in a heat of 50 degrees, till the flowers are set, and ripened in one of 60 degrees. They must be kept near the glass, and the Red Spider carefully watched. Those who have not command of heat, may have them very early by potting good plants, keeping them in a moderately dry place till February, and then setting them in frames. A house fitted up for strawberry forcing, is just the place to force Asparagus, Rhubarb, Radishes, Peas and Potatoes, which do not do well with much heat. Any of these may be started now either in pits or boxes. Peas are scarcely worth forcing, except as a luxury. They will not bear freely unless very near the light.

A Cauliflower pit should be in every garden, where leaves or manure can be had. Radishes and Lettuce can be forced at the same time, and will be in use before the Cauliflower grows in their way. Pits of stone or brick, about six feet under, and one or two above the ground, are usually employed, with glass sashes over. The leaves should be filled in as early as possible, so as to get their most violent heating over, before the plants are set out. A watering as they are filled in assists this, which may be known to be effected by the sinking it exhibits. It is important to have the plants set as near the glass as possible, a few more leaves should therefore be added before the six inches of soil required is placed on. The plants, sown in September, should be planted fifteen inches apart, and Lettuce and Radishes may be sown broadcast between. Asparagus, Rhubarb, and Parsley, are prepared by taking up the old roots at this season.

From the Country Gentleman.

"How to make Butter."

Under the title of "Our Farm of Four Acres," a little book was published the past season in London, detailing the experiences in cultivating and dairying to the extent thus specified, of a family whose circumstances compelled them to retire from city to country for the sake of economy.

The head of one chapter is quoted above, and we think its contents will be read with some interest :

" Let the cream be at the temperature of 55 to 60 degrees; if the weather is cold, put boiling water into the churn for half an hour before you want to use it: when that is poured off, strain in the cream through a butter cloth. When the butter is coming, which is easily ascertained by the sound, take off the lid, and with one of the flat boards scrape down the sides of the churn; and do the same to the lid: this prevents waste. When the butter is come, the butter-milk is to be poured off, and spring-water put in the churn, and turned for two or three minutes: this is to be then poured away, and fresh ^aadded, and again the handle turned for a minute or two. Should there be the least appearance of milkiness when this is poured from the churn, more is to be put up. This we found was a much better mode of extracting all the butter-milk than placing it in a pan under the pump, as we did when we commenced our labours. The butter is then to be placed on the board or marble, and salted to taste; then, with a cream-cloth, wrung out of spring-water, press all the moisture from it. When it appears quite dry and firm, make it up into rolls with the flat boards. The whole process should be completed in three-quarters of an hour.

" We always used a large tub, which was made for the purpose, and every article we were going to use was soaked in it for half an hour in boiling water; then, that removed, and cold spring-water substituted; and the things we required remained in it till they were wanted. This prevents the butter from adhering to the boards, cloth, &c., which would render the task of 'making it up' both difficult and disagreeable.

" In hot weather, instead of bringing the cream-crook into the kitchen, it must be kept as cool as possible; for as it is essential in the winter to raise the temperature of the cream to the degree I have stated, so in the summer it must be lowered to it. Should your dairy not be cool enough for the purpose, it is best effected by keeping the cream-pot in water as cold as you can procure it, and by making the butter early in the morning, and placing cold water in the churn sometime before it is used. By following these directions you will have good butter throughout the year.

" The cows should be milked as near the dairy as possible, as it prevents the cream from rising well if the milk is carried any distance.* It should be at once strained into the milk-pans, and not disturbed for forty-eight hours in winter, and twenty-four hours in summer. In hot weather it is highly important that the cream should be perfectly strained from the milk, or it will make it very rank. Half a dozen moderate-sized lumps of sugar to every two quarts of cream tend to keep it sweet. In summer always churn twice a week. Some persons imagine that cream cannot be 'too sweet,' but that is a mistake; it must have a certain degree of acidity, or it will not produce butter, and if put into the churn without it, must be beaten with the paddles till it acquires it. The cream should, in the summer, be shifted each morning into a clean crock, that has first been well scalded and then soaked in cold water; and the same rule applies to all the utensils used in a dairy. The best things to scrub the churn and all wooden articles with, are wood-ashes and plenty of soap.

" In some parts of the country, the butter made by the farmers' wives for sale is not washed at all; they say, 'It washes all the taste away.' They remove it from the churn, and then taking it in their hands, dash it repeatedly on the board; that is what they call 'smiting' it. The butter so made is always strong, and of two colours, as a portion of the butter-milk remains in it; if any of it were put into a cup, and that placed in hot water for the purpose of clarifying, there would, when it was melted, be found a large deposit of butter-milk at the bottom of the cup. We have tried the butter made our way, and there was scarcely any residuum.

" Besides, this 'smiting' is a most disgusting process to witness. In warm weather the butter adheres to the hands of the 'smiter,' who puffs and blows over it as if it were very hard work. Indeed, I once heard a strong-looking girl, daughter of a small farmer in Kent, say she was never well, for 'smiting' the butter was such dreadful hard work it gave her a pain in her side. After this 'smiting' is over, it is put on a butter-print, and pressed with the hands till it is considered to have received

* In very cold weather the milk-pans must be placed by the fire some time before the milk is strained into them, or the cream will not rise.

the impression. It is then, through a small hole in the handle, blown off the print with the *mouth*.

"I don't think I shall ever again eat butter which appears at table with the figures of cows, flowers, &c., stamped on it. I should always think of the process it has gone through for the sake of looking pretty. Nearly all the fresh butter which is sold in London, is made up in large rolls, and, like that we make ourselves, need not be touched by the fingers of the maker."

Soil.

To the Editors of the Franklin Observer :

SIRS:—It seems to the writer that the question relative to the mineral and agricultural resources of the South-western counties is, what are probabilities of the future in these respects, and not what they are now; for in a country where the inducements for development and improvement are limited, it cannot be expected that remarkable and inviting prospects can be shown immediately upon the surface. Both mining and agricultural interests are slowly developed, and it is only upon and by encouragements which markets and profits hold out that men are induced to act, and hence, when market facilities are provided, an entire change in the feelings of a community take place, which result in enterprise which either brings to light mineral resources, or lead to a systematic and profitable husbandry.

In the South-western counties, agriculture has to contend with the disadvantages of distant markets, where intercourse is difficult and expensive; and hence, the inducements to labor energetically for large crops are too small to move a community, though individual exertions in a few instances are met with which have resulted in proving the capacity of the soil for the production of great crops. When all things are taken into consideration, which affect the capacity of a soil, climate, composition and depth, few sections can compare with the South-western counties of North Carolina. It is true, it is studded with mountains, but they are clothed with a great depth of soil, but bear the finest and most valuable forests of hard and soft woods or timbers in the world. Nothing surprises a traveller more than the extreme depth of soil and the massive timber tree which it

supports; from the valley to the summits of the Balsam and Nantahala Mountains.

But the writer does not propose to speak particularly of the agricultural interests, now, neither indeed upon the mineral interests, except in a few particulars. Of the mineral interests, they may be divided into two branches of industry. 1st. The interest connected with the production of metal. 2d. That connected with and existing in the rocks proper. Of the Western counties which are destined to furnish metallic material, Jackson County is rich in copper, while Macon and Cherokee will produce the most iron. The Savannah copper mines of the Cowee Mountains, those of the Collowhee and Way-yehut-te, are sufficiently enveloped to enable the miner to base a safe opinion, and entertain the expectation that they are destined to become profitable mines, provided a way to market is opened.

The hæmatitic iron ores of the Nantahala are certainly inexhaustible beds, whose character for goodness are not exceeded by the best ores of Salisbury, Connecticut, which has long been celebrated for its iron.

Of the rocks of these counties, we may feel assured of the existence of fine marble, suitable for statuary and other purposes for which marbles are employed. The most important variety is the clear flesh colored marble of Nantahala, which is really unique for the delicacy of its tints.

The same region furnishes, also, fine roofing slates of a blue color. Plates of slate may be obtained, five and six feet in length, and two feet wide. It splits with ease and with a perfect plane.

The quartz rock of the Nantahala are suitable for mill-stones, and besides this variety, there is a species of porous chalcodony, which resembles the common French burr stone. We have whet-stone, mill-stone, and grind-stone grist; fire-stone and rock suitable for glass, and in Macon County the finest porcelain clay. The foregoing embrace some of the important mineral products which are inexhaustible, but which, under existing circumstances, are nearly useless; but which will become of immense value when a cheap and commodious way is opened to the markets of the world.

I am gentlemen, truly yours,

E. EMMONS, State Geologist.

Franklin, Aug. 29, 1859.

Sources of Fertility in Soils.

Liebig, in his chemical researches, says: "If we calculate from the result of ash-analysis, the quantity of phosphoric acid required by a wheat crop, including grain and straw, we find the wheat demands more abundant supplies for phosphoric acid than any other plants. Wheat consumes phosphoric acid in greater quantities during the growth of the seed than at any other period; and this is the time when practical men believe the soil to suffer the greatest exhaustion. Plants in general derive their carbon and nitrogen from the atmosphere, carbon in the form of carbonic acid, nitrogen in the form of ammonia; from water (and ammonia) they receive hydrogen; and sulphur from sulphuric acid."

