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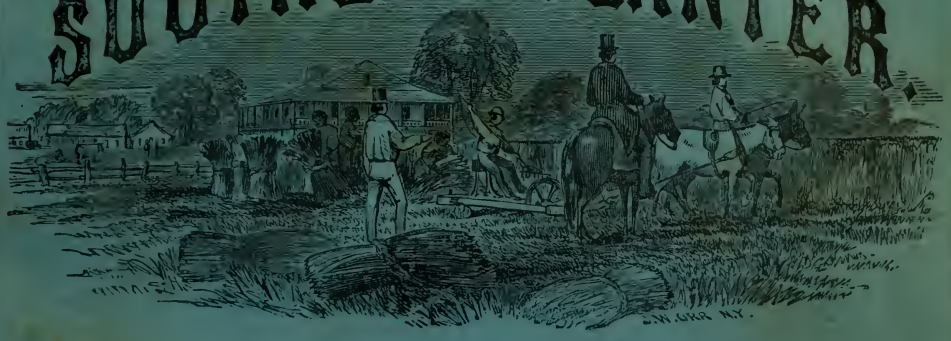
J. E. WILLIAMS, EDITOR.

THE SOUTHERN PLANTER



DEVOTED TO

AGRICULTURE, HORTICULTURE,

AND THE

HOUSEHOLD ARTS.

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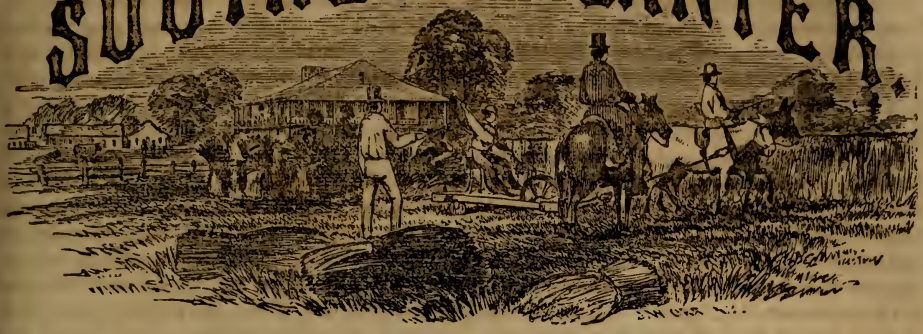

Devoted to Agriculture, Horticulture, and the Household Arts.

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., AUGUST, 1859. No. 8.

From the British Farmer's Magazine.

London, or Central Farmers' Club.

THE PROGRESS OF AGRICULTURE.

The usual Monthly Meeting of the Members took place on Monday evening, April 4, at the Club-house, Blackfriars.

The subject for discussion—"The Progress of Agriculture," was introduced by Mr. R. Smith, of Emmett's Grange, South Moulton, Devon.

After a few introductory remarks from the Chairman, (Mr. Thomas, of Bletsoe,)

Mr. SMITH said: Gentlemen,—When we speak of "the progress of agriculture," I feel that every link in the chain of agricultural events forms a theme in itself, alike expressive of the progress which the "art," the "manufacture," and the "commerce" of agriculture have made during many past centuries, and down to the present time. Indeed, the subject grows upon me, when I reflect that our island was once a "common waste," and that the industry of man has redeemed it from century to century as population increased. Thus agriculture has been fostered from the earliest dates, and we live in a century in which the art has made a degree of progress hitherto unprecedented. * * * * The progress of British agriculture has long been a leading subject in the history of our island, and has been dilated upon alike by the historian, the politician, and the poet. It is common ground for every citizen; it is a nation's question, involving the supply of food for an increasing population upon a given space of land—an island. Indeed, the first want of man is food, and his natural resource for it must be the ground. Hence the tillers of the soil share no small responsibility in the general weal of our national progress. Agriculture is the parent of manufactures and commerce; hence it is not only the most useful of arts, but that which requires the greatest number of operators. The early invention of tillage would be coeval with the discovery of the uses of the cereal grasses, and may thus be considered as the grand step in the invention of ancient husbandry, and the most important as leading to the establishment of property in territorial surface. The early practice of agriculture was confined to men of humble station, who pursued it as a matter of business for daily livelihood. In the last century the occupation became more extended, and it has been engaged in by men of rank and capital, together with some other amateur practitioners, as a matter of taste and recreation. It is both curious and interesting to refer to some early writers upon agricultu-

ral affairs, who, be it remembered, lived in the days of seclusion; but nevertheless they had their wits about them. In the time of the Romans, we find Cato recommending a farm and situation "where there are plenty of artificers and good water; which has a fortified town in its neighbourhood; is near to the sea, or a navigable river, or where the roads are easy and good." To these requisites Varro adds—"a proper market for buying and selling; security from thieves and robbers; and boundaries planted with useful hedgerow-trees." The arable land preferred by Columella is the "fat and free, as producing the greatest crops and requiring the least culture." Again: the occupation preferred by Cato is that of "pasture, meadow, and watered grass-land, as yielding produce at least expense." When speaking of plantations and buildings, Cato recommends men "to plant in their youth but not to build till somewhat advanced in years." Another author says—"Take care in the making of your buildings that they are equal to the farm, and the farm equal to the buildings." On the arrival of the Anglo-Saxons, this island, according to Fleury's history, abounded in numerous flocks and herds, which these conquerors seized and pastured for their own use. The rent of land in those times was established by law, and not by the owners of the land! Very little is known of the implements or operators of husbandry during that period. In the thirteenth and fourteenth centuries agriculture rallied to a considerable extent, and was carried on with vigour. Sir John Fortescue, in a work in praise of the English laws, mentions the progress that had been made in the enclosure of lands, the planting of hedges and hedge-row trees, before the end of the fourteenth century. During the greater part of the fifteenth century England was engaged in civil wars, and agriculture, as well as other arts, declined. Soon after the beginning of the sixteenth century agriculture partook of the general improvement which followed the art of printing, the revival of literature, and the more settled authority of Government. The first English treatise on husbandry now appeared, being written by Sir A. Fitzherbert; and it contains directions for draining, clearing, and enclosing a farm. Landlords are therein advised to grant leases to farmers who will surround their farms by hedges and improve the lands. We have then a short information "for a yonge gentylman that intends to thryve;" and a prologue for the wives' occupation. Among other things, the wife is to "make her husband and herself some clothes; and she may have the "lockes of the shepe, either to make blanketts and coverlettes, or both." Further, it is recorded that "it is the wives' occupation to wynowe all manner of cornes, to make malt, to go or ride to market, to sell all manner of cornes," and faithfully to bring back the money to her "lord and master." The seventeenth century is distinguished by some important improvements in agriculture, among which are the introdution of clovers and turnips in England. That the agriculture and general prosperity of this country have been greatly benefited by the Revolution of 1688, is an undisputed fact. But the general progress of agriculture in Britain, from the Revolution to the eighteenth century, was by no means so considerable as from the great exportation of corn we should be led to imagine. The gradual advance in the price of land-produce soon after the year 1760, occasioned by the increase of population, and of wealth derived from manufactures and commerce, gave a powerful stimulus to rural industry, augmented agricultural capital in a greater degree, and called forth a more skilful and enterprisng race of cultivators. A brief glance at a few of the early practices, before the eighteenth century, may be interesting, and possibly useful, as showing that, even in early times, many good principles were laid down by the husbandman of old. The modern rush for "things new" certainly creates a lively interest, and leads men on to enterprises that their forefathers thought not of; but have we not unfrequently estimated too lightly ancient practices, and especially those that relate to provincial warnings? Amongst the earliest subjects that claimed attention may be mentioned those of draining, irrigation, the effect of climate, the trying of experiments, and so on. With regard to draining, I find, on referring to some old authors, that in the time of the Romans, Cato gives directions for draining wet-bottomed sands: "To make drains four feet deep; to lay them with stones; and if these cannot be got, to lay them with willow rods." Columella directs "that the drains be deep, and narrow at the bottom." Pliny says that "flint or stones may be used to form the waterway, filling the excavation to within eighteen

inches of the top." Of irrigation, Cato says, "as much as in your power, make water-meadows." Of climate, an early author writes: "Whoever would be perfect in this science, must be well acquainted with soils and plants; and must not be ignorant of the various climates, that so he may know what is agreeable, and what is repugnant, to each." Varro writes: "The ancient husbandmen, by making experiments, have established many maxims; their posterity, for the most part, imitate them." This saying is referred to by Pliny, who says that "there were sent to Augustus, by his factor, nearly 400 stalks, all from one grain; and to Nero 340 stalks." He says: "I have seen the soil of this field, which, when dry, the stoutest oxen cannot plough; after rain, I have seen it opened up by a share, drawn by a wretched ass on the one side and an old woman on the other." Among the leading features of practical agriculture during the eighteenth century, we may enumerate the gradual introduction of a better system of cropping, since the publication of "Tull's Husbandry," and other useful works from 1700 to 1750; the improvement of live-stock, by Bakewell and others, about 1760; the drill-system of growing turnips; the use of lime and marl in agriculture; the tapping of springs; the revival of the art of irrigation, by Boswell; and the publication of the Bath Agricultural Society's papers, in 1780. The introduction of the Swedish turnip, about 1790; and of spring wheat, about 1795; and the reports of the Board of Agriculture about this time, also contribute to increase the products of agriculture—as the enclosing of common fields, lands, and wastes, and the improvement of mosses and marshes contributed to the produce and salubrity of the general surface of the country. The progress of the taste for agriculture about this time is shown by the great number of agricultural societies that were formed; one or more as a beginning in almost every county. Amongst these the Bath and West of England Society, established in 1777, holds the first rank. We are indebted to this society for the "Bath Papers," of which sixteen volumes were printed; they were the first agricultural periodicals of England, and were the precursors of the "Journal of the Royal Agricultural Society." The establishment of the Board of Agriculture, in 1793, was looked forward to with considerable interest, and ought to have commenced a new era in the history of the agriculture and rural economy of England at that date; but the country was evidently not prepared for so bold and comprehensive an undertaking, and it consequently effected little beyond the publication of the "County Surveys;" still it may be said to have raised the "art of agriculture" amongst the higher classes. This brief, and yet I fear too lengthened, sketch of the early ages, brings us down to the 19th century. The more modern improvements date from this period; still it had been the early province of such men as Jethro Tull, Arthur Young, Marshall, Sir John Sinclair, Lord Somerville, the late Duke of Bedford, Mr. Coke, Sir Humphrey Davy, Bakewell, Loudon, Cully, Cline, Collins, Blakie, Parkinson, and others, to enlighten the path of agriculture before the nineteenth century. These and other good men, true patrons of the art, laid down principles which have rarely been excelled by the modern improver. A field of enterprise was now opened up, and "men of many grades" became interested in the more popular occupation of cultivating and enclosing the broad acres of our island, which had so long required this stimulus. The late Lord Leicester and the late Duke of Bedford did much towards making agriculture a popular pursuit. This was accomplished by their festive gatherings at the Holkham and Woburn meetings. These animated and descriptive gatherings went far to enlighten the many visitors who assembled from distant counties. These, on returning home, propounded the advances that had been made, which ultimately resulted in the establishment of local societies for the exhibition of native produce, and the discussion of their future prospects. Then followed the suggestion that a National Society should be formed, for the collection and display of the English breeds of live-stock in a prepared state for the shambles of the metropolitan purveyors. The resources of our English breeds of fat stock had not hitherto been developed; and it was suggested that such a gathering of business men and breeders at a national exhibition in London must be productive of good, and gradually lead to the diffusion of improved ideas amongst the general body of breeders and agriculturists. Then followed the establishment of the Smithfield Club, in 1798—about sixty years ago. To show the early popularity of this new society, I may

mention that in 1800, his Majesty George III. was an exhibitor. In 1806 the Duke of York gained a prize, and of late years the Prince Consort has obtained many prizes with Devon cattle. Experiments in the qualities of vegetable food were instituted, and an exhibition of rude implements now formed an adjunct to the Club's display of fat animals. To this successful institution, English agriculture has been mainly indebted. It promoted the gathering of influential men, breeders of live-stock and others, who were eminent for their literary attainments; the one finding practical matter, and the other diffusing it to an advancing class of men; for the sons of agriculture had made a start. It is to this institution that we stand indebted for the parentage of the Royal Agricultural Society. The enrolment of this Society was first mooted at the Smithfield Club Dinner, on the 11th of December, 1837. In this the late President of the Club (Earl Spencer), the late Henry Handley, the late William Shaw (Editor of the *Mark Lane Express*), and the present President, His Grace the Duke of Richmond, took the most prominent part. This society has now held its twentieth anniversary for the exhibition of our English breeds of live stock, has collected and tested thousands of implements, has published about forty journals of English agriculture; and not only has it collected information, but it has been the source from which practical and scientific knowledge has been disseminated by every channel, through the length and breadth of the English counties. From the formation of this justly national society, English agriculture derives its modern type. Before this period of our history, who ever heard of a steam threshing machine, a reaping machine, or a steam plough? How many parts of England had never seen specimens of our established herds and flocks? What breeders anticipated a foreign trade for their produce? Who had manured his lands with portable manures from a guano bag, the produce of foreign birds? Who had thought of reducing a hard, bony substance to a soluble food for the immediate use of the root crops? or, lastly, who had anticipated the publication of such an agricultural work as the Journal of this society? These are results, of which we as Englishmen have a right to be proud. But in the field of our progress we have had another hand-maid at work for us —I mean the press and agricultural literature of the present day. Such men as the late Philip Pusey, Wm. Shaw, Loudon, Sir John Sebright, Bayldon, Youatt, Young, Marshall, did good service in this department. Amongst the other names familiar to our ear are those of Professor Liebig, Way, Nesbit, Voelcker, Lawes, Gilbert, Thos. Dyke Acland, Thompson, Johnson, Morton, &c. In former ages but few books were written upon agricultural subjects. The first "Farmer's Journal" was published in 1808. This old and methodical paper, assisted by occasional agricultural pamphlets, formed the agricultural press and literature of the age. Such was the drug in the reading market, the distaste for new inroads, and the aversion to theorists, that this one journal had but a limited circulation. Moreover, owing to the state of the roads in those days, and the lack of post-office facilities, it is doubtful if the farmer always obtained the journal when he expected it. I will not enumerate the periodicals and newspapers which are now circulated amongst the agricultural community, except by way of illustration. I would ask who in this room would now relinquish his paper? Who, indeed, could keep pace with the progress of agriculture without the "Mark-lane Express," "Bell's Weekly Messenger," and other journals now directly devoted to the cause of agriculture? What member would now yield to the suppression of this club's monthly reports? On the contrary, are they not treasured up as records of passing events? These are gratifying results; but how have they been brought about? True it is that the Smithfield Club and the Royal Agricultural Society have been mainly instrumental in the development of the art of agriculture; but what could practically have been done without the aid of steam and railways? Steam and railways have conveyed our specimens of live stock and implements, our exhibitors, and also the inquiring public, to the national gatherings: they have conveyed our corn to market, and brought back portable manures: they have deposited our supplies of fat cattle and sheep at the best markets, free from loss of weight, and have brought in return ready cash within a few hours. This is a mighty change from the old and dreary time, when animals walked slowly to market, wasting the food of the consumer and the profit of the grazier. These new aids shorten the space of time required for certain operations, produce certainty of

of transit, and thus not only increase the food of the people, but materially aid in equalizing supplies and prices. In fact, if far removed from railways, we may be said to be deprived of the chief facility for our onward course; for they are daily spreading the intercourse between mind and mind, and are creating new markets and new demands for knowledge. With a view to illustration, if indeed it be wanting, I may mention the occasion of this evening's gathering. I have myself travelled 230 miles by railway to be present at this meeting. How many miles have the members of the club collectively travelled within a few hours? Even the thought of old "coaching days" makes one shiver. It may be interesting to mark the important progress in agricultural mechanics as another branch of industry, called forth by, and ministering to progress in agriculture. In the time of the Romans, Pliny tells us, "the corn being spread over the area of a threshing floor (a circular space of from forty to fifty feet in diameter) in the open air, a foot or two thick, it was threshed or beaten out by the hoofs of cattle or horses driven round it, or by dragging a machine over it." Again, we are told by the same authority, "corn was cleansed or winnowed by throwing it from one part of the floor to the other." This ancient picture presents a marked contrast to our present practices of threshing, dressing, and sacking corn at one operation, and leaving it in a fit state for market. Indeed, it is to steam power that we are so much indebted for the magical progress that has been made; and it is to steam power that we have yet to look for a much further development of the art of agriculture. Mr. Mechi has happily chosen this subject for a paper to be read at our next meeting, and I will not anticipate his remarks, which will no doubt be very interesting. In the early part of the present century, English agriculture had warm and justly-eminent patrons, and none more eminent or patriotic than the cultivators of our established breeds of live stock. It is to such men as the late Earl Spencer, Lord Ducie, Bakewell, Quartly, Stubbins, Bennett, Buckley, Burgess, Ellman, Chapman, Price, Booth, Whittaker, and others, that we are indebted for the production of our best breeds of live stock. With a view to show how great is our debt of gratitude to these men, I may observe that our beautiful breeds of cattle, sheep, and horses, have alike been cultivated from indigenous animals. If we examine the history of the sheep, we shall find that he has ever been an inhabitant of every clime, from Iceland to the regions of the torrid zone. Our English breeds were chiefly of a horned class; for instance, the Dorset, Exmoor, Norfolk, Yorkshire, Wiltshire, Shropshire, Welsh, Scotch white face, and Scotch black face, all had horns. Several of these breeds, which inhabit the yet uncultivated wastes, still remain, and are designated "horned sheep." I have said that Britain, in the earliest periods of her history, resembled all other countries under similar circumstances. There was nothing but bleak hills, undrained plains, and wild commons; but in the course of time, desolation gave way to husbandry, and with it came a corresponding improvement in our breeds of live stock. Thus it is that the old and unprofitable animals have given way or been transformed into the established breeds of the present day. We have had as an element those beautiful principles, which are laid down by Nature's laws, of the animal and vegetable kingdom to instruct us. These embrace a standard which man cannot alter; neither can he understand the object, without great scientific research and practical observation of the varied elements which compose the whole. It devolves, therefore, upon the husbandman to watch the laws of Nature, and to found his plans upon Nsture's dictates. The principles of these laws, worked out by proper rules, govern and direct the successful practice of the art of agriculture. I may best illustrate these remarks by mentioning a few of the principles recognized in our practice. First, there is the maxim that it is to the principle of steam that we must look for deep cultivation. Warmth is one of Nature's laws: hence "the principle of warmth" is good: "warmth is an equivalent to food." Animals consume or burn away carbon in their lungs, and waste heat. Vegetables store up the means of warmth. But every vegetable requires its own particular mineral food; and if this be deficient, the plant sickens. Vegetables also need fresh air: they imbibe food by their leaves. Each vegetable has its own "heat mark," below which it stands still. The drier the soil in winter, the warmer. A rough surface causes heat to radiate, and therefore keeps down temperature; therefore moisture is retained in summer by

roughening the surface of the land. And in mechanics there are certain laws as to the balance of action and reaction; as the relation between power used and space travelled over and time consumed, the connection between speed and resistance or friction; from which laws there is no escape. We may sum up thus: Our Creator has given us nature to subdue. In the struggle with nature we learn our strength and our weakness. We find our strength increased by every effort; but the further we advance the more certainly do we know that there is something which cannot be done. In a word: the first condition for mastering nature in detail is to understand her general laws, and to submit to them. These laws then become living principles of science, and bear fruit in consistent practice. Formerly the handicraft of the husbandman was looked upon as the standard of success, without which he could not be classed as a "practical man." If he ventured to read or to act upon new designs, he was at once branded with the stigma of a doomed man. This state of things reminds me of an anecdote. A certain farmer, in the good old days, decided upon giving up his farm to the elder son. To effect this it was thought best to see "The Lord" in person. Accordingly "father and son" set out for the "Hall." Then came the familiar story—

"The soil I now hold, on your honour's estate,
Is the same that my grandfathers tilled."

This over, it was found a good opportunity for reviewing the farm. The dialogue ran thus: "You see, my Lord, we have all ploughed the 'Barn Close' for years, until 'tis tired out, worn out, and grassed o'er. We have been thinking, my Lord, that as we have all mowed the 'top Woodfield' for years and years, and it grows nothing but weeds, your Lordship would let this ere boy of mine change the system a bit, so as to let the 'Barn Close' lay down, now it has grassed o'er, and plough up the 'top Woodfield' that won't grow grass." His Lordship, not quite seeing the drift of the argument, summoned his agent from "Chambers" to the country, who proceeded to view the fields; subsequently agreeing that as the fields represented the story told, and the good old man could have no interest in placing his son in a false position, the change should be allowed. Tne ride was prolonged and all went well until the London agent dived into matters "purely agricultural," by remonstrating with the son as to his not taking "two white crops" in succession, saying this he could not allow. The old boy at once came to the rescue, and quaintly replied, "Quite right, your honour, quite right; there's nothing like a change. It has always been our custom to sow wheat, and then black oats between it and the barley; and I wish the boy to do the same." Whereupon the agent apologized, and agreed that the black oat crop between was an excellent thought, and evidently constituted what he had heard so much about, viz., "the alternate husbandry!" (laughter). Such was the state of things when the "handicraft" of the husbandman was looked upon as the only standard of success. Happily for the increasing population of the present day, this handicraft state of things is passing away, and we have in exchange not only the modern practices of the art, but the free discussion of all subjects which relate to the "progress of agriculture." More especially is this the case at the Central Farmers' Club. In reviewing this auxiliary I feel bound to give praise where praise is due. The happy formation of this Club on the 28th June, 1843, at once announced a new era in the annals of our agriculture, inasmuch as our very excellent and intelligent friend, Mr. Baker, of Writtle, was invited at the outset to introduce the subject of "Artificial Manures," for the free discussion of the members. Since that period this interesting topic has been discussed ten different times, and there have been up to this date no less than one hundred and ten subjects discussed by the members, each of them relating to agriculture. The question of "Tenant Right" has been before the members ten times. The agricultural labourer and his education seven times; and draining and root crops five times each. The important subjects of geology, diseases of cattle, agricultural statistics, agricultural machinery, waste lands, food of cattle, farm leases, sewage manures, the breaking-up of grass land, carts and waggons, deep cultivation, the influence of science, the rotation of crops, weights and measures, allotment system, and the education of the farmer's son, have also shared the attention of the Club. This is a result which may be written upon the broad pages of our history, in the book of agricultural progress. Well may it be asked, "What should we now do

without this Club?" What would the five hundred members think if their Bridge-street sessions were terminated, and the Club disbanded? Let us rejoice that "union is strength;" let each contribute to the cause by introducing new members—only one—and our strength will be increased twofold. I have noticed that this Club has now discussed some hundred and ten subjects relating to English agriculture, none of which have convinced me so much of our growing position as the one recently introduced by Mr. Bond, upon education. That gentleman has well reminded us of the necessity of keeping pace with the times; and that it is to man's mental powers that we have to look for the future advancement of agriculture. The sons of agriculture must have an improved education, an education that will now grapple with advancing science. Formerly the mere routine practices of the year were sufficient to make a farmer's son a "practical man," and the country schoolmaster was an ample teacher for the age. But now, thanks to advanced education and scientific men, we live in an age of progress, and have yet a new era before us. And if this be a truism, then I may ask, who shall hold his own without steadily embracing the improved facilities for education that are daily being opened up? The great point to be kept in view in the farmer's education is not to cram knowledge into the boy's head, but how to give him a good strong head; and I must add also, how to keep his heart warm. It is true that a great deal of scientific knowledge is required for a perfect theory of agriculture. But is it necessary for perfect practice? Is scientific training in early years the best means of preparing the man for the exercise of sound judgment? A perfect mastery of our own noble language is essential to express our own ideas clearly, and to understand those of others. It is generally understood that the best way to acquire a knowledge of our mother-tongue is to learn another language, ancient or modern. The great principles of mathematical knowledge lie at the root of all sound mechanics, and prepare the mind for accurate calculation, for winnowing out the real point at issue, and blowing away the chaff. I have it on the authority of a schoolmaster, whose success in recent examinations is well known, that such an education as I have referred to is appreciated by no class more decidedly than by the leading yeomanry. I may also call the attention of this Club to the fact that one of the first steps towards the improvement of the general education of England was taken at the council of an agricultural society, and is recorded in the fifth vol., page 431, of the Bath and West of England Society's Journal, to this effect: At a meeting of the Council, held at Taunton on the 28th of March, 1857, it was resolved unanimously, "That the Council fully assent to the opinion that skill in business generally is best acquired by practice, and that the best preparation for practical life is a good general education; that the co-operation of some independent examiners, with a local committee, appears well calculated to secure confidence in the results of the examinations." On these two resolutions were founded the measures for university local examinations now adopted in all parts of England. The spirit of commerce or gain urged men to an examination of substances which by their application will enable the farmer to raise larger crops, and continue their culture, without exhausting the soil to the prejudice of succeeding ones. This search for extraneous matters seems to have been pursued as an art, for science at the time had not extended her researches in this direction; though as early as about 1600 many substances now used as manure were mentioned as enriching the ground, to wit, the dung of oxen, sheep, or pigeon; sea-kelp, see-tangle, and other sea-weeds, for arable and pasture land; and the dregs of beer and ale, brine of the strength of 1 of salt to 18 or 20 of water, the soot of chimneys, and the refuse from the refining of petre. Shavings of horn are mentioned as making productive a most unfruitful plot of ground; as also waste soap-ashes, malt-dust, and oat-husks. We may remark that Virgil even says he has seen husbandmen wet their seed with nitre and the lees of oil, that the grain might be larger. Gypsum was used as manure in 1770, and crushed bones in 1775. Now, in the foregoing we recognize many of our manuring principles; but these were not generally known and used, or, when used, they were only applied as specific substances without any but fanciful ideas respecting their mode of fertilizing, and their use was therefore empirical. It was reserved for the science of chemistry to point out the connection between these fertilizers and their produce, to discern the presence in the two of certain elements which were

the true cause of their manuring qualities, and thence to teach us that wherever the same principles could be found we might rely upon a similarly happy result from their employment. In 1790 a professorship of agriculture was founded at Edinburgh, the Highland Society having been instituted in 1784. The Board of Agriculture was established in 1794. The Royal Agricultural Society was instituted in 1838. A professorship of agriculture was founded at Oxford in 1840. In 1840 the College of Chemistry and Agriculture was founded at Kennington by Messrs. Nesbit. In the laboratories of this establishment these sciences, with geology and botany, have been illustrated, and their application has been set forth by Mr. Nesbit's lectures and publications. In 1842 a college was founded at Cirencester, which received a charter under the name of the Royal Agricultural College, to which Professor Way, and afterwards Professor Voelcker, were attached; and there also the application of the sciences to agriculture has been taught. To Sir Humphrey Davy agricultural chemistry is much indebted, from whose time till that of Liebig no chemist applied himself to the application of chemical principles to the growth of vegetables and to organic processes. Liebig gave the greatest scientific stimulus to agriculture by suggesting the use of vitrol or other acids to render the phosphates soluble, and therefore more quickly available for the nourishment of the plant, which result was immediately acknowledged from its first trials in 1840 and 1841; the effect of this solubility being to bring the turnip quickly past the fly. About 1840 guano was first introduced into England. It has, undoubtedly, been a great boon to agriculturists; for, besides a large amount of nitrogen (the active principle of horn, soot, and other ammoniacal manures,) it contains phosphate of lime, a manuring principle of bones, some being in a soluble state, and having therefore the properties of dissolved phosphates. Coprolites were discovered to be manure about the same time (that is, about 1840); and, though their phosphate of lime is in a condition unadapted for solution by natural causes, by reducing them to a fine powder and treatment with acid it is dissolved. Thus we have opened up to us an amount of mineral manure of vast extent, the discovery of which has, happily, been simultaneous with that of a process necessary for its proper utilization. It is to deeper cultivation and the improvement of our waste lands that we have now to look for the extension of our acreage produce. The earliest records of substantial enclosures date from the earliest period of the reign of George the Third, in 1760. The passing of more than three thousand bills of enclosure in a reign of sixty years is a proof how rapidly the cultivation of new land proceeded in that period; and, while the rent-roll of proprietors has been doubled, tripled, and quadrupled by this cause, the condition of the tenantry and of the labouring classes has been ameliorated in a proportionate degree. England exported corn up to the end of the eighteenth century; but this period was about the turning-point—a sort of pivot-period, when exports and imports nearly balanced each other. The enclosure of land now begins to mark the consumption of a gradually-increasing population and trade. A committee of the House of Commons, which set in 1797, computed the total quantity of land enclosed during that century at about four millions of Acres. We have in "Spackman's Analysis of the Occupations of the People" a complete record of the progress of inclosure from the commencement of the present century to the year 1840, viz.—

From 1800 to 1810	1,657,980 acres
From 1810 to 1820	1,410,930 "
Total	3,068,910 "

Thus, during the first twenty years, the inclosures amounted to upwards of three millions of acres. But while these twenty years present to our view the phenomenon of immense inclosure, it must be stated that this took place under the stimulant of the highest range of prices for food ever known, except in cases of famine. At the close of the war in 1815, the average price of wheat had been during the preceding fifteen years 84s. 9d. per quarter, and during the succeeding five years it was 78s. 4d. From 1820 the whole scene changed, and the most trying period commenced, the causes of which are now apparent. Three million acres of moderate land had been taken in hand, and a metallic currency was resorted to. The inclosure from the year 1820 to 1830 only reached 340,380 acres, thus gradually bringing round the natural remedy for the over doses of inclosure which the war had prescribed. From 1830 to 1840 only 236,070 acres were inclosed,

showing that supply and demand had not yet righted themselves. Thus during the forty years we have an addition of three and a-half millions of acres to the cultivated lands, against an increase of upwards of 8,000,000 in the population. By the census of 1801 the population of Great Britain was shown to be 10,472,048; in the year 1841 it had increased to 18,664,761. Spackman then tells us that in the year 1800 we had under cultivation 42,000,000 of acres, which produced food for ten and a-half millions of people. The General Inclosure Act was passed in 1835. The fourteenth report, which has just been presented to parliament, gives the following figures—

Applications for inclosures since the passing of the act	809
Exchanges	1,697
Partitions, &c.	161
Total	2,667

Of this number 316 have taken place in the last year.

Acreage of inclosures confirmed	281,949
Ditto ditto in progress	208,687
Total	490,636

Or in round numbers half a million of acres. These returns embrace a period of five years, which were included in the last decennial period from 1830 to 1840, but I have no power of separating them. It is estimated that there are still 15,000,000 acres of waste lands capable of improvement, 6,000,000 of which would make arable land, and the remainder improved pasture; but as the high prices from 1800 to 1820 caused the inclosure of land to an extent never equalled, so in the proportion to the decline in prices, inclosure has also declined. Still, applications for assistance to drain and improve waste land continue to be made; and the English yeoman will, as he ever has done, adopt whatever improvements can be suggested by experience, as rent-paying practices. A national report of the waste lands of England and their capabilities would be an interesting and valuable document at this stage of our progress. Be it remembered that our population is increasing beyond a thousand per day, while the acreage of our island remains the same; and that there is a certain limit to the high farming of richly-cultivated lands.—Amongst the many and varied practices that have aided the progress of agriculture may be mentioned the practical results of chemistry and artificial manures. These have enabled the farmer to quadruple his green crops, to place the right manure in the right place, and to economize the cost of production. The art of draining is another marked improvement of the age, which dates its further development from the "Government loans" for this purpose, which loans were the result of early private practice, acting on public opinion. The improvement in draining-tools and in draining-tiles has contributed to the success that has been attained, and is rapidly progressing; for without this auxiliary, upon certain soils cultivation is simply useless. The growing knowledge of atmospheric influences has had its share in the work, and gone far to arouse the dormant intellect upon points relating to geographical position, the geography of plants, the influence of light and heat, seasons, winds, &c. The enclosing and improvement of waste land has also formed a prominent feature; and the improvement of local and farm roads is a link in the chain of progress. The attention which has been directed to the education of the labouring classes, the improvement of their cottages, and the allotment system has not been without effect, each of these being an evident requirement for the improved class of men who are daily being called into request to perform the altered cultivation upon the farm. In effect the occupation of the man who thrashed the barn-floor for the natural term of the winter months, is gone. His son succeeds him as an engineer, or the director of a steam-engine! The improvement in farm buildings is another requisite for the time, and has been liberally carried out for enterprising tenants. The "rotation of crops" has of necessity received much attention, alike in the field, in the laboratory, and in the discussions of this club. The practical issue is this: the four-course shift was invented and adopted for the purpose of improving the land; this has been done to a heavy amount, and it now requires correction, by the introduction of another corn crop, extending the four to a five-field course. The Scotch system is that of the six-field course—roots, white straw crop, seeds, white crop, beans, and white crop. The extension of root and other green crops since the introduction of artificial manures has contributed to the increase and excellence of our live stock, in a truly marvellous degree—a profit-

able result. Agricultural statistics have been the subject of many attempts; but although we have had many interesting statements with regard to agricultural produce, the movement has not been received very graciously. Time alone can show how far an altered taste may lead to different results in future years.—Irrigation is a practice which, although chiefly confined to the western counties, has deserved well of the farmer. It has done its part in the production of green food in early spring, and abundance of hay at shear time, at a nominal outlay. This practice is well worthy the attention of proprietors and tenants of hilly districts, "where the plough cannot penetrate," but "the rippling stream can flow." At the request of Mr. T. Dyke Acland, a paper "On Water Meadows as suitable for Wales and other mountain districts" was prepared by Mr. T. Barker, of Pusey (agent on the Pusey Estates), for the last Journal of the Bath and West of England Society. I mention this because the paper is not only well worthy the attention of all "hill farmers," but is about to be reprinted for general use, especially for the principality of Wales and the Westmoreland Lake districts. The grass lands of England have also received some attention of late, but by no means in an even ratio with the favoured arable lands. There is indeed, a nice point of distinction to be drawn on this head. Can we improve moderate grass land by top-dressing to a profit? or are they such as would pay best for cultivation? Local circumstances can alone decide, climate being the ruling power. As regards the tenure of land, the question of an equitable arrangement for ensuring good cultivation versus loss of time and capital, when tenants are changing farms, has been freely and fully discussed of late, and discussion is happily resulting in a better understanding of the necessity for an arrangement. Progress will effect much in this way; and although we may be met in the outset by opposition and by surprise that there should be such a term as "tenant right," equity and improved culture will ultimately become the universal practice. In fact, the principle is being acted upon in present lettings, to a considerable extent. The subject of "agricultural customs and covenants" has been fully before the council of the Bath and West of England Society, and the result will shortly appear in the Society's forthcoming Journal. Deep culture by the aid of steam-power is yet in its infancy; but, as a consequence of progressive art, it will ultimately do much for agriculture, by deepening the tillage earth of countless acres which cannot be profitably moved by any other power. This leads me to the remark that there is yet wanting a better comparative knowledge of the several powers engaged in agriculture, such as steam, horse, water, and manual power. On the subject of "horse power," we have an excellent report in the last Journal of the Royal Agricultural Society, by Mr. Morton. It should be well read, and weighed against the present papers that are being daily written upon steam-power, lest our zeal for "things new" should carry us out of our depth—or we might say below our depth. As regards manual labour, we are daily seeing it supplanted by mechanical aid. From my present acquaintance with water power in a hilly country, I can strongly recommend it to all who have the power of water within reach of the farmstead. The enormous additional weight of green food that has been produced of late has rendered practicable the maintenance of larger herds of cattle, increased flocks of sheep, &c., and thus supplied an additional weight of *animal* food for the growing wants of the people, and the increasing *foreign* trade in English animals; while the fact that the price of meat keeps up, while corn has fallen, has happily falsified some doleful forebodings. The practical value of these increased products is best illustrated by a quotation from Mr. Middleton's work. He observes, "that every acre would support its man, on *vegetable* food;" but, says he, "only let him change his diet to one meal per day of *animal* food, and he will require the produce of four acres." In connection with root crops may be mentioned the intrinsic value of mangoldwurtzel. It is being cultivated to an enormous extent, and has happily come to the rescue of many a farm where the Swedish turnip has become less hardy than in former years, or, more properly speaking, less inclined to flourish on the same soil, once in four years, under the four-course system of husbandry. Autumnal culture has stood the test of experience, and remains as a valuable saving in the cost of clean farming; but as respects light lands, the practice is yet a doubtful one. This class of remarks might be carried on for an

hour: there are indeed so many plans for every branch of our art, that I had better conclude by referring members to the pages of the Royal Agricultural Society's Journal, and those of the Bath and West of England Society's Journal, as records of all that is good and worth recording. The extension of commerce and manufactures has proved a valuable adjunct to the increase and consumption of agricultural produce. More raw materials, as flax, wool, &c., are required, manures from foreign lands are exchanged for goods, and we must not omit the precious metal, and its abundance to this country, whereby all things agricultural have shared in the golden harvest so unexpectedly supplied. The ultimate results of the gold discoveries it would be unsafe to predict; suffice it to say that the effects of the increase of gold require the serious forethought of the statesman. Amongst the facilities that have recently been afforded to agriculture, we may mention the Government Drainage Act, the Inclosure Act, the New Poor Law Act, and the Tithe Commutation Act. The advantages afforded by the Fire Insurance offices, the Drainage, Building, Hail, and Cattle Insurance offices, have each in their way helped along the well-being of those that are prominently interested in them.—Thus far, I have given a glowing account of the "progress of agriculture" from the early ages to the present time. But what shall I say of our disappointment and misfortunes? We have, in truth, had our vicissitudes and losses by the diseases of our live stock, wet harvests, failure in our root crops, and low prices for our cereal produce, while the cost of manual labour has (from various causes) increased. Again, it must be mentioned that the English farmer has to depend upon his own exertions, and cannot look to Government grants or Government assistance. He has no statistics or history of his art; he has no adjustment of his weights or measures, no board of agriculture, no minister or representative in the State. But yet he has held his ground, and continues to feed the people. The future of our agriculture is full of interest. There are subjects before us well worthy of consideration. Amongst them is a growing desire to treat agricultural pursuits upon "commercial principles." From this cause the occupation will become commercial, small farms will have to succumb to large ones, talent and capital will reap their reward; education will progress, the tenure of land and security for unexhausted improvements will become matters of fact, as commercial transaction. The project of steam-power has been boldly launched, and the ingenuity of man is now at work to adapt it for general employment; but this is yet a venture, and has an eminence to surmount that will require the talent of an age. The Royal and West of England Agricultural Societies have each offered a liberal prize for an Essay "on Steam Cultivation. These prizes may bring out an amount of talent that may aid the movement; but the "plant" as yet produced is far too costly for general adoption. There is yet considerable room for perfecting our breeds of live stock, that they may become more generally developed in "every district, and the right animals be cultivated in the right place." The economical consumption of their food, early maturity, and a better knowledge of their diseases, are alike essential to our future good. The extension of draining is another very important element; and it would be well if the Government grants were extended upon a liberal basis. The waste lands of England are again waiting for improvement, and offer an inviting field for enterprise in juxtaposition to that of emigration to "a land we know not of." Artificial manures are yet in their infancy; it being no uncommon thing to realize and consume a crop of roots before they are paid for, thus commercially-improving the farm by manures and sheep to the full benefit of every one, at little cost to the farmer. The improvement of grass-land is indeed a national subject, and must follow the advances of the arable lands. A series of experiments upon grass-lands, conducted under the management of an agricultural society, would elicit much practical information as to the results of different manures, the soil and situation being well considered. Amongst other public questions, there yet remains for consideration an adjustment of the "weights and measures" by which agricultural produce is sold; the establishment of a better system of taking the corn averages; a reconsideration of the malt tax, agricultural statistics, the adjustment of the game laws, so as to substitute "winged game" for the four-footed trespassers; a better understanding of the law of "customs and covenants," as regards the quitting of a farm; an extension of the Government draining loan; and lastly, the preparation

of a new and complete "Ordnance map," upon a large and comprehensive scale, under the direction of the Government (cheers.)