Bondrimont mentions the existence of interstitial currents in arable soils, and the influence they exert on agriculture. He states "that there is a natural process at work, by which liquid currents rise to the surface, and thus bring up materials that help either to maintain its fertility or modify its character. Many phenomena of agriculture and vegetation have at different times been observed, which, hitherto inexplicable, are readily explained on this theory; such, for example, as the improvement that takes place in fallows; and there is reason to believe that these currents materially influence the rotation of crops.

Take the mastery views of Schlieden, in Germany. He asserts that "the goodness of the soil depends on its inorganic constituents; so far, at least, as they are soluble in water, or through continued action of carbonic acid, and the more abundant and varied these solutions the more fertile is the ground."

The amazing yield of Indian corn in Mexico, from two to six hundred fold, is something which, with all our skill, we cannot accomplish, and is a fact in favour of the argument, "that in no case do the organic substances contained in the soil perform any direct parts of the nutrition of plants."

All chemists are agreed as to the source from which the oxygen and hydrogen of plants are derived, the principal of which is water. All of them agree that the carbon of vegetables is derived principally from the air, partly from the soil. It becomes evident, then, from the most con-

clusive proofs, that *humus* in the form in which it exists in soils does not yield the smallest nourishment to plants. The excellent advantages derived from the experiments of talented and industrious men, who have directed every effort to aid practical agriculture, justly entitle them to golden praise from mankind. Liebig has the merit of having been the first who laid before the public some views as to the source of the constituents of plants. He remarks: "How does it happen that wheat does not flourish on sandy soil, and that a (calx or) calcareous soil is unsuitable for its growth, unless it is mixed with a large quantity of clay? It is because these soils do not contain alkalies and certain other ingredients in sufficient quantity; and, therefore, the growth of the wheat is arrested, even though all other substances should be present in abundance."

In some soils there may be too much straw-making food, but not enough for the maturing of the grain. Again, the absence of the necessary moisture in the soil will cut off the supplies of food to plants. But an excess of it may cause available food wanting for the development of the grains to be appropriated to the straw. In very wet seasons, especially in the absence of under-drains, where there is much straw-making food and a deficiency of phosphates, the latter is taken up by the stalks and leaves, to the loss of the grain; hence, soils may yield less grain in a wet season, but more straw than they would do in a dryer one, other things being equal.

"Grain is carried to the cities, and the substances in the soil that made it are removed far away from the original source, and the soil is robbed of it, and but a small portion of their elements are sent to the soil from whence they were taken." In nature's economy nothing is lost; but when man displaces things, he should put them back again in their own places. The wheat-grower should return to his lands in the shape of fertilizers the same elements which he has taken, or he will soon find the soil exhausted, so that he cannot produce the same grain. In many of our best wheat growing places in the West, the lands are so much exhausted that wheat crops do not pay for their labour and expense of growing. The common opinion hitherto prevalent, and still held by some, that the

soil of the West cannot be exhausted, is, therefore, a great mistake.

In our cultivation of wheat we have exhausted the soil of so much of the elements that produce it, that maize is fast taking the place of wheat, especially in the prairie districts, where the ground is less protected by the snow in winter than in others. In Canada, where the winter is severe, the ground being covered by snow, the wheat does not suffer as that sown in more changeable climates. It is found by experience that in a climate where there is little snow, the land needs to be fertilized and plowed deep, in order to give the roots a strong hold in the soil. Fertilization will cause a vigorous growth, and the roots of plants in well prepared soils strike deep and hold fast. This increases the growth of the plant and augments the quantity and quality of the crops.

Correspondence of the Boston Cultivator.

From the Hartford Homestead.

Prof. Mapes' Superphosphates.

The State Agricultural Society of Connecticut has just closed one of its most successful annual Fairs. It is gratifying to know that at this exhibition so many of her citizens were congregated from all parts of the State as to swell the receipts to over 10,000 dollars.

The commercial advantage thus accruing to the Society, and which is indispensable to its healthful administration, is by no means the chief advantage. New ideas of improved agriculture and progressive mechanics and manufactures have been taken to the homes of more than fifty thousand of the sons and daughters of the State. Each has become familiar with some of the better productions of remote portions of the State, which could not otherwise be seen or known. New acquaintances have been formed, exchanges arranged, and a new impulse imparted for a higher standard of husbandry and handicraft.

The Connecticut State Agricultural Society is wisely appropriating a portion of its funds for the benefit of its members and the community at large, by the employment of an able chemist, who is industriously engaged in the examination of various materials used for manurial purposes. A series of papers have already been published, giving the analysis of muck, peat, bones, and

the different varieties of special manures which have been offered in the market.

By these investigations, the true value of these various commodities is determined, and the agricultural community protected from imposition.

We subjoin a late paper from Prof. Johnson on the character and value of "Prof. Mapes' Superphosphates of Lime," which have been so much lauded by the manufacturer:—

Report of Prof. S. W. Johnson, Chemist to the Society, on Mapes' Superphosphates of Lime.

HENRY A. DYER, Esq., Cor. Sec. of the Ct. State Agricultural Society:

Dear Sir,—Of all the many fraudulent and poor manures which have been from time to time imposed upon our farmers during the last four years, there is none so deserving of complete exposure, and sharp rebuke, as that series of trashy mixtures known as "Mapes' Superphosphates of Lime."

It is, indeed, true that worse manures have been offered for sale in this State; but none have ever had employed such an amount of persistent bragging and humbuggery to bolster them up, as has been enjoyed by these.

Seven or eight years ago "Mapes' Improved Superphosphate," was almost the only manure of the kind on sale in our northern markets. Then it was of good quality, and contained soluble phosphoric acid 10.65 per cent.; insoluble phosphoric acid 10.17 per cent.; ammonia (actual and potential) 2.78 per cent., and had a value (calculated on present prices) of \$44 per ton. It was sold at \$50 per ton. This manure was the prototype of the following formidable series, viz: Mapes' nitrogenized superphosphate of lime, \$4 per bag, \$50 per ton; Mapes' No. 1, superphosphate of lime, \$3 60 per bag, \$45 per ton; Mapes' superphosphate of lime, \$3 20 per bag, \$40 per ton; Mapes' cotton and tobacco superphosphate of lime, \$3 20 per bag, \$40 per ton; Mapes' potash superphosphates of lime, \$2 80 per bag, \$35 per ton.

In my first annual report (page 28, 2d ed.) may be found analyses of the "nitrogenized," made on samples collected in the Connecticut markets, in the years 1856 and 1857. The calculated value of this manure was \$21 in case of the sample analyzed in

The inventor of these fertilizers, Prof. J. J. Mapes, is also the inventor of a new doctrine, dating back only a few years, to the effect that there is a progressive increase in the value of the ingredients of a fertilizer, in proportion to the number of times it becomes a part of an animal or plant, and that, therefore, a mineral phosphate, for example, is comparatively worthless as a manure, considered beside a phosphate that is derived from the bones of an animal.

We have only to carry out this principle far enough to show its utter absurdity, for by a vastly great number of "progressions," the point will be finally arrived at, when a grain of "progressed" phosphate shall equal a ton of sombrero guano, or other mineral phosphate. The only use that this vagary of the "progression of ultimates," or "progression of primaries," can serve, appears to be, to account for the great value of Mapes' superphosphates! Are we to believe that the few *per cent.* of really valuable fertilizing matters they contain, is so far *progressed* as to be already worth three or four times as much as the same ingredients of other manures? Are the insoluble phosphates of these manures as good, and hence deserving as good a name as what are ordinarily known as soluble or real superphosphates? Do the materials, (*primaries, ultimates,*) out of which these manures are made, "progress" with such rapidity, that a manure which, in 1852, contained twenty-one per cent. of phosphoric acid, could produce an equal effect in 1857, though containing but thirteen per cent., and in 1859, only requires to contain eight per cent.? Absurd as the doctrine of progression of ultimates in the abstract is, its logical applications are, if possible, more so, and will not find currency in Connecticut we may be sure.

Yale Analytical Laboratory, Sept. 24.

Farmers--Take a Hint.

It is very surprising to see how slow men are to take a hint. The frost destroys about half the bloom of the fruit trees; everybody prognosticates the loss of fruit; instead of that, the *half* that remains is larger, fairer and higher flavored than usual, and the trees, instead of being exhausted are ready for another crop the next year. Why don't the owner *take the hint* and thin out his fruit every bearing

year? But no: the next season sees his orchard overloaded, fruit small, and not well formed; yet he always *boasts* of that first-mentioned crop without profiting by the lesson it teaches.

We heard a man saying, "the best crop of celery I ever saw, was raised by old John ———, on a spot of ground where the wash from the barn-yard ran into it after a hard shower." Did he take the hint, and convey such liquid manure in trenches to his garden? Not at all; he bragged about that wonderful crop of celery, but would not take the hint.

We knew a case where a farmer subsoiled a field, and raised crops in consequence, which were the admiration of the neighborhood; and for years the field showed the advantage of deep handling. But we could not learn that a single farmer in the neighborhood took the hint. The man who acted thus wisely sold his farm, and his successor pursued the old way of surface-scratching.