From the British Farmers' Magazine.

London, or Central Farmers' Club.

EDUCATION AND DISCIPLINE OF THE YOUNG FARMER.

The Monthly Meeting of the Club took place on Monday evening, March 7, at the Club-house, Blackfriars.

Mr. Trethewy, in the absence of Mr. John Thomas, the President of the year, was called to the chair.

The subject for discussion—introduced by Mr. R. Bond, of Kentwell, Long Melford, Suffolk—was, "The education, discipline, and introduction of the young farmer to life."

Mr. BOND said: Mr. Chairman and Gentlemen, we have this evening to consider and discuss an unusually important subject; and it will be well for us to bear in mind, that we have not simply to determine a mere material question, embracing the cost of agricultural production, or the increase of our pecuniary gains; but we have this evening to dwell upon the culture of mind, not matter—of man, not material. We have this evening to dwell upon the cultivation of the cultivator of the soil himself; and much may fall from our lips which may tend not only to form a character and fix a future; but I admit it will be a matter of regret with me if we do not succeed in propounding and moulding the formation of a system which shall be calculated to meet the increased educational requirements of the age—a system which shall ultimately be instituted to exalt the intellectual standard of the agricultural character, and which shall be destined to increase the mental, moral, and physical greatness of Old England. You will plainly perceive, gentlemen, upon the question of agricultural education, I am an advocate for action and co-operation; and I am extremely desirous to see the Central London Farmers' Club occupying the proud position of a pioneer, practically, in every agricultural movement of desirable progress and undoubted usefulness, and I trust, in this instance, we shall this evening not only consider wisely, and discuss fully and freely, but that we shall resolve, prudently and firmly, to carry out to a successful issue some desirable agricultural educational movement. In this age of change, progress, and improvement, no change has been more marked and decided than the altered position of our British agriculture within the past fifty years. Not half a century since, and the agricultural art was comparatively pure empiricism; it was practiced without science, practiced without the light of reason; and the standard of agricultural intellectual attainment was necessarily low and meagre. Agriculture, as a purely imitative art, required no depth of knowledge even in its best qualified professors. There was nothing in a simple course of routine to tax the mental powers. But within the present century how marked the change! We have now the widest field and the most extended scope for intellectual exertion; we have now the whole of Nature's laws opened up for our investigation and research. There is scarce a science but bears directly or indirectly upon the art by which we live; and for a rational fulfilment and a thorough comprehension of agricultural practice, I know of no business or profession at the present day requiring a deeper knowledge or a higher degree of intellectual attainment. Agriculture is no longer a mere blind question of plowing and sowing; but agriculturists now require to understand the object, reason, and result of every mechanical operation. They require to know why plowing benefits the land; why draining answers; what the plant derives from the soil, what from the air; why one manure as applied to the soil answers, why another fails to answer; how light and heat affect the plant; how they influence the crop; why the animal thrives well upon one kind of food and not upon another—to say nothing of the structure of the plant, the anatomy of the animal, the construction of machinery, and many other subjects requiring the greatest mental application to qualify any man to comprehend the intricacies of Nature's laws and the complications of Nature's operations, which it is the farmer's greatest success to subscribe to, to foster, and promote. With such a flood of light and scientific knowledge as the past fifty years have produced, has the agricultural educational system or the educational standard of instruction kept pace? We have this evening to express our opinion, and we

have to pronounce our verdict upon the fitness or unfitness of our present system of education to the altered and elevated position of British agriculture. It is necessary upon this subject we should speak out; and allow me to propound the question—Are the youths and young men of the rising generation so educated upon the best principles of instruction that they are thereby best fitted to cope with their future position? Are they so educated in the knowledge essential to their calling, that they will prove equal to the requirements of their business? Are they so educated, that they are thereby fitted in intellectual attainments to the altered and scientific standards of their profession? Will they prove thorough men of business, thorough in knowledge, thorough in judgment, and successful in practice—really thinking men? Or will the result disclose the fact that there is rottenness at the core of our existing system of education and discipline? I know, well, such questions as the foregoing may be met with the conservative plea that we have done well enough in the past. In such an opinion I fully agree. Without much education the farmers of England have cultured England to a degree of perfection unknown beyond her shores; without severe educational training, we have succeeded in beating the world in agricultural productions; without a deep knowledge of science, we have practically solved the most scientific problems; and, till recently, science has rather followed in our rear than advanced as our vanguard. But because we have succeeded practically, and that most successfully, shall we reject a proffered aid? Shall we reject the helping hand of a helping handmaid? Shall we, who have practically preceded science, close our minds to the enlightening truths of science? Shall we, who deal in the culture of Nature's products, close our eyes to the revelations and explanations of Nature's laws? Shall we blindly continue in empiricism, when reason waits to reveal the *rationale* of every operation? Can we afford to reject such knowledge for the rising generation of England? for those who will quickly occupy our positions, who will have to uphold the honour of England's agriculture in a world-wide race—against some odds—in a world-wide competition? Will they not need the stimulant and assistance of every adventitious aid? I am well aware it may be said that the best-educated are not always the best farmers or the best men of business. This is perfectly true. I know of men whose school-history is a farce, and their educational chance was at best but a poor one. I know of such agriculturists; yet those very men are possessed of such sound common sense, of such caution and prudence in the affairs of life, of such clear observation and shrewd reflection, of such prompt and defined judgment, that in any age they must be noted as men of no common mould: but let it be remembered, that facts and information are the basis of their correct reasoning, of all correct reasoning, of all soundness of judgment; and a greater knowledge, in their case, of Nature's truths, would but have made them more powerful men in Nature's laws, and in the practical operations of every-day agriculture. Such men, with a storing of scientific facts, would but have been more prominently the pioneers of progress; and though I condemn the nonsense that a man cannot farm without a knowledge of the sciences, yet I broadly propound the fact that the truths of science, especially in our own heads and hands, are admirably calculated to introduce us to more paying processes, and to insure to us increased pecuniary returns. I am not ignorant of the marked improvement which has characterized the agriculturist of the present age: I believe no section of society has more advanced in intelligence, knowledge, and position. Capitalists and capital have reduced the small holdings, banished the old feudal system of favouritism in business, and supplanted a degrading subserviency by an exalting respect. Men are now rare who are agricultural bores or inveterate grumblers; and though there is still the disposition in society to assume the fact that the agriculturist, however unlimited his capital or his ability, has no right to a position in society, or to the modern refinements and amusements of life, yet England can boast of sons of the soil, high in intelligence, exalted in principle, and thorough in business—men of whom even England may justly be proud; yet, notwithstanding this vast social and intellectual improvement, when I view the relative positions of the sciences bearing on agriculture, and the scientific culture of the agriculturist, I can plainly perceive a vast distance of

space. Scientific truth is far a-head. Individually I feel it. Thanks to the revelations of our Liebig, Lawes, Gilbert, Playfair, Way, Nesbit, Voelcker, Johnson, and others, that science is not in advance of our practice; but science is infinitely in advance of ourselves—she has much to suggest to us, much to tell us, much of which we cannot afford to be ignorant, and all of which the rising generation ought to know, ought to aspire to, must acquire; that, as agriculturists, they may base their reasoning on correct data, and improve by their reflection and research the agricultural practice of the kingdom. The British yeoman has been always noted for that sound common sense, which, though no science, is fairly worth the seven—a common-sense, which could neither be won by a fallacy, nor be deluded by a delusive theory. Profit has justly been his badge of disciplineship; but it is necessary now to combine, in the same person common-sense with agricultural science; it is necessary that the future and rising generations of farmers should possess the highest intellectual attainments, and I believe it requires a severe discipline of study to master the intricacies of scientific agriculture, and a rare combination of powers correctly to carry out the principles involved in the most successful practical issue. I advocate a thorough proficiency in the sciences, because I believe such knowledge is admirably calculated to increase the pleasure and profit of farming; I believe it is the precise knowledge necessary to prevent mistaken outlays and wrong applications; to insure the placing of the right manure in the right place, the giving the right food to the right animal, and the doing the right thing in the right way; to lessen the cost of production and to increase the annual returns; to win more fully the prize we all have in view, viz., money, or money's worth—to secure by scientific culture a secular success. I will now enter upon the question of education, and I purpose to consider the necessary changes in the course of study to be pursued, and the system of education necessary, in the agricultural schools of England. What then is our object in education? It is to draw out the latent powers of youth; to culture for the future as well as for time; to discipline the heart as well as to inform the intellect; to make happy men, respected men, men beloved by their fellow-men, and to insure success in life? Let it be remembered that education is not a mere matter of schoolmasters and of school discipline; parents cannot, in reality, delegate their responsibilities. Rely upon it, education commences at a much earlier stage than we commonly recognize; and from whom the child learns his mother-tongue, from the same does he imbibe his principles. We speak of breeding and blood, as if hereditary likeness arose from the simple fact of parentage; depend upon it, the force of imitation, and the power of influence and example have more to do in the formation of a character than the power of descent. We who are accustomed to the maxims of breeding admit, as a fact, that much size goes in at the mouth—that the quantity and quality of the food govern the physical development of the animal; and rely upon it, the mental inclination and the dispositional development of the child are governed more by those quick and early inlets to the soul—the eye and the ear—by the influence of those around them, than by any inert inborn principle. We are daily becoming more alive to this fact in the careful selection of servants, and in the choice of playmates and companions; and I enter into this digression to show that the boy may have received a wrong impression long before reaching the hands of the schoolmaster, and the tutor has probably to deal with a spoilt child, instead of a promising, well-cultured, well-trained boy; the twig has received the wrong twist, and to rectify the past, to antidote past poison, to regain wasted opportunities, and, at the last, to stand well in the race with so unpromising a colt, is more than we have a right to expect; and I here express my conviction that more than half the failures and sorrows of life are traceable to the want of the proper fulfilment of parental discipline, extending from childhood to the age of twenty-one years. I am a great advocate for the culture of the heart as well as the culture of the head; no man is truly a man without it; and it is especially the duty of parents early to implant, to foster, and to uphold sound Christian principle; to culture in acts of reverence, in feelings of love and affection, and in deeds of unselfish kindness; to insist on obedience and truthfulness. And it has been my observation that without this Christian security the

most successful secular life is at best but a mistake, and the most hopeful intellectual attainments a comparative abortion. There must be the ballast of sound principle, or right feeling, and right doing, as well as the sail or the steam-power of ability. Education cannot be purely secular to be successful; and though my observations on this point may appear beyond the mark, yet I plainly assert that no education is perfect, no prosperity sure, no happiness complete, which is not based on Christian principle. I have informed myself, by an extensive correspondence, upon the course of agricultural study generally pursued throughout the kingdom. In the Colleges, such as Cirencester, Kensington, and Queenwood, the whole course of study is enlightened, suitable, and satisfactory. In the local schools, generally, the sciences are much neglected; in more than one-half of the prospectuses received from such schools the sciences are not even mentioned, and in many, where alluded to, it is a foot-note, to state—"taught if required." Now, it is not the fault of the school-master that this is the case: it is for us, as agriculturists, to make up our minds, to have clear views upon this point, and to express our wishes. It is for us to say whether these things ought thus to be. I observe there is the same dunning at Latin and Greek as when I was a school-boy, and I dare say there is the same plausible reason given for the continuance of the system, viz., discipline. Now there is no one a greater advocate for mental discipline than myself, but why the dead languages are so infinitely superior in their influence I cannot for the life of me conceive. To me it appears such studies may make boys word-searching mental-memory machines; but what is there to excite the observation, to induce inquiry, to lead to reflection and real thought? Now, where the dead languages so essentially fail, the sciences so eminently succeed. The sciences dwell upon subjects of real utility—subjects which meet us at every turn; and such subjects of every-day life are ever suggesting consideration and research. They constantly interest the boy, and teach him to use both his perceptive and reflective faculties. The boy sees a plant, and contemplates its construction; he thinks over the process of vegetation, the works of the roots and rootlets, the ascension of the sap, the functions of the leaves, and the whole busy process of accelerated nature most actively working to manufacture food for man. He sees a steam-engine, and at once examines its manufacture; he understands its mechanism, and contemplates the possibility of some mechanical improvement. All nature and art, to a mind scientifically cultured, are vast fields of interest, of observation, and thought. Surely, then, gentlemen, for those destined for agriculture, a study of the sciences is the course to pursue, to manufacture thinking boys and intelligent thinking men. Give the boy an early bent to understand the why-and-because of all around him; you thus place before him a deep mine of wealth, which it is discipline indeed to comprehend, and a study throughout life fully to acquire; he never lacks a subject for intelligent thought, and you culture the mind, by a gradual process, to make constant efforts; the knowledge and facts acquired, all bearing upon agriculture, are literally power—power to apply in the manufacture of meat, and the manufacture of corn; and you cultivate, at the same time, that indispensable guide in all the business transactions of life, viz., a thoroughly well-balanced judgment. Now, gentleman, what do the dead languages effect? They simply train to a word-research, to the cultivation of the memory, and they teach the derivation of words. Too often the dead languages, indirectly, have even an injurious influence: they erect a wrong standard in the minds of youth; boys view a high attainment in the classics as far transcending a common scientific knowledge of common things; they despise the useful; and that acquisition of the languages, which you intend as discipline and as a means to an end, they cling to and believe to be the end itself. When I turn to my own experience I can plainly perceive that two years' study of the sciences have proved of more benefit to me than many a year's grinding at Latin: in my education every one pound's worth of science has yielded a larger return than each ten pounds expended in the classics. In the sciences I was interested, I could understand their usefulness, and upon leaving school, it afforded me pleasure to prosecute my studies, and each day in the agricultural world I find something to observe and learn and turn to practical usefulness. Upon the scholastic studies generally, I would observe, it is highly desirable every

boy should be able to read clearly and fluently, without hesitation and stammering; it is equally desirable he should be taught to write a good, plain, legible hand, apart from all curvilinear flourishes, rectangular excrescences, and the complete ambiguity which characterizes the writing of the present day. Let each boy, too, be especially well-grounded in arithmetic; by some means implant a taste for figures; for the system of good and correct accounts, in every matter of business, is one of the grand secrets of success in life. Of course there are grammar, spelling, and history to be learned; but I am convinced upon these subjects there is much time wasted. I forget how many works on grammatical rectitude I succeeded in wearing up. I know several; and that, too, in learning by rote rules which I never knew how to apply, and in attempting to rectify sentences which were designedly made wrong. In spelling, the same: it was my duty to correct misspelt words; but I candidly believe it would have been infinitely more to my advantage that I should never have seen the grammatical and orthographical mistakes, as the eye and the ear became habituated to and familiar with error. I am convinced I not only wasted time, but that I received a positive harm from the process. Again, let a knowledge of sacred and profane history be acquired; but I must confess I could not, nor can I even now, see the utility of learning by rote the dates of the ascension and death of every monarch who has occupied the English throne. A knowledge of geography is, of course, desirable; also a knowledge of mathematics. I believe the plans of theme-writing and of close verbal questioning, upon every study, are most desirable, as ensuring a thorough grounding, which is the basis of accuracy, self-reliance, and after self-development. To me it appears, too, most desirable that the parent, if competent, should regularly and carefully examine his son, and thereby note his progress; but for general, every-day, local schools to be useful, we require reform. We require a public board of agricultural examiners, who shall duly examine each candidate, in the first instance, at sixteen years of age, in all that constitutes a sound agricultural education; we should thereby introduce competition and a standard of merit, and the most meritorious, painstaking, competent master would have the largest proportionate number of successful boys. I advocate such reform, to rid us of incompetent masters—to secure patronage to the deserving; and the mere fact of such an examination would excite a spirit of emulation amongst the boys themselves; and often, in their hours of wished-for idleness, would they remember they must render an account some day; and that the fruits of indolence would be exposure and disgrace. Such a public system of examination would ensure the general adoption of the most desirable course of study, and force up schools to the necessary standard of proficiency. At the same time, such a system would embrace agricultural schools of every standing—the small as well as the large—and have a general influence for good. In ten years, so radical would be the change, that Dickens—who, in "Nicholas Nickleby" justly caricatured the old system of education—would see an almost undreamed-of reformation. Further: upon a youth leaving school, the necessity is obvious for continued intellectual discipline; and how requisite it is for a young man to have continually some intellectual object of attainment before him! I note the present system: a boy leaves school at sixteen years of age; he throws up his hat, and concludes his education finished, when, in reality, it is but just commencing. More than half the young men destined for agriculture in England actually waste, and worse than waste, the first four or five years of their freedom from scholastic restraint. Theirs is a thorough desultory life; they throw up all intellectual culture, and they have no intellectual standard of attainment to which to strive to attain. They probably assist in the farm-management; but as they have no responsibility, the farm occupies but little of their thoughts; as they feel but little interest, they observe but little; and the rat-hunt, the cricket-match, the run with the harriers or fox-hounds, the quadrille-party, the shooting exploit, with other amusements, combined with a profusion of tobacco, are their real employments—their true business of thought and occupation. How are the evenings spent? Often in a desultory, do-nothing industry, or in card-playing and smoking—in colouring a clay or idolized meerschaum—or, if in literature, in pursuing some trashy love-tale novel, in studying "Blaine's Encyclopædia of Rural

Sports," or in reading the last number of the "London Journal." I speak, gentlemen, from facts, from my own observation; and only in ridicule, I fear, can it be said that such training will create promising candidates for future agricultural honours! This is not a desirable course of discipline: reared in a desultory manner to sport and to spend, to study their own pleasure and indulgence rather than their interest, and advantage, it will be no matter of wonder or surprise if pleasure is their chief engrossment in after-life, and if business, at the commencement of their career of responsibility, finds them deficient in knowledge and judgment. Such, gentlemen, is literally the case. I have seen young men make grand mistakes upon their first start in life, from absolute incompetency—especially upon clay-farms; and I agree with the observation of an old friend of mine, that it would well answer the purpose of many a young man, upon commencing business, to pay an elder to superintend and direct him in his management and supervision for the first two or three years. I am in no way averse to a reasonable amount of sport and amusement; I have had my share, and that a large one, of hunting, coursing, shooting, and the like, and I believe, too, without detriment; but let it be the condition that whilst sport is sport in reality and in earnest—whilst a young man rides across country with courage and judgment, and sports as a sportsman—that business and study are equally pursued with the same spirit of indomitable energy and perseverance. We hear a great deal too much, now-a-days, of the old tale that "All work and no play makes Jack a dull boy." The truth is, that more work and less play would make Jack a bright boy, a business youth, and a thriving, successful man. I am for pleasure in reason, but for business in earnest; and in every case I desire to put aside the dreary, indolent, listless nonentity spirit which characterizes young men, both in their intellectual improvement and in their business attainment and attention. I want to see young men fresh from school, not only breathing, but really living—living for an object—living for an end, and actually using the means to attain that end. I want diligence, and not a passive indifference, to govern their conduct. I want them to feel that time is a talent not to be wasted and squandered, but a talent to be used and improved; that they have much to do, and but little time to do it in. I want to see minutes more valued than hours now are. Life is a race, and, all else equal, the best training will make the best man, and secure the best place; and I know well that the idle brain is, most surely, the devil's best workshop. What, then, is to be done? Is it not desirable to adopt some course? Is it not necessary to act? Is it not essential to induce young men to cultivate habits of self-culture and of self-devlopment? It is most necessary—most desirable; and it is a positive duty, on our part, to act to ensure it. What man was ever a man worth calling a man without such self-culture? Rely upon it, such is the upward educational movement that we positively cannot stand still. I even see it imperative upon us that we combine to co-operate; and as every agricultural society in England looks to the Royal Agricultural Society as its agricultural father, it is for us to take steps to induce our parent to act for the better education of her agricultural children. I believe farmers' clubs generally, and every agricultural society throughout the kingdom, would gladly combine to facilitate such a movement; and I know of no course so effectual as the establishment of a public board of Agricultural Examiners. I strongly recommend two examinations: one for junior candidates not exceeding sixteen years of age, (as before alluded to,) and one for senior candidates not exceeding twenty-one years of age. I would certainly throw the examinations open to all candidates, as the only object would be to excite competition; and to grant an agricultural diploma to those competitors having attained to the necessary standard of intellectual acquirement. It could be a matter of no moment whether the knowledge of the senior candidates was attained by study in the privacy of their own homes, or by attending a course of agricultural lectures. It would be for the board of examiners to recommend the best works extant upon the various subjects and sciences for examination in the senior class; and it is highly necessary so to act as to ensure general competition. The standard of merit may not be set too high. Even the young man missing his mark and losing his diploma would in reality be a gainer—and a very great gainer, notwithstanding—from the habits of

study and of mental discipline to which he had cultured himself in his attempts to secure the distinction of the diploma. I am well aware that such a board of examiners would have been of essential service to me; for though I continued to study chemistry, geology, and some other sciences, after leaving school, without the slightest incitation from those around me, yet I feel that the fact of a public examination would have been a sufficient inducement for me to have worked with redoubled diligence, preventing a foolish waste of time, training me in habits of mental and physical industry, and resulting in redoubled success. I do not think the middle-class Oxford University examinations meet our requirements; the whole matter will be far better in our own hands; the whole scheme may be self-supporting. We must carefully avoid the error into which the Highland and Agricultural Society of Scotland has fallen. That society required candidates to attend, for a period of two years, classes in five or six of the different sciences prior to examination. Such a requirement, of course, nullified the general usefulness of the scheme. The mistake is now rectified. In England or Scotland it must take a time for the competition to be great, or for the attendance to be large at the examinations, from the simple fact that the education of young men has been grossly neglected, especially after leaving school; and it must take a time to rear any number of young men, intellectually cultured and qualified to come forward for examination, or to compete for the honours of the certificate or diploma. With the existence of such a board of examiners, how far more powerfully could a parent stimulate his son to do his utmost, and to how much better account could the present system of agricultural pupilage be turned! In my own case, it would afford me pleasure to use my most strenuous exertions so to assist those gentlemen, at any future time resident with me, in their studies and preparation for examination, that they should pass with credit and *éclat*. How far more gratifying, too, to parents and friends, to see each hour both usefully and profitably employed, instead of having to contend with the natural fireside habits of indolence, with habits of late rising, with general frivolity, and a thorough indifference to mental culture and business proficiency! Seeing the vast improvement, the complete revolution, which the Royal Agricultural Society has effected in agricultural mechanics, in agricultural machinery, in the breeding and development of stock, and in agriculture generally, I think I am not too sanguine in expecting the same improvement and the same beneficial result when that society turns its powerful influence to the mental development and the scientific culture of the agriculturist himself. There is an ample and wide field for action; and it is my conviction that in carrying out the system of agricultural educational examinations, lies hid in embryo the Royal Agricultural Society's most successful operations and her proudest triumphs. Having completed the educational portion of my subject, I will now turn to consider the discipline, and afterwards the introduction of the young man to life. I am anxious at once to establish the masculine fact, that every man is the architect of his own fortune, and the carver of his own future. There is no such thing as undeserved success or unmerited failure. A man may sink or swim according to his ability in the battle or struggle of life. Whilst one man succumbs to circumstance, and becomes the creature of circumstance, another yokes circumstance to his car, and triumphs over his position, winning increased distinction from the magnitude of the difficulties surmounted. I am extremely desirous to be clear on this point. I want to put aside all the maudlin enervating doctrines of chance and misfortune. I want to establish a habit of real self-reliance. I want young men to see that they had far better trust to their own internal strength and competency, than to any extraneous aid. How many a young man has been ruined by his reliance on fortune! How many a young man has been spoiled and rendered unfit for success in life by his expectancies! Fortune at best is proclaimed a fickle goddess; and though bachelor uncles and maiden aunts are all very well, they are certainly crochety beings, difficult to please and easy to offend; and I had rather rely, ten thousand times over, upon the strength of my own right arm and upon my own internal power, than to trust to the whims, caprices, and uncertainties of succeeding to dead men's shoes. Windfalls are always very acceptable, but they are broken reeds to trust to. Self-reliance is the qualification for success; and I am

convinced, if we are men of observation, of thought, of industry, of perseverance, of principle and prudence, we must succeed in life, we must triumph, we must conquer. It is a moral certainty. No circumstance and no material power can prevent it. What is failure but industry unapplied or misapplied? or the fruits of labour undervalued and unhusbanded? In any case, trace the cause of unsuccess. What is it but a lack of the elements necessary for success? what but a lack of prudence, of principle, of energy, of industry, or ability? I do not deny the existence of heavy overwhelming losses; but even these are usually traceable to the facts of hazardous speculations or imprudent outlays, and to the adoption of the man-or-the-mouse principle of sink or swim. In the common course of matters, I am tired to the heart at the sound of misfortune: it is a lulling misnomer for human neglect and human incapacity. Many a man may say, "How could I avert my misfortune?" I reply, such misfortunes are usually traceable to habits of early neglect in education or in training, and to the effect of neglected opportunities. How is it the members of a large family usually succeed in life far better than an only son? What is it but the effect of discipline, habit and culture? The many are early taught to cut their own way, trained in diligence, to habits of care, economy, and hardihood, and reared upon the necessaries, and not upon the luxuries and supernumeraries of life—trained to produce, and not to squander; to save, and not to spend; whilst the only child learns the consuming to perfection, but not the producing; to spend, but not to spare or to save. What is it but the one cultured to succeed, and the other cultured to failure in life? But what is this enigma—success in life—of which we hear so much? What is it, but the power to produce exceeding the desire to consume?—what, but the balance after deducting the actual consumption from the actual production? Unfortunately in our day, so strong is the love of appearance, so great the appreciation of comfort, that men forget the great secret of life is not so much in getting as in retaining—not so much in producing as in not spending. Unfortunately, spending is the order of the day; there is a false show abroad; but all men of sound sense will be content to walk if they cannot afford to ride, and to walk before they attempt to run. How many young men appear to suppose that life is governed by "luck," and that success is a mere toss-up matter of chance! Success is as much governed by fixed laws as the solar system, with this saving clause of exemption—that no rule is without an exception. You see, gentlemen, I lay especial stress upon habits, and especially upon the habits of self-reliance. I look to education to teach a man to use his brains, his eyes, and his ears, to show he has a head upon his shoulders, and to prove he does not pass through life half asleep; but I look to habits and discipline to effect much also. We are a bundle of habits; and if any young man thinks he will succeed in the daily life of agriculture by informing his mind alone, he will find himself mistaken. For success there must be habits of industry and not of sloth, of prudence and not of prodigality. But to enter more minutely, most strongly do I recommend every young man to adopt the habit of early rising; to carry out the habit of thinking nothing of trouble in business; to adopt active habits, and an active and prompt execution of every duty. Most thoroughly do I recommend the habit of correct accounts, and of noting down passing business events. I strongly urge that interest and advantage be studied, and not inclination and pleasure—habits of self-denial, and not habits of self-indulgence. Settle it down as a fact that you can do anything if you try, and cultivate the habit of perseverance. Men succeed by sticking. Cultivate the habits of cheerfulness. Bears with sore heads don't make friends. Cultivate the habit of a frank, open-hearted, manly manner, combined with politeness; for conceited borishness and pedantry don't assist to success. I strongly recommend young men also to the habit of manual labour, sufficient to understand what labour really is, and to acquire a practical knowledge of the different operations of the farm. I think it well that young men should bear the yoke in their youth, and I give it as my experience that such a practical acquaintance with labour proves of infinite service throughout life. It is a splendid thing to be trained to labour, both mentally and bodily; also to spend with caution, and to act with care. Much more could I say upon habit—upon the habit of

thought, the habit of observation, and the like—but I trust we shall hear no more the common cry of "what can I do?" or "I have no chance." Every young man with health and strength may succeed in life if he will; but his success must be the fruit of education, training, and discipline: and if he neglects these necessary means to an end, he will probably go by the wall. I don't call being born with a silver spoon in one's mouth success; and I don't call living on the leavings of a parent or a friend success. But I call that success which is earned by industry, ability, tact, and perseverance; and I had rather have the chances of many a man without a sixpence in the world, possessing these qualifications, than I would the chances of another reared to nonentity and in habits of extravagance, though possessing thousands of pounds. Young men of England, look to it that your education is right, your training right, your own self-culture right; and with such a commencement success in the battle of life is more than half ensured or secured. Above all, rely upon yourselves, cultivate the quiet assurance you can overcome every obstacle, that you are equal to every emergency; but see that the result equals your convictions, or conceit will prove your shame instead of competency your praise. We speak of patronage; but who can patronize a fool? We speak of friends; but who, in a business point of view, can befriend the incompetent? The world will look to worth and ability; and in every case it is upon men so qualified the world bestows its premiums. Who has a situation to offer, and does not look about him for the best man? Who has a farm to let, and does not search for the best tenant? The world, from self-interested motives, will befriend the competent, while it throws men of incapacity to the dogs. And who does not know that there are more good situations in life than men qualified to fill them, and more good opportunities than men qualified to embrace them? I make the allusion with extreme diffidence; but in my own case, gentlemen, I have known what it is to start in life without two ten-pound notes in my pocket to keep each other company. I have known what it is to fight my way in the world; and though I have had many a kind friend to whom to be grateful, I have had a taste of the disadvantages and the difficulties of life. They are excellent discipline; and to show young men there is something in self-reliance, I tell them plainly I would start again to-morrow without a sixpence in my purse, without a murmur and without regret. Further, to show the power of self-reliance, I know young men who were so reduced in circumstances by the depression consequent upon the repeal of the corn-laws, that they seriously contemplated an assignment of their affairs into their creditors' hands; yet these very men, by dint of courage, tact, and perseverance, though possessing at that time scarce a pound they could call their own, yet these very men have so pushed out hither and thither, have so doubled their resources, and redoubled their exertions, that they have now thousands of pounds instead of a few pence, with which to bless themselves. What others have done others may do; but young men must remember "life is earnest, life is real;" and they must learn to trust to their own strength, to labour, and to wait. I have spoken upon the education of boys at school, of the education of young men, and the discipline of habit after leaving school, and I now come to the last portion of my subject, viz., the introduction of the young farmer to life—his commencement in business. I am no advocate for young men sticking at home and being tied to their mother's apron-strings; but, as soon as qualified by stability of character and soundness of judgment—and the sooner qualified the better—let them commence business on their own account. By all means have them do something in some way to advance their own individual interests. If young men commence with capital, let it be with a moderate amount, barely equal to their actual requirements, for a superfluity of the needful never teaches the real value of money—and to teach the worth of the one pound sterling is highly essential in the opening of life. A few judicious monetary difficulties, in cutting one's way and in making ends meet, will do a young man no harm; difficulties are excellent tutors of calculation and careful outlay; whilst the necessity for industry compels to exertion, and prevents many a foolish extravagance. If parents are so situated that they cannot afford to give their sons capital, it is doubly essential a father should early insist upon a son turning out

in the world, and working his own way. If there is no capital in the purse, there ought at least to be capital in the head, and young men of character, even in this competitive age, may succeed by trying. But young men must try: they cannot succeed by inaction. There is nothing like working one's own resources, and having individual responsibility for progress. In the matter of a farm there is a great deal in a good start. If a young man wants a business so much or wants a cage for a lady-bird so badly that he is induced to pay a rental for a farm exceeding by 10 or 20 per cent. its annual value, he has no one to blame but himself. If a young man lays out his money in permanent improvements, upon bad security, or upon no security at all, he has no one to blame but himself. Rotten props will let down men as well as buildings. I see great mistakes are made in attempting too large a business upon inadequate means. Now, though it is all very fine to be thought a great man in a small way, yet it is most undesirable to half-stock and half-farm any land. I do not object to a young man borrowing a small proportion of his capital at a reasonable rate of interest, but I know of no greater folly than attempting to farm 500 acres of land with capital barely sufficient for 300 acres. For profit and comfort there must be sufficient capital. Of course, let every young man secure good land, good buildings, and a good landlord, with a principled agent, if he can; but if he cannot, if the supply is not equal to the demand, by all means let him make the best of those persons and things with whom and with which he has to deal. I recommend every young man to take the judgment of an experienced friend upon every point upon entering business, not only in the hire of the farm, but also in the purchase of the necessary stock and implements. I have seen many a young man, without much judgment or discretion, much imposed upon both at auctions and in private purchases. In the management of the farm do everything well and at the cheapest cost, and don't be afraid to calculate the cost to produce a crop, or the cost to rear or fatten an animal. I am sure we look at a farm too much in the mass, instead of calculating the items, whereby we unknowingly lose in one or more departments of our manufacture, for the want of investigation. Scrutiny leads to judicious and profitable outlay. Cultivate a thorough judgment of stock, for purchases 10 per cent. too dear and sales 10 per cent. too cheap are serious mistakes, and tell heavily against success in life. Young men must know by observation what constitutes a day's work: horses are expensive machinery, and if horses are kept well and worked 20 per cent. daily below par, whereby 20 per cent. of horse muscle is necessarily kept beyond the actual requirements of the farm, I say these again are serious losses. The manual labour, too, of a farm is necessarily a heavy outlay, and a master receiving 20 per cent. minus his due in labour is in an unfavourable position. Young masters must learn what constitutes a fair day's work for a fair day's wages, and see, too, that they get it. Also, in task work, a young man may be much imposed upon by paying a heavy percentage beyond the value of the work performed. Both horses and men demand serious attention and consideration, with good supervision and direction. The work of the farm should always be forward, that it may be performed at the proper time and season. Not to make hay when the sun shines is mistaken economy. A man always just behindhand is not likely to overtake success. I most strongly recommend every young man annually to draw out a correct valuation of the live and dead stock, and of the covenants of the farm. I do it each year at October, and at the same time I draw out an actual balance-sheet of the annual returns and expenditure; and I urge upon every young man the necessity of doing the same. The more we are men of figures the more shall we be men of sound judgment, of deep research, and correct practice. Groping on in the dark has been the ruin of many a man. It is investigation which prevents a continuance in losses; and it is always wise to know the worst, and meet our difficulties, not by avoiding them, but by research, by action, and as men. I feel it to be absolutely essential for every young farmer to study the agricultural literature of the day. The Royal Agricultural Society's Journal must be carefully read, also the "Farmer's Magazine;" and it is highly important weekly to peruse the *Mark Lane Express* or *Bell's Weekly Messenger*, or some other good agricultural paper that young men may keep

pace with the practical and intellectual progress of the age. Again, the Royal Agricultural Society's shows, and the other important and local agricultural exhibitions, are excellent opportunities for comparison, information, and improvement. To see other than home systems of farming is decidedly necessary to prevent local prejudices and those narrow notions which grow up under the shade of one's own barn-doors. I might say much upon the necessary amount of capital according to the character of the farm; also in recommending thorough draining, deep cultivation, autumnal fallowing, good stock, good manure, no false economy, and the like; but, in concluding my observations, I prefer to address a few remarks to young men themselves upon their own individual position and bearing. We cannot be blind to the fact that some men, upon their first start in life, make grand mistakes: they start with false views and false aims, and attain to a false position. In these days of ready credit, how many a man expends far beyond the limit which his income prescribes or warrants, in personal comfort or external show, in handsome furniture and house decoration, in first-class dog-carts, and other extravagances! Nor is this the worst: such a man usually resolves to cut a shine, be a swell, drive fast horses, attend balls, hunt, shoot, smoke and drink, give dinner parties, ape superiors, and usually comes to grief. This is not a picture of plodding industry, and I have drawn an extreme case of folly, to warn young men without adequate means against such a life of tomfoolery. Success is based upon labour; and a slow, unpretending, economical start in life is a safe start. Let young men be content to earn their position and their luxuries before they assume the one or indulge in the other, or they will find to their cost that they end their life as they should have commenced it—in labour instead of competency, and that a life of youthful extravagance leads to necessitous old age. Youth is not the time for self-indulgence and the jog-trot easy pace of indolence. Youth is the time for hard but substantial fare, hard every-day lodging and hard work. I am opposed *in toto* to the smoking, drinking, and pampering habits of young men in the present age. I am equally opposed to all the easy-chair habits and the semi-inaction far too common. As a young man I can knock on very well in life without much of the stimulants—beer, wine, and spirits, and without the enervating influence of tobacco and many other luxuries; and, what is more, I find myself better in health, better qualified for business, and better in pocket, without them. I am an advocate for moderation in everything; and I think it a strange thing indeed if a young man is not at liberty to decline to injure his health or his constitution because of the voice of public opinion. I especially urge moderation, as I observe young men make fools of themselves in their hours of excitement. I observe in the hour of excess deeds committed which entail an afterpiece of sorrow and regret; and how often the loss of character, of business, habits, and of fortune may be traced to a wrong step here—to a departure from habits of temperance! I am no ascetic: I can be as happy as any man in spirit; but I do not need either a narcotic nor an opiate to lull or to cheer me, and I am not prepared to fall down to that public opinion which makes venial the seed-bed of vice. Intemperance is the source of more than one-half of England's sorrows; and I warn the rising generation to flee her enticing calls. Safety here, and a young man of sense is proof against the foolish spree, secure from a youth-time of folly, and an old age of physical debility and mental repining. Some young men appear to consider the fast life a life of heroism, and a life wherein to glory. It leads to a life-time of shame; and how is society strewed with the wrecks of youthful intemperance, vice, and folly! No Scriptural axiom is more true than the one embodying the fact, "That the world will speak well of thee so long as thou doest well unto thyself." I have said much upon temperance as a preventive to folly; but the only true safeguard is true Christian principle. Christianity is the fundamental basis of security; and shall I, who feel that I owe all that I have, all I am, and all I ever shall be, to its influence—I say, shall I lack the moral courage to assert its power? Shall I pass it by as a subject which has nothing to do with the business of life? Shall I bow to the popular notion afloat in the world, that it is only fit for Sundays, and for elders when the fire of life has abated? Shall I admit that it has nothing to do with the discipline and the success of life? I came to tell you my ex-

perience; and, as a young man, I tell the young men of England plainly, I have found Christian principle as a thousand-horse power within a man, to cheer and to urge him onward in the path of duty. I hate the hypocritical cant and the jesuitical humbug which abounds. There always will be inpostors in any age; but I know of no body of young men more imposed upon than those who wilfully determine to have nothing to do with true Christian principle upon any terms. True Christian principle is the highway to success in life; for while it prevents indolence, sloth, and extravagance, a waste of time and a waste of money, it excites to industry and economy, to uprightness of character, and rectitude of conduct. Are not those thus imbued—the men who prove Havelocks in their sphere?—men armed with moderation, patience, and endurance—men possessing promptitude and perseverance? Are not those the men who neither rack their bodies by excesses, or their minds by fear and feverish anxiety? Are not those the men intellectually strong in tranquility, and physically strong from temperance? Are not those the men who are kind-hearted, courteous, considerate, and unpretending? Are not those the men who can control their tempers and their passions, and live above the jealousies, animosities and envies which mar the happiness and peace of most men? They are; and, if such are the fruits of true Christian principle, are not such qualities and such fruits the essentials for success in life? Are they not the essentials to secure a peaceful and a happy home? Are they not the essentials to constitute a cheerful and a happy manhood? They are; and to every young man I recommend the Bible as his chart, and, when Christian precept has become his practice, may it be his good fortune to possess a sharer of his joys, to possess a helpmeet, amiable in temper and kind in disposition; to possess a wife adorned with the ornament of a meek and quiet spirit, adorned with the beauty of love and the jewel of sense; and thus may they be mutually blessed, and prove blessings to all around them. In conclusion, a good education, thorough training and discipline, are the groundworks of success in life. Agriculturally those groundworks have been and are at the present time, much neglected; and, though parental and social influence generally may do much to mould the character of youth, yet it is only by national combination and national exertion that the intellectual development, the scientific culture, and the mental discipline of the agricultural youths of England can be secured. And most strongly do I urge upon you, gentlemen, upon parents generally, and upon the kingdom at large, the necessity for action, the necessity for a well-developed plan of agricultural educational examinations; and such public examinations, I am convinced, would prevent the present waste of thousands of pounds annually in indolent and wrongly-directed efforts of instruction, and at the same time put aside the present incalculable loss of many of the most precious years of a young man's existence, extending from the age of sixteen to twenty-one years—a loss, too, which cannot be estimated even by tens of thousands of pounds annually. And I long to see England made more great, more glorious, and more free by the improved intellectual culture and the improved mental discipline of the rising and future generations of Englishmen.

Ventilating Hats.

A great number of hard-shell hats are made with a small opening covered with gauze in the crown of each, and with this arrangement it is supposed they afford ventilation for the head, and tend to keep it cool during warm weather. This is a mistake, because ventilation can only be effected by a current of air, and as there are no means provided for the inlet of air, but only for its outlet, in such hats, of course they cannot afford ventilation. The true ventilating hat must have perforations at or near the band to secure the inward passage of air, and quite a number of such hats are now manufactured and worn. Felt hats, being somewhat porous in their texture, afford partial ventilation. Silk plush hats being saturated with lac-varnish are perfectly impervious to the atmosphere.

Scientific American.

Do everything in its proper time. Keep everything in its proper place. Always mend clothes before washing.

Rising early is an excellent habit.

The Effects of High Prices of Slaves;

Considered in reference to the Interests of Agriculture, of Individuals, and of the Commonwealth of Virginia.

In regard to every undertaking, or pursuit of business, requiring capital for the prosecution, it would be admitted, as a general proposition, that the less the price or value of the stock or capital required, from which to obtain equal amounts of products, the greater would be the net profit of the business, and of every investment therein made.

But though this truth, stated in general terms, would be universally admitted, and without question or doubt, still it would be excepted to by many, if not by most persons in Virginia, as to the especially important subject of agricultural industry and investments. For such exception and denial are necessarily implied in the opinion commonly entertained, that the high prices of lands, and of slaves, are evidences of the prosperous condition of agricultural interests, and of agriculturists, in the localities where such prices prevail.

Land, and the labor required for its culture, constitute the greater proportion of all agricultural capital employed. Greatly expensive as these are, land and labor (and in Virginia it is mainly slave-labor), are but the most important of the materials and tools essential to the carrying on of the mechanical operations of tillage, and what may be considered as the manufacturing of the products of agriculture. To whomsoever may be about to invest capital, or to enlarge his previous amount of investment in the business of agriculture, the less the price at which he can purchase land and slaves (they being nearly all the capital required), the greater will be his profits in the production of like amounts of crops, if sold at equal prices. If a certain farm, with a certain number and description of slaves were bought at fifteen thousand dollars, and would yield annual crops for sale of the market value of four thousand dollars, it is obvious that the agricultural net profit, would be very far greater than it would have been if the same property had cost, and was worth in market price forty thousand dollars.

The error of opinion, which is so common on this subject, is the result of mistaking effects for causes. The increased price of land is generally a true indication of a *preceding* improving, prosperous, and profitable condition of agriculture in that locality But a preceding increase of price is not evidence of either still improving, continuous, or prospective profitable returns of agriculture, upon the then increased price of land and cost of capital.

The greatly increased prices of slaves do not (as in regard to lands) even offer evidence that their preceding profits have justified the advance of price, but only that the profits of slave labor in *some* locality have been and still are great; for slaves, being moveable, will be rated in price, not by their profits in their actual location, but according to the profits in any other region to which they can be easily transferred. Thus it might be, that while the profits of grain tillage and of agriculture generally, in Virginia, would yield the least profit, the prices of slaves and also their profits might be at the highest rate, on the cotton and sugar-lands of the more Southern States.

In the last twenty to thirty years, both agricultural improvement and profits have made great advances in Virginia. Mainly in consequence of improvements in fertility and productiveness, the prices of land have greatly advanced. Let us suppose that this advance of price, on the general average, to be equal to forty per cent. (On particular farms it has been full two hundred per cent.) If the increase of net profit is advanced (by the improvement of the land) in equal proportion to its market price, the land is now as well worth one hundred and forty to a present buyer, as it had been at first worth one hundred to the former owner and first improver. Indeed, it may be worth much more, if additional future improvements are still in certain prospect, from which additional products and still greater profits may be hereafter realized. And so far as such prospective improvements enter into consideration, and make part of a present valuation, it may be conceded that the increased price may also be evidence of future greater value, as well as of preceding and present good products and profits. When such new and permanent improvement, and a certain income therefrom, have been made manifest, it may be a safer, and therefore a better investment, to buy land at the latest and highest price, than it had been at the early low price before the improvements of fertility had been made, and when their feasibility was doubtful or totally unknown. Nevertheless, it is not the less true, that the first

improvers who raised the lands from the lowest to the highest production and actual value, derived more profit during the process and progress of that improvement that they or their successors could do at the later time of highest value and price, and maximum production of the lands. Further: the first term during which the lands rose (by their improved production) from a low to a high market price, must have presented a more prosperous and more profitable condition of agriculture, than when, after the completion of their improvement, the lands had reached their highest state of production and of price.

No farmer can afford, or will long endure, to cultivate land on which his agricultural and other products regularly fall short of yielding a fair and ordinary interest or profit, on his whole capital so employed. Negligence of calculation, and ignorance of the amount of loss, may cause many particular and temporary exceptions. But as a general rule, men will not invest capital, nor continuous previous investments, in pursuits which do not yield the ordinary safe profits of capital. Therefore, if such reduction of profits shall occur in Virginia, the first effect will be to deter persons, as new undertakers, from investing capital in agriculture; and this will so far lessen the demand of purchasers, and increase the supply of land offered for sale beyond the effective demand, that the price of land must fall, as a certain consequence. So would the price of our slaves decline, for the same reason, if they were fixed to the farm, or to Virginia. But as their market price is regulated entirely by the demand and higher appreciation in the more Southern States, there will be no reduction of their selling value, for removal, because of the lower value of their labor at home only.

In another aspect we may see the same conclusion reached. The capital of the farmer in Virginia is made up mainly of land and slaves. Of this compound amount, the necessary slaves constitute a large proportion, and in many cases the larger proportion, of the whole mixed investment of capital. Considered merely as the necessary total investment in farming stock, and while yielding good profits on the whole amount, it matters not to the farmer how much value of his mixed capital is of land, and how much of slaves. It is only necessary to him that the two together shall yield good and sufficient products and profits on their united and total amount. In the last fifteen years the price of slaves has risen full 100 per cent. This increase of their price has not been caused by the actual increase of the value of their labor and their products at home, but by the higher value and greater demand for them abroad. Excepting, therefore, the few cases in which improved fertility and net products of farms have been increased in equal proportion with the doubled market price of slaves, no new undertaker could afford to buy slaves for investment in agriculture in Virginia, without some counter-vailing reduction of cost in the other necessary capital stock. And such reduction can only be found, or made, in the land—and this operation (which is already begun and in progress) will necessarily follow and increase with the supply of land for sale exceeding the demand of new purchasers. So far as the prices for slaves have already exceeded the profits of their labor in Virginia, so far that excess has already checked the demand for investments in agriculture, and must operate to reduce the price of land. And the more that the price of slaves shall rise, still more, and in full proportion, will it operate further to reduce the price of land, and to throw land out of cultvation (or to render its cultivation more imperfect), because of the loss (by their removal to the South) of the slaves needed for cultivation in Virginia, and which are even now very deficient in number.

Probably but few owners of slaves have voluntarily sold them merely on the consideration that it would be more profitable to sell than retain them as laborers, and as agricultural capital. But whether the recourse to sale is sought or avoided, by the present owners, the end will be the same, in more or less time. At the present high prices of slaves, no undertakers can afford to make new and complete agricultural investments. No such case has occured within my knowledge or information, for the last two years. It is only in cases of already established and successful farmers who, needing more slaves than they before owned, may buy a few more to supply great deficiencies of labor, and to prevent great consequent losses. But even such men as these do not, and cannot profitably, buy half so many additional slaves as they greatly need for their labor, and as they would buy, if at much lower prices. Consequently, though

the general *home want* for labor is greater than would be supplied by all the natural increase of numbers of our slaves, the *home market demand* is almost nothing, compared to the effective *Southern demand* for our slaves. Thus, whenever debt, or necessity, or the legal division of slaves among heirs, compels the sale of slaves, nearly all sold must be sent abroad. It is supposed that the annual draft and deportation thus made on our stock, already exceed in number all the increase in slaves in Virginia by procreation. This loss must continually increase with the potency of the producing causes, and with increasing rapidity; and sooner or later the operation must remove so many of our slaves, as necessarily to destroy the institution of negro slavery within the limits of Virginia. Every successive step of approach to this end will be more and more calamitous to the economical, social, and political interests of this commonwealth; and the complete consummation will be one of the greatest of evils to the whole of the Southern States, of which, as yet, Virginia forms an integral part in sentiment, interest, and in institutions and policy.

Some persons, even in Virginia, and at this late day, would deny that there would be these or any general evils produced by the extinction of slavery in Virginia, by this operation of gradual sale and deportation. To the holders of such opinions, or any others of the anti-slavery school, I shall not oppose a word of argument. There are also many other persons who deem that the highest price for slaves is always beneficial to the owners, and that any injury from their sale abroad, at such high prices, if in numbers short of the annual increase, will be more than counterbalanced by the large sums thus received by the sellers, and added to the general wealth of the community. Treating this merely as a question of values or of economy, I will estimate nothing on the score of feeling and humanity, and the disruption of all the ties that must be caused by this general, though gradual and long-continuing deportation of all the slave population of Virginia. But considering the question merely as to values, and without descending to details, I maintain that no possible increase of market price, or of pecuniary profit to the seller in each particular case of the sale of slaves, can compensate the commonwealth for the enormous accompanying evils, even if these evils were merely social and political. But to reach the end —of the removal of all slaves and of negro slavery—which some few of our distinguished politicians and political editors even now look forward to as a benefit—our people and commonwealth must first pass through various other conditions of loss and calamity—the gradual deprivation of necessary agricultural labor—lands reduced more and more in price, deprived of necessary means for fertilization, badly tilled, and much even thrown out of cultivation—the emigration of numerous slaveholders and agriculturists, and of the wealthier and most industrious of our people, because agricultural capital in Virginia could no longer yield profit—and the general deterioration, social, moral, and intellectual, of the remaining diminished population of the State. Even the later supply and substitution of a laboring class of foreigners and Yankees to make up a new population (which is the great compensatory benefit expected and promised by anti-slavery theoretical reasoners), could not be made way for, nor effectively invited, except by the prior nearly complete removal of slave labor, and the consequent lowest prostration of prices of the lands and of the prosperity of the still existing remnant of the original population. When a descent shall have been thus made, and every former property-holder has been either driven away, or ruined if remaining, it is true that a new colonizing of the desolate and wasted territory might and would be effected, and of materials which it is one of the important benefits of our present institution of negro slavery to keep away and to defend us from. I will not attempt, by any opposing argument, to lessen the satisfaction of those persons who can imagine a recompense for thus destroying the present population and commonwealth of Virginia, in the prospective establishment, after a century of calamity and desolation, of a Yankee community on the territory of Virginia. It is not to such reasoners that my remarks are addressed, but to those who, like myself, deem the existing institution of negro slavery to be one of our chief blessings, and that its removal, by any means whatever, would be an unmixed evil and a curse to the whole community.

So far, reference has been made only (or mainly) to general interests and results. Let us now consider the subject in its bearing on private or individual interests.

Even if the commonwealth should suffer ever so much in the loss of agricultural labor, in the gradual decline and eventual prostration of the price of lands, in the emigration of its best and most wealthy population, in the consequent drying up of the sources of public revenue, and so destroying public credit if not also State solvency, in starving out education, stifling refinement of manners, and lowering social character and intellectual station—still it would be conceded by most persons, that individual slave-owners at least are profited by the existing high prices, and will be still more profited by any further increase of the foreign demand for, and sale, and exportation of slaves. This may be true in many particular cases, if we look solely to the immediate interest and gain of the individual seller, and to that particular transaction and time only. It may be true, and permanently, in many more cases, if the individual seller (by early emigration or otherwise) shall escape being involved in the later and consequent ruin of his country. But all such cases will form but a few exceptions to the general rule, that the greatest (supposed) private gains of individual sellers of slaves at highest prices, will be more than counterbalanced in their own shares of the remote loss and damage inflicted on the community by the whole system of extensive sale and deportation of slaves. And putting aside the effects on the general interests of the commonwealth, the greatest amount of gain produced by the high prices of slaves to their individual owners are not so great as the amount of disadvantage and loss, produced by that same cause, to the interests of a much greater number of other individuals and members of the same community.

The individuals who are benefited by obtaining prices for slaves too great to be afforded by any persons who would desire to buy here, are those only who choose or are compelled to sell slaves. There are almost no slaveholders and farmers who, of their own choice, would, by selling some of their slaves, lessen their amount of labor, which is already deficient on almost every farm. They who thus make partial sales are very generally such as are compelled to sell because of improvidence, bad management, and consequent debt, or other great necessity. No persons look forward to sell, and so to profit by the existing or prospective high prices of slaves, except those who also expect to be compelled by debt; and these are fewer, by many, than the number who will be actually so compelled at later times. Then it is only the few persons who expect to be compelled to sell slaves who also can expect to obtain any pecuniary gain from the highest price of slaves. To all other persons, more than ten-fold in number, high price is either of no operation, good or bad, or it is an injury and an obstacle to prevent their obtaining greater pecuniary gain by employing more slave labor. To the farmer and slaveholder of ordinary and average industry and thirft, whose other means and extent of labor increase as his slaves increase by procreation and growth, who neither desires nor expects to sell or to buy slaves, but only to bequeath those which he possesses and their increase to his children—it is clear that such a person neither gains nor loses by high, nor would lose by a low market price for slaves. They are worth to him the actual value of the net products of their labor (which he cannot dispense with), and there is no difference to his income or interests whether his best slaves would sell for fifteen hundred dollars, or for but five hundred dollars. If a man so situated sells a vicious slave, he will need to fill his vacant place by the purchase of one more suitable, and still there will be neither gain nor loss in the rate of price, whether both are high or both are low, in the sale and purchase.

But besides these two classes of farmers and slaveholders, there is another, the members of which are the most industrious, thriving, and of most utility and benefit to their country. These, by the continued extending of their agricultural improvements and labors, need more slaves than they possess, and yet cannot afford to buy them because of their exorbitant prices. If to be bought at lower and remunerating prices, these men alone would buy as many slaves as would be sold by all the improvident and necessitous owners, and thus there would be retained to the commonwealth, and transferred to the most profitable service, all the labor that is now lost and is so greatly needed. There are now in Virginia, even of those already slaveholders, ten men of this most useful class, who would be glad to buy and employ more slaves, where there is one of the indebted or improvident class who is compelled to sell. And more slaves are needed, and would be bought and retained by residents, if at low prices, than

are now sold and sent abroad to obtain the present high prices. To say nothing of higher considerations, and public or general interests, the benefit that would enure to individual buyers from greatly and permanently reduced prices for slaves, would be much greater than would thereby be lost in price to all the individuals who are sellers.

But even this is but a very contracted view and comparison of the private interests at stake—and of the balance of benefit that would accrue, first to private individuals, and through them to the community. The foregoing estimate and comparison of interests were limited to actual slave-owners. But the number of slave-owners would be greatly increased, (perhaps doubled,) if the prices of slaves were greatly reduced. It is not needed to set forth the advantages to the commonwealth, and to the slaveholding interest, of increasing the number of additional proprietors of slaves. And besides all such new recruits to the slaveholding interest, every other man in the commonwealth, who expected or hoped to be able to become a slaveholder at any future time, would deem his wishes and interest forwarded and served by such reduction of the market price of slaves, as would offer the only ground on which to rest his hopes.

But there are many persons who, even while admitting the truth of more or less (and even of the whole) of the positions here assumed, still will claim, as a great gain and profit, both private and public, to Virginia, the large amount of money received for the slaves annually sold and carried to the South. Suppose the number so removed, to be now at the rate of twenty thousand a year, and they being mostly of the more valuable classes, may be averaged at eight hundred dollars, making the total amount of purchase money sixteen millions of dollars a year. Whatever evils and sufferings may be incident to these sales, it is conceded by most persons, and scarcely denied by any, that the money thus received is, at least, so much profit to the sellers, and to the commonwealth, in the same manner as would be obtained from the sale of any other production of agriculture. This I deny. Such would indeed be true, if the slaves sold were all surplus, and not needed either for the service of their owners or the benefit of the commonwealth. But such is not the case, in any respect. Crops sold and exported are entirely surplus, and every dollar's worth sent away is so much gain to the individual producer and to the public interests. And any portion of such surplus, that was held back from sale (or as profitable use or consumption,) would be so much of waste and dead loss to the producer and to the country. Also of the grazing and fattening animals, which constitute the great agricultural products of the western portion of Virginia, the annual sales are strictly confined to the surplus animals, of which the removal does not detract from the present productive value, or the future increase of the numbers retained on each farm. It is an old calumny, often repeated in England and by Northern abolitionists, that negroes are bred and reared in these older Southern States for sale, and that the surplus individuals are annually selected for market, precisely in the same manner as a grazier selects his beasts for sale. If this charge were as entirely true as it is entirely false, however odious, abhorrent, and indefensible would be the practice, it yet might be truly claimed as being profitable to the full extent of the operation. For in that case only surplus and therefore useless slaves (at home) would be sold—and the number so abstracted could never encroach on the amount of slave labor required for the most profitable tillage of our State; and, therefore, if these motives and objects, and these only, operated to sell our slaves abroad, there would be now, and perhaps for many years to come, a complete cessation of all sales of slaves for exportation. For the proper tillage and improvement of our own lands, and other uses at home, now require, and could advantageously employ (if to be bought at fair prices,) every slave that is now sent out of the State. The actual sales are rarely induced because the slaves sold are surplus to the owners—and never because they are surplus to the commonwealth. It is the debt or necessity of the owners, that leaves to them no choice, but to sell some of their slaves—and it is their much greater value and price abroad which forbids other persons here from buying and retaining the slaves that are sold and carried away. And when such partial sales are compelled, the selected subjects for sale are not of the surplus, or the least useful individual slaves, but usually of the most efficient young laborers, of both sexes, because these will command the highest market prices. Further—the sales are not made

by owners, or from farms, where slave labor is best supplied, and where any loss of hands would be least felt—but most generally where labor was previously very deficient, both to the land and to the owner.

Another view will serve more clearly to disprove the alleged pecuniary gain to the commonwealth from the sale of slaves. It is a fact, known to every man of observation and intelligence, that labor is greatly deficient in all Virginia, and especially in the rich western counties, which, for want of labor, scarcely yet yield in the proportion of one tenth of their capacity. There is scarcely a farm in Virginia on which more slave labor is not needed, and could not be profitably employed in the improvement and tillage of the fields. For large spaces, ten times the present number of slaves are required, and (if bought at low prices) could be advantageously employed, for both private and public interests. Under such circumstances, the removal of every slave from the State is not merely the loss of the value of the service or hire of such slave, but of all the amount of additional crop or other product that the labor of such slave would have made if retained, and which has not been made, because of his removal and the deficiency so caused of so much labor. A young negro man may now be hired for a year for $130 and his maintenance; and his labor, applied to all the other capital of a farm that needed his labor, would probably add not less than $300 to the net sales of products of the farm. If, then, this slave were removed from the State, and, of course, so much labor as he would have performed be omitted, the annual loss to the farm, and to the commonwealth, would not be merely $130, the market price of his hire, but the $300, the value of what would have been the net product of his year's labor. Again: Suppose that a farmer should be tempted by the offer of double prices, to sell all his working horses and other plough teams, though he would be unable to replace them for a year. It is obvious that his consequent loss would not be the fair value, or price of hire, of so many horses and other working teams for a year, but the whole of the crop which he would fail to make for want of all team-labor, and which would amount to very much more than either double or quadruple prices for the animals he sold. Now, the sale of every useful slave from Virginia is, in like manner, a loss to the commonwealth of all the net products of the labor of such slave if remaining. Such labor cannot be replaced for the State; and therefore the loss continues for all the time that the laborer, if retained, would have been useful. Four years, estimated at $300 of net products so lost, would amount to $1,200, or about the highest present price for young and able men. According to these views, the highest prices yet obtained from the foreign purchasers of our slaves have never left a profit to the State, or produced pecuniary benefit to general interests. And even if prices should still continue to increase, as there is good reason to expect, and to dread, until they reach $2,000 or more for the best laborers, or $1,200 for the general average of ages and sexes, these prices, though necessarily operating to remove every slave from Virginia, will still cause loss to agricultural and general interests, in every particular sale—and finally render the State a desert and a ruin.

R.

Hanover County, Virginia.

(From De Bow's Review.)

The following very spirited and interesting account was received, (we regret to say,) too late for our July number, but it will be none the less interesting to our readers in consequence of the unavoidable delay attending its publication.

There is no part of Virginia, we believe, where the spirit of improvement in stock-raising is in advance of the neighbourhood in which the exhibition referred to in Mr. Noland's communication occurred, and there is probably no one in that neighbourhood who has contributed more largely to the diffusion of that spirit than Richard H. Dulany, Esq., who, for years past, has been importing some of the finest specimens of the best breeds in England. The most perfect Ram of pure South Down blood we ever saw was exhibited by him two or three years since at the Fair of the Virginia State Agricultural Society:

For the Southern Planter.

Upperville Union Colt Club.

The annual exhibition of the "Upperville Union Colt Club," came off on the 16th instant. Upperville, you may probably know, is a village, beautifully situated among the green hills of Loudoun and Fauquier, just at the foot of the Blue Ridge and in a section equally noted for its fertility of soil

and beauty of scenery. These lands left untilled for a few years, carpet themselves in rich turf, and are generally owned by men of wealth, who are enthusiastic agriculturists and stock raisers; so that there is not wanting rich pasturage, ample means, nor the spirit of enterprise necessary to improve to its highest degree of perfection, live stock of all kinds. The *hobby* of the country, however, is the *horse*, the love of which is a *passion* with this people. Any of these "sovereigns," like England's king on Bosworth field, would give "his kingdom for a horse." Old and young, rich and poor, white and black, have a "*ga-laugish*" look when in the saddle or handling the ribbons, and as a consequence, every thing with hair on it is made to move. In one family, particularly, it is thought by some that the children are *born with spurs* upon their heels, and all the colts come "natural pacers."

For many years past much attention has been bestowed on breeding *horses for the saddle*, and such a commingling of pure "riding blood" was never known in any other country. "Hiatoga," "Robroy," "Saltram," "Tom," and "Telegraph," hold place in the affections of the people, and each is as highly esteemed by his friends as if "all the blood of all the Howards" had coursed through his veins. The wonder is that the product of such moving crosses ever *stand still* long enough to get a saddle on. A very interesting confirmation of the theory that the "*acquired* traits of the progenitor transmitted to the offspring," is here found in the fact that many of these colts, before they are "bitted," excell in what we call the *artificial gaits*—rack, dog-trot, &c. (And let me tell you, by-the-way, that the "dog-trot" is the very perfection of a travelling gait. In it the greatest distance per day is accomplished, with little fatigue to horse or rider, and, if you want to feel like a business-man, a freeman and a gentleman, at one and the same time, just get a good dog-trotter and go ahead.)

Of late the attention of the horse-breeder of this section has been divided between the saddle and quick-draught horse, and the introduction of the Black Hawk, Messenger, Madison, Hunter, Cleveland and Moss Grey, strongly suggests the idea of "2.40," if only a level could be found among these hills on which to lay a "plank." This, however, is not the land of "fast" men nor fast horses, so that these colts will have to find their level elsewhere; but, if in light draught, you seek *high style*, *great beauty*, and *perfect grace*, here you find it in full perfection. I predict that the influence of this Colt Club will be impressed upon the character of the horse throughout the State, and that these shows will become marts for the sale of fine horses, at which every want may be supplied. There were upwards of eighty entries in the different classes, and the Club on this occasion distributed about $500 in premiums, consisting of beautifully wrought silver cups; and if merit could have been fully rewarded, double the amount would have been disposed of. I send you herewith a list of awards, and can but regret that circumstances will not admit of my calling attention to some of the unsuccessful competitors, who though losing the high prize, are yet well worthy of a commendatory notice.

FIRST PREMIUMS—$20 CUP.

Geo. S. Ayre—Heavy draught 1 year old stallion.

Jno. M. Scott—Heavy draught 2 year old stallion.

Jno. Grant—Heavy draught 2 year old gelding.

Joseph Jeffries—Heavy draught 3 year old stallion.

Rich'd E. DeButts—Heavy draught 3 year old filly.

N. Berkeley—Quick draught 1 year old stallion—Madison Hunter.

N. Berkeley—Quick draught 2 year old stallion—Madison Hunter.

Samuel Tebbs—Quick draught 2 year old filly—Black Hawk.

H. G. Dulany—Quick draught 3 year old stallion.

Rich'd H. Dulany—Quick draught 3 year old filly—Cleveland Bay.

J. Thos. Smith—Saddle, 1 year old stallion—Oregon.

Sam'l T. Ashby—Saddle, 2 year old stallion.

Thos. Foster—Saddle, 2 year old gelding—Tom.

Robt. Carter—Saddle, 3 year old stallion—Tom Telegraph.

Dr. J. Bushrod Rust—Saddle, 3 year old filly—Tom Telegraph.

SECOND PREMIUMS—$15 CUP.

Sam'l Tebbs—Heavy draught 1 year old Scrivington colt.

Robt. Carter—Heavy draught 2 year old gelding.
Ashton Marshall—Heavy draught 3 year old Oregon filly.
Rich'd H. Dulany—Quick draught 1 year old Scrivington colt.
R Welby Carter—Quick draught 2 year old Black Hawk colt.
Sam'l Tebbs—Quick draught 2 year old Black Hawk filly.
Caleb Rector—Quick draught 3 year old St. Lawrence colt.
A. C. Randolph—Quick draught 3 year old filly—(Gipsey).
F. Lewis Marshall—Saddle, 1 year old Oregon colt.
Dr. T. Eliason—Saddle, 2 year old colt.
J. Bushrod Rust—Saddle, 2 year old filly.
Col. Ham'l Rogers—Saddle, 3 year old Saltram colt.
Geo. S. Ayres—Saddle, 3 year old filly.

Among the old horses for which no premiums were offered, I noticed Mr. R. H. Dulany's splendid imported Cleveland bay, Scrivington—a horse of great power, and suited to all work—the Black Hawk horse of the same owner—the getter of more fine colts than any other on exhibition; a Messenger horse of Mr. R. Welby Carter, which gives great promise; Mr. Marshall's Oregon, a fine mover, and the getter of several of the premium colts; Mr. Nath'l Burrell's Moss Grey, which has about him all the points of a quick draught horse, and several others of merit.

The success of this enterprise will, I hope, induce the formation of similar clubs throughout the State, under the influence of which Virginia will become famous for her fine horses. Yours, R. W. N. N.

From Hunt's Merchants' Magazine.

Manufacture of Paper from Straw.