A staunch farmer complained to us of his soil as too loose and light; we mentioned ashes as worth trying: "well now you mention it, I believe it will do good."

"I bought a part of my farm from a man who was a wonderful person to save up ashes, and around his cabin it lay in heaps. I took away the house and ordered the ashes to be scattered, and to this day I notice that when the plow runs along through that spot, the ground turns up moist and close-grained." It is strange that he never took the hint!

There are thousands of bushels of ashes lying not far from his farm about an old soap and candle factory, with which he might have dressed his whole farm.

A farmer gets a splendid crop of corn or grain from off a grass or clover lay.

Does he take the hint? Does he adopt the system which shall allow him every year just such a sward to put his grain on? No, he hates book-farming and scientific farming, and "this notion of rotation;" and jogs on the old way.

A few years ago our farmers got roundly in debt; and they have worried and sweated under it, till some of them have grown greyer, and added not a few wrinkles to their faces. Do they take the hint? Are they not pitching into debt again?—*Fruit, Flowers and Farming.*

Horse-Shoes Must be Beveled on the Ground Surface.

An iron shoe tacked on a horse's foot, says the *American Veterinary Journal*, is one of the avoidable evils of domestication, yet when properly applied is not so great an evil as some persons might suppose. One of the objects in applying the shoe, is to preserve the natural concavity of the sole of the foot. A horse in his natural state, and, indeed, up to the period of his first introduction within the precincts of the "smithey," has, generally, a concave sole; and wisely is it so ordained; were it otherwise the animal would be unable to secure a foot-hold; as it is the inferior edge of the hoof—that is, the ground surface—projecting beyond the sole, may be compared to the point of a cat's claw, or the nails of a man; they grasp, as it were, bodies with which they come in contact, and thus secure a point of resistance, which aids in advancing limb or body, over a smooth surface. Now, in order to preserve the natural mechanical functions of the horn and sole, the ground surface of the shoe must correspond to the ground surface of the foot; that is to say, the ground surface of the shoe must be beveled, cup fashion; its outer edge being prominent, takes the place of the hoof; its inner surface being concave, corresponds to the natural concavity of the foot. It is a custom among some blacksmiths to reverse the above procedure, and place the concave surface next to the foot; and often the ground surface appears to be more *convex* than concave, in justice, however, to that much abused individual, the shoer (who is not always at fault,) we remark, that often he is not allowed to use his own judgment, for, as some people believe, "anybody can *doctor* a horse," so an equal number have an idea that they know all about *shoeing* him, and men will often stand over the smith, and direct him as to the form of shoe and manner of securing it to the foot.

Notwithstanding men's various opinions on the general art of shoeing horses, we think that all will sooner or later agree with us, that a beveled, or cup-shaped, ground surface is the best. We care not what may be the form of the foot, whether it be high or low-heeled, contracted at the heels, lengthened or shortened at the toe, or having a concave or a convex sole: it is all

the same. The ground surface must always be *concave*. In every other part of the shoe, improvements and alterations are suggested, and, indeed, required, in consequence of the ever-varying form and action of the horse's foot under the state of health and disease; but, on the inferior surface of the foot, we are presented with a pattern for the ground surface of a shoe, which no man can ever improve on, and if we were to follow that pattern more closely, there would be fewer accidents in *falling* and less lame horses.

Politicians and Farmers.

Politicians who want an office frequently make great pretensions to the agricultural knowledge, and figure largely at the cattle shows. It is said that Governor —— is one of this sort of "farmers," and in illustration thereof the following good story is in circulation:

Not many springs ago, his excellency, in company with another distinguished citizen of ——, was riding in the country. In passing a beautiful field of grain, just beginning to head, the Governor reigned in his horse, and burst into rapturous admiration of the wheat.

Quoth Ned—"Governor, how much will that yield to the acre?"

"Oh, from about seventeen to twenty bushels."

"What kind of seed is that from, Governor?"

"Common winter. This is by far the best for this soil."

"You are the President of the Agricultural Society, are you not, Governor?"

"I am, sir."

"Delivered the address before the Agricultural Society of New York last year?"

"Yes, sir."

"You are the author of an eloquent passage about the cultivation of roots and tops?"

"A mere trifle, Ned."

"Well, you are the only agricultural writer I ever saw who could not tell oats from wheat!"

Labor, continuance, constancy. Life's trinity. Turn them into their proper channels, and the meanest intellect can rise to usefulness and honor. Without them the finest talents are of no avail.

From the Rural Register.

Milk, and Dairy Produce Generally.

"THE COMPOSITION OF MILK."—The appearance and the usual qualities of milk, are too well known to require description here. It differs considerably in its composition as obtained from different animals, but its general nature is similar in all cases. From 80 to 90 lbs. in every 100 lbs. of cow's milk, are water. This quantity may be increased by special feeding for this purpose. Some sellers of milk in the neighborhood of large cities, who are too conscientious to add pump-water to their milk, but who still desire to dilute it, contrive to effect their purpose by feeding their cows on juicy succulent food, containing much water; such watered milk they are able to sell with a safe conscience, though it may be doubted if the true morality of the case, is much better than if the pump had been called directly into action.

From 3 to 5 lbs. in each 100 lbs. of milk, are curd or casein; this is a nitrogenous body like gluten, albumen, animal muscle, &c. Casein is a white, flaky substance, and can be separated from the milk in various ways. There are also in every 100 lbs., from 4 to 5 lbs. of a species of sugar, called *milk sugar*; this is not so sweet as the cane sugar, and does not dissolve so easily in water. It may be obtained by evaporating down the whey, after separation of the casein or curd. In Switzerland, it is made somewhat largely; and used for food.

The butter or oil amounts to from 3 to 5 lbs. in every 100 of milk. Lastly, the ash is from $\frac{1}{4}$ to $\frac{3}{4}$ lb. in each 100. This ash is rich in phosphates, as shown in the following table; it represents the composition of two samples, each of the ash from 1000 lbs. of milk.

	No. 1.	No. 2.
Phosphate of lime,.....	.23	.34
Phosphate of magnesia,...	.05	.07
Chloride of potassium,....	.14	.18
Chl'de of sodium (com. salt,)	.02	.03
Free soda,.....	.04	.05
	0.50	0.67

The butter, as stated above, is from 3 to 5 lbs. in each 100 of milk. It exists in the form of minute globules, scattered through the liquid. The globules of butter or fat, are enveloped in casein or curd, and are a very little lighter than the milk; if it

is left undisturbed, they therefore rise slowly to the surface and form cream. If the milk be much agitated and stirred about, the cream will be much longer in rising; so also if it is in a deep vessel, as a pail, in place of shallow pans. Warmth promotes its rising.

When milk is drawn in the usual way from the cow, the last of the milking is much the richest; this is because the cream has, in great part, risen to the surface inside of the cow's udder; the portion last drawn off then, of course contains the most of it. Such a fact shows the importance of thorough and careful milking. In some large dairies, the last milkings from each cow are collected in a separate pail. More milk is said to be obtained from the same cow when she is milked three times a day, than when but once or twice; less when milked once than twice, but in this last case it is very rich.

Some large breeds of cows, are remarkable for giving very great quantities of poor watery milk; other small breeds give small quantities of a milk, that contains an uncommon proportion of cream. These large breeds are kept in many parts of the country about London, for the purpose of supplying the city. By giving them succulent food, the milkmen contrive to increase still farther the watery nature of their milk, as before noticed.

The small breeds have one great advantage: it requires a much less quantity of food to supply the wants of their bodies, so that all over that quantity goes to the enriching of the milk. A weight of food, therefore, with which they could give good milk, would only suffice to keep up the body of the larger animal, and the milk would consequently be poor and watery. This is, probably, one chief reason, why the milk of the small breeds generally exceeds so decidedly in richness.

OF BUTTER.—We are now to consider the various methods of making butter, and some of the questions connected with its preservation. The object in churning, is to break up the coverings of the little globules of butter: this is done by continued dashing and agitation: when it has been continued for a certain time, the butter appears first in small grains, and finally works together into lumps.

Where cream is churned, the best practice seems to be, to allow of its becoming

slightly sour; this sourness takes place in the cheesy matter, or casein, that is mixed in the cream, and has no effect upon the butter beyond causing its more speedy and perfect separation.

In many dairies the practice is to churn the whole milk. This requires larger churns, and is best done by the aid of water or animal power; it is considered to produce more butter, and this is said by some to be finer and of better quality. I do not think that there have been any very decisive experiments upon this point.

The excellence of butter is greatly influenced by the temperature of the milk or cream, at the time of churning; if this be either too hot or too cold, it is difficult to get butter at all, and when got it is usually of poor quality. A large number of experiments have been made with regard to this point, and the result arrived at is, that cream should be churned at a temperature, when the churning commences, of from 50 to 55 degrees of Fahrenheit's thermometer. If whole milk is used, the temperature should be about 65 degrees F. at commencing. In summer, then cream would need cooling, and sometimes in winter a little warmth. It is surprising how the quality of the butter is improved by attention to these points. I have seen churns made double, so that warm water, or some cooling mixture, according as the season was winter or summer, might be put into the outer part. It will be seen, that in whatever way the temperature is regulated, a thermometer is a most important accompaniment to the dairy.