A German invention for treating straw so as to produce a pulp suitable for the economical manufacture of paper, is said to successfully meet the difficulties that have heretofore attended the process. The straw is first steeped entire for sixty hours, in spring, rain, or river water, of a temperature of from fifty-five to eighty-five degrees, according to the season of the year. After some hours, the water becomes gradually warm and discolored, and an active fermentation takes place. After sixty-hours, the liquid is suffered to run off, and the straw is washed with a plentiful supply of water, in order to remove all the soluble coloring matter. The straw is then drained, and while still damp is subjected to the action of millstones, rolling on a plane surface, or passed between a pair of rollers, in order to flatten the straw. It is then forced between other rollers furnished with cutters, or other suitable apparatus, whereby the straw is formed into filaments or fibres, as long and continuous as possible.

When thus reduced, the straw is exposed to the air and sun, for the purpose of drying it, after which process the straw will have assumed a pale yellow color. By subjecting the straw to the action of water, and subsequently exposing it to the air and light, it becomes bleached to a certain extent; but by means of a subsequent process, it is completely divested of all coloring matter, and is rendered perfectly white. After having been submitted to the process referred to, the straw is steeped for one or more days, according as it is in a more or less filamentous state, in one or more chemical preparations, the filaments being first treated either with the alkaline solutions, or by the solutions of hypochloride of soda or potash; and sometimes for a longer or shorter period, with the preparations of hypochloride of lime, until the straw has acquired the requisite degree of whiteness. By these processes the straw becomes reduced to beautiful filaments, which may readily be converted into pulp.

From Hunt's Merchants' Magazine.

Means of Preserving Timber.

Oils are preservatives of wood, as is evidenced in the case of whaling ships, which seem to be proof against decay. Hot oil has been experimented with in impregnating wood; but while it rendered it more durable, it injured the tenacity of the fibres. From the well known preservative nature of arsenic, it would be effectual for preserving timber, but its use is attended with much danger. Timber impregnated with a solution of tannin is rendered preservative, by the tannin combining with the albumen, and forming an insoluble compound, in the same manner that leather is produced by the combination of the tannin with the gelatin of skins. Creosote is an excellent preservative of wood, and the efficacy of common tar, for this purpose, is attributed to the creosote it contains. The boiling of

timber in wood tar renders it highly preservative, but it impairs its strength. About two gallons of creosote to every one hundred gallons of water, makes a sufficiently strong solution for use. Burnett's process for preserving wood consists in the use of a chloride of zinc solution—one pound to every five gallons of water, and is applied in the same manner as the corrosive sublimate. For ship timber it is much superior to the corrosive sublimate, because the compound which it forms with the albumen of the wood is insoluble in salt water, which is not the case with the mercury compound. The chloride of zinc, and the sulphate of copper are the most simple, and the best preservatives, considering the cost. Shingles for roofs of houses, boiled in a solution of the sulphate of copper or pure salt, will last many years longer than they otherwise would.

From the New England Farmer.

Ornithology.

BY S. P. FOWLER.

The family of wrens in the United States and Territories is composed of 12 species, and includes the genus regulus, (crested wrens) and the Troglodytes or proper wrens. The only species I have observed in Danvers are the house wren, winter wren, marsh wren, golden-crested wren and ruby-crowned wren. The common house wren, (Sylvia Domestica of Wilson,) which I intend more particularly to notice, is the most numerous species found in Massachusetts. It has become completely domesticated, is never seen in our woods and forests, and seldom noticed far from the habitations of men. With the protection it everywhere receives, it is singular it is not found more abundantly, as it rears two broods of young in a season, and lays from six to nine eggs. Its habits are very peculiar and eccentric, possessing individuality in a high degree. It is never moved by a particle of gregarious emotions so common in birds; on the contrary, two pair of wrens can never endure each other's presence in a garden, a quarrel always taking place, and one of them is forced to quit the premises. Although quite a small specimen of ornithology, it is smart and courageous, petulant and imperious. It seldom fails to assault the peaceable blue-bird, when preparing to breed in the neighborhood, by visiting its nest in the owner's absence, and committing outrages, of which one would suppose such little birds would not be found guilty, but leave such exploits to be performed by the cautious, piratical crow, or the handsome fillibustering blue jay. These visits of the wren to the domicil of the blue-bird are for the purpose of demolishing its nest, or sucking its eggs, and if surprised in these felonious intentions by the return of the mild, but justly indignant bird which wears the blue coat, it evades its deserved punishment about to be inflicted, by fluttering to the ground on its short curved wings, when it conceals itself in the shrubbery or passing along under cover, a few rods, it rises again to the top of a tree, and utters its hurried, thrilling notes in defiance.

While thus invading the premises of others, the wren is very careful of its own; not a bird can come near them for honest and peaceful purposes, without a hostile threat, or severe scolding, such an one as no other songster, but the one in a drab colored dress, knows how to inflict. Notwithstanding all this, the little churl possesses good qualities, alike noticeable in birds as well as men. Its domestic habits are admirable, taking the best care of its numerous offspring, being careful to warn them of the dangers, which beset their youthful flights, and of the cruel habits of the feline race, as every stealthy marauding cat, (our bird's greatest enemies and tormenters) would be compelled to admit, could these felines, (which should be shot, every one of them, when found in a garden,) be made to testify. The wren is also an industrious bird, its industry being peculiar, and not noticed in other birds. It builds a large nest, if we regard its surroundings, composing a foundation of short crooked sticks, that one would suppose would be very difficult to be managed by so small a bird. His labors, (I here speak more particularly of the male,) are not confined to constructing in connection with his mate, a cradle for his young, but embrace other than this, a constant instinctive desire to labor, when nothing useful is produced, in building nests not wanted, and but half formed. The wren is busy in this unproductive work, simply because he must be employed, cannot afford to be idle.

We see this industrious trait of character in men and think it commendable. I have never seen any thing like it in birds, with the exception of the one under considera-

tion, and it has also been noticed in the house wren of Europe. This labor is usually performed by the wren, when not particularly engaged with its own affairs, by odd jobs, as we say, chiefly when the female is engaged in incubation, when time passes slowly with him, helping to fill up a long day in June; with other engagements, such as scolding at the cat, as soon as he gets his eye upon her, prying into every nook and corner of the garden, by creeping about more like a mouse than a bird, and striving to obtain a general meddlesome knowledge of the affairs of all birds in his neighborhood. This labor, as we have before intimated, consists in forming as many half-finished nests as he can find boxes in which to build.

A friend of mine, desirous of getting as many of these birds to breed in his garden as possible, placed some two or three boxes in his grounds for their accommodation. In conversation he observed to me one day, that his boxes were filled with wrens, and was much pleased with the supposed fact. Knowing the singular propensity of this bird to engage in useless labor, I remarked, upon examination he would probably find but one pair of wrens in his garden. Ah! but, says he, I saw the birds go in and out of the boxes, and build their nests. I replied, we will examine them, and see if we can find eggs or young. Upon examination we found in all the boxes, but the one that was the true domicil of the wrens, nothing but a mass of short, crooked sticks! I never had but one pair of wrens in my grounds at the same time, although I have heard persons say *they had* two pair in the spring, but one of them was caught by a cat. I suppose, in this particular case, grimalkin's character had suffered unjustly, which so seldom happens in the imputed cases of bird-catching, I am particularly desirous here to notice. In my grounds the wren raises two broods in a year, and its sprightly and tremulous note is heard as late as the 20th of September. But little is known of its migratory habits; where it goes in autumn, and from whence it comes in spring, no ornithologist knows. It manages with its short wings to migrate beyond the limits of the union; most probably to Mexico. It comes to us in the night, and its pleasing, lively note is first heard upon a pleasant morning in the early part of May.

Knowing, friend Brown, your love for birds, I send you with this communication an olive-jar expressly prepared for kitty wren. In these jars I have found them more inclined to breed than in anything else, having had one of them in my garden for many years. The way and manner of placing it upon a pole, I have, I think, informed you.

Danvensport, April 30th, 1859.

The Influence of Salt upon the Growth and Health of Cattle.

The practice of salting stock at regular intervals, of generally about once a week, is maintained by all good farmers. When cattle and other farm stock are allowed to partake of salt at pleasure, it is found that in the season of the year when the grass is making its most luxuriant growth and is the most succulent, the consumption of salt is the greatest. Besides the beneficial effects of salt upon the animal system, its use serves as an important means to call together at stated periods the large herds that are pastured on the prairies and plains. Stock that have been thus treated expect it and are ready to answer at the first call of the herdsman.

Boussingault made some observations concerning the influence of salt upon the fattening of cattle. His experiments show that salt does not exert that beneficial influence on the growth of cattle and the production of flesh which is usually attributed to it. His experiments extended over a period of thirteen months, and were made upon a number of steers, some of which had their rations salted, while others had not; in other respects they were treated in a precisely similar manner. The results show that the increase in the proportion of flesh does not pay for the salt employed. It is, however, remarked that a saline diet does exert a beneficial effect on the appearance and condition of the animals, for the steers which were deprived of salt for eleven months appeared sluggish and of a languid temperament, their coats being rough, devoid of gloss and partially bare, while those which had been fed with salt were lively, had a fine glossy coat, and were sure to attain a considerably higher price in the market.

From the observations of this distinguished agriculturist and chemist, although it does not appear that there was an actual

cash profit in feeding salt to his steers, yet from the sleek, healthy appearance of those treated to it, it evidently contributed to their health, and we believe nature not only demands, but requires it.—*Valley Farmer.*

For the Southern Planter.

Tobacco the Bane of Virginia Husbandry.

No. 4.

Let it be granted that a plantation with the proper equipment of hands under the tobacco system, can work out of the soil a larger income in dollars and cents for a limited number of years by the tobacco crop, than can be realized in cash by a farming course—yet it may be shown, that the tobacco culture is an illustration of the Fable of the Goose that laid the golden eggs—it may be worth the while in this progressive age to present the arguments on the other side, notwithstanding the above formidable admission, sustained as it *seems* to be by "the Almighty Dollar."

Not one jot or tittle of the charge against tobacco, as the most exhausting of all crops can be abated. The impoverished fields of the whole State, where it was once cultivated as the staple crop, but for the last quarter century has been abandoned because it no longer yielded a remuneration for the labor employed in its production, is conclusive evidence of the alleged fact.

Every county of Virginia, from the seaboard to the head of tide-water, with several tier of counties above, in their natural State one of the loveliest regions on earth, now presents a standing monument against the ruthless destroyer, in a wilderness of piney old fields and gullied hill-sides, hitherto the acknowledged fruits of the tobacco culture.

It is now argued, that Virginia owes her late reduced state to the corn culture, and not to tobacco, and as a farther apology for tobacco, that the country was originally poor.

The fact that corn has been continually a profitable crop, throughout all the counties where tobacco has ceased to be cultivated, is well known; and it is equally well known that the corn crops have been steadily increasing in productiveness since tobacco has been given up, which is a sufficient answer to the unjustifiable assumption. And as to the original poverty of the country, we need only refer to one witness to the contrary, whose testimony will hardly be questioned; the most authentic and earliest Historian of Virginia—the gallant and distinguished, and above all, the Christian gentleman, Capt. John Smith. See Smith's History of Virginia upon the point. If the testimony of this witness, added to the every-where-existing-frightful piney old-field and gullied hill-side monument, do not convince, it may be useless to resort to any further argument on this point. But let the subject be presented under the only aspect likely to attract the attention of the mass of cultivators—the pound, shilling and pence aspect—and results may be shown upon bases of fair calculation, that will bring the rival systems of the plantation and farm more nearly upon a par as to profits, than the larger cash income from tobacco, claimed by its advocates, would seem to allow.

It may be safely assumed, that three times as many hands are necessary, and usually employed for a full-handed and well-found tobacco plantation, as for a farm of the same arable surface, upon a strictly farming system. We will make our calculations upon a medium sized plantation of twelve hands; a farm of the same arable surface and equal value would require four hands, and here of course in the all-important item of labor, the value of the hire of eight hands is fairly chargeable against the plantation, and forms a large offset against the tobacco cash income—but it is fair here to allow that the greater cost of utensils and machinery upon the farm than the plantation, must go in abatement of the offset referred to above. Nevertheless, when the increased annual value of the real estate of the farmer is taken into the account, (as it reasonably should,) it leaves but a small, if any, balance of cash in favor of the plantation system, and if nearly equal at the outset, there must, soon, be a wide difference between them.

If the planter, with all the modern progress of agricultural science, aided by the new fertilizers, can improve or keep up the value of his land, (a question yet requiring further experience to settle,) it may be assumed, that he cannot improve his land in any degree of comparison with the farmer, for reasons already shown in my former numbers—the value of the real estate of the planter, if not positively at a stand-still, advances at a snail's pace in comparison

with that of the skilful farmer. True, the farmer's improvements cannot be represented by any fixed quantity, for they depend upon the skill and energy of the manager, which is ever variable. The marked difference between the two is discoverable in many points. The planter may have a larger amount of dollars to meet his indebtedness when he sells his tobacco, than comes at any one time in the year into the hands of the farmer—but the planter has to draw upon his dollars to buy a part of his bread corn, almost all his meat, and the whole of his teams; the farmer makes and raises them all at home.

The planting system is essentially connected with the credit system--although the weed always commands the cash—yet the planter is kept behind the time, because it takes him a year and a half to compass his crop, while the farmer gets through all in a year.

If the planter has any surplus funds after paying for his necessary supplies, they go to buy fresh lands and more hands to make tobacco: the skilful farmer's investments go to the addition of his real estate, an investment which never fails, as legally constituted bodies corporate sometimes do.—Moreover, the farmer's improvements are identified with all the more rational endearments of home. Where, beside the broad acres under a course of improving husbandry, are seen the ever fresh and still growing comforts of the garden, the verdant lawn, the shade trees, and the blithe painted cottage, with the farm yard hard by, with all its interesting accompaniments, forming a little earthly paradise. Now let us compare with this the plantation and its domicile—often a dilapidation in the midst (technically speaking) of a standing tobacco lot; if inclosed, fenced in with a worm fence made of mauled rails—including half an acre for a cabbage patch, called the garden, leaving a narrow margin of turf around the unpainted dwelling, because more could not be spared from the tobacco crop. These form the well known features of the establishments of many of the devotees of the tobacco culture. But after all it is still triumphantly harped that the planter can make a larger amount of dollars than the farmer; but admitting it to be so, has not the time come when the reduced state of the fee simple value of the country calls for a change?

It is the highest aspiration of the regular tobacco maker to add to the number of his hands, buy fresh lands, and make larger crops of tobacco.

Strange that the obduracy of agricultural habit, in our enlightened community, and this progressive age, should hold so many still, spell-bound to a system which the face of the country, from the sea-board to the mountains bears melancholy testimony to the ruinous effects of, in that it has converted one of the loveliest regions of the earth into a broad wilderness of piney old fields and gullied hill sides—nor is it within the compass of human ingenuity to conceal the fact, that this wide spread ruin has been the work of the tobacco culture.

But we may console ourselves that "all things are mutable and nothing fixed," and that the culture of tobacco in Virginia, must, in the nature of things, continue to run down, and must finally give place to the more rational, moral, and comfortable farming system. The blessings of this change are apparent already in all the tide-water counties from which tobacco has been longest excluded. Recently these counties are showing a degree of improvement, which will soon bring up the value of their lands to those of the best of the now remaining "tobacco-land" districts; the price of the former are steadily advancing, while the price of the latter must inevitably fall under the short process of three successive crops, which always does the work of completely exhausting the richest soil for tobacco, until it is manured. But if the present high prices under the stimulating artifice of the lottery, gambling principle, which of late years has been brought into the market, leads to keeping up the crop, the effects must be disastrous, morally, as well as agriculturally.

The mass of tobacco makers will judge of the arguments urging the abandonment of the crop, upon the exclusive principles of rural economy, but there are many individuals of the highest class amongst them—that class that constitute "the salt of the earth,"—to whom the matter may be presented under a far more interesting aspect, than the pound, shilling and pence aspect. I shall therefore address my future numbers to those only that hold themselves responsible for the morality of their calling.

(Signed) JOHN H. COCKE.

To thine own self be true.

From the Gardner's Monthly.

The Philosophy of Transplanting.

WHAT is the secret of successful planting? Why do some trees live, and some die under the operation? Why do they not all live? Why do any of them die?

Though comprising some of the simplest of questions, and affording as simple answers, who has ever heard a satisfactory one given? Jupiter, when he undertook to receive the complainings of the sons of men, could not be more struck with the opposite nature of their wants and wishes, than a new beginner in the planting line must be at the varying and contradictory advice he is constantly receiving. "Don't plant in fall," "Don't plant in spring," "Prune severely," "Don't prune," "Water at planting," "Don't water:" but we may as well stop. As to reasoning on the matter, who attempts it? Some few do; but how do they do it? "Dogmatically, dictatorially and absurdly."

"I have done with getting trees from Brown. Lost three-fourths of what I got from him last year."

"Trees do best from a change of soil. Those I got from neighbor Smith's nursery all died. Those from Nebraska all lived."

"It don't do to spit on your hands while planting trees. I set out two last year; had to stop for that purpose while filling in one, and that one died; the other is doing well."

Of course, you will say the last reasoning is absurd, but it is no more so than any of the others.

Now, if we can only demonstrate why a transplanted tree dies at all, all the questions about the time and season and manner of planting may be compressed into a small paragraph. It needs no reasoning to tell us an umbrella is useful in rainy weather, or that a well-corked bottle will keep the liquid safely inside for an indefinite period, and yet these simple facts might be so confused by words, and obscured by scientific verbiage, that a score of opinions might be conscientiously entertained of them. This is the way errors arise in the idea of tree planting. We read learned disquisitions on the functions of the leaves, and their relation to the roots—of the cells and tissues, and of crude sap and sap elaborated; and after all the terms in physiology have been exhausted to show the cause of the death of a transplanted tree, it all amounts to this matter-of-fact conclusion: that it died through being *dried up*;

Through being dried up! You may as well tell us an animal dies for want of breath.

And if it does, we may not be able to give the breath, but we may give the necessary moisture to the tree. To make the matter plain, if we take up one of two trees, and leave it exposed for a few days, it dies,—it withers and shrinks away; but the other lives on as ever. Evaporation is continually going on from the branches of trees. In the exposed tree the roots are prevented from supplying the waste; in the other they maintain the balance; so that the one dies and the other lives.

Shall we now say that every case of death from transplanting is only a modification of this simple process? Indeed, it is from no other cause. The tree has *dried up*.

It is a remarkable circumstance that our physiological writers have nearly, we may say quite, overlooked this matter of evaporation. Only a few days ago, we read a very learned disquisition, showing that trees should never be pruned at transplanting, because the speedy production of roots was a great object; and as the elaborated sap in the branches was the matter from which roots were formed, why the more branches the better for the roots. All true enough, my good friend, if you could prevent the moisture from drying out in the mean time; but there's the rub,—the more surface the more waste.

A few days ago, one-half of a large worm was thrown into the writer's aquarium, as food for the fish; the other half was forgotten, and left in the open air. A few hours after, and this half was entirely dead—dried up. The half in the water-tank had managed to get beneath a rock, safe from the watering mouths of the pikes and tadpoles, and twenty-four hours after, it was still there, as lively as ever. "That is the idea again!" we exclaimed,—the check to evaporation saved its life. It could not easily dry up there; and so we carried the idea again to the tree.

Instead of laying neglected on the ground, we will say that it is actually planted. The roots are more or less mutilated—that is a necessary result of removal,—and many not mutilated are not, even with the best care, so closely imbedded or surrounded by soil, as to be able to obtain the same amount of moisture from the earth it could before transplanting. And now immediately follows a bitter cold windy day, or a

hot and dry time, when the very skies seem like brass, and all nature seems languid and debilitated; the sap is exhausted faster than the roots, so circumstanced, can supply, and just the same as in the totally neglected tree, it dies—*dries up*.

But the result is not often so palpable. No cold winds or hot days perhaps follow for a long time, but the soil is cold, and unfavorable to the production of new roots, and so the tree stays in a state of rest,—laying up no treasures, taking no thought of to-morrow,—and when the adverse time does come, its sandy foundation is discovered. It dies—*it dries up*. So we may go on through a score of illustrations. Still the same explanations, the same reasoning, the same result: it dies—*it dries up*.

From all this it follows, that to succeed in transplanting, all that is necessary is to have control of the evaporating power of the tree—to prevent, in plain language, the sap from drying out of the tree, until the roots have made new fibres, and thus able to supply whatever demands the branches may make on them for moisture.

There are, then, two periods when it is good to plant trees; one is when there is very little evaporation going on from the top of the tree: the other when the roots are active, and the fibres are pushing with freedom and vigor, and the *best time* is when we can get the two to work together. This is not easy. When the thermometer ranges between 30° and 40,° little or no evaporation is going on—the air is saturated with moisture, and a tree might be dug up, and suffered to lie for a week with its roots exposed, without experiencing material injury. Such times we often find in November and December, February and March, and at various times at other seasons. But the opposite objection arises; the ground is cold, and the roots, though not perhaps entirely dormant, are but little active. Again in the spring the roots are very active, and are ready to draw water almost as soon as the tree is transplanted; but—again that implacable *but*—the wood has become soft and spongy, and the atmosphere warm and drying, and evaporation goes on so very, *very* fast, that the advantages of the newly pushing roots are more than balanced.

In whatever way we look at the subject, this conclusion is apparent; that to be successful with tree-planting, *evaporation from the branches must be checked until the new fibres push*. Recognize this principle, and trees may be transplanted at any time of the year.

What will our readers say to the doctrine, that deciduous trees can be removed more successfully in May and June than at any other season? But it is a fact. It must not be done in the usual way. The leaves have to be stripped off, and the young growth shortened-in; evaporation is arrested, and the young roots, rejoicing in their newly-found liberty, push forth in all directions, and sustain the tree at once. New buds and leaves start immediately, and the tree goes on apparently with very little check.

Over and over again have we seen, during the past few seasons, trees taken up in May and June, and in August and September, and with the most complete success.

And now, dear reader, do not think that we are offering you crude theories, that have yet to be elaborated by the pure air of practice; or that we have taken an idea from some contemporary's sensation leaders, and with the aid of a few principles stolen from some learned physiologist's deductions, turned out of the editorial machine a piece of work that is to astonish you. That is sometimes true, and the authors or manufacturers get a greater reputation for learning than the more honest fools, as Shakspeare calls them. But this idea of late spring planting is becoming very practical here. It is now understood by many of our practical planters. As we now write, (first week in June) one of our most popular jobbing gardeners is driving by our office, with a large load of trees, which he would warrant for a small per centage, to give you more satisfaction than trees planted in March.

It is more trouble, to be sure, to prune and strip the leaves from the trees, and the whole care required to control this evaporation costs more than trees set out in the usual time and way; but to many a man, labor is better worth five dollars in April, when every thing has to be done at once, than it is in June, when nearly all is finished up.

Without making this chapter too long, it is impossible to go into the details of this idea as we would like to do. The reader must apply the principle for himself. He must check evaporation till new roots are produced, either by syringing, or shading, or pruning, or disleafing; he must do all he can to insure a rapid formation of new

fibres. He must, in fact, experiment and observe a little for himself; and when he, as he soon will be, becomes master of the idea, he may remove things at any time of year when he has the most leisure and inclination.

From the Indiana Farmer.

Straw and its Waste—Its Worth per Acre.

BY J. J. MECHI, OF TIPTREE HALL, ENGLAND.

SIR, This is a vital question for agriculture. For many years I have been gradually more and more convinced that straw has a considerable value for feeding purposes, for which alone it should be used, in order to extract from it the largest profit.

It is true that, when I have propounded this notion in the presence of practical farmers, their shouts of laughter have testified to their disbelief; and I have smiled at their prejudices and miscalculation, in conscious conviction that they would gradually have to surrender at discretion.

The quantity of wheat straw removed from an acre of well-farmed clay, where the average is 40 bushels per acre, would be 2 tons per acre. Science has shown us that, plowed in and considered as manure, its worth is but $2.24 per ton; while, used as food, it will, if properly prepared, realize a value of $10.00 per ton. Now what farmer would knowingly throw away $10 to $15 per acre, in so economic a business as farming? and yet, this is literally being done over millions of acres.

It is denied that straw has a greater value as food than as manure, it would, by parity of reasoning, be desirable to compare the manurial and feeding values of oilcake, barley, beans, peas, hay and roots.

While my farming friends ridicule my dislike to plowing in straw, they would stand aghast at my proposing to them to plow in their barley-meal, linseed-cake, or other feeding material.

But I can see no difference: the folly or error in each case is equal, and the loss comparatively as great.

Whence does this singular disbelief arise? Simply because the straw, in an unprepared condition, is not in an available condition as food.

I purpose to give a practical illustration of this question, by a statement of my own proceedings; but every one who would understand the question in its most comprehensive view, should study Mr. Horsfall's admirable papers on dairy management, in the Society's Journal. The whole feeding question may be considered as greatly developed by these papers.

The question of converting both our straw and our roots more advantageously than we now do, is a true breeches-pocket question for the British farmer; nor are the public less interested in the more abundant supply of meat, which would naturally follow the more economic use for our straw and roots.

The general appearance of thriving animals is unmistakable. If, after feeding, they lie down contentedly, free from restlessness, all goes on well. Such is the case with my ten young shorthorn bullocks, of Irish breed, about 30 months old, which were bought at $45 each, in 1858.

They consume daily—

216 gallons cut wheat straw		
6 do rapecake.....	$0	60
3 do malt-combs.....	0	09
5 do bran.....	0	10
Moistened by		
20 gallons of hot water (bean straw requires twice the quantity)		
300 lbs. of mangel-wurtzel	0	64

In round numbers, they cost at the rate of $0.84 per week, independent of the wheat straw. If I value the wheat straw at $10.00 per ton, it would add $0.60 to their weekly cost. The roots I value at $2.50 per ton. The animals are in a fattening and growing condition, and evidently are advancing remuneratively. This we can judge of by their appearance, as I have not, like Mr. Horsfall, a weighing machine for cattle. Nothing tests the value or force of food so soon as milking cows. I strictly adhere to Mr. Horsfall's proportions of food for mine; and the result is an ample supply of milk, and an increase in condition.

The food for each cow is as follows, daily: 20 lbs. straw chaff; 8 lbs. of hay; 5 lbs. rapecake; 2 lbs. bean meal ¾ lbs. bran; ¾ lbs. malt-combs; 35 lbs. mangel or Swedes. Cost (without straw), $1.82 per week.

The whole question may be said to hinge upon the condition in which the food is administered. It must be moist and warm; and the animals must have proper warmth and shelter. As a general rule, this is not

the case throughout the kingdom; hence much food is wasted or misapplied. Were I to give my bullocks the same quantity of cut straw in a dry state, they would not eat one-half of it; and, besides, they would be restless and dissatisfied. This I know from experience.

I will now describe my mode of preparation, and calculate the cost.

I do not use the ordinary close steaming apparatus, but a number of cast iron pans, or coppers, each capable of containing 250 gallons. These are set in brickwork, with a 4-inch space around them, each space connected with the adjoining one by a 6-inch earthern pipe.

Into these spaces, and around these coppers circulates a portion of the waste steam from the engine, after having passed through the cylinder.

I should state that a close vessel of water, connected with the supply tank, is kept in a nearly boiling state by the waste steam before it passes around the coppers, and a vertical four-inch pipe takes away the steam after it has passed around the coppers, after heating the close vessel of water, and then passes into the atmosphere.

The coppers are all sunk into the earth, so as to stand level with the floor.

By this means, when an extra supply of food is required, it may be piled up in a mound, and kept hot for two or three days.

The straw, cut fine and sifted, is thrown into the copper, twenty-seven gallons at a time, and then the proportion of malt-combs, bran, and rapecake strewed over it; then a pail of hot water (drawn from the hot water vessel close at hand) is thrown over it, and it is all incorporated by mixing with a steel fork, and well trodden down; then another twenty-seven gallons of chaff, with the other materials and hot water; another mixing and another treading down, until the copper is full and solid; and if extra quantities are required, it may be continued in the same way above and around the coppers, but it must be moist and solid (if too wet the animals will not eat it.) The larger the mass the longer it remains hot.

Practically, we can in winter manage, if our engine only goes twice a week; but as a general rule we work it for grinding, irrigating, thrashing, &c., more often than that. The mass of subterranean brick-work absorbs the heat from the waste steam, and holds it for several days.

The heat so obtained costs you nothing, for it would be wasted in the atmosphere.

I think the time will come when farmers will turn it to several useful purposes.

Animals will eat rapecake abundantly when so mixed and dissolved, but not when dry.

This is an admirable food for all sorts of farm animals, and it should be administered, more or less, through the whole year.

I should say that our roots are cut either by a Gardner or Bentall, and mixed in the manger with the warm steamed chaff. There will be no blowing, no griping, or scouring with food so prepared, and the animals eat it as hot as they can bear it.

In my earlier career, I reared first forty and then fifty calves, and sold them as fat bullocks, so treated, never having been off the boarded floor for two and a half years, and never having had straw under them.

The ten bullocks I am now feeding are on sparred floors.

The cost of cutting a ton of straw into chaff, one-fourth of an inch long, may be taken at 72 to 90 cents. The trials of chaff-cutters, as reported by the judges, in the Royal Agricultural Society's Journal, show that 112 lbs. or more of hay could be cut in three minutes by steam power. It would be well, however, to double that time or cost, because we know on such occasons everything is in "competing order," which could not be expected on a farm. Therefore, 48 cents a ton for hay, and 96 cents per ton for straw, would be a liberal cutting-up, allowance for steam power.

If we are to consume all our bean, barley, wheat, and oat straw, we must keep our animals on sparred floors, or on burned clay, and we must invest more capital in animals, and shall make much more meat per acre. If a ton of straw will make 30 lbs. of meat, and if two tons of straw are grown per acre on our cereal and pulse crops, it would be four score of meat per acre over the whole of the cereals and pulse.

Oh! but where is your manure to come from, if you eat your straw?

Why your animal, by this mode of feeding, consumes 560 lbs. of rapecake with every ton of straw. This is better than littering the yards by cartloads in wet weather, to sop up the water, and save some of the liquid manure which would otherwise be washed away by rain from untroughed roofs.

But what feeding property is there in straw?

A good deal of hilarity was excited at our London Farmers' Club the other day, by my stating that every 100 lbs. of wheat straw, contained the equivalent of 15 lbs. of oil. Since then I find I have understated the case, and that really each 100 lbs. of straw contains—see Morton's admirable Cyclopedia, vol. ii, page 1153 (Voelcker's analysis)—seventy-two per cent! of muscle fat and heat-producing substances, of which twenty-seven per cent. are soluble in potash, and thirty-five per cent. insoluble.

The soluble fattening substances are equal to 18½ lbs. of oil in each 100 lbs. of straw.

In conclusion, I would recommend every feeder of stock to study Mr. Horsfoll's papers in vol. xvii., page 260, and vol. xviii., page 150 of the Royal Agricultural Society's Journal. They will enlighten his mind, dispel his prejudices, and increase his profit.

By Mr. Horsfall's mode of feeding you may get the manure without cost, and a handsome price for your straw and roots.

The following facts, deduced from Mr. Horsfall's paper, will show that 1,000 lbs. of Swedish turnips, or 100 lbs. dry are worth, 43½ as manure, whilst

100 lbs. of hay are worth	$0 28½
100 lbs. of straw	0 10
100 lbs. of bean meal	0 60
100 lbs. of oilcake	0 75
100 lbs. of Indian meal	0 25½
100 lbs. of locust beans	0 10

Here is an instructive and interesting comparison with a vengeance! A ton of Swedish turnips are worth, as manure, 96 cents per ton, or nearly half the manurial value of a ton of straw or locust beans.

Oilcake, or rapecake are worth, as manure, $15.12 per ton.

If by his system of feeding 14 lbs. per week of meat and 3 lbs. of internal fat can be gained by each full-sized animal (and I am sure this can be done as an average,) I know of no other system which will exceed it in result, or equal it in economy.

The consumption of straw, in the way here suggested, would produce a very great increase of meat, manure, and corn.

If supplies of this warm food were conveyed to sheep in our field in cold and miserable weather, many losses would be avoided, and our turnips would make more mutton.

In order to provoke a discussion and examination of this subject, I send this communication to several papers, and shall probably enlarge upon it in some future paper.

From the Gardner's Monthly.

Improvement of the Soil.

Mr. Editor:

"Every one to his taste," is a trite old saying, and I have no doubt a very true one; and it suggests itself particularly to me just now, when taking up my pen to write you a few hints that occur to me about the subject named at the head of this chapter. I notice that many of your correspondents congratulate you that *this* subject has been brought up, and *that* subject has been explained; but to me there have been few articles in any paper I ever read, that gave me more pleasure than one on "Trenching Ground," and another on "Surface Manuring," in some recent numbers of your journal; because I think that by getting at the soil question properly, we come to the *bottom*, —the *root* of all improved culture.

Now, sir, it seems to me that in the discussion of this question, most practical men forget that there are two distinct objects to be aimed at. The first is that in working soil we are to render it fit to retain the greatest amount of heat and moisture that will benefit the plants, and no more; and the second is that we should convey into the soil such elements, in the shape of manures, as will most effectually perfect the growth of the plants.

A soil may contain all the fertilizing ingredients desirable,—all the carbon and nitrogen,—all the *sodium*, *potassium*, and what other *iums* go to make up the vocabulary of a chemist's treatise on the perfection of soils; but if it have not the capacity to retain heat and moisture in due proportion, —if it dry up the first hot June day, or remain cold and swampy when other soils permit their tenants to bask in the warmth of a few spring days' suns,—it is altogether imperfect.

Then, again, it may be perfect in this respect. It may be deep, and its particles finely disintegrated, and its capacity to retain heat and moisture so admirably balanced, that the most enthusiastic trencher could wish no more; and for all this, in the chief elements that constitute a fertile soil, it may be as poor as a miserable bit of humanity

who has no friends; and what under the sun can be poorer?

We find great difference of opinion to exist amongst men equally famed for their practical knowledge. One manures on the surface, and finds great benefit from the application, and then, perhaps, he goes further, and deprecates all those modes of practice which buries the manure far below the surface; another digs it deeply into the soil, and in the result obtains his every anticipation.

Looking at manures as fertilizing ingredients, the one who employs them at the surface, evidently has the best of the argument. The roots, properly so called, and which penetrate deeply into the soil, do not much towards supplying the plant with nutriment,—it is the fibres which are attached to the roots, or rather their points, or *spongioles*, as the physiologist terms them, which collect the feeding matter. The roots are the drones, and the fibres are the working bees of the vegetable hive. Now, the fibres are invariably found in the greatest abundance near the surface, and there, as a necessary corollary, is the place to furnish the necessary food.

But the roots, if they do not do much towards taking in substantail food, at least absorb an incredible degree of moisture, and the man who mixes his manure deeply in the soil, does a great deal towards increasing the power of the soil to retain moisture. All the vegetable matter he mixes in beneath the surface assumes a sponge-like character, with the same absorbing property, which, as also like a sponge, it gives off to whatever surrounds it that may become dryer than itself. Let not, therefore, him who sees his neighbor mixing long strawy manure a foot or more below the surface, say in his heart, "Oh! fool!" or him who espies the other raking at the surface, exclaim, "Thou jackass!" but let each of them watch the process in either instance, and mark the result.

With regard to trenching, Mr. Editor, I could never see what benefit was to arise from throwing good surface-soil two or three feet below the surface, when the most expected of the poor subsoil brought up was that it should be ultimately made as good as the soil originally thrown below. It always seemed to me something of the robbing the hen to fat the goose kind of a system, by which something was made on twelve, but as much lost on the dozen. But if by trenching is meant deepening a soil, and making it, by mixing vegetable matter with the subsoil, to retain heat and moisture in all weather, why then I am with you, heart and soul,

> "And here's a hand, my trusty fiere,
> And gie's a hand 'o thine."

If you do not receive the assent of all practitioners, you will at least have that pleasure from one who likes to look at things

PRO AND CON.

Summer Grazing—Grazing of Cattle.

BY A PRACTICAL FARMER.

A too frequent recurrence to the same subject needs every apology from stated writers; but the importance of the above subject to graziers, and the rapid increase of the numbers who read the *Mark Lane Express*, is a sufficient reason for again introducing the subject. I am not, however, about to write anything expressly new, or perhaps of much value to the experienced grazier: but amongst the many readers of the above paper, there are young readers who would like to "gain a wrinkle" from an old grazier, or to be reminded of some common things which may have escaped their present observation, it is for these I write a few remarks upon summer grazing in these papers. 1st, cattle; 2nd, sheep; 3rd, horses, &c., &c.

The grazing of cattle, the fattening of cattle, the lands adapted for the profitable raising of cattle must be of first class order. No inferior grass lands will do it, unless aided by a liberal allowance of linseed-cake or other fattening food; nevertheless, we have good grass lands of varied quality and power. The most powerful will fatten an ox of 100 stones weight without such aids; and others of such sweet and nutritive herbage on inferior soils as will fatten a Scot or Devon admirably. What I mean is, that the grazier must adapt his cattle to his land, or make up for either deficiency in artificial aids as food. No grazier should, however, attempt to fatten cattle on land not suited for such purpose; and this is soon generally known by the experience of every occupier, and on every occupation; and new tenants often injure themselves by not taking timely advice on this point. The best bullock-lands; These are usually grazed by

superior cattle, and I take it for granted that the general testimony and practice on such lands is correct, and in the average of years profitable. One thing I know, the occupiers of these beautiful lands are almost invariably to a man proud of them, and proud to see grazing upon them such splendid animals. This is one of the pleasures and gratifications of business. What grazier does not enjoy, intensely enjoy his evening stroll amongst a herd of first-class animals, all progressing favorably; and may he not justly exult a little now and then in the prospect of showing them at his favorite fair, and to his old round of friends and customers? I confess to such occasional pride, and I approve it. It gives stimulous to exertion, to care, to selection, to management in all its phases. This is all right; but there is another view to be taken as to the most profitable grazing of such lands. It is not that every grazier possesses a long purse, and is able to buy such ornaments to his field. What must the poor grazier do? I have seen some of the most powerful bullock lands grazed by very inferior cattle—aged cows, bull-legs, worked oxen, coarse steers; in fact, such a class of animals as only such land "could move," and which was well known to the occupiers; these animals often come in at little cost, and pay handsomely. I once saw a large and beautiful field of first-class land grazed by aged cows and a few coarse animals which would not average above some six or seven hundred pounds each; the profit was, I understood, very great. The care requisite in such a case is to obtain such animals as will bear a profit under such strong succulent herbage. If the animal is weak in body or constitution, it is certain to go wrong. It is therefore, manifest that first-class land need not of necessity be grazed by first class animals; but it is necessary that every animal grazed on such land must possess a constitution and aptitude to fatten and improve.

To graze profitably, the grazier must first take care to provide a good pasture. This he will do by "laying in" his fields early; so that he may commence stocking early. His next care will be to put in his stock in suitable weather, and in number proportioned to his keeping. He must not in any case overstock; if he does, in all probability he will lose his season. His stock must have a sufficiency of grass, but not more, or it will grow coarse and unpalatable, and the stock are thus confined to those sweet spots on which they delight to browse, often very bare and insufficient for their profitable advancement. Should such be the case, it is but to mow down gradually and daily every rough spot, and leave enough for every day's consumption. Cattle are very fond of partially-withered grass. There is great difficulty on this point in grazing lands subject to burning in hot weather; such lands "require a covering;" but I cannot think they require such a covering as is sometimes, nay often, seen. I have seen some of those beautiful Herefordshire lands, having pastures which, while carrying their usual quantity of stock, would, I think, yield at the same time a ton or more of hay per acre, positively "up to the knees in grass." In Leicestershire I have seen the like; yes, and in many other counties too. Now, if this could with safety be prevented, I doubt not but the grazing would be more profitable. To fatten cattle most speedily and advantageously, the grass requires to be ever new, and always in plenty. A bullock pasture—*i. e.*, not too young; that would cause looseness or scouring; but a good bite of strong-grown grass, but not old—just in accordance with the old adage, "twelve days old for a bullock." To insure this, it is often attempted to graze two fields alternately; that is, to lay one in for three or four weeks, while the other is being grazed, and then to bring back the stock as soon as ready. But this plan is objectionable, as requiring a double number of stock for the time being, which tread down a large quantity of most excellent herbage. The better course is to "get off" the forward animals to market, lay in one field, and well dress it over; *i. e.*, knock the droppings and cut up the tussocks or rough places, that all the grass may be young and fresh, and then turn the backward animals into this beautiful autumn pasture; they will on this seldom fail to get fat. The old-fashioned course is to reserve the best aftermath or eddish for this purpose, and failing this, to bring them into the hovel or byre for the winter. This is wofully expensive, and seldom pays. If a bullock will not fat by the above process of grazing, I would advise the graziers to quit him. It is customary with most graziers to reserve a few prime animals for Christmas. I know of no better course than to make the same provision for their benefit as for the backward ones except an

allowance of corn meal or cake amply sufficient to promote their rapid progress—no reasonable expense must be spared to get up a Christmas ox. Butchers will have perfection in their Christmas beef if possible, and don't mind paying for it; short of this it becomes good ordinary beef, and is bought accordingly; very good certainly; but it don't reach the top standard. To achieve this desirable point, each animal as soon as the pastures are done should have a separate byre or hovel where he can roam at pleasure. He must be supplied with the best of food, *i. e.*, turnips, carrots, cabbage, hay—all of the best quality, the root cleaned and sliced or pulped, and given with the greatest regularity, and then the animal must be left undisturbed. If he can be kept stalled or in a dark stable or hovel all the better, and an occasional or daily grooming is very serviceable. Fatting animals seldom require the services of the veterinary practitioner: the chief point to be observed in keeping them in a thriving condition is to change their keeping if requisite; and this will be principally needed in untoward seasons, or upon an extraordinary flush of grass or similar deviations from common ordinary grazing, as in seasons of drought. The water becomes in many localities pernicious, when it will require much care to avert injurious consequences. Nearly all these matters depend upon the judgment of the grazier. "It is the eye of the master that grazeth the ox." The chief changes in keeping are from a nutritious to old pasturage, from bad herbage and bad water to an eddish or green clover or seeds; or if dry food is indispensable an allowance of straw or hay is highly advantageous.—*Mark lane Express.*

Practical Men.

Professor Henry says:

"*Mere Practical Men.* We have no sympathy with the cant of the day, with reference to 'practical men,' if by this term is meant those who act without reference to well established general laws, and are merely guided by empirical rules or undigested experience. However rapidly and skilfully such a person may perform his task, and however useful he may be within the limited sphere of his experience, and in the practice of rules given by others, he is incapable of making true progress. His attempts at improvement are generally not only failures, involving a loss of time, of labor, and of materials, but such as could readily have been predicted by any one having the requisite amount of scientific information. It is the combination of theoretical knowledge with practical skill, which forms the most efficient and reliable character, and it should be the object of the agricultural colleges to produce educational results of this kind."

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We are glad to see the above by Prof. Henry, as it particularly applies to agriculturists. The future of agriculture will owe its progress to those who, in addition to pysical ability, will apply the lights of science to their vocation. No man can be a *practical* farmer who simply delves as a laborer, without understanding, at least in degree, causes as well as effects. To succeed in a *special locality* by simply carrying out the practice of others, will not insure progress elsewhere. Where natural law is fairly understood, then the operator can apply his knowledge to any locality or variety of circumstances. Farmers should at least know so much of the sciences, as will enable them to clearly comprehend the writings of those who investigate more clearly than themselves.—*Farmer and Planter.*

Sounding Shells.

There are few persons who cannot remember childish wonder with which they were filled, when a sea-shell was first placed to the ear; and the still greater wonder they experienced when told that the strange resonance which they heard was the roar of the sea; this being the common explanation given to children. There are, doubtless, many adult persons who do not know the phenomenon of the sounding shell. It is caused by its hollow form and polished surface; these enable it to receive and return the beatings of all the sounds which tremble in the air that surrounds it.—*Scientific American.*

Wood ashes and common salt, wet with water, will stop the cracks of a stove, and prevent the smoke from escaping.

A gallon of good strong lye put in a barrel of hard water, will make it soft as rain water.

Half a cranberry bound on a corn will soon kill it.

For the Southern Planter.

On Curing Tobacco Yellow.

Tobacco should be very ripe when cut. In order to cure a fancy crop, it is necessary to select your tobacco as you cut it, in order to get a house full as uniform as possible of plants that ripen a yellow colour. I put my tobacco in the house as soon as possible after cutting it, putting six to eight plants on a stick four and a half feet long, placing the sticks at a distance on the tier polls, so that the tobacco does not touch after it is hung in the house. Commence firing immediately with coal, at 100 degrees Fahrenheit twenty-four hours—the next twelve hours 105°, the next six hours 110°, the next six hours 115°—then increase 2½° every hour until you attain 165°, and remain at that degree until your tobacco is thoroughly cured. The stalk should be dry when you quit firing. As soon as your tobacco is soft enough to move after it is cured, shove the sticks as close together as you can, that it may more effectually retain its colour.

My barns are all 20 feet square, five tier in the body, and as tight as I can make them. I have nine fires to each house, made of coal—either pine or oak, or any other wood is equally as good. It is necessary to keep up the fires night and day.

CASWELL.

Yanceyville, N. C., July 11th, 1859.

For the Southern Planter.

Super-Phosphate of Lime.

Clarke County, Va., June 10th.

We would invite the attention of the *Farmers* of Virginia to Rhodes' Super-Phosphate of Lime, sold in Baltimore. For the last six or eight years, I have been in the constant habit of using Guano upon my wheat, but the *high price* of Guano, and the continued failures of the *clover crop* when the season has been at all dry, induced me, with many of my friends, to try Rhodes' Super-Phosphate of Lime, and the result has been *entirely* satisfactory. At a cost of $45 a ton, in the place of $65, for Guano, we have the finest crop of wheat we ever harvested. One stubble field estimated by good judges, at from 30 *to* 35 *bushels per acre.*

From my own experience of this year, and the use of it last year by some of my neighbors, I do not hesitate to say, that at the *same price*, I would *prefer it, ton for ton, to Guano.* Mr. Rhodes is an accommodating gentleman, and deserves to be patronized.

We are in no way interested in the sale of the Super-Phosphate of Lime, and only give our experience for the benefit of the farmers of Virginia.

A CLARKE COUNTY FARMER.

From Jackson's Agrieulture and Dairy Husbandry.

Ploughing.

* * * The object of ploughing is to delve and turn over the soil in ridges, to destroy the surface vegetation by burying it underground, where it rots and forms a kind of manure; to bury the dung spread on the land; to form furrows for different purposes; and, generally speaking, to break up the hard mass of land, and prepare it for the action of the grubber, harrow, and other instruments.

There are certain requisites to constitute *good ploughing*—a skilful ploughman, a steady team of horses, and a properly constructed instrument. Before these can be brought to bear, however, it is essential that the land be tolerably even in its surface. If it be encumbered with large stones upon, or a short way below, the surface, or with whins or furze, or any kind of heights and hollows, it cannot possibly be ploughed to advantage or with neatness. A preliminary to good ploughing, therefore, is to level and clear the land, by lowering its protuberances, filling up its hollows, breaking up and carting away its stones, rooting up stumps of trees, and, if required, draining its springs.

All this has been done within the last seventy years, to probably nine-tenths of the arable land in Scotland. If the land be in a rude condition, and require these and other improvements, another preliminary to a right process of tillage will be its division into fields of from six to twelve acres; the divisions to be hedgerows, walls, or palings, according to local circumstances. Whatever be the nature of the fences, they should occupy as little room as possible, and in moist situations they ought to have a sunk ditch on each side, to receive water from the surface and small drains. In Norfolk, Northumberland, the Lothians, and other highly improved districts, the fields in general are from fifteen to twenty-five acres in ex-

tent, each encompassed by fences and ditches, and to all appearance as beautifully trimmed on the surface as a garden.

The following directions to ploughmen, given by Mr. Finlayson in his excellent treatise on the Plough, will be perused with advantage by all who are engaged in tillage:

"Nothing can be more beautiful than a field commodiously laid off, and neatly ploughed. There is even none of men's handiworks that can please the eye more, and at the same time show more of its unruled accuracy, than a lawn which presents ridges of the same width, with furrow-slices running in straight equidistant lines; and that, too, with such minute exactness, as scarcely to be equalled by the gardener.

"It is not the man who makes the greatest ado with the horses who opens his ridges best, but more commonly he who goes steadily and directly forward himself, and keeps such a command, by the reins, as to prevent them from deviating far from the right path, yet without laying *too much stress on their precision*, or checking them suddenly, from one side to the other; and he who can take a straight furrow at first, and continue so to the last, even on a ridge of fifteen feet, will finish with one, two, or three bouts less than one who is all along undoing and overdoing, and that, too, independently of the ease to himself and his team, and the preference of the work in every respect.

"If broadcast ridges are of unequal breadth, bent, or zig-zag, the work cannot be so uniform, and in the turnings much time is lost, and harm done to the land which is ploughed; and with crooked drills there is a loss of ground, an unequal distribution of manure, if such has been applied, and the hoeings cannot be so effectually done where they are far distant, or done at all, without soddening the mould, and injuring the crop, where they are narrower.

"In fine, the grand criterion of ease and proficiency is, that of the ploughman's walking between the stilts, and in the furrow, with a free step and erect body; for thus he is more convenient for himself, has the horses and the plough better at command, and increases not the friction by his weight; for thus *he cannot go*, excepting the horses and the plough are properly adjusted, and proceeding with the least possible obstruction; and thus, too, he is more graceful to look on, than when wriggling with one foot foremost, or moving as if part of his muscles were under the domination of violent spasmodic contraction.

"It would perhaps be impossible to give any thing like *a system of rules* for the most proper and convenient make, size, weight, turn, &c., of a plough for all the varieties of soil, or of diversity to be met with, even in the same ridge; neither shall I make the attempt; but a few rules may be laid down, and observed as axioms in all ordinary circumstances, viz:

"1. The horses should be yoked as near to the plough as possible, without too much confining, or preventing them from taking a free step.

"2. When at work, they should be kept going at a good pace.

"3. The chains or theets should, from where they are suspended over the backs of the horses, point in a direction leading through the muzzle, to the centre of the cutting surfaces of the coulter and share.

"4. The implement, when taking the form of the dimensions required, should stand upright, and glide onwards in the line of progression, without swerving in any particular way.

"5. The ploughman should walk with his body upright, and without using his force to one point, or showing appearance of inclination.

"The untamed and liveliest, or most forward horse, should be put in the furrow, and only bound back to the right or off-theet of the land-horse, at or near the place where the backband joins it, at such length, when stretched at the width required, as to prevent his end of the beam, or double tree, from being before the other. And further, the heads of the two should be connected together by a small rope, or chain, at the distance wanted, giving the furrow-horse power over the other; that is to say, if tender-mouthed, it must be fixed well up on his head, and in the rings of the bit or curb of the other, so that he may have the power of the head over that of the mouth of the land-horse." * * *

Let the draught of the horse go in a direct line to the plough or swingle trees; for if the line be in any way bent, a portion of the power will be lost. Sometimes in England as many as five horses are yoked to a plough, two and two, with one in front; and in most cases of this kind, the power of the

foremost horses is partially thrown away, or probably distresses the hind pair of animals. It is not convenient to yoke four or five horses abreast, but it should be fully understood that in that manner they would exert their power to most advantage. Two horses will, in general, do more work yoked abreast to a plough, than four yoked before each other in single file; because some of the power of the foremost horses is always lost in its passage along the sides of the hind horses, and, in turning, the whole draught is imposed upon the hindmost in the row. * * * Unless on very strong soils, or where a great depth is required, two horses with a well-made plough will be found amply sufficient. Where four horses must be employod, yoke them two and two abreast, and let the draught of the foremost pair proceed by a chain from their central swingle tree to the central swingle tree of the hindmost pair, thus passing between the hindmost and going in a direct line to the muzzle of the plough. By this means, the power of both pairs of horses goes unimpaired to the resisting object. Never, on any account, let the power of the foremost pair proceed by two chains along the sides of the hind horses to the outer ends of their swingle trees, for this would only cause a needless expenditure of draught. In Scotland, where the economising of animal power has been carefully studied, all ploughing whatsoever, be the land light or heavy, except when exerted on the subsoil, is performed with but two horses, and these invariably yoked abreast.

It is a well-known maxim in tillage, that clay or tenacious soils should never be ploughed when either two wet or two dry. When too wet, it is tough, and the clods difficult to break; and when too dry, the plough will scarcely penetrate the soil. In ploughing the first time for fallow* or green crops, it is of importaace to begin immediately after harvest, or as soon after wheat sowing as possible, in order that strong tenacious soils may have the full benefit of the frost. On wet stiff soils, frost acts as a most powerful agent in pulverising the earth. It expands the moisture, which, requiring more space, puts the particles of earth out of their place, and renders the soil loose and friable. On such soils there is no rule of husbandry more essential than to open them as early as possible before the winter frosts set in. If left till spring, clay soils may be two wet for ploughing, or if the season be dry, the earth, when turned up, will be in hard clods very unfit for vegetation. Therefore, on farms having a proportion of clay and of light soils, it is necessary that the strong wet land should be ploughed first, providing the weather will allow.

In ploughing, three different points require particular attention; 1st, the depth of the slice to be cut; 2nd, its breath; and 3d, the degree in which it is to be turned over. This last operation depends much upon the construction of the plough, particularly the mould-board, and the care of the ploughman. The breadth and depth of the furrow slice are regulated by judiciously placing the draught on the muzzle or bridle of the plough, setting it so as to be the depth and breadth required. The plough should be so regulated, that if left to itself, and merely prevented from falling over, it would cut a little broader and deeper than is required. The coulter is placed with some inclination towards the left or land side, and the point of the sock or share is slightly bent downwards. The degree to which the furrow slice turns over is regulated by the breadth and depth; the proportion usually being six inches broad to nine deep. When the slice is cut in this proportion, it will be nearly half turned over, or recline at an angle of from 41° to 45°; and a field so ploughed will have its ridges longitudinally ribbed into angular drills or ridgelets. If the slice be considerably greater in width than in depth, it will be almost completely turned over, and each successive slice will overlap that which was turned over immediately before it.

When the depth materially exceeds the width, each slice will fall over on its side, and be somewhat overlapped by the next, leaving all the original surface bare, and only laid obliquely to the horizon. The first of these modes of ploughing on the

* NOTE.—Fallow in English and Scotch husbandry signifies leaving the land for a certain time in a bare, unproductive condition, during which it receives rest from cropping, and is subjected to various processes of ploughing and harrowing, to destroy its noxious weeds. The original signification of the word (of Saxon origin) is *yellow*, and has been applied to bare arable fields in consequence of their general yellow-brown appearance. Fallow-deer signifies yellow deer.

square slice, is the best adapted for stubble land after harvest, when it is to remain during the winter exposed to the influence of frost, preparatory to fallow or green crop. The second, or shallow slice of considerable width, as five inches deep by eight wide, answers best for old ley land, because it covers up the grass turf, and does not bury the manured soil. The third is a most unprofitable and slow operation, which ought seldom or never to be adopted. The general breadth of a slice is from eight to ten inches, and the depth must depend on circumstances, such as the nature of the soil and the object in view. It ought seldom to be less than four, or more than six inches, except on soils of uncommon depth and fertility, or for particular crops, such as carrots. Shallow ploughing, as four inches deep or less, ought always to be used when covering lime, which has a natural tendency to sink in the soil. * * *

Ridges vary in breadth, and are raised more or less in the middle, according to the nature of the soil. On clay and retentive soils, the great object being to procure the free discharge of superfluous water, very narrow ridges are not to be recommended. Those from fifteen to eighteen feet,* the land raised by two gatherings of the plough, are most generally adopted, this width being considered more convenient for manuring, sowing, harrowing, and reaping, than those of a narrower description. On dry ground the ridge may be formed to any breadth thought proper. In many parts of Kent, entire fields may be seen without either ridge or interfurrows, the soil being of such a nature as to admit the water to pass off quickly. On the turnip soils in Berkwickshire, having a free bottom, it is usual to plough the land into ridges of from thirty to thirty-six feet, called band-win ridges, from being reaped by a band of shearers served by one binder. In finishing this kind of soil, more especially before being laid down to grass, it is customary to cast up a narrow ridgelet, or single bout-drill, between the broad ridges which guide the sower; and in the operation of harrowing, all the ridgelets are obliterated, giving a beautiful lawn-like appearance to the field when in pasture. To form the ridges straight and of uniform breadth, the best ploughman on the farm is chosen. With a pole shod with iron, he first marks off the head or end ridges, on which the horses turn when ploughing, and these should generally be equal in breadth to the bounding lines of the field, eighteen feet being little enough space to allow two horses abreast to turn on. The forming of the head ridges first is necessary to let the ploughman know where to step out his plough, when working the other ridges of the field. If this is not attended to, the head ridges will be gashed, and by the turning and cleaning of the plough, earth will be accumulated more in one part than another. This will render them not only unsightly, but in retentive soils will be apt to lodge in the hollows thus formed, which several ploughings will scarcely fill up to their proper level.

In forming the ridges of fields, the proper direction is to make them run north and south, as the grain will ripen more regularly than if running from east to west. On wet and retentive soils, however, the direction of the ridges must depend upon the acclivity of the field, and be formed so as to allow the free discharge of superfluous moisture. Having determined the breadth of the head ridge, the ploughman will measure off the half of the first ridge of the field, if it is to be so gathered, or one ridge and a half if it is to be ploughed flat. At this point he sets up a pole, and in a straight line at some distance, a second and a third, or more, as the irregularity of the surface may render necessary—the last pole being at the end of the intended ridge. He enters the plough at the first pole, and ploughs them all down successively, stopping at each, then setting the poles at the right distance for the next ridge. When he reaches the end he returns along his former track, correcting any deviations, and throwing a shallow furrow on the side opposite to his former one, which, when reversed, forms the crown of the ridge, and directs the ploughmen who are to follow. By skilful ploughmen, these lines are drawn with great accuracy.

In ploughing land, there are a variety of ways of forming the ridges. On dry soils, the plots of a ridge may be all laid in one direction, and those of the adjoining ridge turned the contrary way; this is termed casting. On soils medium between light

* In Virginia many farmers prefer wider beds, ranging from 30 to 40, and in some cases 50 feet.—[Ed.

and strong, the ridges are split out, so that the crown of the old ridge becomes the furrow of the new; this, in Scotland, is called crown and fur. On strong soils, it is necessary to form the ridges by twice gathering all the furrow slices in the direction of the crown. In this case the ridges are preserved in their original situations, and the inter-furrows in the same places. It is customary, when breaking up these ridges to be worked as summer fallow, to split or cleave them, reversing the former operation by turning the furrow slices outwards, beginning at the furrows and ending at the crowns. In this operation the ridges are cut in two, the old water furrows carefully opened up to serve as surface drains, and an additional series of water furrows formed at the crowns.

In some cases, land is too steep to admit of using the plough in any of the ways mentioned. On such land, farmers, from a desire to have the ridges run directly up and down hill, sometimes draw all the furrow slices down, and drag the plough up-hill again empty. It is much better, however, to form the ridges in a slanting [or horizontal] direction, for this renders the up-hill work easier for the horses, and in the event of heavy rains, the ridges prevent the manure from being washed away.

On strong tenacious soils a pair of good horses ought to plough three quarters of an acre in nine hours; and on the same land, after the first ploughing, or on light soils, an acre, and even a quarter more, is considered a common day's work in Scotland. Throughout the year, an acre may be considered as the average rate of ploughing, allowing for the difference of soils. The whole series of furrows in an English acre, supposing each to be nine inches broad, would extend to 19,360 yards, and adding 12 yards to every 220 for the ground travelled over in turning, the work of one acre may be estimated at 11 miles and nearly 5 furlongs. The late Earl of Mar calculated, that when ridges are 78 yards long, 4 hours and 39 minutes are lost in turning during 8 hours' work, whereas, when ridges are 274 yards long, only 1 hour and 19 minutes are lost during the same period of time.

The proper depth of ploughing since the introduction of thorough draining, has become a subject of dispute. On this subject Sir John Sinclair remarks:—"Deep ploughing, by bringing up new mould, is peculiarly favourable to clover, beans, potatoes, and turnips; and without occasional deep-ploughing, these crops would diminish in quantity, quality, and consequently in value. It is of the utmost consequence, not only by supplying more pasture to the roots of plants, but, above all, by preventing the injurious effects of either too wet or too dry a season. This is a most important consideration, as, if the season is wet, there is a greater depth of soil for absorbing the moisture, so that the plants are not likely to have their roots immersed in water; and in a dry season it is still more useful, for, in the lower part of the cultivated soil, there is a reservoir of moisture which is brought up to the roots of the plants by the evaporation which the heat of the sun occasions." These remarks, coming from such an authority, must go far to recommend the practice of occasional deep ploughing, more especially with regard to its rendering the ground better adapted for the absorption of superfluous, and the retention of necessary, moisture.

Subsoil Ploughing.—The ploughing of the subsoil is a new feature in Scotch husbandry, and deserves particular attention both from the speculative and practical agriculturist. To understand its value, we must revert to matters connected with the constitution of the soil in referenee to vegetation. As already stated, plants consist chiefly of certain elementary gases, in peculiar combination with earthy substances. Nature provides the gases to a certain extent, both from the atmosphere and the ground; but as the supply is inadequate for artificial and regular cropping, the farmer assists in the good work by a due administration of manures. These manures, however, excepting in the case of lime, do not greatly supply the loss of *earthy substances* in vegetation. In taking a heavy crop of grain from the ground, we actually carry away a portion of the soil; and if this be done repeatedly, the land must ultimately be diminished in bulk. To the eye of a common observer, the field after many years' cropping remains the same as ever, but in reality a portion of its contents has disappeared, and what remains is a very different kind of substance from what existed before the cropping commenced.

If any one has a doubt of the correctness of these observations, let him take the stalk of any plant, and, after drying, burn it to ashes; then bray the ashes on a plate

of stoneware, and he will find that the powder contains small particles of a sandy material, which will feel harsh to the fingers, or scratch upon the plate. This sandy material is silica, of which there is a portion in every vegetable product. Besides this, there are in most vegetables carbonate of lime, carbonate of magnesia, alumine or clay, oxide of manganese, and oxide of iron, all which, along with the elemental gases, can be detected by chemical experiments. An eminent foreign chemist having performed an experiment of this nature on the seeds of wheat, rye, barley, oats, and straw of rye, two pounds of each, he discovered that they contained the following number of grains of earthy or metallic matter. We omit fractions:

	Wheat.	Rye.	Barley.	Oats.	Rye Straw.
Silica,.....	13	15	66	144	152
Carbonate of lime,.....	12	13	24	33	46
Carbonate of magnesia.....	13	14	25	33	28
Alumine,.....	fraction.	1	4	4	3
Oxide of manganese,.....	5	3	6	6	6
Oxide of iron,.....	2	fraction.	3	4	2

It is probable that these proportions of earthy and metallic matter in vegetables will differ according to the nature of the ground; but we may feel assured of the fact, that they are less or more essential to artificial cropping; and unless supplied or compensated in some manner by the farmer, his fields will in time deteriorate in their fertilising virtues, notwithstanding the administration of putrescent manures. It is true that nothing in nature is ever struck out of existence, and that the earthy material of plants is deposited somewhere; but as it does not come back to the field whence it was removed, means must be adopted to supply its place.

The process of earthy restoration may be accomplished by scattering new materials upon the fields, and this might be easily accomplished in many parts of the country, so far as silica or fine sand is concerned, but the readiest and cheapest process in most situations will consist in trenching the subsoil, and gradually assimilating it to the mould above. The subsoil, or that portion of the under stratum which lies out of reach of the ordinary plough, may already be so good as to be available for bringing towards the surface, and in such cases it admits of easy and profitable management; but in most instances in our country, the subsoil is hard and stony, and will require to be trenched, and lie for a time in its underground position, before it is ready for mixing with the upper mould.

The most efficient instrument for trenching the subsoil on a large scale, is the subsoil-plough of Mr. Smith, of Deanston Works, near Stirling. When a field is to be trenched, a common plough, drawn by two horses, goes before, throwing out a large open furrow of the active soil. The subsoil-plough follows in the wake of the common plough, slits up thoroughly and breaks the bottom, and the next furrow of active soil is thrown over it. This large subsoil-plough is a kind of *horse-pick*, breaking up without raising the under stratum to the surface. The atmospheric air being by this means freely admitted to the subsoil, the most sterile and obdurate till becomes gradually meliorated, and the common plough may ever after be wrought to a depth of from ten to twelve inches without obstruction. For this heavy ploughing most likely three horses yoked abreast will be required. The charge for subsoil ploughing may be estimated at twenty-four to twenty shillings per statute acre, being one-fifth of what a similar depth with the spade would cost, and, upon the whole, be as effectually done. The expense of subsoil ploughing is no doubt considerable, but its advantages are incalculable. "All who have ever studied or experienced the most common gardening, must be aware of the important advantages of deep working; and when it can be attained in the broad field of farming at so small a cost, they may easily believe that the whole will be more than doubly repaid in every succeeding crop, and abundantly even in pasture. When land has been thoroughly drained, deeply wrought, and well manured, the most unpromising sterile soil becomes a deep rich loam, rivaling in fertility the best natural land of the country, and from being fitted for raising only scanty crops of common oats, will bear good crops of from 32 to 48 bushels of wheat, 30 to 40 bushels of beans, 40 to 66 bushels of barley, and from 48 to 70 bushels of early oats per statute acre, besides potatoes, turnips, man-

gel wurzel, and carrot, as green crops, and which all good agriculturists know are the abundant producers of the best manure. It is hardly possible to estimate all the advantages of dry and deep land. Every operation in husbandry is thereby facilitated and cheapened—less seed and less manure produce a full effect, the chances of a good and early tid* for sowing are greatly increased—a matter of great importance in our precarious climate—and there can be no doubt that even the climate itself will be much improved by the general prevalence of dry land. When this subject was treated of in 1833, the system was beginning to be adopted in a few places in a very few districts of Scotland, England, and Ireland, and in most instances on a very limited scale. Since then, the intrinsic merits and evident outspeaking results of the system have raised its character, even with many of its former opponents; and one cannot now travel almost any where in the country without seeing, either on a large or a small scale, the operation of thorough draining going on. The deep ploughing is not yet so general, but it will undoubtedly follow; and it is to be regretted that, in the meantime, some zealous and good farmers, not aware of its advantages, are filling their drains so near the surface as to mar the future thorough application of the system of deep working.

In making a survey of the agricultural aspect of Scotland, and great part of England, it must be evident to every one skilled in agriculture, that by much the greatest proportion of the arable land, indeed we may assume three fourths of the whole, is under very indifferent culture, arising mainly from the want of complete draining and deep working; and looking even to the best farmed districts with the eye of an experienced farmer in the thorough system, much of the land will be seen suffering under wet or damp. * * *

All the operations by the plough, the harrow, and similar instruments, are intended to loosen, pulverise, and mix the soil. The more effectually, therefore, that this can be done, so will the crops be the more productive. A plant, growing in a hard soil in its wild state, is always inferior in bulk to one which grows in a loosened or cultivated piece of earth. By cultivation, as every one knows, the character of plants is greatly changed and improved. The reason for this is, that the air and moisture, not to speak of manures, are enabled to reach the roots, and nourish their growth. Pursue this mode of improvement to its ultimate limits, and we shall find that the more completely we can deepen the soil and reduce it to powder, the more bulky will the plants become, and the more heavy will be their crops. The fertility of a ploughed field is from the earth which happens to be loosened and powdered; little or nothing is got from the clods. Let us hear old Jethro Tull on this subject:

"I have had the experience of a multitude of instances, which confirms it so far, that I am in no doubt that any soil (be it rich or poor) can ever be made too fine by tillage. For it is without dispute, that one cubical foot of this minute powder may have more internal superficies than a thousand cubical feet of the same or any other earth tilled in the common manner; and I believe no two arable earths in the world do exceed one another in their natural richness twenty times; that is, one cubical foot of the richest is not able to produce an equal quantity of vegetables, *cæteris paribus*, to twenty cubical feet of the poorest; therefore it is not strange that the poorest, when, by pulverising, it has obtained one hundred times the internal superficies of the rich untilled land, should exceed it in fertility; or, if a foot of the poorest was made to have twenty times the superficies of a foot of such rich land, the poorest might produce an equal quantity of vegetables with the rich. Besides, there is another extraordinary advantage when a soil has a larger internal superficies in a very little compass; for then the roots of plants in it are better supplied with nourishment, being nearer to them on all sides within reach, than it can be when the soil is less fine, as in common tillage; and the roots in the one must extend much farther than in the other; to reach an equal quantity of nourishment, they must range, and fill, perhaps, above twenty times more space, to collect the same quantity of food. But in this fine soil, the most weak and tender roots have free passage to the utmost of their extent, and have

* "Tid," a Scotch term for that state of the ploughed soil which is most suitable for receiving the seed—neither too moist nor too dry.

also an easy, due, and equal pressure every where, as in water."

It will be understood, from these explanations, that subsoil trenching—to increase the depth of permeable earth, and to supply the deficiency caused by the absorption of earthy substances by plants—is of great and lasting value. But to this ingenius process must be added that of thoroughly breaking the clods in the upper mould, and reducing the whole to a kind of powder. If the ordinary course of ploughing, cross-ploughing, and harrowing, be unable to break the lumps of hardened mould, it should, as far as possible, be done by hand-labour with mallets.* When the mould is pulverised and loose, it is a powerful absorbent of moisture from the atmosphere, and thus will nourish plants from mists and dews, in a far more effectual manner than if left in a concrete condition.

It would be easy to produce further evidence of the value of subsoil ploughing, for all the purposes to which we have adverted; but such testimony, we should think, can hardly be required, enough having been already said on the subject to convince the most sceptical, and to instruct the uninformed. We conclude with the following valuable observations, delivered by the Marquis of Tweeddale at the Inverness meeting of the Highland Agricultural Society, in 1859, and which refer to his lordship's own mode of management:

"The system I have adopted for the treatment of the lands of my own farm, where the soil and subsoil are of the weakest, is as follows: A great proportion of the land is valued at five and ten shillings per acre. After it is drained in grass, the land is trench-ploughed, making the furrow from fourteen to sixteen inches, the soil being turned into the bottom of the furrow. The ploughing is done by two ploughs, each having a pair of horses. As the work is harder upon the horses that turn up the hill, they every hour change with the plough that turns over the sod. The till remains exposed to the frost during the winter; in the spring the land is cross ploughed, the sod is found quite rotten, and mixes with the till. Oats are sown, and the crop is found considerably better than before the land was drained. After the crop is cut, the land is ridged up with a winter furrow, turnips being sown in spring. In ridging up the land for turnips, there is little or no appearance of till. The best crop of turnips to be found in the same district of the country, is not superior to that grown after this management of the land. The land, after the turnips are eaten off by sheep, is ploughed for barley; there is an excellent crop, and the grass seeds are always well planted during the two years of grass that follow the barley, the fields having the earliest grass crop in the district. The largest number of sheep are fed on them, and are the fattest animals. The grass that formerly grew on these fields was of the worst quality, and sheep would scarcely eat it. No extra manure or lime has been applied to these fields, except on a part of one of them, which remained six years without growing any thing an animal would eat, consequently it was left without stock. In the third year since it was in that state, it is growing as good a crop of turnips as can be seen in the country; and no stranger who saw the land in fallow would believe it to have been what the people of the country knew it to be previous to its improvement. It is evident that the only extra work in following out this system is trench-ploughing once; this, however, is done with the ordinary plough used for working the land, and the horses are never oppressed. It will be satisfactory to state, that I have an equal dread with other farmers to bring till, before the land is drained, to the surface. It is only after that operation is effectually executed, that I consider the till or subsoil, when properly pulverised, forms a new soil the most valuable and easy to work of any I know."