The time occupied in churning, is also a matter of much consequence. Several churns have been exhibited lately, which will make butter in from 3 to 10 minutes, and these are spoken of as important improvements. The most carefully conducted trials on this point, have shown that as the time of churning was shortened, the butter grew poorer in quality; and this is consistent with reason. Such violent agitation as is effected in these churns, separates the butter, it is true, but the globules are not thoroughly deprived of the casein which covers them in the milk; there is consequently much cheesy matter mingled with the butter, which is ordinarily soft, and pale, and does not keep well. Until the advocates of very short time in churning can show that the butter made by their

churns, is equal in quality to that produced in the ordinary time, farmers had better beware how they change their method, lest the quality of their butter, and consequently the reputation of their dairy, be injured.

Butter contains two kinds of fat. If melted in water at about 180 F., a nearly colorless oil is obtained, which becomes solid on cooling. If the solid mass be subjected to pressure in a strong press, at about 60 F., a pure liquid oil runs out, and there remains a solid white fat. The liquid fat is called *elaine*, and the solid fat *margarine*. These two bodies are present in many other animal and vegetable oils and fats. They are both nearly tasteless, and when quite pure, will keep without change for a long time. In presence of certain impurities, however, they do change.

If great care is not taken in washing and working, when making butter, some buttermilk is left enclosed in it; the buttermilk, of course, contains casein, the nitrogenous body which we have already described; there is also some of the milk sugar before mentioned. The casein, like all other bodies containing much nitrogen, is very liable to decomposition. This soon ensues therefore, whenever it is contained in butter; and certain chemical transformations are by this means soon commenced, whereby the *margarine* and *elaine* are in part changed to other and very disagreeable substances; those which give the rancid taste and smell, to bad butter. The milk sugar is instrumental in bringing about these changes. It is decomposed into an acid by the action of the casein, and has a decided effect upon the fatty substance, of butter, causing them to become rancid. This action and consequent change comes on more or less rapidly, as the temperature is warmer or colder.

No matter how well the butter is made in other respects, if buttermilk be left in it, there is always, from the causes above mentioned, a liability to become rancid and offensive. When packed in firkins, it will be rancid next to their sides and tops; will be injured to a greater or less depth, and as the air may have obtained access. Salting will partially overcome the tendency to spoil, but not entirely unless the butter is made so salt as to be hardly catable. Another reason for much of the poor butter, which is unfortunately too common, is to be

found in the impure quality of the salt used. This should not contain any magnesia or lime, as both injure the butter; they give it a bitter taste, and prevent its keeping for any length of time. Prof. Johnson mentions a simple method of freeing common salt from those impurities. It is to add to 30 lbs. of salt about 2 quarts of boiling water, stirring the whole thoroughly now and then, and allowing it to stand for two hours or more. It may be afterwards hung up in a bag, and allowed to drain. The liquid that runs off is a saturated solution of salt, with all the magnesia and lime which were present. These are much more soluble than the salt, and are consequently dissolved first.

Want of caution as to the quality of salt used, and of care in separating the buttermilk, cause the spoiling of very great stocks of butter every year; a large part of that sent to Europe is sold for soap grease, and for other common purposes, simply because these points have been neglected."

Shelter for Cattle in Autumn.

Messrs. Editors,—Those chilling storms and frosty nights which have begun once more to visit us, have called my attention to an error practised by many farmers in leaving a portion of their stock to lie upon the ground at night, yarded in the open air, and exposed to all the vicissitudes of the weather, at a time too when the heat of the preceding summer has induced such a habit of body as to render them highly sensitive to the first approach of cold. If we would reason from our own experience, we should see that it is the transition from one extreme of climate to another which affects them most seriously, and we ought, consequently, to pay a special attention to their comfort at such times.

Cows that have been allowed to remain in pasture at night, or yarded away from the barn, should now be furnished at night, at least every cold and stormy one, with shelter and a *dry* place to lie.

Young stock should when it is practicable, be similarly provided for; although many farmers think they may be allowed, like sheep, to find their shelter where they find their food, till they are finally brought into winter quarters.

These suggestions are not urged principally upon the score of humanity, although that is not to be overlooked, but it is to be

borne in mind that as the thrift and value of animals are inseparably connected with their bodily comfort, the profits to be derived from them are increased or diminished in direct proportion as that is promoted or impaired.

American Agriculturist.

Sealing-wax for Fruit Cans.

Don't buy any sealing-wax for your bottles of fruit or fruit juice called wine; or anything else that you want to seal up for future use. Make it yourself "How?" We will tell you. These are the ingredients. Beeswax, $\frac{1}{2}$ oz; English vermilion, $1\frac{1}{2}$ oz; gum shellac, $2\frac{1}{2}$ oz; rosin, 8 oz. Take some cheap iron vessel that you can always keep for the purpose, and put in the rosin and melt it, and stir in the vermilion. Then add the shellac, slowly and stir that in, and afterwards beeswax. When wanted for use at any after time, set it upon a slow fire and melt so you can dip bottle-nozzles in. Recollect that the vermilion is only put in for the looks of the thing, and if you want to use it for any purpose where color is no object, as for instance sealing over wounds upon trees, you may leave the color out. The ingredients for the above, bought in this city, cost only 25 cents, for which and a little trouble you can make three-quarters of a pound of good sealing-wax for any common use. For any purpose, such as an application to trees, where you want it tougher than the above preparation will make it, add a little more beeswax, and leave out the vermilion.—*N. Y. Tribune.*

[If the vermilion is left out in the above, it will be all the better for it, as this is a sulphur of mercury and is merely used for coloring purposes.—*Scientific American.*

Grinding Feed.

"If a machine was invented to grind hay," says the London *Farmer*, "the ground article would approximate in value to *un-ground* oats in producing fat and muscle. *Chopping* hay and stalks is the process that comes nearest to the grinding, and relieves the animal of just so much labor as it takes to do it. Twenty-five pounds of dry hay a day is a good deal of work for the muscles of one pair of Jaws, if they have the whole burden of its reduction to small bits and powder; this labor affects the whole system, retarding the animal's growth and rendering more food necessary to supply the waste of its tissue.



The Southern Planter.

RICHMOND, VIRGINIA.

Agricultural Fairs.

Among the most prominent evidences of increased interest and energy, in the promotion of agricultural progress and prosperity, we think the rapid multiplication of Fairs throughout our whole State, may safely be considered: and they are, too, the best mode of keeping alive that special interest in all that pertains to husbandry,—which we are glad to believe has been awakened greatly, through their instrumentality, in the breasts of all our farmers.

But a few years since, and we had only two exhibitions in our borders, and these were County Societies, which owed their origin to a few public-spirited gentlemen, who, by their energetic efforts to induce a more liberal and thorough system of tillage, which should better conform to the scientific teachings of the age, acquired for themselves the reputation of “book farmers.” With this name was coupled an intimation that nothing *practical* was to be expected from such men, but rather that they were themselves pursuing and recommending to others to follow in their footsteps, a path which would only lead to loss, by a course of extravagant culture of their lands—based, for the most part, on “sky scraping” theories, rather than economical experiment and actual fact. But time has proved the benefits arising from these associations for developing and improving the agricultural interests of the country—even to the most prejudiced eyes.

We have seen the fruits of these annual gatherings, by the taste for improvement in our lands, implements and stock of every description, which has been created among the mass of our farmers in every part of our State. A general spirit of inquiry has gone abroad from these scenes, which has greatly tended to swell the ranks of the “book farmers,” and to fur-

nish to agriculturists a great deal of valuable information of both a scientific and practical character, which was entirely unknown to our forefathers.

Our system of farming has been changed from a mere routine of crops, and imperfect tillage, which were, for the most part, planted and performed at a certain season and in a given manner, with no better reason for their time and sowing, and mode of cultivation, than that “my father did so before me.”

While we have yet much to learn, of agriculture as a science, still we have abundant reason to congratulate the whole farming community, on the rapidity with which improved modes of culture, sound philosophy, and a knowledge of the truths of Chemistry and Vegetable Physiology, are advancing among our masses. Our farmers, as a class, do not work less than they formerly did, they think more, and have their thoughts better guided by the discoveries of science. Negligence of the affairs of the farm on the part of the owner, is by no means as common as it was formerly, and sounder views of the respectability and dignity of labour, pervade all classes. The time is not far distant, when only he will be a “poor farmer” who shuts his eyes to the truths presented him, and stops his ears to the counsels of his neighbours.

It is not to the want of a more remunerative system of cropping, which has become a necessity, from the higher price labour commands among us; or the more expensive style of living adopted by all classes, *alone*, to which we must attribute the changes for the better in the cultivation of our lands—but to the more general intelligence and intimate association of our farmers. Another effect of the same cause is the formation of numerous Agricultural Societies, and Farmers’ Clubs, and the many “shows,” which have enlivened so many places in our State for several years past. While they have afforded to many of our citizens moments of unalloyed pleasure, they have been also productive of profit, by presenting to our inspection, new inventions, and the varied products of industry, taste and skill in the several departments of mechanical, horticultural, and agricultural enterprize. The honourable competition for “premiums,” has excited a generous spirit of emulation, and a desire to accomplish ourselves as much as has been performed by our neighbours.