[* Or by horse-power with the clod-crusher.] [Ed. So. Pl.]

Items for Housekeepers.

If your flat irons are rough, rub them with fine salt, and it will make them smooth.

Oat straw is the best for filling beds; should be changed once a year.

If you are buying a carpet for a durability, choose small figures.

A bit of soap rubbed on the hinges of the door will prevent their creaking.

Scotch snuff, put on holes where crickets come out, will destroy them.

The Southern Planter.

RICHMOND, VIRGINIA.

Phosphates.

The manner in which we may best and most economically restore to our lands the amount of inorganic manures abstacted from the soil by a given number of bushels of grain produced upon an acre, becomes a very important subject of interst and inquiry to all good farmers--especially as we are, year after year, devoting more and more attention to the raising of small grains and grasses. Economy in manuring is as necessary for our thrift as its proper observance is essential in other arrangements of the farm to secure us anything to the credit side of the balance sheet. We do not expect to be understood in any other sense, when we speak of "economical manuring," than as cautioning against *waste* of fertilizing materials, either by any injudicious application, or neglect in husbanding our supplies. We shall have to rely principally, or at all events largely, upon "concentrated manures" as fertilizers—the high price and the constantly increasing demand for which warn us to make the most of them. We are compelled to use guano in a mode different from the old broad-casting method, or we shall receive a very small profit for a very short while. But if by means of "composts" (the guano being used as a constituent part of them always) we may make a manure suitable for using in a drill with which we may give to our wheat crop *ammonia enough and no more than it wants*, while we may *leave in the soil a greater supply of phosphatic and other mineral ingredients at a less cost than we pay for them in imported guanos*, we may reasonably expect a larger development of grain, and better stands of clover, with a steady and general improvement of our farms. We do not pretend to decide to whom the honor belongs, of having first originated the theory that eight per cent. of ammonia is enough for the wants of a growing crop; but we believe it. The gentlemen engaged in "*manipulating*" guano, always have in view the design of lessening the amount of ammonia contained in Peruvian guano, and increasing its value in phosphatic manures—contending for the economy of reducing the ammonia from 13 per cent. to 8, while the phosphates are largely increased, and put up to 40 or 45 per cent. They say we will secure in this manner more grain and less straw. This is an end which it is very desirable to attain. The guanos so treated, are very thoroughly ground and prepared, so as to make every ounce of them available, either for broad-casting or drilling. Each year that we raise large crops of grain or grass, we are exhausting the earth's supply of phosphatic lime. We must look, then, for some source from whence we can draw supplies of this all-important item of fertility, as we cannot, every year, haul out enough putrescent manure to supply the deficit caused by our increasing wheat crops. Two sources are presented to us in Bone-Dust, and the Nevassa, Sombrero, and other guanos. We acknowledge a preference for a phosphate obtained from bones, because we believe it to be more easily soluble, and consequently of more rapid and perfect assimilation for plant food. We think the time has come when it is necessary for us to arrive at some satisfactory conclusion on this point, by experiments and a free comparison of experiences. We refer our readers to the experiments reported in our June number by Messrs. Coombs, Minor, Anderson, Raine, Walton, Lacy and Staton, in response to the queries of Mr. S. T. Stuart, of Fairfax, page 345, and to the communication of "A Clarke County Farmer," in our present number, of his experience with "Rhodes' Super Phosphate," while we earnestly beg for the report of every gentleman on the merits of these articles, who has had experience with them—being, as a practical farmer, as deeply interested in the subject as any of our readers can be. We have seen one very strongly marked case of improvement of the soil, and increase of profits in a crop, from an application of "home-made" super phosphate, by a gentleman of this county. We regret that we have not yet received his receipt for making it, and his own report of his experiments with it; but we shall publish it as soon as we do, with the hope that all of our readers will try his recipe and report results.

Phosphatic guanos *may not* prove of as *immediate* benefit to growing crops as the bone dust, since they contain phosphate of lime as a

mineral, rather than an animal product. We have no doubt that the mineral phosphates can be rendered much more immediately soluble (and available for a present crop in proportion as they are soluble) by trituration with strong acids, either the muriatic or sulphuric—the latter of which is generally used on the score of economy. Earth, too, has solvent powers of no weak order, and sustains to the crops she bears the relation of a "matrix," for the reception, germination, nutrition and watering of the seeds, until their full development is effected by her retaining the requisite supplies, to secure this end, of warmth, moisture, air, and manures reduced to their finest state of divisibility and solubility, which are furnished her either from natural or artificial sources. In fact the earth not only thus wins her title of "mother;" but she performs, for plants, what the stomach does for the animal economy in receiving, dissolving, and thoroughly preparing the food offered, by which it is reduced to the condition necessary for the wants of life.

We subjoin extracts from tables of analyses of different crops, that it may be seen how we abstract phosphatic manures from the soil.

1st. Tobacco. Liebig says "Tobacco requires only alkalies, and food containg nitrogen."

The diference in the quantity of phosphates extracted from the soil by wheat is as (for wheat) 97.7 to (for tobacco) 16.

The *roots of tobacco, as well as wheat, extract phosphates from the soil; but they restore them again*, because they are not essentially necessary to the development of the plant.

"Indian corn contains in 100 parts a per cent. of phosphoric acid equal to 44.87. Oats 18.19. Wheat 46. Buckwheat 50.07."

In the May number of the Planter, for 1857, will be found a thorough and interesting article, written by Professor Gilham, on Super Phosphate of Lime. We commend it to the attention of those who are interested in the subject.

For the benefit of new subscribers, we are strongly tempted to re-publish the Essay, and may do so at a future period.

To our Subscribers and Friends.

The Editor does not keep the books of "The Southern Planter," and consequently very seldom knows anything about the accounts therein—whether "due" or "over-due" stands alongside of anybody's name on the list. He is, however, glad to enjoy "the run of the cash drawer," and feels as lively an interest as any other member of the establishment—not excepting the printer or his devil—in keeping it well filled. He does not hesitate, therefore, to invoke the aid of friends to accomplish this desirable end. Almost every friend to our paper (we hope) *can influence several persons to become regular paying subscribers----and we want a host of just such men on our list.* Will they not at once occupy a position on our books, and receive therefor our thanks and best efforts to serve them acceptably?

In the meantime our old patrons who are in arrear, will *very greatly oblige, and aid us*, if they will at once remit the amounts due by them. We presume they can be subjected to little or no inconvenience by so doing, while we are sure they will, as a consequence, *feel better.* At all events—apart from the gratification we shall experience at such evidence of their recollection—we shall be in better condition for complying with that necessary, but often inconvenient rule of "pay for what you get"—which a man residing in, or around Richmond, is so often reminded of, and may not neglect.

We have written this much at the earnest request of the "book-keeper," and our task is DUN.

H. E. Watkins, Esq., of Farmville, has the accounts of subscribers residing in Prince Edward, Charlotte, Cumberland, and Buckingham counties, in his hands for collection.

Mr. Tho. B. Montague has our accounts for collection which are due in Goochland—and Mr. George C. Reid our bills for Norfolk City and county.

The Virginia Military Institute.

The liberality of Col. P. St. Geo. Cocke—the former President of the Virginia State Agricultural Society—has thrown into the funds of this institution $20,000---with which it is intended to endow a Professorship of Agriculture.

A great want in the education of young men—many of whom go from the college halls to take charge of farms---will thus be supplied. It is expected that Col. Cocke's noble lead will be followed by other generous spirits, who are alike interested in promoting the cultivation and advancement of Agricultural science.

We trust this fund may be largely added to, so that our State may have within her borders *the very best school*, in all our glorious Union, for the education of not only her own sons, but of those of her sister States. It is with the greates:

pleasure we announce the appointment of Major Wm. Gilham to the new Professorship of Agriculture. Major G. is so well known to the citizens of our own State for his scientific attainments, his laborious, constant industry, his zeal in the cause of agriculture, together with the possession of all those accomplishments, and traits of character which serve to constitute and adorn the scholar and gentleman, that his appointment will, we believe, greatly add to the prosperity and reputation of our already popular Military Institute.

Messrs. B. M. Rhodes & Co.

We call attention to the advertisement of these gentlemen, who give a legal warrantee of the thorough preparation and genuine quality of their "Super-Phosphate." Intending to keep it always up to the *present standard*, they authorize all their agents, in case of any failure on their part to do so, to refund to purchasers any money which they may have paid for the article manufactured by them. This is the proper course to follow. We commend it to the attention of all manufacturers of specific manures. Give us a fair statement of what your article is, and if it does not come up to representation, give us our money back. We will not then have so reasonable a fear, as we have at present, of being "humbugged."

Rural Register,

Published by Sands & Mills, Semi-monthly; each number containing sixteen 4to. pages. Price $1 00 per annum.

We have received the first number of this paper, which is under the Editorial management of Samuel Sands, Esq., who was for many years the Editor of the *American Farmer*. The paper is well printed and *well filled* with interesting matter. We shall be happy to place it on our exchange list, and most cordially wish Messrs. Sands & Mills abundant success in their enterprise.

Cosmopolitan Art Journal.

We return our thanks to the Publishers of this valuable and entertaining "Quarterly" for a copy of the last number, which contains its usual amount of matter to interest and instruct its renders,—besides engravings. The principal engraving in the number before us, is the American Eagle, watching the spirit of Washington, which is dedicated to the Ladies of the Mount Vernon Association.

The late Thomas Nelson of Hanover.

The following resolutions have been sent us for publication. In giving them a place in our columns, we cannot refrain from expressing our own deep sympathy with the family of the deceased, in their severe bereavement.

Captain Nelson was for many years a resident of this city, and at one time the Collector of Customs in our port. He commanded the admiration and enjoyed the esteem of many of our citizens, who knew his worth as a faithful public officer, a devout Christian, and high-toned gentleman.

"OBITUARY.

"At a regular meeting of the "Farmers' Club of the Forks of Hanover"—

"*Resolved*, That this Club has heard, with the deepest regret and sorrow, of the death of the late Mr. Thomas Nelson, of Oakland, a member of this Club, and tender their sincere sympathy to the widow and family of the deceased.

"*Resolved*, That we have ever esteemed him one of the brightest, most exemplary and useful of our members; and that, by his death, a vacancy has been created in society which can with great difficulty be filled.

"*Resolved*, That the Secretary be requested to send a copy of the above resolutions to the family of the deceased, and forward them to the *Southern Planter* and the other Richmond papers for publication."

American Institute, New York.

We tender our thanks to the "American Institute," of New York, for a handsomely bound and illustrated copy of their "Transactions," which we have recently received.

Campbell's Manual of Scientific and Practical Agriculture.

We spoke of the above work before we had seen it in print, from memory; we now speak of it with increased approbation after having seen it in print. We take pride in commending it, because in addition to its high merit as a standard manual both for the Farm and the School, it is a *Virginia work*—a superadded merit, other things being equal, which entitles it to the special patronage of Virginia farmers, and being also adapted in its matter to the peculiarities of Southern planting and farming, it

deserves universal dissemination among Southern agriculturists.

We have been particularly struck with the concluding remarks of the author, and reproduce them here for the benefit of young farmers.

"CONCLUDING WORDS.

"In all parts of the brief outline here given, the author has aimed to be as concise as was consistent with clearness. Much that has been said was intended as merely suggestive. The leading design has been to present the great principles of Science closely connected with Agriculture, and to show how these principles are involved in the daily business of the farm.

"It is hoped that the young farmer will find some things so presented to his mind, as to inspire him with new ardour in his honourable profession; and, at the same time, enable him to pursue it with unwonted pleasure. No profession can ever give much mental pleasure or satisfaction to the man engaged in it, unless he has, first, a clear view of the principles which form the basis of his operations; and, secondly, a distinct understanding of the relation between these principles and his own practice.

"The life of the agriculturist, as well as that of men in other pursuits, may have its toils, its trials, its perplexities, and its disappointments; but it has, at the same time, rare sources of pleasure and comfort. In the first place, it is the most independent of all departments of industry. It is true there is a mutual dependence pervading all the classes of society, but none have to rely so little upon the capricious patronage of their fellow-men as the successful cultivators of the soil. Hence, they are less seldom tempted to resort to trickery and deception, than men in some other professions, in order to secure the favourable consideration of 'the public.'

"Again, every farmer may feel that he is a member of that class upon whom a country like ours is chiefly dependent for its wealth and prosperity. The farming interests lie at the foundation of our national greatness. A paralysis in this department would evidently result in a paralysis of every industrial and commercial pursuit throughout this broad land. The farmers nourish and enrich the nation.

"The land-holders of our country, too, are the conservators of the purest patriotism. They are always the most stable and reliable citizens of this, and every other land. No other class of the people have their interests so closely and completely identified with the general and permanent interests of every part of the country—none can be more warmly attached to their native soil—and none are found more ready at all times to raise the strong arm of resistance against every invasion of rights, from whatever source it may come; and yet, no class of our citizens are so conciliatory and conservative in all times of great political excitement. Such considerations give a dignity and importance to agricultural pursuits which few other professions can claim.

"Besides these more general relations of the farmer to society, which should cause him to feel no ordinary degree of satisfaction in the pursuit of his honourable calling, he has around him the more closely-associated interests of his own little 'republic' at home, in which he can ever find much to alleviate any vexations which may arise to mar his comfort. A well-tilled farm, with its appurtenances all skilfully arranged, and in good order—with its close, strong fences, its deeply-plowed fields, and its well-selected, well-fed, and comfortably-sheltered stock—presents to the mind of any man of taste, a most pleasing object of regard. How much, then, must that pleasure be heightened, when he can say: 'All these are my own!' If, in addition to this, the happy owner can look over his broad fields, and view every step taken in their improvement and culture, with the light of Science before his mind—if he can trace each effect back to its true cause—how much more elevated still must be his pleasure, and how much more complete his satisfaction!

"There is yet a higher view, which the intelligent tiller of the soil may take of all that he sees around him. When he beholds in the light and heat of the sun, in the air he breathes, and in the fertilizing shower, exhaustless sources of life and joy—when he has learned how nicely the balances of Nature have been adjusted in all her departments—his thoughts must often rise in gratitude to the all-wise Author of these beautiful and benevolent arrangements. In every breeze that sweeps across his fields—in every shower that waters the thirsty land—in the growth of every plant upon his soil—in every shaking leaf, and in every blooming flower by the wayside—Science has taught him to see, and seeing, to adore the hand of Omnipotence."

From the Southern Farmer.

We cheerfully comply with the request of Mr. Bagley, and will be glad to submit to our readers, through this journal, any information which may be communicated in further response to his inquiries. We append the editorial of the Southern Farmer, and also Mr. Bagley's article.—[ED.

Tobacco Culture.

We have had several articles on the culture of tobacco in reference to the permanent improvement of the land, and the reader will find a very interesting one in to-day's paper from a planter of Lunenburg. Contrary to the general experience of the country, many planters contend that the tobacco crop is not incompatible with a general system of improvement. If this has ever been the case at all, it is perhaps only since the introduction of

guano and other bought fertilizers. With the aid of these, it appears to be far more practicable now than in former times, when the tobacco crop required all the manure, on the farm, to pursue an ameliorating system. Moreover the prices of tobacco will justify a liberal expenditure in its cultivation.

The subject is certainly one of the highest importance to the agriculture of the State, especially to the Southern portion. Whether the crop is unfriendly to general improvement or not, it will continue to be grown. It is, therefore, a desideratum to know the best method of culture, combined with a gradual and progressive improvement of the soil. And intelligent planters could not confer a greater favor on the planting interest than in submitting their views and experience on the subject. We trust, therefore, there will be several responses to the call of Mr. Bagley.

The Southern Planter is requested by Mr. B. to ask the attention of its readers and correspondents to the subject.

Cultivation of Tobacco with Regard to Improvement.

MR. EDITOR:—I am indebted to "J. G. P." of Nottoway and to "Cumberland" for the information they have been kind enough to impart in regard to the inquiries about the permanent improvement of tobacco land.

If I understand "J. G. P.," he advocates the five-shift rotation both for corn and tobacco. Will he be good enough to inform us if he puts his theory into operation? Suppose he has on his farm twenty good hands; now five acres to the hand for corn would requre one hundred acres for one field, and five shifts would require five hundred acres of his farm for corn, and two acres to the hand for tobacco would take forty acres, or two hundred acres for five lots appropriated to wheat and tobacco—thus making seven hundred acres of arable land in a farm to be cultivated by twenty hands. All will perceive that the labor required to keep so many fields well fenced in, and free from brushes and briers would be immense, to say nothing about other objections.

"Cumberland" recommends a three-field system, and making a new tobacco lot every year, seeding it in clover. Now, Mr. Editor, I do not feel competent to instruct others in a matter so important as this, but I see very plainly the system the planters are pursuing in our country is reckless and ruinous in the extreme, and will tend only to poverty and bankruptcy; and in writing this my object is only to have the opinions of others on a subject so important. I suggest a system like this: Make a new lot every year, by raising all the manure you can, and then apply about three hundred pounds of Peruvian guano and one hundred pounds of some phosphatic guano to the acre, next year seed this land in wheat, and about the last of March sow and harrow in not less than two gallons of clover seed to the acre in order to secure a good stand of clover and exclude all other growth. Let it remain in clover the next year, and then put it in corn to be followed by wheat, thus having two lots in wheat every year. Continue this rotation until you have made six lots and seeded them all to clover, or until you have improved all of your land as you may think best. But I give it as my opinion that the *sine qua non* to the improvement of land is first to lay it off, and plow in a manner to prevent washing. I do not mean the ordinary ineffectual and ridiculous mode of horizontal ditching and crooked corn rows, but a skillful, effectual and thorough system, for any other than such is worse than none, and I will here mention that after several year's experience, and after reflecting on this subject perhaps more than any other person in our part of the country at least, I have now adopted a mode which is somewhat new, and which I am convinced is more practical and does better than any plan with which I am acquainted. This is a subject, Mr. Editor, of the greatest importance. Will you request that several others give their opinions as to the best and most practical way of improving land, and increasing our crops? Will the *Southern Planter* be so kind as to copy and request correspondents to give us light on the subject, and let all give their names in full, and all who write on such subjects should. For instance, if I knew who J. G. P. is, I could make some inquiries about his farm, and might find out whether or not his theory and practice correspond. Don't tell us about what you think; tell us what you are doing, and give us your names in order that we may judge for ourselves.

WM. M. BAGLEY.

Columbian Grove, July 15th, 1859.

From the Am. Journal of Science and Art, Vol. XXVII, July, 1859.

On Some Points of Agricultural Science.

BY SAMUEL W. JOHNSON,

Professor of Analytical and Agricultural Chemistry in the Yale Scientific School, and Chemist to the Connecticut State Agricultural Society.

The Absorptive properties of Soils.—It has long been vaguely known, that the soil possesses a remarkable power of absorbing a great variety of bodies. How the soil absorbs odours (more properly the volatile matters that give the sensation of odour) has often been seen in the case of gar-

ments upon which the fetor of the American skunk has fallen. The Indians long ago taught that they might be "sweetened" by burying them in the earth; and indeed we are told that these people sweeten the carcass of the skunk by the same process to render it fit for eating. Dogs and foxes bury bones and meat in the ground, and afterward exhume them in a state of comparative freedom from offensive odour.*

In the older treatises on agronomy we find allusion made to the power of soils to absorb gases, and this power, especially as exercised toward carbonic acid and ammonia, has been assumed to be of much agricultural significance, although the lack of precise experimental knowledge as to its extent, has been confessed and lamented.

The absorptive power of the soil not only for odours and gases, but also for fixed matters carried into it in a state of solution, is illustrated in certain commonly occurring instances. Thus the wells in densely populated cities, or in the vicinity of barnyards, or filthy canals, remain sweet and pure for a greater or less period of time, though they must be constantly receiving waters that have been in contact with putrefying animal matters. The filtration of the foulest water through a thin stratum of loamy earth removes all unpleasant effluvium and taste.

In the year 1850, it became known through two interesting articles published in the Journal of the Royal Agricultural Society of England,† that the soil exerts an absorptive power toward certain substances, ammonia and potash especially, but not toward hydrochloric, nitric and sulphuric acids, so that if dilute solutions of hydrochlorate, nitrate, or sulphate of ammonia or potash are filtered through, or agitated with a certain quantity of soil, the salts are decomposed, the bases remain in insoluble combination with the soil, and the acids are found in the solution united for the most part to lime.

Previous to 1850, the absorbent power of the soil was explained as a result merely of the surface attraction of porous bodies. Thus Liebig in his "Chemistry applied to Agriculture and Physiology," referred the condensation of ammonia in soils, to the surface attraction of oxyd of iron, alumina and humus, compared this power of soils to that exhibited by charcoal, which absorbs 90 times its volume of ammonia gas, and evolves it again moistening with water. He also says, deciding from analogy, but in the absence of experimental data, and erroneously, *"the ammonia absorbed by the clay or ferruginous oxyds is separated by every shower of rain, and conveyed in solution to the soil."*

The separation of organic odours and colouring matters from foul water by contact with earth, has been considered analogous to the action of animal charcoal, by which, for example, beer and wine may be deprived of odour,* colour and taste, and to that

* It is well known that some surfaces have a much greater power of attaching odours to them than others. Every person has observed that woolen garments retain smells longer than cotton or linen ones, and it appears that the colour with which a cloth is dyed affects its retentiveness for some odours. It is a fact, as the writer has personally observed, that when a skunk has emitted its stench in the cellar of a house, the odour clings most perceptibly to *silver ware* which has been buried among napkins in the recesses of a "china closet" long after it has disappeared from every other article on the premises. It is probable that the soil, or some of its ingredients, "sweeten" a garment as above stated, by first effecting a transfer of the odorous matter from the surface, and then destroying it by oxydation in the same manner as operated by charcoal, and platinum black. See note in next column.

† "On the absorbent Power of Soils." By H. S. Thomson. Vol. xi, pp. 68—74; and "On the Power of Soils to absorb Manure." By J. Thomas Way, Consulting Chemist of the Royal Agricultural Society. Vol. xi, 317—380; also, vol. xiii, pp. 123—142

* Several years ago Stenhouse found that the disinfecting property of charcoal depends, not merely upon the condensation in its pores of odorous matters, but also upon their destruction by the condensed oxygen with which, doubtless, it is charged. The writer (after Stenhouse) has kept the carcass of a dead rat all summer long in the working room of the Yale Analytical Laboratory without its evolving any disagreeable effluvium, simply by burying it an inch deep in powdered charcoal. The only odour that is perceived, is a strong one of pure *ammonia*, and in time, all the putrefiable parts of the carcass disappear, the hair and bones only remaining. The animal matters enveloped in charcoal (or other highly porous body capable of condensing oxygen, as platinum black or platinum sponge; probably also most soils, especially those rich in humus) are completely oxydized to water, carbonic acid and ammonia (free ni-

of alumina which forms insoluble *lakes* with organic pigments.

Way, in his comprehensive investigations before alluded to, after studying separately as far as possible the absorptive effect of each ingredient of the soil, was led as a last resort to invetigate the relations of the silicates to saline solutions. The simple silicates he found ineffectual and had recourse therefore to the complex silicates. He digested feldspar with solution of chlorid of ammonium but detected no reaction, and thence concluded that the fragments of granitic rocks could not perceptibly decompose saline solutions. In order to trace the action of such silicates as are formed to a small degree in the wet way in soils by the weathering of the granitic minerals, Way next prepared double silicates of alumina with the bases potash, soda, lime, an ammonia respectively. In the first place he procured an alumina-potash, or alumina-soda-silicate, by precipitating the soluble alkali-silicate with a salt of alumina; on digesting these double silicates with solutions of lime and ammonia, he succeeded in replacing the potash and soda by lime and ammonia, though but incompletely, for different preparations of his alumina-ammonia-silicate contained but 4.51 to 5.64 per cent. of ammonia instead of the quality equivalent to the partly displaced alkali which, according to him, in case of the alumina-soda-silicate, should be 15.47 per cent.

Way gives as characteristic of this class of double silicates, that there is a regular order in which the commonest protoxyd bases replace each other. He arranges them in the following series:

Soda—Potash—Lime—Magnesia—Ammonia:

and according to him, potash can replace soda but not the other bases while ammonia replaces them all: or each base replaces those ranged to its left in the above series, but none of those on its right. Way remarks, that "of course the reverse of this action cannot occur." Prof. Liebig (Ann. de Chem. u. Phar., xciv, 380) has drawn attention to the fact that Way directly contradicts himself in describing the preparation of the potash-alumina-silicate, which may be obtained by digesting either the lime-alumina or soda-alumina-silicate in nitrate or sulphate of potash, when the soda or *lime* is dissolved out and replaced by potash.

Way was doubtless led into the error of assuming a fixed order of replacements by considering these exchanges of bases as regulated after the ordinary manifestations of chemical affinity. His own experiments abundantly show that among these silicates there is no inflexible order of decomposition, nor any *complete* replacements.

Liebig, in the paper just cited, was led from this contradiction and from other considerations, to reject the conclusions of Way, especially as there was no direct proof that these double silicates exist in soils.

The recent researches of Eichhorn,—"Ueber die Einwirkung verdünnter Salzlösungen auf Ackererde," (Landwirthschaftliches Centralblatt, 1858, ii, 169, and Pogg. Ann., No. 9, 1858,) have cleared up the discrepancies of Way's investigation (which is itself one of remarkable interest,) and have confirmed and explained his facts.

As Way's artificial silicates contained about 12 per cent. of water, the happy thought occurred to Eichhorn to test the action of saline solutions on native hydrous silicates. He accordingly instituted some trials on chabazite and natrolite, an abstract of which is here given.

On digesting finely pulverized chabazite with dilute solutions of chlorids of potassium, sodium, ammonium, lithium, barium, strontium, calcium, magnesium, and zinc, sulphate of magnesia, carbonates of soda and ammonia, and nitrate of cadmium, he found in every case that the basic element of these salts became a part of the silicate, while lime passed into the solution. The rapidity of the replacement varied exceedingly. The alkali-chlorides reacted evidently in two or three days. Chlorid of barium and nitrate of cadmium were slower

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trogen?) without the appearance of the intermediate and fetid products that occur in putrefaction. The sweetening of meat by charcoal (or earth?) consists in the oxydation (eremecausis) of the putrefying surface. Stenhouse found that platinized charcoal (charcoal ignited after moistening with chlorid of platinum) makes an excellent escharotic and disinfectant for foul ulcers, and latterly the surgeon is employing permanganate of potash—an energetic *oxydizing agent*—for the same purpose.—*Second Series, Vol. XXVIII, No.* 82.—*July*, 1859.

in their effect. Chlorides of zinc and strontium, at first, appeared not to react; but after twelve days, lime was found in the solution. Chlorid of magnesium was still tardier in replacing lime.

Four grams of powdered chabazite were digested with four grams chlorid of sodium and 400 cubic centimeters water for ten days. The composition of the original mineral (I,) and of the same after the action of chlorid of sodium (II,) were as follows:

	I.	II.
SiO_3,.....	47.44	48.31
Al_2O_3,.....	20.69	21.04
CaO,.....	10.37	6.65
KO,.....	0.65	0.64
NaO,.....	0.42	5.40
HO,.....	20.18	18.33
	99.75	100.37

Nearly one half the lime of the original mineral is replaced by soda. A loss of water also has occurred. The solution separated from the mineral, contained nothing but soda, lime and chlorine, and the latter in precisely its original quantity.

By acting on chabazite with dilute chlorid of ammonium (10 grams to 500 c. c. water) for ten days, the mineral was altered, and contained 3.33 per cent. of ammonia. Digested twenty-one days, the mineral, dried at 212°, yielded 6.94 per cent. of ammonia, and also had lost water.

These ammonia-chabazites lost no ammonia at 212°, it escaped only when the heat was raised so high that water began to be expelled; treated with warm solution of potash it was immediately evolved. The silicate appears to be slightly soluble in distilled water, the solution giving with solution of iodid of mercury in iodid of potassium, the yellow coloration indicative of ammonia.

As in the instances above cited, there occurred but a partial replacement of lime. Eichhorn made corresponding trials with solutions of carbonates of soda and ammonia, in order to ascertain whether the formation of a soluble salt of the displaced base limited the reaction; but the results were substantially the same as before, as shown by analyzing the residue after removing carbonate of lime by digestion in dilute acetic acid.

Eichhorn found that the artificial soda-chabazite re-exchanged soda for lime when digested in a solution of chlorid of calcium; in solution of chlorid of potassium both soda and lime were separted from it and replaced by potash. So, the ammonia-chabazite in solution of chlorid of calcium, exchanged ammonia for lime, and in solutions of chlorids of potassium and sodium, both ammonia and lime passed into the liquid. The ammonia-chabazite in solution of sulphate of magnesia, lost ammonia but not lime, though doubtless the latter base would have been found in the liquid had the digestion been continued longer.

It thus appears that in the case of chabazite all the protoxyd bases* may mutually replace each other, time being the only element of difference in the reactions. Natrolite, however, was not affected by digestion with chlorid of calcium. Eichhorn suggests that its soda is more firmly combined than that of chabazite.

These observations of Way and Eichhorn promise to yield the most fruitful results, not only to the theory of chemical geology, as elucidating the formation 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.

Voelcker, in some valuable researches on the absorbent power of a soil for the liquids of the dung-heap, (Journal Roy. Ag. Soc. of Eng., xviii, 149,) first showed that it is not always true that the bases displace *lime* from soils. He found to the contrary, in one instance, that lime was fixed and potash displaced. This result, as well as the opposite behaviour of ammonia-chabazite and natrolite towards solution of chlorid of calcium in Eichhorn's trials, indicate most clearly *that different silicates suffer different displacements, though in general, certain bases react more speedily and more*

* Eichhorn's observations indicate that the combined (basic?) *water* of a silicate is also liable to be increased or removed. May not the small amount of water of the many specimens of properly anhydrous minerals, be thus acquired? May not in some cases the loss by ignition in minerals, be due to ammonia that has entered into combination in the same manner?

largely or firmly retained than others. Obviously a great number of experiments are wanted on the behaviour of other silicates, native and artificial, towards saline solutions in various degrees of concentration, and at different temperatures, as well as in mixed solutions, before we can decide many interesting questions suggested by these results; but we have undeniably an important new generalization with reference to the reactions that may occur among minerals and in the soil.

Economy of the Ammonia naturally accumulated in the soil.—Since it has been proved that enormous quantities of ammonia exist in soils in a state of such intimate combination that the usual means (boiling with fixed caustic alkalies) fails to expel it,* the important question has arisen—how may this ammonia be rendered more rapidly available to vegetation than it is, so as in many cases to forestall the necessity for nitrogenous manures.

The displacement of ammonia from the ammonia-chabazite by potash, soda and lime, indicates a partial solution of this question; and may not the remarkably diverse effects of various saline manures, e. g. common salt, gypsum, sulphates of soda and magnesia, and silicate of potash, as well as carbonate and phosphate of lime, depend, to some degree, on reactions analogous to those above described! We know that very small doses of salt and gypsum, to take familiar examples, often remarkably enhance the productiveness of a soil, and as often fail to produce any good effect, either in small or large applications. Neither of the constituents of common salt is found to much extent in our usually cultivated plants, and soda is often entirely wanting.

The action of common salt and gypsum, especially of the latter, is most frequently similar to that caused by ammoniacal manures, whether these be applied to the soil or administered in gaseous form, as is now done in hot-houses by means of carbonate of ammonia, after the plan proposed by Ville, and is manifested in a more intensely green and luxuriant development of foliage, and increased content of water and of nitrogen. The "fixing power" of gypsum cannot longer be considered a useful quality of this fertilizer *in the soil*, not only because, in the merely moist soil, sulphate of ammonia would react on carbonate of lime, as Boussingault long ago demonstrated, but for the reason that the soil has itself a greater and more than sufficient power to fix ammonia, whether it be present as carbonate or sulphate. It is on the other hand the *unfixing* power of gypsum—its ability to liberate ammonia from the ammonia-silicates, that may in some cases constitute its merit.

General law of Displacement among Saline Fertilizers.—We are every day drifting further from what but a few years ago was considered one of the most fixed and beneficial principles of agricultural science, viz: that a substance is chiefly a fertilizer because it directly feeds the plant, and are learning from the numerous recent and carefully conducted experiments with manures, that in very many cases we cannot safely venture to predict what will be the influence of a given application; but find in practice the strangest and most discordant results, it being literally possible to show from the experience of the farm that almost every fertilizer in use has in some instances proved beneficial to every cultivated crop, and in other cases has been indifferent or even detrimental.

We are therefore compelled more and more to regard the *indirect action* of manures, and the principle brought out by the researches of Way and Eichhorn, appears adapted more than any other yet discovered to generalize the phenomena of indirect action, and enable us to foresee and explain them. Proofs are not wanting of the actual operation of this principle in the soil.

Wolff (Naturgesetzlichen Grundlagen des Ackerbaues, 3d ed. p. 148,) found in fact that the ashes of the straw of buckwheat grown with a large supply of common salt, compared with the ashes of the same part, of that plant grown on the same soil *minus* this addition, contained less chlorid of sodium but much more chlorid of potassium: there having occurred *an exchange of bases* in the soil.

The probabilities already adduced in

* In 1855 the writer found that there was no limit to the evolution of ammonia, when attempting to estimate it in soils, and Dr. Mayer (Ergebnisse. Ag. Chem. Versuche in Munchen 1 Heft.) could not recover by boiling with caustic potash nearly all the ammonia he purposely added to a soil.

favor of the view that ammonia is made available by gypsum, carbonate of lime, &c., are in point, and in the further course of this article other evidences will be brought forward to the same effect. May not the influence of lime and guano (or the carbonate of ammonia resulting from its decomposition,) in some cases be partly due to their fluxing the anhydrous or non-absorbent silicates of the soil, thus giving origin to absorbent silicates, as well as to their displacing effect on silicates already existing?

But it is of little use in the absence of decisive investigations to speculate on these topics except for the purpose of exciting research. A great field is opened here, and with this new clue to guide us it should be speedily explored.

Not merely the bases, but, as *a priori* would seem entirely reasonable, the acids also appear to be capable of similar exchanges and substitutions.

Way, Liebig and others, have repeatedly observed that phosphoric acid is absorbed by soils, and from the trials of Voelcker before referred to, it would appear that among the acids there occur displacements analogous to those established between the bases. Thus in one experiment in which the drainings of a manure heap were passed through a soil, there were found in an imperial gallon—

	Before filtration	After through the soil.
Silica,	·75	2·38
Phosphates of lime and iron,	7·90	1·54
Sulphate of lime,	2·18	7·92
Carbonate of lime,	17·46	79·72
Carbonate of magnesia,	12·83	6·17
" " potash,	85·27	4·29
Chloride of sodium,	22·85	18·90
" " potassium,	35·25	26·44

In another case were found.