The beauty of improved breeds of animals has delighted our eyes, and made them weary of beholding the "high bones and low flesh" of our "old field" stock, which are the "Ishmaelites" of so many neighbourhoods. But along with all the other benefits derived from these annual gatherings, we have displayed the bone and sinew of the country,—aye, the fat and muscle also, and lastly, but by no means least in the estimation of all our gentlemen, the array of female beauty and loveliness, of the hearts, minds, and persons of "wives, daughters, and sweethearts," who always enliven and grace the grounds.

It is this happy reunion of friends at the "jubilee" in honour of a good cause, which calls out fresh and warm feelings in our hearts, that tend to strengthen the bands of fraternity, hospitality, and affection for those of the same calling. Our circle of acquaintance is enlarged, and all the impulses and feelings which fit man for a social creature are exercised and augmented. Whatever tends to arouse our sympathies and draw us closer in affection for our fellows, is good for us; and the time we spend in such a manner as will ensure this result, is not lost, but rather is garnered up as a part of the sum, which, when fully made up, will secure for us a "perfect day."

So far as we are informed, to the town of Fredericksburg (which has been the birth-place and home of so many "good fellows") belongs the credit of establishing the first Agricultural Society and Fair in Virginia. Henrico county and Richmond city combined, and followed her example; and although both of these Societies languished and died out for awhile, yet they were the means of accomplishing a great deal of good by infusing into their members new life as agriculturists. The Fredericksburg Society is again living under the name of the Rappahannock Valley Society, and in the place of the old Henrico at Richmond, we have the Central and State Fairs whose exhibitions have attracted large crowds and reflected credit on our State. Nor are these all of the associations engaged in the good work; but we may add to the list those of Winchester, Lynchburg, Petersburg, Norfolk, Wytheville, Suffolk, Alexandria, and the "Loudoun Colt Club."

The same spirit of progress which has given rise to the organization of these different Societies, has shown a still greater development in the formation of agricultural schools in connection with our State University and Military In-

stitute. It is to the liberality of private citizens, that we are indebted for these great public favours, and we confidently look to them as the means of accomplishing, in the future, an amount of benefit to the agricultural cause, and the young men of our State, which cannot be over-estimated.

The necessity for such schools has been widely felt among us; and we rejoice to know that they will soon be in operation under the guidance and control of liberal and competent men.

The Fairs at Richmond, Petersburg, and Norfolk.

We had the pleasure of attending all three of the Exhibitions first named, and so far as their *success* may be attested by a large crowd of visitors, and a goodly array of agricultural material, it is only acknowledging their just claims, to pronounce them eminently successful.

The amount of stock, machinery, &c., at Norfolk was, of course, smaller than at Richmond and Petersburg, since the Fair represented a much smaller district than did either of the others. But in point of money received at the gates, it had a very desirable pre-eminence, and its financial condition, as shown by its treasurer's report, is equal to that of any other society anywhere, taking into consideration the number of members belonging to it. The display of Ladies' Work proved that, in taste, industry and skill, many a member of the Union and Seaboard Society might, with pride, recognize his wife as his "*better-half*;" and we can truly say, that if the *men* of Virginia would only fill up *their* departments at our Fairs with such samples of their zeal and industry, as did the *ladies* at Norfolk and Petersburg, we might hereafter dispense with all fears of a failure in any of our annual exhibitions. With an eye more for the useful than the ornamental, we were better pleased with the samples of "Virginia cloth," home-made blankets, quilts and counterpanes exhibited by the ladies, than we were with the collars and other embroideries, and specimens of fancy work, which adorned the walls of the same buildings. It may be because we were so much a better judge in one case than the other, that our fancy was led to be partial to counterpanes and quilts, (in Petersburg particularly.) At all events, no man in the Commonwealth would give more demonstrative evidence of his appreciation of their merits, by submitting to a

longer nap, in a cold night, under their protection, than ourselves.

The display of horses, cows and swine was most excellent, both in Richmond and Petersburg. We saw some of the finest specimens of *Devons* that we ever had the pleasure of examining, among the herds of Messrs. *Strandburg* and *Brown*, of *Maryland*; and *Pendleton*, of *Louisa*, and *Davis*, of *Loudoun* counties of our own State.

Messrs. *Sanders* (of *Wythe*), *Young* (of *Grayson*), and *Ficklen* (of *Albemarle*), exhibited very fine *Short-Horns*. *Crockett & Irvine*, and Captain *Buford*, *Fat Cattle*, and some beautiful *grades*. Mr. *Peyton Johnston*, of *Richmond*, the hand-somest *Alderney Cow*, and *Jno. B. Crenshaw*, of *Henrico*, the best *Ayrshire Bull* we ever saw.

The display of *Sheep* was not so large as usual, in point of numbers; but the flocks of Messrs. *Rives* and *Bradford* were well represented.

Of *Horses* there was a large number on exhibition—*Thoroughbreds*, *Morgan Black Hawks*, and *Cleveland Bays*. Mr. *S. W. Ficklen*, of *Charlottesville*, had a splendid stallion and a brood mare and filley, of *Morgan* blood, which he had just brought on from *Vermont*. These, we think, will make a most valuable addition to the "breeding stock" of our State, as they show size, speed, and style.

Dr. *Jno. R. Woods*, of *Albemarle*, had a *Cleveland Bay* colt (just imported from *England*), which we admired more than any animal of his class we have ever seen; and Mr. *H. J. Smith*, of *Richmond*, exhibited "*Kossuth*," and quite a family of his colts—making an exhibition of which any owner might justly feel proud. One of them (a yearling) was, in our opinion, the perfection of horse flesh. Besides these, many others excited the admiration of everybody who saw them.

An English *cart-horse (stallion)*, exhibited by Mr. *Noland*, of *Albemarle*, was a noble specimen of what the heavy draft horse should be, in appearance, power and muscular development. But we must stop speaking of fine horses, to avoid the crime of envying our neighbor's goods, to which we confess we are very prone in regard to this item, and close our remarks by expressing our unfeigned pleasure at the entire success attending our exhibitions for 1859, held at the following places:

Wytheville,	Richmond,
Winchester,	Petersburg,
Lynchburg,	Suffolk,
Fredericksburg,	Norfolk.

We tender our especial thanks to Messrs. *Luther Tucker & Son*, of *Albany, N. Y.*, for a copy of their "Illustrated Annual Register of Rural Affairs" for 1860. With 180 engravings. Price 25 cents.

This little work contains more valuable information for farmers, gardeners and house-keepers than any other publication we have ever had the good fortune to meet with, at anything like the same price. *It ought to be in the possession of everybody.*

Fine Wheat.

At the Exhibition of the Sea-Board Agricultural Society, held in *Norfolk*, we saw a bag of wheat, entered by Mr. *Jesse C. Jacobs*, of *Durant's Neck*, *Pergunimons county, N. C.*, which contained the most beautiful specimen of white wheat we ever looked at.

Mr. *Jacobs*, we are sure, would confer a favor on the farmers generally, by giving a history and description of this grain.

Share's Patent Coulter Harrow.

We were much pleased with the work done by this implement, at the *Central Fair* in *Richmond*, and the *State and Union Fairs* in *Petersburg*. It is endorsed by Messrs. *Luther Tucker & Son*, of the *Country Gentlemen in Albany*, (whose recommendation of any implement is entitled to great confidence;) and it has also been used by Dr. *J. R. Woods*, of (*Ivy Depot*) *Albemarle*; the Messrs. *Boulware* and others, of (*Guiney's*) *Caroline county*. To all of whom it gave perfect satisfaction. We think every farmer ought to have one of these harrows, and are glad to know that they can be procured at all of the agricultural stores in this city, at manufacturer's prices.

"AFFLECK'S SOUTHERN RURAL ALMANAC." By *Thos. Affleck*, *Washington Co., Texas*.

Just received, the list of *Trees, &c.*, grown and sold at the above large Nursery.

We tender thanks to Professor *Johnson*, for a copy of his valuable work on *Peat, Muck and Commercial Manures*, containing the reports made by him as the Chemist to the *Connecticut State Agricultural Society* in 1857-'58.

RO. BUIST, Philadelphia, Pa.

Garden Manual and Almanac, with select lists of the most approved varieties of Vegetables, Fruits and Flowers.

JAS. GUEST, Richmond.

Catalogue of Fruit and Ornamental Trees, Flowers, &c., for sale at his Nursery.

WM. R. PRINCE, Flushing, Long Island.

Catalogue of Foreign and Native Grape Vines, with remarks on their culture.

FRANKLIN DAVIS, Staunton, Va.

Catalogue of Fruit, Shade and Ornamental Trees, for sale at his Nursery.

We return our thanks to the publishers of the above, which have been received.

Hot Feed in Winter.

I have 28 chickens large and small, several of them Fall chickens. I obtained but a few eggs the fore-part of Winter—not more than one or two a day. The feed was corn and oats. In January I tried the experiment of hot feed once a day, in the morning. As soon as the fire was started in the cook-stove, I put a quart or so of small potatoes in an old dripping pan and set them in the oven. After breakfast I took a quart or more of wheat and buck-wheat bran, mixed, put in the swill-pail, and mixed into thin mush with boiling water, then added about 1 quart of live coals from the stove and put in the potatoes hot from the oven, adding all the egg shells on hand, and sometimes a little salt, and sometimes a little sulphur. These mashed together are fed immediately in a trough prepared for the purpose, made about 10 feet long, of 2 boards 6 inches wide, nailed together, and two short pieces nailed on the ends, with a narrow strip nailed lengthwise on the top, and two bearers under. The object of this was to keep the hens out of the trough, and leave room to eat each side of the narrow strip. At noon I fed 6 ears of corn cut up in pieces an inch long; and in the evening oats and wheat screenings about 1 quart. Now for the result. In about a week the number of eggs increased six fold and in about two weeks, and since, they have ranged from 12 to 20 eggs per day. The coldest weather made no difference. When it was cold and stormy I kept them in the hen house all day, and generally until 10 or 12 o'clock. Such singing over the corn at noon I never heard from hens before—a concert of vocal music that would have done any lover of eggs good to hear.—*A. Du Bois in Am. Ag.*

What can be Done with Paper.

A writer in Blackwood's Magazine says it is wonderful to see the thousand useful as well as ornamental purposes to which paper is applicable in the hands of the Japanese. He states that he saw it made into materials so closely resembling Russian and Morocco leather and pig skin, that it was very difficult to detect the difference. With the aid of lacker varnish and skillful painting, paper made excellent trunks, tobacco bags, cigar cases, saddles, telescope cases, the frames of microscopes; and he even saw and used excellent water-proof coats made of simple paper, which did keep out the rain, and were as supple as the best Mackintosh. The Japanese use neither silk nor cotton handkerchiefs, towels nor dusters; paper in their hands serves as an excellent substitute. It is soft, thin, tough, of a pale yellow color, very plentiful, and very cheap. The inner walls of many a Japanese apartment are formed of paper, being nothing more than painted screens; their windows are covered with a fine translucent description of the same material; it enters largely into the manufacture of nearly everything in a Japanese household; and he saw what seemed to be balls of twine, but which were nothing but long shreds of tough paper rolled up. If a shop-keeper had a parcel to tie up, he would take a strip of paper, roll it quickly between his hands, and use it for the purpose: and it was quite as strong as the ordinary string used at home. In short, without paper, all Japan would come to a dead lock; and, indeed lest by the arbitrary exercise of his authority, a tyrannical husband should stop his wife's paper, the sage Japanese mothers-in-law invariably stipulate in the marriage settlement that the bride is to have allowed to her a certain quantity of paper.

Domestic Receipts.

LEMON PIE.—Mix flour and molasses, so that it will just run freely. For each pie, add one drop lemon oil, and you have an excellent pie. Be sure and use the *oil*. Cinnamon is also good.

SCARLET ON WOOLEN.—For two pounds of goods, take two ounces muriate of tin, two ounces cochineal, two ounces cream of tartar. Boil the dye fifteen minutes; then dip in the goods, and air until the color suits. Color in brass or copper.

Make Farm Labour Fashionable.

At the base of the prosperity of any people lies this great principle—*make farm labour fashionable at home*. Educate, instruct, encourage; and offer all the incentives you can offer, to give interest and dignity to labour *at home*. Enlist the heart and intellect of the *family* in the support of a domestic system that will make labour attractive at the homestead. By means of the powerful influences of early home education, endeavour to invest practical labour with an interest that will cheer the heart of each member of the family, and thereby you will give to your household the grace, peace, refinement, and attraction which God designed a *home* should possess.

The truth is, we must *talk* more, *think* more, *work* more, and *act* more, in reference to questions relating to *home*.

The training and improvement of the physical, intellectual, social and moral powers and sentiments of the youth of our country, require something more than the school-house, academy, college and university. The young mind should receive judicious training in the field, in the garden, in the barn, in the workshop, in the parlor, in the kitchen—in a word, around the hearthstone *at home*.

Whatever intellectual attainments your son may have acquired, he is unfit to go forth into society, if he has not had thrown around him the genial and purifying influences of parents, sisters, brothers, and the *man-saving* influences of the family government. The nation must look for virtue, wisdom, and strength, to the education that controls and shapes the home policy of the family circle. There can be no love of country where there is no love of home. Patriotism, true and genuine, the only kind worthy of the name, derives its mighty strength from fountains that gush out around the hearthstone; and those who forget to cherish the household interests, will soon learn to look with indifference upon the interests of their common country.

We must cultivate the roots—not the tops. We must make the *family government*, the school, the farm, the church, the shop, the agricultural fairs, the laboratories of our future greatness. We must educate our sons to be farmers, artisans, architects, engineers, geologists, botanists, chemists—in a word, practical men. Their eyes must be turned from Washington to their States, counties, townships, districts, *homes*. This is true patriotism; and the only patriotism that will perpetually preserve the nation.—*Gov. Wright*.

A little girl asked her sister, "what was chaos, that papa read about?" The other child replied: "Why, it is a great pile of nothing, and no place to put it in!"

Be honest, industrious, and economical, and love your neighbour as yourself.

Cheddar and Parmesan Cheese.

Cheddar cheese is a variety in high repute for its richness, and commands a high price in market. It is made of new milk only, and contains more fat than the egg. It is, indeed, too rich for ordinary consumption. The milk is set with rennet while yet warm, and allowed to stand still about two hours. The whey first taken off is heated and poured back upon the curd, and, after turning off the remainder, that is also heated and poured back in the same manner, where it stands about half an hour. The curd is then put up into the press, and treated very much as the Cheshire up to the time of ripeness.

The Parmesan is an Italian cheese, made of one meal of milk, allowed to stand sixteen hours, to which is added another which has stood eight hours. The cream being taken from both, the skim-milk is heated an hour over a slow fire, and constantly stirred till it reaches about eighty-two degrees, when the rennet is put in, and an hour allowed to form the curd. The curd is thoroughly broken *or cut*, after which a part of the whey is removed, and the curd is then heated nearly up to the boiling point, when a little saffron is added to colour it. It then stands over the fire about half an hour, when it is taken off, and nearly all the rest of the whey removed, cold water being added, till the curd is cool enough to handle. It is then surrounded with a cloth, and, after being partially dried, is put into a hoop, and remains there two days. It is then sprinkled with salt for thirty days in summer, or forty days in winter. One cheese is then laid above another to allow them to take the salt; after which they are scraped and cleaned every day, and rubbed with linseed oil to preserve them from the attacks of insects, and they are ready for sale at the age of six months.—*Flint's Dairy Farming*.

Paddy Describes America.

"Where did baccy come from, Corney?" inquired Mary.

"Why, from Meriky, where else?" he replied—"that sent us the first pitaty. Long life to it for both, say I."

"What sort of a place is that, I wonder?"

"Meriky, is it?—they tell me its mighty sizeable, Moll, darling; I'm told that you might roll England through it, and it would hardly make a dint in the ground. There's fresh water oceans inside of it that you might drown Ireland in, and save Father Matthew a wonderful sight of trouble; and as for Scotland, you might stick it in a corner of one of their forests, and never find it but for the smell of whiskey. If I had only a trifle of money, I'd go and seek my fortin' there."

Educate your children, if you wish them to be useful and happy in life.

Beautiful Extract.

The following beautiful tribute to Woman was written several years ago. It occurs in a tale of touching interest, entitled "The Broken Heart:"

"Oh, the priceless value of the love of a pure woman! Gold cannot purchase a gem so precious! Titles and honors confer upon the heart no such serene happiness. In our darkest moments, when disappointment and ingratitude, with corroding care gather thick around, and even the gaunt form of poverty menaces with his skeleton fingers, it gleams around the soul with an angel's smile. Time cannot mar its brilliancy; distance but strengthens its influence; bolts and bars cannot limit its progress; it follows the prisoner into his dark cell, and sweetens the homely morsel that appeases his hunger, and in the silence of midnight it plays around his heart, and in his dreams he folds to his bosom the form of her who loves on still, though the world has turned coldly from him. The couch made by the hand of the loved one is soft to the weary limbs of the sick sufferer, and the potion administered by the same hand loses half its bitterness. The pillow carefully adjusted by her brings repose to the fevered brain, and her words of kind encouragement revive the sinking spirit. It would almost seem that God, compassionating woman's first great frailty, had planted this jewel in her breast, whose heaven-like influence should cast into forgetfulness man's remembrance of the Fall, by building up in his heart another Eden, where perennial flowers forever bloom, and crystal waters gush from exhaustless fountains."

REMEDY FOR THE BITE OF MAD DOGS.

A Saxon forester, named Gastell, now of the venerable age of 82, unwilling to take to the grave with him a secret of so much importance, has made public in the *Leipsic Journal* the means which he has used for fifty years, and wherewith he affirms he has rescued many human beings and cattle from the fearful death of hydrophobia.—Take immediately warm vinegar or tepid water wash the wound clean there-with, and then dry it; then pour upon the wound a few drops of hydrochloric acid, because mineral acids destroy the poison of the saliva, by which means the latter is neutralized.

Death has nothing terrible in it, but what life has made it.

Number of Seeds in a Bushel.