	Before filtration	After through the soil.
Silica,	4·75	15·08
Phosphates of iron and lime,	36·32	33·14
Sulphate of lime,	7·14	*trace.*
Chlorid of sodium,	50·91	48·48
" " potassium,	30·32	39·49
Carbonate of potash,	148·69	85·93

The entire analyses have not been quoted, as I do not now intend to discuss these results fully, but merely wish to direct attention to the fact, that in both instances silicic acid (perhaps *only* as the result of an excess of carbonate of potash in the dung-liquor to which the soil was subjected) has been removed from the soil, and phosphoric acid has been fixed by it, while in one case sulphuric acid has been retained and chlorine lost by the soil, and in the other case the reverse has occurred.

Liebig, in the paper before referred to, remarks that "a clay or lime-soil poor in organic matter, withdraws all the potash and all the silicic acid from a solution of silicate of potash; whereas one rich in so-called humus (humic acid), extracts the potash, but *leaves the silicic acid* in solution."

Oxyd of iron and alumina, or some of their compounds which are at present in all soils, are the most obvious means of fixing the phosphoric acid of soluble phosphates, and Thenard (Compt. Rend. Feb. 1, 1858,) has experimentally demonstrated that they do remove phosphoric acid perfectly from solutions of phosphate of lime in water saturated with carbonic acid. Déhérain (quoted in Landwirthschaftliches Centralblatt, 1859, i, 94,) has shown on the other hand that carbonate of lime and ferric phosphate brought together with highly carbonated water, give rise to phosphate of lime and ferric carbonate. According to the same experimenter, phosphate of alumina and ferric phosphate are also decomposed by contact with solutions of the alkali-carbonates. Thenard, in the paper just cited, asserts that silicate of lime and phosphate of alumina decompose each other in carbonated water. However complicated

and obscure these re-actions may be, it is plain, that, henceforth, *the effect of a solution of one base in displacing other bases from native hydrated aluminous (and ferric?) silicates, and of one acid upon the compounds of other acids with oxyd of iron and alumina, must be considered in the theory of the action of saline manures.*

Water as the medium by which the ingredients of the soil enter the plant.—From his experiments on the absorbent power of soils, Way was led to question the influence of water in effecting the distribution of plant-food in the soil, and Liebig in a recent paper on this subject (Uéber einige Eigenschaften der Ackerkrume" Ann. der Chem. u. Phar. cv., 109 et seq.*) has drawn the conclusion that this force in the soil is so powerful that ammonia, potash and phosphoric acid when applied as manures are instantly made quite insoluble, so that we must relinquish the idea hitherto entertained that plants appropriate their food directly from an aqueous solution, and must adopt as an only alternative the doctrine that the roots of the plant themselves attack and solve their nutriment. Liebig is of the opinion that the bodies mentioned cannot be distributed in the soil by the ascending and descending streams of moisture which are perpetually circulating in it, in obedience to gravitation and evaporation, and he adduces analyses of river, spring and drain-waters, which are almost free from potash and ammonia to sustain this view.

On the other hand Eichhorn in the paper already referred to, found that *pure distilled water dissolved from a soil much more of all the mineral matters required by vegetation than would be needful to supply any average crop.* Henneberg and Stohmann (über das Verhalten der Ackerkrume gegen Ammoniak u. Ammoniaksalzen, Ann. der Chem. u. Pharm. cvii., 170) found that when a soil had been saturated with ammonia, pure water removed it again to a certain extent. Thus 100 grams of soil were treated with 200 c. c. of a solution of chlorid of ammonium (containing 0·693 grams ammonia) and absorbed 0·112 grams of ammonia; on removing one-half of the solution and substituting as much pure water the soil lost 0·009 grams of ammonia as the result of the dilution: by again replacing with water 100 c. c. of the thus diluted solution, 0·014 grams of ammonia were re-dissolved from the soil, and by five repetitions of this process 0·053 grams or nearly one-half the quantity of ammonia originally absorbed passed again into solution.

Liebig himself in one of his papers (Ann. der Chem. u Pharm. cvi., 201,) has furnished the best illustration of the manner in which one base is made soluble by being displaced from its combination with the soil on the addition of another base. He says—"If sulphate of ammonia in very dilute solution, is brought in contact with soil saturated with silicate of potash, and which does not give up a trace (?) of its potash to water alone, it instantly dissolves a certain quantity of this alkali, which may be easily detected by the common reagents."

Liebig has not overlooked the case of acquatic plants whose roots do not enter any soil, for which, he remarks—"there must of course exist other laws for the absorption of their mineral food; they must absorb it from the surrounding medium."

But there appears to be no reason for supposing that acquatic plants differ from our cultivated crops in the manner of imbibing or appropriating the nourishment which enters the roots, especially since Sachs and Stoeckhardt (Chemischer Ackersmann 1859, p. 28, *et seq.*) have shown that the cereals and leguminous grains, as well as clover and beets, not only germinate but attain a vigorous development and even blossom; although their roots never come in contact with a solid soil, but merely float in water holding in solution the salts needful to supply them with mineral food.

It must be borne in mind that the amount of mineral (fixed) ingredients in a plant or crop is but a minute fraction (according to Boussingault 1–15,000th on the average, according to Lawes and Gibert 1–3,000th) of the quantity of water which a plant or crop under usual circumstances transpires during its season of growth. We are not surprised then that agricultural plants are sufficiently fed when their roots are merely surrounded by ordinary well water which is daily changed, or by distilled water mingled with a little vegetable ash into which carbonic acid is daily conducted. We know that drain tubes and aqueducts are often choked by a mass of

* See also his "Letters on Modern Agriculture," London, 1859.

rootlets which have grown from one little fiber that made its way into them through a narrow crevice, but why should the roots of trees and land plants thus develop in such water unless they find their food in it? In Stoeckhardt's experiments *loc. cit.*, it was observed that rye and oats only developed in a normal manner, in saline solutions, when these were diluted from six to ten thousand times! and young clover plants grew luxuriantly, putting forth new roots, leaves and blossoms in profusion, when transferred from the soil to pure water supplied with carbonic acid, to which was added 1–500th of clover ashes that had been neutralized with nitric acid.

It is true that most river and spring waters yield by analysis but the minutest traces of potash, ammonia and phosphoric acid, but we cannot, perhaps, infer with safety that they are actually so deficient in these ingredients, for it may easily happen, as all chemists know, that in the evaporation of a large mass of water traces of salts are likewise carried off,* and in the ignition of saline residues, as is customary in the analysis of a water, much more loss of potash may occur from the ready volatility of chlorid of potassium.

But admitting that our analyses are sufficiently accurate to base calculations upon, and that the soil-water never contains more potash for example than river and well waters; viz., from 2 to 10 parts in 1,000,000,† it must be remembered that the plant is by no means compelled to limit itself for its supplies of mineral matter to that portion of water which it transpires.

The root-cells of a plant placed in a saline solution at once establish osmotic currents, in virtue of the mutual but unbalanced attractions that exist between the cell-walls, the liquid of the cell, the surrounding liquid and the saline and organic matters in solution in these liquids. The assimilating processes going on in the cells are constantly transporting matters forward into the newer growths; or else removing them from solution in the sap, and causing their deposition in the solid form. These are the prime disturbances that operate the currents, and to restore the matters thus removed from the liquids of the root-cells, external matters held in solution diffuse inwardly. If a plant has a large leaf surface exposed to the free air, from which water rapidly evaporates, water diffuses into the root-cells if it be present in the soil, and thus the normal humidity of the structure is preserved. But if the plant be situated in a close hot-house, or in a Ward's case, the atmosphere of which is constantly saturated with aqueous vapor, there can be no evaporation of water from the leaves, there can be no transpiration of water through the plant and no absorption of it by the roots, except to supply what becomes a solid constituent of the tissues or is decomposed in the nutritive process. The same is true of potash or any other substance held in solution in the soil-water. As a result of this principle the land plant collects the potash, phosphoric acid, silica, &c., needed for its organization, from the vastly dilute solutions of these bodies which form the water of wells or of the soil, just as the fucus gathers its iodine from the ocean, although the marvellously delicate reagents which we possess for iodine scarcely enable us to detect this substance even in highly concentrated sea-water.

Says Gmelin, (Handbook of Chemistry, Cavendish Soc's. ed., vol. ii, p. 248,) "the quantity of iodine contained in sea-water is so small that Tennant, Davy, Gaultier, Fyfe and Sarphati were not able to find it. Balard, however, found it in the water of the Mediterranean and Pfaff in that of the Baltic, which is nevertheless very poor in iodine." Otto (Lehrbuch 3d ed., 1st Part, p. 452,) observes "while bromine is easily found if not in sea-water itself, yet in the mother-liquors obtained by its evaporation, and is prepared from them in large quantities, it is still doubtful if iodine can be detected in them." Again, in a note—"It is worthy of remark that in preparing bromine from the mother-liquors of sea-water, iodine, so far as I know, has never made its appearance."

Iodine can be detected in a solution of which it forms but 1–300,000th part—Otto.

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*In Liebig's Chemistry applied to Agriculture and Physiology (5th German ed., p. 102, et seq.,) may be found an account of some of the more striking instances of this volatilization. My friend, Dr. Robert A. Fisher, permits me to mention the result of some of his researches that bear on this point. He found, in fact, that a quantity (very small indeed but still sufficient to be estimated by volumetry) of *caustic potash* is carred off in the vapor when its aqueous solution is distilled.

†Eichhorn found in 1,000,000 parts of distilled water that had been in contact with a soil for ten days, 57 parts of potash.

The *selecting power* which is possessed by plants is fully explained and defined by osmotic diffusion. Within certain easy limits the plant imbibes only those kinds of matter and those quantities, which it requires to develop its organism, and which diffuse into it in consequence of assimilation in the cells. These limits are not so narrow or inflexible as to make the finding of the conditions of growth impossible, and within them, the plant lives and expands, but is itself influenced in its life and in the direction of its enlargement, by the quantities, absolute and relative, of the nutritive or soluble matters, that happen to surround it. Could we grow two plants in precisely identical conditions, we should find their composition alike in all their parts. The variations in the composition and amount of the ash of plants is probably connected with the different relative development of the separate organs, and this again (in part) with the relative quantities of food present in the soil-water. Thus the ash of the plant is, to a certain extent, independent of the soil, but again, to a certain extent, is affected by it. The absorption of *poisons* by plants is entirely abnormal and does not affect our statement.

Not only does the grand law of osmose (endosmose and exosmose) feed the plant out of such attenuated solutions, but, in all probability it aids the formation of these solutions. Graham has shown in the case of alum and bisulphate of potash, that the unequal diffusive tendency of the members of a double salt is powerful enough to decompose it, and he observed that solutions even of the neutral sulphates of potash and soda diffused their basic ingredients into lime-water, more rapidly than the acid; these stable salts thus undergoing partial decomposition.

The investigations of Henneberg and Stohmann already cited, have proved that the absorbent power of a soil is not a purely chemical process, in the ordinary restricted sense; but is in part a physical phenomenon, i. e., it does not depend exclusively upon the presence in the soil, of a certain amount of some peculiar *kind* of matter, but is also related to the *condition* and to the relative amount of acting surface of the various materials which react.

Henneberg and Stohmann found that the *time of contact* between a solution of an ammonia-salt and a soil did not affect the amount of absorption,—as much ammonia being taken up in four hours as in a week. This fact indicates that the absorbing substance is in an extreme state of division, to which the pulverized chabazite of Eichhorn's experiments can bear no comparison.

They found, too, that a given soil absorbed out of an equal volume of liquid very nearly the same amount of ammonia from equivalent quantities of all its salts, the *phosphate* excepted.

They observed, however, that the *relative quantities* of soil, water and the saline substance, affected the results; thus from a stronger solution a greater absolute amount of ammonia was absorbed, while from a weaker solution a relatively greater quantity was taken up: and further, relatively more was absorbed by a given amount of soil, from a solution of given strength when the *volume* of the latter was increased.

Finally they found, as has been already remarked, that by diluting with pure water the solution from which a soil had saturated itself with ammonia, a portion of this body is re-dissolved.

Thus it appears that the very surface-attractions which determine the solution of solid bodies, and occasion osmotic diffusion, also operate in the soil to influence the chemical affinities which are the prime cause of its absorptive properties. The chemical affinity of silicate of alumina for the bases, (probably too that of oxyd of iron and alumina for some of the acids) is modified by the mass of the reacting substances and by that of their solvent; or in other words, the cohesive force of the atoms of the compound silicates, or the adhesive force of water, (solvent action) for the saline bodies, may neutralize or limit the chemical affinity which determines one compound and give origin to another. Hence the chemical substitutions in the soil, and in the case of chabazite: hence, too, the perpetual presence of all the mineral food of plants in the water of the soil.

We would not by any means deny the direct action of the rootlets of plants upon the soil, an action which though exceedingly obscure and as Prof. Liebig remarks in enunciating his new views "very difficult to form a conception of," we may admit in some cases.

Liebig in his letters on modern agriculture, p. 43, gives this instance: "We frequently find in meadows smooth lime-stones with their surfaces covered with a network

of small furrows. When these stones are newly taken out of the ground, we find that each furrow corresponds to a rootlet, which appears as if it had eaten its way into the stone.." We may admit in this case that the rootlets have acted upon the stone, but are not therefore necessarily compelled to assume that the dissolved matters have entered the plant or were dissolved as food, for in such lime-soils the excess rather than the deficiency of carbonate of lime is oftener a hindrance to vegetation. In the case of the *Lycopodiaceæ* which contain *alumina* in large quantity combined with tartaric acid, (Berzelius) or malic acid (Ritthausen) we are, if any where, obliged to look to the plant itself, to account for the entrance into it of a substance absent from all cultivated plants if our numerous analyses are to be credited, and one which is rarely found in river waters, and then in quantity so small as to excite the suspicion that it has been introduced in the reagents, or came from suspended matters.

But it is evident from the facts that have been adduced that it is unnecessary to have recourse to any new theory to explain the access of the soil-ingredients into the plant. In fact it would appear that the view we have felt forced to sustain is the only one admissible in the present state of knowledge —the only one conformable to what we deem well established physical laws.

Conclusion.—The function of the soil.—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, sesquioxyds 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 beneficial 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 animal exuviæ as well as of artificial refuse (manures) into permanent supplies.

Yale Analytical Laboratory, May 15th, 1859.

Useful Information.

The washerwomen of Holland and Belgium, so proverbially clean, and who get up their linen so beautifully white, use refined borax as a washing powder, instead of soda, in the proportion of a large handful of borax powdered to about ten gallons of boiling water. They save in soap nearly one-half. All the large washing establments adopt the same mode. For laces, cambric, &c., an extra quantity of the powder is used, and for crinolines (required to be made very stiff,) a strong solution is necessary. Borax being a neutral salt, does not, in the slightest degree, injure the texture of the linen; its effect is to soften the hardest water, and, therefore, it should be kept on every toilet table. To the taste it is rather sweet—is used for cleansing the hair, is an excellent dentrifice, and, in hot countries, is used with tartaric acid and bi-carbonate of soda as a cooling beverage. Good tea cannot be made from hard water, —all water can be made soft by adding a tea-spoonful of borax powdered to an ordinary sized kettle of water, in which it should boil. The saving in the quantity of tea used will be at least one-fifth. To give the black the flavour of the green tea, add a single leaf from the black currant tree.—*Scientific American.*

In the system of the universe every part is doubtless proportioned to the whole.

VIRGINIA STATE AGRICULTURAL SOCIETY.

PROCEEDINGS OF THE EXECUTIVE COMMITTEE.

At a quarterly meeting of the Executive Committee of the Virginia State Agricultural Society, held at the Exchange Hotel on Thursday evening the 26th July 1859,

PRESENT.

EDMUND RUFFIN, *President.*

Franklin Minor, R. H. Dulany, Colin Stokes, Hugh M. Nelson, B. F. Dew, Wm. Overton, W. C. Knight, Wm. G. Crenshaw, and Wm. T. Scott.

Mr. Crenshaw from the sub-committee appointed to receive proposals from, and negotiate with any cities, towns or Agricultural Societies of the State, in regard to the holding of the next Fair, submitted the following:

REPORT:

That no proposals from any city, town or society of the State had been received prior to the 16th of June last, when the President of the Virginia Central Society opened a correspondence with your Committee, proposing terms for a practical union with the State Society in holding its annual Fairs, upon the grounds of the Central Society. The terms offered to the State Society were such as for various reasons—disclosed in the following correspondence—could not be acceded to.

Your Committee knowing the decided and oft-repeated preference of the Executive Committee for Richmond as the place most suitable for holding the annual Fairs, and being themselves fully impressed with the importance of attaining so desirable an object, (if practicable) without detriment to the State Agricultural Society, submitted the various modifications which would be necessary to render the original proposition conformable to the constitution and acceptable to your Committee, and in view of the non-acceptance of the proposed changes, offered another distinct proposition, the terms of which will be found in their letter of June 21st.

Neither the modifications proposed nor the alternative offer of the Committee was acceptable to the President of the Society, but on the contrary, were both declared to be "utterly inadmissible." Yet, in further manifestation of the earnest desire of the Committee to effect an arrangement with the Central Society for holding the Fair, its President having emphatically declared, that the terms proposed by him, and adhered to in every particular except as to the duration of the contract, were more favorable than those which had been accepted, last year, by the United States Society, your Committee—having expressed their willingness to accede to similar terms—offered to unite with the Central Society on the basis of its contract with the United States Society, and to leave matters of detail involving departure from the terms of the contract to arbitration, so as effectually to secure the Central Society from any changes which would operate to its disadvantage. To this proposition your Committee have received no response, though they have seen from a communication to the "*Richmond Enquirer*" that the President of the Virginia Central Agricultural Society declares, "that we have had enough of foreign Societies, * * * and as the State Society has placed itself in that category, we have done with it." As the communication contains explanations, the benefit of which we would not deny to the writer, we append it to the correspondence.

Your Committee report further, That having been favored with an interview with the sub-Committee of the Union Agricultural Society of Petersburg, terms of union for holding the next Fair have been mutually agreed upon, and your Committee therefore recommend to the Executive Committee the adoption of the following resolution:

Resolved, That the sub-Committee be authorized to make a contract with the Union

Agricultural Society of Virginia and North Carolina for holding the Annual Fair in connection with them, on their grounds at Petersburg on the following basis:

The free admission of the members of both Societies to the grounds;—the Union Society to pay one thousand dollars towards the premium list, reserving one thousand dollars of the sum granted by Petersburg to them for the holding of Fairs, for the repairs of grounds, which are to be put in good order by them;—the State Society to have all receipts and gate fees, and pay all expenses and the balance of the premium list—the police to be furnished by the Union Society free of cost to us; and that all payments to the Union Society for membership fees be reserved to them. We submit the annexed correspondence:

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LABURNUM, June 16th, 1859.

DEAR SIR:

My engagements in Court have been such since I had the pleasure of an interview with you, that it has not been in my power to hold another, and, as the time for announcing the Fair is rapidly approaching, I have concluded that it is best to delay no longer for a personal interview, but to address you this note, stating the terms upon which I propose a practical union of the State and Central Agricultural Societies. They are—

1. That the State Society shall hold its Fairs upon the grounds of the Central Society, without liability for expenses or premiums.

2. The premiums to be awarded by the State Society. The subjects for premiums to be determined by the Committees of the two Societies, but the amount of the premiums to be controuled (if they desire) by the Central Society, which shall alone be responsible for the payment of the premiums. The Committees of Award to be appointed by the two Societies. [The Fairs to be held in the name of the State Society, which shall have the free use of all the facilities under the controul of the Central Society, but the local management, police, &c., to be under the exclusive controul of the Central Society.]

3. The State Society to hand over to the Central Society its present surplus fund, and to lend to the Central Society a sum equal to the principal of its annual surplus—say $12,000—upon a credit of ten years, to be secured by a lien upon the Fair Grounds of the Central Society, but no interest to be paid upon it while this agreement continues.

4. This agreement to continue for five years and to be renewable thereafter for five years, at the pleasure of the State Society, upon a release of the debt of $12,000.

Please to favor me with as prompt a reply as your convenience will permit.

I am, most respectfully, your ob'dt servant,

(Signed) JAS. LYONS.

President Va. C. A. S.

To W. G. CRENSHAW, ESQ., *Chairman of the Committee of the State Agricultural Society.*

—

OFFICE OF THE VA. STATE AG. SOC'Y,
Richmond June 21st, 1859.

JAMES LYONS, ESQ.,

President Virginia Cent. Ag. Society:

Dear Sir:—Your favor of the 16th instant, was duly received and—without loss of time—was referred to the Committee of the State Society, charged with the duty of making arrangements for holding the next Annual Fair. The most respectful consideration has been given to each of the substantive propositions submitted by you, with an earnest desire, on our part, that the negotiation now begun may be conducted to a mutually satisfactory adjustment of the terms on which "a practical union of the State and Central Societies" may be effected. We now proceed, in the spirit of courtesy and frankness, to answer your several propositions in their order.

1. Your offer to permit the State Society to "hold its Fairs upon the grounds of the Central Society without liability for expenses and premiums, considered in reference to such reasonable equivalent concessions on our part to the Central Society, as shall compensate for their remission to us of "liability for expenses and premiums" indicates a just and proper basis, or starting point, in relation to which all the minor details of a general arrangement may be conformably adjusted, and if such particulars can be so adjusted, we unhesitatingly express, in advance, the high satisfaction it will afford us to enter into the arrangement, so far as we can do so consistently with our constitutional powers, which are limited to

the present year, and further, to extend which, would be an assumption of the prerogatives of the Farmers' Assembly. (See Constitution, Sec 2.)

2. Your second proposition is in these words: "The premiums to be awarded by the State Society—the subjects for premiums to be determined by the committees of the two Societies, but the amount of the premiums to be controlled (if they desire) by the Central Society, which shall alone be responsible for the payment of the premiums. The Committees of Award to be appointed by the two Societies. [The Fair to be held in the name of the State Society, which shall have the free use of all the facilities under the control of the Central Society; but the local management, police, &c., to be under the exclusive control of the Central Society.]

Inasmuch as you propose to assume the whole responsibility for the payment of the premiums, we cheerfully accord to the Committee of your Society the privilege of concurrent action with that of our own in determining the subjects of premium and the appointment of the Committees of Award. With equal pleasure we surrender to the Society—if they shall desire it—the right to control the amount of premiums to be offered, with this proviso, however, *that the sums proposed as prizes shall not fall short of those embraced in the schedule of the State Society for its last Fair;* the privilege of *enlargement* being absolutely committed to the discretion of the Central Society. We accept as part of a general arrangement the free use of the facilities which are under the control of the Central Society, for holding the Fair in the name of the State Society, but, the remainder of the clause contained in crochets—"the local management, police, &c., to be under the exclusive control of the Central Society," being in contravention of the Constitution, which provides, Sec. III., Article 7th, that the President "shall appoint and have direction of all marshals and other agents required to carry out and give effect to the rules and regulations prescribed by the Executive Committee for the Annual Fair," we are necessitated by the paramount authority of that instrument to decline; nevertheless, we think the object of the Central Society can be *substantially* attained by conference with the President, whose appointments of agents for local management, police, &c., we venture to premise will be made in accordance with the wishes of the Central Society, agreeably to rules and regulations to be prescribed by the Executive Committee, and which, we doubt not, will be so constructed as to be in substantial harmony with the wishes of the Society, while they must conform to the IX. Section and 5th Article of the Constitution, and that such co-ordinate control will be accorded to them as is not incompatible with the dignity, rights and obligations of the President while holding the Fair in the name of the State Society.

3. Your third proposition is, "The State Society to hand over to the Central Society its present surplus funds, and to lend to the Central Society a sum equal to the principal of its annual surplus, say $12,000, upon a credit of ten years, to be secured by a lien upon the Fair Grounds of the Central Society; but no interest to be paid upon it while the agreement continues.

In the 1st. Article of the XI. Section of the Constitution, it is provided that "all capital of the Society now or hereafter invested, shall be held a fund sacred to the cause of agricultural improvement, *of which the income only shall be subject to appropriation.*"

You will see in the above clause of the Constitution that the whole of your third proposition is without the sphere of our legal competency, and that the Farmer's Assembly only has authority in the premises; yet, we think there would be no objection on the part of the Executive Committee to recommend to the Farmers' Assembly to authorise such a loan as the one proposed, provided all other necessary arrangements could be satisfactorily made. And furthermore: as the Central Society proposes to release the State Society from responsibility for expenses and premiums, we deem it but just and reasonable, and coming within the scope of the powers of the Executive Committee to make it, that an allowance be made to the Central Society of an amount in money equivalent to the privilege to be reserved to the life and such of the annual members of the State Society as shall have paid their dues, namely: the privilege of free admittance for themselves and for their families daily to the exhibitions of the Society during the continuance of the Fair, and that the whole of the gate money and other incidental receipts of the Fair be

deemed to constitute part of the said allowance, but not to include the initiation fees of new members, nor the payments for the dues of annual members: neither is it to imply the right of the Central Society to charge higher fees for the privilege of exhibiting and contending for premiums within the fair grounds than the State Society has hitherto received.

4. Your fourth specification to this effect: "This agreement to continue for five years, and to be renewable thereafter for five years at the pleasure of the State Society upon a release of the debt of $12,000," comes not within the constitutional competency of the Executive Committee; and must, therefore, be remitted to the consideration of the Farmers' Assembly.

Should the foregoing proposed modification of the terms proposed by you be deemed inadmissble, we would in further manifestation of our earnest desire to effect "the practical union of the Virginia State and Va. Central Agricultural Societies," by some other means more acceptable, submit the following alternative proposition:

Presuming that the city of Richmond will agree to furnish the police, or means to pay the expense of it, as has been done formerly on several occasions; the Virginia State Society proposes to hold *its* Fair this year on the grounds of, and in connection with the Virginia Central Society, upon their grounds being furnished to us in good and complete order. The Fair to be conducted at the expense, and the gate-money and other incidental receipts to enure to the use of the State Society; the basis on which it is to be conducted, being the same as of all the Society's previous Fairs, namely: Admission or gate fees to be 25 cents for each person not entitled to free admittance; and the admission of stock, and other subjects of exhibition offered by persons not wishing to become members, three dollars. The free admission of all life and such annual members as shall have paid their dues to be continued, and the free admittance of all members of the Central Society to be allowed on the same terms on which our own are admitted. The committee of arrangements for the Fair to consist of five persons, *two* of whom will be appointed on the nomination of the Executive Committee of the Virginia Central Society, an arrangement alike consistent with the requirements of the Constitution and with the objects which both of the Societies have in view.

The contingent fund of the Society being larger at this time than it was last year, the Executive Committee feel warranted in assuming larger pecuniary responsibility in conducting a Fair this year, than they were able to do then; in other words, they can afford to assume the risk of holding the Fair without the requirement of a guarantee of expenses.

We are, dear sir, with most respectful consideration, your obedient servants,

WM. G. CRENSHAW,
FRANKLIN MINOR,
FRANK G. RUFFIN,
CH. B. WILLIAMS,
} *Committee.*

LABURNUM, June 22, 1859.

Gentlemen:—I had the honor to receive, this afternoon, your letter of the 21st, in reply to mine of the 16th, and I hope you will pardon me for saying that I read it with equal surprise and regret, disappointing as it does, utterly, the hope which I, in common with many others of its members and the friends generally of agriculture indulged, that the State Society would appropriate, at least, its surplus funds to "advance and improve the condition of agriculture, horticulture, the auxiliary mining and mechanic arts," as required by the second article of the first section of its constitution, and, to that end, would unite with the Central Society in holding a Fair.

In this regret and surprise, the gentlemen with whom I have the honor to be associated in the management of the Central Society, fully sympathize, and with the expression of it, I should close this note, but for the fact, that, while you graciously consent to accept every privilege we have offered you, and claim others of an extreme character, you decline to co-operate with the Central Society in holding a Fair, and refuse to aid it with the advance, or loan of a cent, upon the ground that the constitution of the State Society forbids you to do so, and conclude by gravely submitting a proposition in which you say, "presuming that the city of Richmond will agree to furnish the police or means to pay the expense of it, as it has done formerly on several occasions, the Virginia State Society propose to hold *its* (your emphasis) Fair this year upon the Fair Grounds of, and in connection with the Central Society, upon their

grounds being furnished to us in good and complete order." "The gate-money and other incidental receipts to enure to the use of the State Society," forbidding us to charge more than 25 cents gate fee for each person. In other words, the State Society will consent to hold a Fair upon our grounds if the city of Richmond will furnish the police, and we will give it every cent of our receipts, even including the rent of our own booths and buildings.

It becomes me, therefore, in my opinion, to show that I have suggested nothing which is forbidden by your constitution, and why your proposition is deemed utterly inadmissible by the Executive Committee of the Central Society.

1st. As to the term of the contract proposed by me—you say that your power is limited to one year by the second section of your Constitution, and further, to extend which will be an assumption of the prerogatives of the Farmers' Assembly.

I confess that I do not perceive such prohibition in the Constitution. It is true that the second section provides that the State Society "shall hold an annual Fair at such time and place as the Farmers' Assembly shall designate," but adds, "or in default thereof, as may be designated by the Executive Committee." Now I understand you to concede, very properly, that "the Farmers' Assembly have the prerogative" of contracting for five years as I propose; for, otherwise, your making such a contract would not invade their prerogative, and such being the case, it seems clear that under the circumstances existing, you, as the Executive Committee, have the power, because "the default" provided for, has occurred for three years, I believe, (and probably will occur henceforward and forever,) and in such "default" you are clothed with the whole power of the Farmers' Assembly, not only by the very clause you quote, but by the 9th article of the 6th section, which expressly provides that all powers of the Society shall be transferred to the "Farmers' Assembly," and in default of being exercised by that body, shall devolve, provisionally, on the Executive Committee. The term of five years was proposed, however, because we deemed it beneficial to the State Society, and as it objects to it, we are quite ready to limit the contract to one year, if otherwise its terms be such that we can with any propriety accede to them.

2d. You refuse to allow the Central Society to have the control of the local management, police, &c., because the 7th section of the 3d article of your Constitution provides that your President "Shall appoint, and have the direction of all marshals and other agents required to carry out and give effect to the rules and regulations prescribed by the Executive Committee for the Annual Fair." Now, it is very obvious that this article pre-supposes that the State Society had a place at which to hold a Fair, over which it had complete control, and that the case actually existing is a *casus omissus*.

But the difficulty may be gotten over in two ways, viz: first by your Executive Committee prescribing "no rule or regulation for the Fair," except that you will hold it on our Fair Grounds, under such rules and regulations as we may prescribe, provided they be first seen and approved by your Executive Committee. Second, by your President's agreeing to appoint such persons to be marshals and agents as we may nominate to him, and to enforce the regulations which we may have prescribed.

As to our placing the large amount of property entrusted to us farther beyond our controul than this, it is impossible, with anything like fidelity to those of whom we are the agents, who look to us for the protection and preservation of their property from abuse or accidental destruction.

3d. You say that you cannot hand over to us your present surplus fund, nor lend us $12,000, the interest of it to be applied to the exigencies of the Fairs, because the 1st article of the 11th section of your Constitution provides that "all capital of the Society now or hereafter invested, shall be held a fund sacred to the cause of agricultural improvement, of which the income only shall be subject to appropriation," and, therefore, you add, "that the whole of your [my] third proposition is without the sphere of our competency, and that the Farmers' Assembly only has authority in the premises."

With all respect, I must be allowed to say that I do not understand this passage of your letter, especially when I read it in connection with the closing paragraph of that letter, in which you say that "the contingent fund of your Society is larger than it was last year, and the Executive Committee feel warranted in assuming larger pecuniary responsibility in conducting a Fair this year."

My third proposition was, that the State Society should hand over to the Central its present surplus funds, and lend to the Central Society $12,000. You reject the whole of it, because, as you say, it is beyond the sphere of your competency—making no discrimination between the transfer of a surplus fund and a loan of a part of your capital. What, then, have you to expend upon a Fair this year more than you had last, unless you mean to discriminate between surplus fund and contingent fund? which, I presume, you do not. Again: if you cannot appropriate your surplus fund, which I understand to be an annually accruing fund, not capital, and synonymous, therefore, with contingent funds, how can the Farmer's Assembly do so? inasmuch as it has the power to appropriate the income only, and you, the Executive Committee, have precisely the same power; or, you can incur no expense for a Fair, and the income of the State Society must be perpetually reinvested in stocks until it becomes a great monument of its efforts, "to improve and advance the condition of agriculture"—but a monument, I fear, too much resembling that which the first Napoleon erected at the "Hotel des Invalids"—built of the trophies which he had taken from his victims.

As to the loan, I presume, from your reply, that you misapprehended me. I did not propose that you should appropriate any part of your capital to the Central Society, but simply, that instead of lending the Central Society $720 per annum, of your surplus revenue, while you hold your Fair on our grounds, that you should lend the principal of that sum, upon ample security, demanding no interest upon it while using our grounds.

Can the Executive Committee make or change an investment? If they can, there is nothing, allow me to say with all respect, in your objection. If they cannot, then they must have kept all their surplus funds uninvested since the last meeting of the Farmers' Assembly, and so must continue them until its next meeting.

Permit me now to say a word or two as to your proposition to the Central Society.

First, you assume that the City of Richmond will provide the police for the Fair, or money to pay for it, and, assuming that, you say that the State Society will hold its Fair upon the grounds of the Central Society, if they are furnished to it in ample order, it receiving the gate-money and all other incidental profits, and having the entire controul of the Fair; and, in return for this use of our grounds, the State Society will appoint a Committee of Arrangements for the Fair, to consist of five persons, and allow the Central Society the privilege of *nominating* two of them!!!

Were it not for the high character which each of you sustain, I should regard this proposition as a wanton insult to the Central Society, intended to rebuke its presumption for proposing any connection with the State Society. I cannot permit myself to believe—nay, am absolutely forbidden to believe, that such was your motive, and I frankly confess, therefore, that I am utterly at a loss to conceive what could have prompted you to make such an offer. By the time the Fair is held, the property of the Central Society will be worth at least $30,000; its officers will have bestowed, and must continue to bestow, much of their time and attention upon it, and the injury to it, arising from the Fair, will not be repaired for less, probably, than $500. Do you really think the privilege of nominating two members of the Committee of Arrangements an equivalent for the use of such property under such circumstances, and that the State Society renders the aid to agriculture which is justly expected of it, when it avows that such a privilege is the only contribution it can make for the purpose of establishing a suitable place for the permanent exhibitions annually of the products of the farmers and graziers, the artists and mechanics of the State, when the consequence must be, that unless, without such aid from the State Society, such places can be established by the liberality of the people, and Virginia will never witness within her limits another Agricultural Fair or Cattle Show by her State Society? If such be your opinion, I must be allowed to say, most respectfully, that I differ widely from you; and time, I think, will show that a great majority of the other members of the State Society concur in opinion with me.

In concluding, allow me to repeat the deep regret which I and those with whom I have the honour to be associated, feel at the total frustration, as it seems at present, of our hopes that, in common with all the friends of agriculture in the State, and especially in Richmond, the Central Society

would have found occasion for grateful acknowledgment to the State Society for its efficient encouragement of agriculture, the arts and manufactures, by a practical union with it in holding a great annual Fair at Richmond;—but to add that we shall still be most happy to be authorized to make such acknowledgement by a change of the views and policy of the State Society which will warrant it, and to say, therefore, that I shall, to the latest moment practicable, be happy to receive any communication from you to that effect.

I am, most respectfully, your ob't serv't;

JAS. LYONS,
President Va. C. A. S.

To Messrs. Wm. G. Crenshaw, Frank G. Ruffin, Franklin Minor, and Charles B. Williams, Committee of the State Agricultural Society.

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OFFICE OF THE VA. STATE AGR'L SOC'Y,
Richmond, July 6th, 1859.

JAMES LYONS, ESQ.,
President Va. Central Agr'l Society:

Dear Sir.—Your letter of June 22d was received on the 28th, but owing to the indisposition of one member of the Committee and the absence of another, an earlier attention to its contents has been impracticable.