A Scotch paper gives the following table, said to be based upon actual trials of the number of various kinds of seeds in a bushel. It also adds the weight by which we can judge how the bushel measures compare with ours :

Name.	No of seeds pr lb.	No. of lbs. pr bushel.
Wheat,	10 500	58 to 64
Barley,	15 400	48 to 66
Oats,	20 000	38 to 42
Rye,	23 000	56 to 60
Canary Grass,	54 000	
Buckwheat,	25 000	48 to 50
Turnips, (Rendle's Swede,)	155 000	50 to 56
Turnip, (Cornish Hold-fast,)	239 000	50 to 56
Turnip, (Orange Jelly,)	233 000	50 to 56
Cabbage, (Scotch Drumhead,)	128 000	56
Cabbage, (Drumhead Savoy,)	117 000	50 to 56
Clover, (Red,)	249 600	60
Clover, (White,)	686 400	50 to 56
Rye Grass, (Perennial,)	314 000	20 to 28
Rye Grass, (Italian,)	272 000	13 to 18
Sweet Vernal Grass,	923 200	8

Worth Remembering.

The following were Jefferson's ten rules to be observed in practical life:

- 1st. Never put off till to-morrow, what you can do to-day.
- 2nd. Never trouble others for what you can do yourself.
- 3rd. Never spend your money before you have it.
- 4th. Never buy what you do not want, because it is cheap.
- 5th. Pride costs us more than hunger, thirst and cold.
- 6th. We never repent of having eaten too little.
- 7th. Nothing is troublesome that we do willingly.
- 8th. How much pains have those evils cost us, which have never happened.
- 9th. Take things always by their smooth handle.
- 10th. When angry count ten before you speak, if very angry, a hundred.



To My Mother.

WRITTEN BY MISS DAVIDSON, IN HER SIXTEENTH YEAR.

O, thou whose care sustained my infant years,
 And taught my prattling lip each note of love;
 Whose soothing voice breathed comfort to my fears,
 And round my brow Hope's brightest garland wove:

To thee my lay is due, the simple song,
 Which Nature gave me, at life's opening day;
 To thee these rude, these untaught strains belong,
 Whose heart indulgent will not spurn my lay.

O say, amid this wilderness of life,
 What bosom would have throbb'd like thine for me?
 Who would have smiled responsive?—who, in grief,
 Would e'er have felt, and, feeling, grieved like thee?

Who would have guarded, with a falcon-eye,
 Each trembling foot-step, or each sport of fear?
 Who would have marked my bosom bounding high,
 And clasped me to her heart, with love's bright tear?

Who would have hung around my sleepless couch,
 And fanned, with anxious hand, my burning brow?
 Who would have fondly pressed my fevered lip,
 In all the agony of love and woe?

None but a mother—none but one like thee,
 Whose bloom has faded in the midnight watch,
 Whose eye, for me, has lost its witchery,
 Whose form has felt disease's mildew touch.

Yes, thou hast lighted me to health and life,
 By the bright lustre of thy youthful bloom—
 Yes, thou hast wept so oft o'er every grief,
 That woe hath traced thy brow with marks of gloom.

O then, to thee, this rude and simple song,
 Which breathes of thankfulness and love for thee:
 To thee, my mother, shall this lay belong,
 Whose life is spent in toil and care for me.

Be Kind to Each Other.

Oh, be kind to each other!
 For little ye know
 How soon ye may weep
 The sad tears of woe,
 For a brother, or sister, or friend loved and dear,
 Reposing in stillness on death's sable bier.

Be kind to each other!
 For little ye know
 How soon ye may weep
 O'er a desolate home,
 Or yearn for the forms that have passed away
 To dwell in the light of a happier day.

Be kind to each other!
 And strive, day by day,
 To render some kindness
 To soften life's way;
 And remember that friends the last ones should be
 To sneer at the faults in each other they see.

Be kind to each other!
 For short is life's span:
 We must crowd in its compass
 All the good acts we can.
 Each hour should recall, as it passes away,
 Some being made glad by love's kindly sway.

The Heart.

The heart—the heart! oh, let it be
 A true and beautiful thing—
 As kindly warm, as nobly free,
 As eagle's nestling wing.
 Oh! keep it not like miser's gold,
 Shut up from all beside;
 But let its precious stores unfold
 In mercy far and wide.
 The heart—the heart that's truly blest,
 Is never all its own;
 No ray of glory lights the breast
 That beats for self alone.

The heart—the heart! oh, let it spare
 A sigh for others' pain;
 The breath that soothes a brother's care,
 Is never spent in vain.
 And though it throbs at gentlest touch,
 Or sorrow's faintest call,
 'Twere better it should ache too much
 Than never ache at all.
 The heart—the heart that's truly blest,
 Is never all its own;
 No ray of glory lights the breast
 That beats for self alone.

INDEX.

A.	PAGE		PAGE
Agriculture, English	1-369	Crops, Rotation of	345
Agricultural Society, Virginia State	18	Childhood	384
Agriculture, Amer'n Statistical View	321-401	Currency Terms	80
Agriculture as a Profession	369	Cider, How to improve	96
Agriculture, Board of	184	Clover, Cultivation of	98
Advice, Good, to a farmer	201	Cutworm, The	111
An April Day	256	Cisterns, To measure contents of	127
All's for the best	256	Champagne Wines	165
Apple Trees, Pruning	275	Cotton Trade of England	172
Adorn	396	Cotton Manufactures of Gr. Britain	173
Agricultural Science	422-504-632	Corn, Peabody	183
Air, Water and Light	427	Corn, Fish as manure for	184
Apples	430-576	Cattle, Short Horn	187
Ammonia, Sulphate	538	Cements	101-563
Ashes,	544	Cows, Selection of	202
Ague and Fever,	546	Curiosities of Commerce	235
Atmospheric Dryer,	576	Calves, Rearing on	236
Agricultural community, important to	585	China, How to mend	237
American Crops, Causes of diminution in	605	Camel, The Nature, &c.	238
Air, Supply of to Plant Roots	638	Cottage Homes	249
Ashes Leached, Value of	641	Corn. Essay on the Cultivation on Clay	
Agriculture, Importance of	677	Soils, &c.	257
Agricultural Science, on Some Points in	756	Composition Roofing	270
Agricultural Fairs	774	Compost, Use of	302
America, Paddy Describes	778	Corn Experiment	316
B.		Child of James Melville	320
Benevolence	48	Coffee and Sugar Plantations of Cuba	416
Butter, Rules for making	367	Country and City Life	419
Breadstuffs	375	Clay Soils, Reclaiming	444
Bearing Rein, Evil influence of	76	Colt Club of Upperville	477
Blasting Stumps,	127	Carrats, Fine	576
Body and Brain	154	Cent, The Old Red	578
Beef, Mutton and Bread	159	Coffee, Cost and Culture	579
Big Head, Cure for	202-233	Cotton in England	583
Better late than never	320	Cattle, Galloway	592
Bones, &c., Effect of on Plants	426	Cellar for Farm House	593
Betsy Baker's Bonnet	584	Cotton	634-705
Box Edging	585	Charcoal, Use of	635
Barns and Shelter for Stock	609	Cheap and Valuable Paint	636
Bone Manure	640	Cattle Yards, Subdivide	639
Bedfordshire Farmer	679	Corn, To Cook sweet	639
Birds are worth their keeping	691	Coffee, How to make	642
Bone Dust, Value of	720	Candy, Molasses	642
Beefsteak, To Cook	744	Coolings	676
Butter, How to make	763	Crow, The	700
Beautiful Extract,	779	Cows, How to Keep	707
C.		Cross Breeding of Cattle	708
Cows, Peculiarities of four	51	Calves, Rearing	710
Counsels to the Young	63	Chickens, How to fatten	711
		Chinese Potatoe Culture	719

	PAGE		PAGE
Cattle in Autumn, Shelter for	773	Farming by Steam	749
Coulter Harrow, Share's Patent	776	Fruit Garden	755
Cheese, Cheddar and Parmesan,	778	Forcing	762
D.		Fertility in Soils, Sources of	776
Dairy Salt	367	Farmers—Take a Hint	769
Ditching and Manuring	73	Feed, Grinding	773
Drainage	103-217-711	Fairs at Richmond, Petersburg and Norfolk, The	775
Devil, The Printers	168		
Dairy, The	291	G.	
Decoration for Horses	314	Guano Controversy	12-133-266-385
Domestic Receipts	317	Guano Experiments	46-47-97-343
Ditching, Hillside	399	Gearing Teams, Proper	61
Drought, Benefit of	577	Gentle Words	64
Dairies and Bone Manure	657	Grape Vine, Summer Management of	349
Draining Farm Lands	675	Gooseberry, The	102
E.		Gypsum	170-579
Experiments with Peruvian and Columbian Guano	46	Give, (Poetry),	192
Ewes, Silesian	49	Green Food for Work Horses	251
Education, Scientific in Europe, (Col. Smith's Report)	353	Guano, Sombrero, Experiments	301
Education	383	Gardening, Ornamental	302
Eyes, Abused	102	Guano, Use of	305
Evergreens, Transplanting Forest	106	Gravel Wall Houses	429
Eagle, Golden	156	Grazing	489
Earth and its Herbs	177	Galloway Cattle	592
Economical Hints	253	Geology, Agricultural	616
Eggs, Sex of	387	Galls and Wounds on Horses	630
Enlarging a Farm without buying Land	425	Garget, To Cure	641
Enterprise and Obstacles	428	Gold and Silver	674
Education and Discipline of Young Farmer	460	Grape Vine, To Shield in Winter	721
Editorial Life	698	H.	
Eloquent Extract	708	Happy New Year	57
Elements, Four Organic	714	Horticulture	351
F.		Honey, French, To make	383
Farmers, Virginia Compliment to	62	Human Grief	384
Fruit Drying, Plan of House for	346	Hair, Human, as an article of trade	107
Frog Showers	273-377	Horse, The	180-199-206-224-437-582
Fruit Trees	378	Houses, Cord Wood	190
Fodder, Sorghum a substitute for	65	Havanna, The Trade, &c.	191
Fattening Animals	77	Hollow Horn	224
Farm Yard Manure	135	Home Embellishment	248
Farmers, A Hint to	145	Home Cottage	249
Fruit Growing, Capabilities of the South for	195	Horses, Handling while being shod	271
Farmer's Motto	204	Horses, Fast, Agriculturally Considered	271
Farming, Chief aim in	222	Hot Beds	274
Farmers, Hints to	290	Horizontal Culture, By whom originated	299
Fruit Growing	302	Hair of Children	395
Food, Increased Cost of	413	Houses, Gravel Wall	429
Farmer's Story	578	Hats, Ventilating	471
Fertilizers, Experience in the use of	614	House Keepers, Items for	499
Facts in Agriculture	632	Homes, Pleasant	581
Fodder, A valuable discovery	641	Hydrophobia, Cure for	585
Fruit and Fruit Trees	641	Hungarian Grass	590
Fruit, To Preserve	642	Horses, How to keep fat	642
Feeding, English	672	Hog, Points of a good	720
Fowls, How to make them lay	692	Horse-Shoe must be Beveled on the Ground Surface	770
Farm, A Profitable	707	Hot Feed in Winter	777
Farming, High	715	I.	
Fruit Trees, Planting, &c., in Virginia	744	Ice, Gathering	97
		Ice Trade	158
		Industry	207
		Imperial Stables of France, The	208
		Information, Useful	513

	PAGE		PAGE
Salutations of different nations	156	Tobacco, Salt prevents "Firing,"	672
Sows, Why destroy their young	205	Table, A useful	705
Sub Soil Plowing, Effects of	259	Trade, Foreign	706
Song, Cottage	320		
Silk Mill, The first	397	U.	
Seed Saving	424	Under Drains	112-159
Stock Breeding	437-652	University of Virginia	308
Sub Soil Plowing	446	V.	
Slaves, Effects of high prices of		Vegetable and Truck Trade of Norfolk	108
Straw Paper	479	Vegetable Physiology, Reflections on	109-595
Salt for Cattle	481	Visions of Childhood	128
Straw, Waste of and Worth	486	Vegetable Matter, Sources of	225
Soil, Improvement of	488	Valley, The, of the Rappahannock	306
Summer Grazing	489	Value of Science to Farmers	578
Sounding Shells	491	Virginia, The two great evils of	643-664
Soda, Potash, &c.	506	Virginia Husbandry, Bane of	659
Sanitary Precautions	580	W.	
Stock Barns and Shelters	609	Wealth, The way to	6
Sheep, Winter Management of	637	Water-proof Clothing for Negroes	56
Sweet Potatoes, To secure	652	White Wash for Fences	383
Sheep Husbandry in the West	653	Why so few succeed	101
Science, Beneficial influence of true	687	Wonderful power of fuel	101
Scientific	688	Walking as an Exercise	157
Stock	718	Wanted, A young man of industry	169
Slavery and Free Labor Defined and Com- pared.	723	Wool Trade	172
Scientific Agriculture, Progress of	760	Wishes	192
Soil	765	Wash Boards	198
Superphosphates, Prof. Mapes'	767	Why Sows destroy their young	205
Sealing-Wax for Fruit Cans	773	Why Use Cut Food	200
Seeds in a Bushel, Number of	779	Warts, Cure for	216
T.		Waiting	256
Turnip Drill, The Poor Man's	341	White Wash Brilliant Stucco	274
Terra-Culture	342	Wife, A Perfect	318
Tobacco 71-78-115-129-373-381-146-253-264-482	482	What the Earth gives us	318
Trees, Advantages of	102	War in Europe,	433
Transplanting Forest Evergreens	106	Wheat Culture	539
Tobacco Land, Proper time for preparing	148-604	Woman in the Garden	580
Tobacco Seed, Mode of Sowing	149	Windows Managing for Air	584
Tobacco, Guano Applied to	149	Wheat Crop, Preparation for	586
Thistles, Extirpation of from Grass land	443	Wonders, List of	633
Timber, Means of Preserving	479	Wife, The, Who found good in everything	688
Transplanting, Philosophy of	484	Wool, To test the quality of	709
Tobacco, To Cure Yellow	492	Wheat, On the Culture of, The Necessi- ty of Phosphates	741
Tobacco Culture	503-504-581	Washington, General, The Model Farmer	747
Teeth, Advice about	545	Wheat, Fine	776
		Worth Remembering,	779

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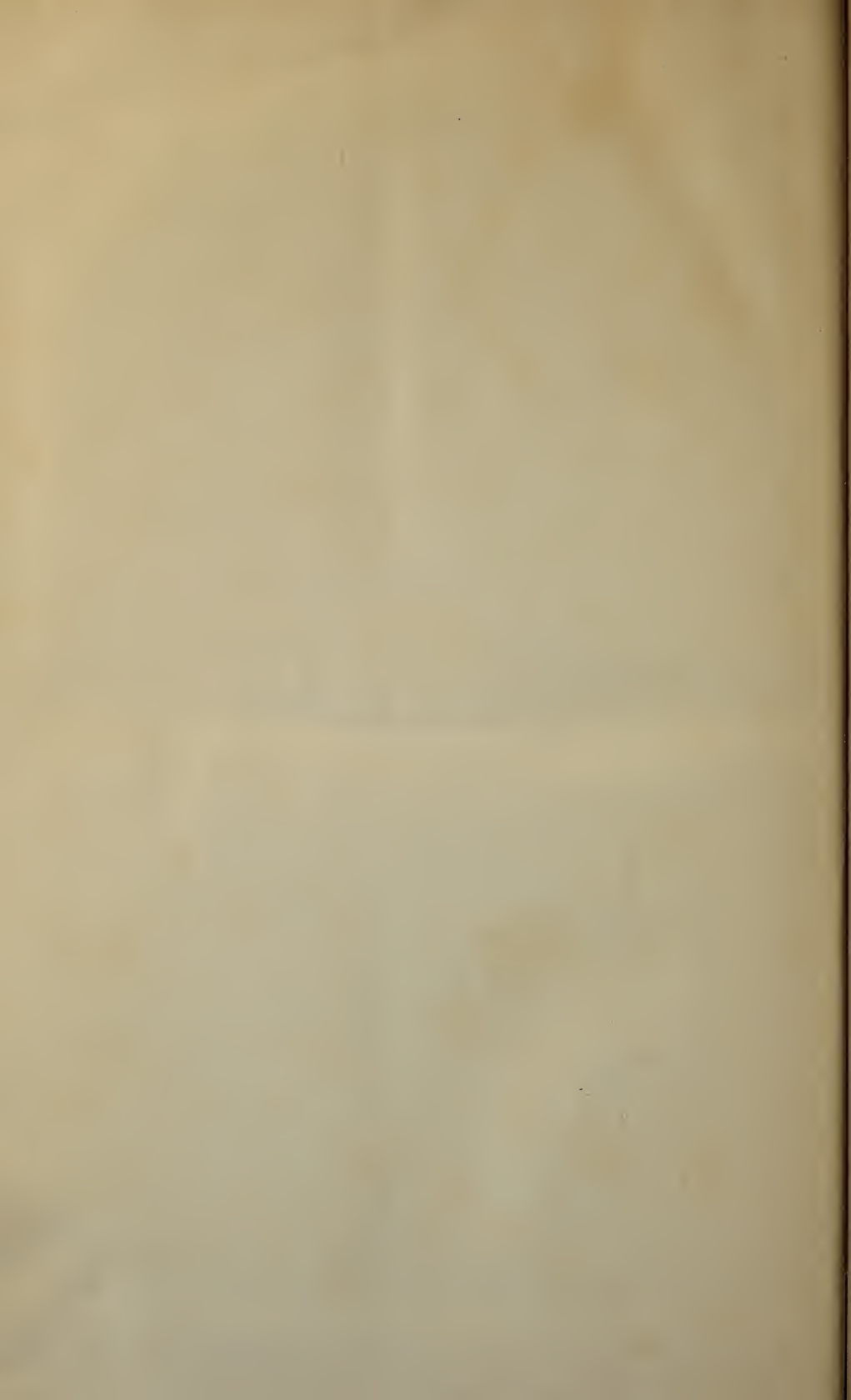
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