From the terms of your letter the Committee regret to ascertain that there is no hope of their holding a Fair of the State Society in concert with your own, and as a matter of course, of holding one at all in the city of Richmond this fall.

As you seem to have misapprehended somewhat the terms proposed by the State Society, as well as the tone with which they were submitted, it may not be amiss to give an outline of the correspondence, in the hope that such a recapitulation may aid in removing wrong impressions.

Your letter of June 16th proposes a practical union of the two societies upon the following basis:

That the State Society shall hold its Fairs on your grounds, but in *its* name, for the next five years, and award the premiums, but under your controul as to their amount;

That it shall give you its present surplus (contingent) fund; lend you $12,000 for ten years, without interest for five years; and at the end of five years make a gift of that sum, if the contract for holding the Fair on your grounds be renewed for another term of five years, at the expiration of the first term, in consideration whereof the free use of the facilities under the control of the Central Society is tendered to the State Society for holding its Fairs *in its own name*, while on the part of the Central Society you propose to pay the premiums; to controul their amount; and to retain the exclusive controul of the local management, police, &c., in your hands.

To this our Committee reply, accepting, (conditionally) your offer to pay the premiums and expenses, and conceding the right to controul the amount of the premiums, provided the sums proposed as prizes should not fall short of those offered by the Society last year; declining to accord to you the "*exclusive*" "local management, police," &c., because the Constitution of the State Society expressly imposes the responsibility on its President of appointing all agents required to carry out the rules and regulations of the Executive Committee in whom *this* power is vested, and by whom it cannot be renounced, but offering to grant your object *substantially* by appointing such agents as you might approve.

In regard to your demand of the present surplus (contingent) fund of the State Society, they agree in lieu thereof, to make you an allowance equal in amount to the privilege to be retained to the Life, and such of the Annual Members of the State Society, as shall be entitled thereto, of free admittance to the Fair Grounds, and to give you the entrance money of all the visitors, and the fees for exhibition, only stipulating that you shall charge our fee for exhibiting by those who are not members, thereby intending to exclude the sweepstake feature of charging ten per cent. on all exhibitors, which was introduced and charged by the United States Agricultural Society last fall; and *not* stipulating, as you allege, that you should be restricted in your charge on the entrance of visitors, this restriction applying only to ourselves, in the event of the acceptance of our alternative proposition to which we shall presently refer.

They decline—because the Constitution forbade them to accede to it—your demand or a loan of $12,000 for ten years, without interest for five years, and to become a

gift at a future time, but propose to recommend to the Farmers' Assembly to authorize such loan on proper conditions; and they decline to make any arrangement for any term of years, because they had no right to do it.

In view of the possibility of these modifications being unsatisfactory to you, they further propose, alternatively, to hold the Fair at their own expense on your grounds, upon the basis of all their previous Fairs, and upon terms more favourable to you than Petersburg, accepted last year, and which they hoped would prove agreeable to you who had then agreed to give the United States Agricultural Society $12,000 to hold a Fair in Richmond; or, in other words, to guarantee them against loss to that extent. This hope they felt authorized to indulge, as they could not suppose that you held the interests of the State Society in less regard than those of the Society you paid so handsomely for accepting your liberal invitation.

Your last letter declines the modifications proposed to your first proposition, and rejects the alternative offer of the Committee. That letter proposes nothing new; and consists mainly of arguments against the positions of the Committee, which have not convinced them, and of inferences in which they do not concur. It is useless, therefore, to state its terms, especially as in an effort to do so they might unwittingly weaken its force. It is only deemed proper to notice that part of it in which you say that, "were it not for the high character which each of you sustain, I should regard their (alternative) proposition as a wanton insult to the Central Society, intended to rebuke its presumption for proposing any connection with that Society." Permit us to assure you, that so far from meaning such an outrage, we were actuated by an "earnest desire," courteously expressed, to unite with you on such terms as we thought conducive to your interests and ours; and as the Union Agricultural Society of Petersburg had last year accepted a less liberal proposition, and as you were not known to have been offended at the demand of $12,000 on the part of the United States Agricultural Society as the condition of *their* holding a Fair, we could not for a moment suppose that our offer to hold one in connection with you for nothing, could present any ground of offence or even of dissatisfaction.

Bear with us in making one other remark. In submitting to you our alternative proposition, we ventured to presume that the city of Richmond would furnish the police, &c., but did not intend to be understood as making that a condition precedent to our holding the Fair. We had just been considering your proposition to controul the local management, to furnish the police, &c., and did not doubt but that you expected in so doing the city would assist you as it had done last year; we thought, therefore, that on the supposition of our holding the Fair, and assuming the local management, and the payment of the premiums and expenses, the city would be as liberal to *us* as it had been to *you*, and as it had been to us on several former occasions.

We are, most respectfully,
Your obedient servants,

WM. G. CRENSHAW,
FRANK G. RUFFIN,
CH. B. WILLIAMS,
} *Committee.*

LABURNUM, July 9th, 1859.

Gentlemen.—I have the honour to acknowledge your favour of the 6th instant, in reply to mine of the 22d ult., and with this acknowledgement should close the correspondence between us, were it not for the singular errors which you have embodied in what you term your "recapitulation" of the correspondence, and another superadded in the close of your letter.

It is due to all parties concerned, but especially to the Central Society, that those errors should be corrected, and with the correction of them, I shall close this correspondence on my part.

The errors are—

I. Mis-statement of the first clause of my proposal. That clause was: "That the State Society shall hold its Fairs upon the grounds of the Central Society, without liability for expenses or premiums." In re-stating it, you omit the last clause, from the word "without," inclusive.

II. Mis-statement of the third and fourth clauses of my proposal. The third clause was, that the State Society should hand over to the Central, its present surplus fund, and loan it $12,000, to be secured by a lien upon the Fair Grounds, but no interest to

be charged, while the agreement continues, (that is, while the State Society uses the Fair Grounds of the Central Society.)

In re-stating it, you omit, wholly, to state the security proposed by us, and blend it with the fourth clause, making us, by your "recapitulation," ask of you a "gift" of $12,000, at the expiration of five years.

Now, the fourth clause does not ask of you a gift, or anything else, at the expiration of five years. Its language is: "This agreement to continue for five years, and be renewed at the pleasure of the State Society, upon a release of the debt of $12,000." The wonder to me is that gentlemen of your intelligence could interpret this language into an appeal to you to go beyond your Constitutional "sphere," and make us a gift, when it plainly, and simply, extends to "the State Society," (and not to you its present Committee,) the privilege of renewing the contract for five years, provided that it (not you, its present Committee,) shall pay $12,000 to the use and benefit of agriculture, for the privilege, if it avails itself of it. We were willing to bear the toils and burthens of Agricultural Fairs for five years, while the State Society reaped the honours, and held the hoarded funds; but we thought, and still think, that if we perform the task so satisfactorily that the State Society desired to renew the contract, it should, for the purpose of making our service more efficient, and our burthen lighter, pay at least $12,000 out of the $50,000, which the friends of agriculture and the arts and manufactures placed under its control for their benefit. And with all respect to you, we are of that opinion, and, indeed, find it more than difficult to conceive how the State Society could regard as a gift the expenditure by it in the cause of agriculture, of any portion of the funds which the friends of agriculture raised and put under its controul for the use and benefit of agriculture. Such expenditure by it being, in our opinion, nothing but an appropriation of a portion of the trust-fund to the uses and purposes of the trust, according to the intent and design of those who created it. In this opinion I should be most happy to have the concurrence of the State Society, because I believe the beneficent ends of its creation would be thereby attained, and the great cause of which we are all the humble servants, advanced and promoted. But, whether you concur with us in this opinion or not, I hope you are convinced that I did not suggest to you the high misdemeanor of violating your Constitution; and that your agitation in behalf the Constitution has been quieted. That you are satisfied that it was no invasion of your "sphere" of duty to suggest, that your principals and masters might renew a contract if they pleased to do so.

III. You say that you proposed to recommend to the Farmers' Assembly to make us a loan of $12,000 "upon proper conditions."

Pardon me for saying that you proposed no such thing, as you will see by referring to your letter. Your language in that letter is, "we think there would be no objection on the part of the Executive Committee to recommend to the Farmers' Assembly to authorize such a loan, provided all other necessary arrangements could be made." To my comprehension (in all respect I say it) this sounds much more like the tale of "The House that Jack built," than a recommendation by the Executive Committee to the Farmers' Assembly. You certainly declare nothing in it, but that you have a thought, from which fact you infer that the Executive Committee may have a corresponding or somewhat similar thought, but whether they would excogitate that thought into a recommendation to the Farmers' Assembly, or if they did what the nature of that recommendation would be, we are not advised, because no intimation is given of what is meant by "other necessary arrangements" to "be satisfactorily made." But what would a promise to make a recommendation to the Farmers' Assembly amount to, if you had made it? About as much as a resolve to make an eel pie without first complying with Mrs. Glass's sage maxim, viz: "First catch your eels—then skin them," &c. When did you have the felicity to catch a "Farmers' Assembly;" and when do you think you will enjoy it again? Never, probably, unless the love of their great cause shall stimulate the farmers to get it up, in order that it may afterwards get rid of itself. But what is to become of agriculture in the meantime, and what to be done with the funds which the people have raised for the benefit of agriculture? Are they to remain locked up in the coffers of the State

Society, as the vital principle of a nominal organization? Was it to accomplish such an object that the State Fair was removed from Richmond? I understand not; for the Executive Committee of the State Society avowed that it removed the Fair from Richmond, because its contingent fund was not adequate to the expenses of a Fair, and the principal could not be touched, and therefore, it could not hold a Fair at Richmond, unless Richmond would advance a sum, which, added to the contingent fund, would defray the expenses of the Fair; and yet, when the Central Society, (the child of Richmond,) comes forward and offers to do the very thing which you required, by furnishing you with all the means to hold a Fair, and paying all its expenses, if you will give it your surplus fund; you decline, and say "we have a thought, that the Executive Committee may have a thought, that the Farmers' Assembly (if it ever meets) ought to have a thought, that the thing ought to be done!"

So much for the errors of your "recapitulation." But to them you have added another, and yet more remarkable error, in the allegation that the Central Society did more for the United States Agricultural Society than it is willing to do for the State Society, having given the former $12,000 to hold a Fair, while it will not permit the State Society to hold one "for nothing.'

This is a most extraordinary error indeed, and a most remarkable mis-statement of the case. Let me state the case properly to you, and I entertain the most perfect confidence that you will, when you read it, confess your error. The case, properly stated, is this: The United States Agricultural Society offered a premium list of $10,000, and they consented to hold a Fair at Richmond if they were guaranteed against loss from that list, and the other necessary expenses of the Fair. This guarantee the Central Society agreed to give, provided it should not extend beyond $12,000. The United States Agricultural Society accepted the guarantee, with the proviso. The Fair was held, we paid the premium list and other expenses, and had about $600 left. Now, what does the Central Socitety offer to the State Society? Does it offer less than it did to the United States Agricultural Society? No. But, on the contrary, it offers not a guarantee limited to $12,000, but, intending to propose a premium list of $10,000, it offers the State Society an unlimited guarantee. It says to it, "Take our grounds, use all our facilities, hold the Fair, and award all the premiums in your name; we will be at all the trouble, and keep everything in order, and pay all expenses, (no matter how large,) including the premiums; while you shall receive all the honour and eclat, if any; and all that we ask in return is, that, to assist us in paying these expenses and premiums, you will contribute your "surplus fund." And, in the name of the great State Society of Virginia, not for the sake of agriculture, but in deference to certain constitutional doubts and scruples, you reject our offer! Now, I appeal to you as candid gentlemen, as I know you are, to answer this question: Did the Central Society offer more to the United States Society than it has offered to the State Society? And here let me add, that we claimed the controul of the premium list because we were afraid to entrust it to the State Society. One of the most important elements, if not the most important one, in a good Fair, is a large premium list; and one of the prominent causes of the failures of the State Society, has been the absence of that element, and a small premium list. We intended to avoid that error, and have a large premium list ($10,000 at least;) and, from the past action of the State Society, we inferred its future course, and were, therefore, not willing to trust it, unconditionally, with the premium list.

In conclusion, I beg leave to repeat the expression of the sincere regret which I, and those with whom I have the honour to be associated, feel at your determination, because the great cause of agriculture and the arts will suffer from it, we fear though we shall do all in our power to avert that consequence. Which of us is right the great body of the people must decide. And, as some of your officers or employees has furnished to the Examiner, or some one connected with it, (whose hostility to the Central Society is to me inexplicable,) an imperfect view of our correspondence, upon which an article, unjust to both parties, but especially to us, has been framed, I hope you will send to the Editor a complete copy of the correspondence, with a request that he will publish it, and I will cause copies of

it to be sent to the Editors of the other papers for publication.

With great respect,
I am your obedient servant,
JAMES LYONS,
President Va. C. A. S.

To W. G. Crenshaw, F. G. Ruffin, C. B. Williams, Esqs.—*Committee.*

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OFFICE OF THE VA. STATE AG. SOC'Y,
Richmond, July 16th, 1859.

JAMES LYONS, ESQ.,
President of Va. Cent. Ag. Society.

Dear Sir:—We had not the pleasure to receive your letter of the 9th instant,* but having seen what purports to be a copy of it in the "Richmond Enquirer" of the 13th, we proceed to answer it through the same medium:

You call our attention to what you are pleased to term "the singular errors which (we) have embodied in what (we) term (our) 'recapitulation' of the correspondence between us and another superadded in the close of (our) letter."

In tracing an outline of a lengthy correspondence, it was not to be expeeted that there should be a full reiteration of all that had passed, but such a brief reference only to what had before been elaborately discussed as would serve as an index to the correspondence. Yet, if in condensing ours, we have in anything come short of the full measure of justice due to the Central Society, we sincerely regret it, while we disavow such intention, and profess our perfect willingness, as in duty bound, to stand corrected. You too, we doubt not, will confess to a reciprocal obligation in relation to the State Society.

We are sorry we left out the words in our reference to your first proposition, by the omission of which we incur the imputation of "mis-statement." But, if it was a "singular error" on our part to have done so, in not citing the words "*without liability for expenses and premiums,*" although we state distinctly in the next paragraph that "you propose to pay the premiums," (and the omission of the word "expenses" was merely accidental,) is it not truly marvellous that *you*, who are the first to complain, should have been the foremost to transgress your own rule, and should be found to have committed the self-same "singular error," when in attempting to restate *our* proposition *you* omit the important fact contained in the words "*the Fair to be conducted at the expense* of the State Society?" In other words—*with "liability for premiums and expenses."* Yet you have done this, not once but twice in your letter of June 22d.

With respect to your second, third and fourth proposals, we refer to them and adopt them in their original form, as no restatement of them can add to their clearness, or make them more intelligible.

It is unfortunate in referring to them that we should have used the term "gift," to which you so much object, albeit we are not sensible of the impropriety of its use, even in the sense in which you understand it, for you were willing in consideration of the *interest* of the $12,000 to grant us the free use of your grounds, facilities, &c., for five years, but for the renewal of the contract for another equal term, you demand the surrender of the principal, in addition to the interest, without offering any additional consideration for it. Is it not plain then, that the surrender of a debt without consideration, is of the nature of a gift or something very near akin to it? But, if you will re-examine the passage of our letter in which the word occurs, you will at once perceive that we used it not in the absolute sense you supposed, but only in a qualified sense; for we say "at the end of

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* NOTE.—ARMORY, RICHMOND, July 18th, 1859—7 P. M.

Dear Sir:—I have just heard of a grave error on my part, which involves Mr. James Lyons in an apparent lack both of official and personal courtesy. Thus: Mr. Lyons sent to me from his residence in the country his last communication to your Executive Committee, with a note to send it to you. This note I did not see, it having dropped from the bundle without my notice. Thinking this was but a copy to be put on record, and that he had directly sent the original note to you, I rested quiet, not doubting but that all had been done rightly. I now learn that you never received, of course, the communication, nor did your Executive Committee see it until in the "Enquirer."

I lament this mistake the more because it involves Mr. Lyons, when, even to this moment, he knows not of the error; but I shall inform him in the morning.

I ask it as a favor that you will explain this to the several gentlemen composing your Executive Committee.

Most respectfully, yours,
C. DIMMOCK, Sec'y Va. C. A. S.

C. B. WILLIAMS, ESQ., *Sec'y Va. State Agricultural Society, Richmond.*

five years, make a *gift* of that sum if the contract for holding the Fair on your grounds be renewed," &c., "IN CONSIDERATION WHEREOF, the free use of all the facilities under the controul of the Central Society is tendered to the State Society for holding its Fairs *in its own name;* while on the part of the Central Society; you PROPOSE TO PAY THE PREMIUMS, to controul their amount, and to retain the exclusive controul of the local management, police, &c., in your hands." As well might it be maintained that the *free use* implied *the gratuitous use* of the Society's grounds, as that the *gift* of the $12,000 loan upon a certain contingency, and for a specified *consideration* implied an absolute donation. Under similar qualifications we understand you to use the word "lending," as it occurs in the following paragraph in your letter of the 22d ultimo, viz:

"I did not propose that you should appropriate any part of your capital to the Central Society, but simply that instead of LENDING the Central Society $720 per annum of surplus revenue while you hold your Fair on our grounds, you should lend the principal of that sum upon ample security, demanding no interest upon it while using our grounds."

Now as this paragraph reads, is it not a "mis-statement" of your own proposition? And, is it not perfectly manifest that you use the term "lending" as synonymous with "hand over," as its use occurs in this correspondence, and in an entirely different sense, too, from that in which the word "lend" is used by you in the same sentence?

The way being open for the correction of "mis-statements," we have to call your attention to one, and still another of yours, before we come to consider what you are pleased to call "a most extraordinary error" and "a most remakable mis-statement" on our part in relation to your arrangement last year with the United States Agricultural Society.

We cite, for remark, the following paragraph, bristling with a terminal accompaniment of admiration marks arrayed like the pegs upon a ten-pin alley:

"First, you assume that the City of Richmond will provide the police for the Fair, or money to pay for it, and, assuming that, you say that the State Society will hold its Fair upon the grounds of the Central Society, if they are furnished to it in ample order, it receiving the gate-money and all other incidental profits, and having the entire controul of the Fair; and, in return for this use of our grounds, the State Society will appoint a committee of arrangements for the Fair, to consist of five persons, and allow the Central Society the privilege of *nominating* two of them!!!"

We have already shown that you omitted the fact that the State Society proposed to conduct the Fair at its own expense; but, if you will turn to our proposition, you will find another "mis-statement" or two, which we doubt not you will, on second consideration, deem to be constituent elements of our proposition, too important to have been overlooked in determining what our offer really was.

1st. It was important to have stated that, upon the basis of our previous Fairs, stock and other subjects of exhibition offered by persons not wishing to become members, (for members pay nothing for entrance fees,) would be admitted to competition for the premiums of the Society simply by *one* payment of three dollars. The importance we attach to it is: It shows that *we pay* the premiums we offer out of the ordinary receipts of membership fees, gate fees, &c., without levying an excise of 10 per cent. of the amount of each premium offered, upon the exhibitors, for every article entered for competition, as was done by the United States Agricultural Society, conducting its Fair in connection with you and with your concurrence last Fall. A measure by which the funds were directly increased $1,500, and indirectly $2,000, the awards of premiums having been prevented to that extent—a new mode of encouraging and fostering agricultural improvement—the effect of which was to make the exhibitors, to the extent to which they were taxed, pay the premiums. Call you this "skinning of eels?" Or is it a "monument"—after your copy-right pattern—to signalize your peculiar care for and identification of interest with "the farmers and graziers, the artists and mechanics of the State," erected *a la Napoleon*, "of the trophies which you have taken from your victims?"

2d. It was of very great importance too, that you should not have overlooked and have omitted to mention *that we offered to allow free admittance of all the members of the Central Society on the same terms on which our own are admitted.*

You may consider this of so little moment as not to be worth mentioning as any part of the "return," we proposed to make you, for the use of your Grounds, but, however, that may be, we thought far otherwise. When we were treating with you, on the basis of your first offer, we said, "as the Central Society proposes to release the State Society from responsibility for expenses and premiums, we deem it but just and reasonable." * * * "that an allowance be made to the Central Society of an amount in money equivalent to the privilege to be reserved to the life" and annual members "of the State Society," and that the whole of the gate money and other incidental receipts of the Fair, be deemed to constitute part of said allowance.

You say, "the injury to your Grounds, arising from the Fair, will not be repaired for less, probably, than $500." But, will not the receipts of all the annual membership fees, received from the members of your Society, more than quadruple the amount?

Where, then, is the propriety of your taunting question—"Do you really think the privilege of nominating two members of a Committee of Arrangements an equivalent for the use of such property under such circumstances, and that the State Society renders the aid to agriculture which is justly expected of it, when it avows that such a privilege is the only contribution it can make for the purpose of establishing a suitable place for the permanent exhibitions annually of the products of the farmers and graziers, the artists and mechanics of the State, when the consequence must be, that unless, without such aid from the State Society, such places can be established by the liberality of the people, and Virginia will never witness within her limits another Agricultural Fair or Cattle Show by her State Society.

We answer your question by asking another. When and where has the State Society avowed that such a privilege is the only contribution it can make for the purpose of establishing, &c.? and do *you* really think that we have offered you no other return for the use of your grounds than the privilege of *nominating* two members of the Committee of Arrangements?

Having now disposed of *your* "mis-statements," we will proceed to pay our respects to the concluding part of your letter, which has reference to what you term ours.

We are charged with a "yet more remarkable error in the allegation that the Central Society did more for the United States Agricultural Society than it is willing to do for the State Society, having given the former $12,000 to hold a Fair (omitting our explanatory clause, 'in other words, to guarantee them against loss to that extent,') while it will not permit the State Society to hold one for nothing." "This," you say, "is a most extrordinary error, indeed, and a most remarkable mis-statement of the case." "The case properly stated," you add, "is this: The United States Agricultural Society offered a premium list of $10,000, and they consented to hold a Fair at Richmond, if they were guaranteed against loss from that list, and other necessary expenses of the Fair. This guarantee of the Central Society agreed to give, provided it should not extend beyond $12,000. The United States Agricultural Society accepted the guarantee with the proviso. The Fair was held, we paid the premium list and other necessary expenses, and had about $600 left. Now, what does the Central Society offer to the State Society? Does it offer less than it did to the United States' Society? No. But, on the contrary, it offers not a guarantee limited to $12,000, but (intending to propose a premium list of $10,000,) it offers to the State Society an unlimited guarantee. It says to it, "take our grounds, use all our facilities, hold the Fair, and award the premiums in your name; we will take all the trouble, keep everything in order, and pay all expenses (no matter how large), including the premiums, while you shall receive all the honor and eclat, if any, [and if none, what? why the *mere name of holding a Fair!*] And all that we ask in return is, that to assist us in paying these expenses and premiums, you will contribute your surplus funds." In other words—although you had just said that you offered the State Society an unlimited guarantee, paying all expenses, &c., (no matter how large,) we must, to assist you in paying, &c., just allow you to "*eat the malt that lay in the house that Jack built.*"

Let us now stop and subject all this to the test of analysis. You ask, "what does the Central Society offer to the State Society? Does it offer less than it did to the United States Society?" *You* answer "No." *We*

say the offer was far less favorable to the State Society—in this: that you demanded the whole of its surplus fund, amounting to between three and four thousand dollars, while from the United States Society you asked *not one cent!* "But," you continue, "on the contrary, it offers not a guarantee of $12,000," "but it offers to the State Society an unlimited guarantee," &c. Why, then, if this offer was not less than that made to the United States Society, are you unwilling that the State Society should hold a Fair on the same terms? or, on the offer of the State Society to hold it on the same terms, *minus any guarantee at all*? Are we not justified in saying, you held the interest of the United States Society in higher regard than you did that of the State Society?—But this is not all. You engaged to do yet more—even to "hand over" to them your "*surplus funds*," after defraying all neeessary expenses and premiums, not even retaining the receipts from membership fees, paid by the annual members.

This abundantly appears, from your contract with the United States Society, setting forth that the Virginia Central Society pledged itself to pay "all the premiums and other necessary expenses of the United States Agricultural Society, provided the amount should not exceed the sum of $12,000, and to pay over to it the surplus (if any) arising from the gate and entry fees, and fees of membership, paid by the annual members, after deducting all the expenses of the Fair, including premiums." It further appears, that so the President of the United States Society understood it, who, in his letter to you, (see Richmond "Enquirer" January 19, 1859,) remarked: "The basis of all our negotiations has been, that the United States Society were to bring all the weight of its 'PRESTIGE,' its 'machinery,' and the service of its officers, to the aid of the Virginia Central Society in advaneing the success of the Fair: and, in return, were to receive, in addition to their premiums and necessary expenses, whatever surplus might remain after defraying the necessary expenses of the Fair." Now, the whole matter resolves itself into this: that the better arrangements offered us, required of us to pay fully one-fourth of all the premiums and expenses, under the specious delusion of an "unlimited guarantee," while the worse arrangement (and worse, indeed, it was to you,) offered to the United State Agricultural Society, not only the guarantee of $12,000, but also to pay over to them *the surplus profits* arising from holding the Fair.

You appeal to us "as candid gentlemen," to answer this question: "Did the Central Society offer more to the United States Society than it offered the State Society?" We have answered it in anticipation and with all candor, that you did; nevertheless, as on this point we seem to misapprehend each other, if you are desirous of accommodating the State Society with terms *equal* to those accepted by the United States Society, the whole matter is compressed within the compass of a nut-shell, and may not after all be difficult of solution.

We propose, then, to unite with you on the basis of your contract with the United States Society, and if any of the details of the contract cannot be reconciled with the requirement of our Constitution, we are ready to submit to the adjudication of disinterested persons mutually chosen, the adjustment of the details in all cases of departure from those embraced in the said contract, so as to substitute others which shall in no event operate to the disadvantage of the Central Society.

In conclusion, we express the hope that you will not decline the proposed union upon the basis indicated, and that arrangements may be speedily made for issuing the Programme of a Fair to be held on your Grounds in October.

We remain, dear sir, with respectful consideration, your obedient servants,

WM. G. CRENSHAW,
FRANK G. RUFFIN,
CH. B. WILLIAMS,
} *Committee.*

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LABURNUM, July 20, 1859.

To the Editors of the Enquirer:

GENTLEMEN.—I have just read in your paper, the resume of the Executive Committee of the State Agricultural Society, which, professing to be a reply to my last note, is a laboured attempt to draw off attention from its own errors, by a great outcry over certain omissions and inaccuracies. In mercy to you and your readers, I shall not review this last work of the Committee nor even point out its numerous errors and fallacies, because I am sure that even the casual reader will be struck with its beau-

ties and sensible of its errors on the first reading. My purpose is simply to put myself right, in respect to one matter, over which the Committee rejoice much, as over a detected error, and to confess some of the "manifold sins and wickednesses," which they ascribe to me.

The first matter is the use of the word "lending," instead of the word "handing," in speaking of the annual surplus of $720. The word which I used was "handing," making the paragraph read, "In stead of handing to the Central Society $720 per annum, &c., you should lend the principal of that sum."

But, as you know, I write unfortunately a bad hand, and one difficult to read, especially when I write rapidly, as I generally do, and in copying my letter, the copyist made "lending" of "handing," and it escaped my observation. In doing this, (for which he is in no wise censurable,) the copyist made me mis-state my own proposal and make it absurd; and I do not perceive that it is at all relieved of that quality by the remarkable assumption of the Committee that lending and handing were used as synonymous terms. In the next place I have to confess my error in failing to comment upon the proposal of the Committee to permit the members of the Central Society to enter their own Fair Grounds during the Fair upon the same terms upon which the members of the State Society should be admitted. I did not notice this offer, because, as the Committee say, I considered it "of so little moment as not to be worth mentioning," and because it really seemed to me to be so ludicrous that I supposeed it was a lapse of the pen. In this, also, I have to confess that I was in error, for the Committee now assure me that the proposal was gravely made and "far otherwise" than unimportant; and I now perceive its merits and really confess that it partakes of that high order of wit which gives notice of its presence to the astounded listener by the peal which follows the unseen flash, and which rolls through the whole essay of the Committee like a pondrous ball over a ten-pin alley stuck full of pegs.

Indeed, it is quite equal to the best of Jerremy Didler or Beau Hickman, when the one was seeking information and the other a dinner. If I had been as well informed then as I am now, I should not only have noticed it, but certainly honoured it with "a terminal accompaniment of admiration marks, arranged like the pegs upon a ten-pin alley;" but the truth is, that my poor learning had not instructed me that a ten-pin alley had pegs on it arranged like pins; or that there was such a thing as "a terminal accompaniment." I will never be caught in the same fix again, however, for whenever I roll a ball over a ten-pin alley I shall keep a bright look out that it encounters none of the pegs; and I am sure I shall never hear a deep-mouthed foxhound open upon the trail, or think of the Executive Committee, without recollecting that there is such a thing as "a terminal accompaniment"—and thus instructed, I will examine, for a moment, the last view of "a terminal accompaniment," presented by the Committee in its proposal to take the place and attitude of the United States Agricultural Society; and to refer to a board of arbitrators the settlement of all disputed details, after a deliberate effort to arouse old prejudices against that Society, by denouncing it as an eel-skinning concern, and then to transfer the prejudice to the Central Society.

Forbearing to say of this proposal many things which my learning in the new lingo of "terminal accompaniment" suggests, I content myself with saying, that we have had enough of foreign Societies, (though I mean not to reflect upon the United States Society;) and, as the State Society has placed itself in that category, we have done with it. We shall never again seek the aid of a foreign Society to promote the cause of Agriculture in Virgiuia. The people of Virginia will sustain us, and, if they do not, the generous people of Richmond, to whose paternal care we owe our being, will. Of course we decline the tip end of the "terminal accompaniment"—the reference; because, as we cannot surrender ourselves to the foreigner, we cannot authorize others thus to surrender us; and, because the reference must be obviously unequal, and therefore unfair. The Committee have already declared that they cannot accept our terms because of their constitutional difficulties, and in just respect to them, I am bound to suppose that those difficulties would not be removed by the opinion of a Board, and the reference would amount, therefore, to nothing more than the enquiry, whether the terms proposed by the State Committee should be accepted or not, excluding all

consideration of our terms. This is "a ceremonial accompaniment," hanging altogether on one side. But we have no authority to refer to a Board to decide how we shall discharge the trust which has been reposed in us. That would be, illegally, to delegate to others the power which has been delegated to us. This may be within the "constitutional sphere" of the Executive Committee of the State Society, but it is not within ours. I must say, therefore, to our foreign friends, we shall continue our efforts, unaided by them, to give annually a Fair and Cattle Show which shall advance the great cause of agriculture and the arts, and reflect some credit on our State, and we hope to meet them there as our guests.

JAMES LYONS,
President Va. Central Agr'l Soc'y.

The report and accompanying resolutions were accepted and unanimously adopted.

The Committee adjourned until to-morrow morning at half-past 8 o'clock.

WEDNESDAY MORNING, July 27th.

The Executive Committee met pursuant to adjournment.

PRESENT,

EDMUND RUFFIN, *President*,

Minor, Dulany, Scott, Stokes, Crenshaw, Nelson, and Overton.

On motion of Mr. Dulany, the following preamble and resolution were unanimously adopted:

Regarding it as highly important that the members of the State Agricultural Society shall clearly understand the various propositions which have recently passed between their Executive Committee and that of the Virginia Central Society, and also the great necessity there is for procuring another meeting of the Farmers' Assembly, therefore,

Resolved, That a Committee of three be appointed to address a circular letter to the members of the Society, setting forth briefly the several propositions of the Central Society and the State Society for a Fair in Richmond and urging the members of our Society to elect delegates to the Farmers' Assembly, and to exert themselves to obtain a full meeting of that body, and a large attendance of the Farmers generally at the Fair to be held in Petersburg.

Committee, R. H. Dulany, F. Minor, W. G. Crenshaw.

The premium list was examined, revised and adopted, and its publication ordered in the usual manner.

On motion of Mr. Minor,

Resolved, That, hereafter, the subjects of experiments, Essays and other written Communications offered for premiums at the annual fair be referred to the Executive Committee, who may retain them for careful examination and comparison, until the quarterly meeting in January next following, when they shall announce their awards if agreed upon, or hold them for further consideration until the next stated meeting thereafter if they shall think proper to do so.

The Secretary communicated the resignation of Col. Wm. Townes as a Vice President of the Society, which was accepted, and thereupon Lewis E. Harvie, Esq., was elected Vice President to fill the vacancy.

On motion of Mr. E. Ruffin, the following "Special Premium" was ordered to be added to the schedule adopted for the next Fair:

SPECIAL PREMIUMS

For the successful and economical application, in actual operation, of steam-power to tillage purposes, as a substitute for team or animal power—to drain, and to work plows, harrows, rollers, clod-crushers, or any substitutes thereof, operating either to break, subvert, or pulverize the soil, or otherwise to prepare it for putting in seed, or for the production of crops on level or moderately undulating land—a premium of $500.

As conditions necessary for competing for, or obtaining this premium, it shall be required by the judges that full trials shall be made of the implements or machines offered, in practical labours and performance, and for as much time, before or after the annual exhibition as shall be deemed proper by the committee. And also that the operation shall be considered economical and profitable, and more so than the use of team labour for the same purposes, and on fields not less than fifty acres of size.

Should there be more than one machine competing for this premium, it will be awarded to the best, (if deserving it by sufficient merit,)—or if two be deemed deserving and of equal claims of merit, the premium shall be divided equally between them.

Any person designing to compete must notify the Secretary of the Society (at Richmond, Va.,) of his intention at least forty days before the Exhibition, and he will then be notified when and where (on James river,) the machine must be brought and tried. It must also be exhibited on the Fair Grounds during the Exhibition.

WILLIAM B. HARRISON,
WILLIAM C. KNIGHT,
ROBERT DOUTHAT,
JOHN A. SELDEN,
RICHARD IRBY,
W. W. GILMER,
EDMUND RUFFIN, JR.,
} *Com'tee.*

ANNUAL REPORT.

The Secretary was directed to prepare the Annual Report of the Executive Committee.

COMMITTEE OF ARRANGEMENTS.

Messrs. Wm. C. Knight, Wm. T. Scott, Colin Stokes, and Ch. B. Williams, were appointed the Committee of arrangements to act in concert with the Executive Committee of the Union Society in making all needed preparations for holding the Fair, the meeting of the Farmers' Assembly and the section or general meetings of the Society.

The Executive Committee then adjourned to meet at Bollingbrook Hotel, Petersburg, on Monday evening the 31st of October, at 7 o'clock P. M.

CH. B. WILLIAMS, *Sec'y.*

RUFFIN'S PHOSPHO-PERUVIAN GUANO.

Peruvian Guano *used alone* is quite costly, and is rarely attended with any permanent, and never with any considerable improvement. Phosphatic Guano *used alone*, though far less costly than the other, is yet not economical, because, being dissolved slowly and with difficulty, it rarely exerts any effect on the Wheat crop, and not much on the subsequent crop of clover. The two used in intimate mixture, and costing less than Peruvian Guano, are said to be superior to either alone, that a far less quantity of Peruvian Guano will produce a crop which would require a much larger application if used singly; and the Phosphatic Guano is made speedily operative on the Wheat, and permanently operative on the succeeding crop of clover, and on the land. One theory is, that the ammonia in the Peruvian liberates the phosphoric acid in the Phosphatic Guano, for the use of both wheat and clover. Another is, that the ammonia enables both Wheat and clover to appropriate the phosphoric acid. Of the truth of all this each man must judge for himself. The mixture would certainly seem to be judicious, because there is a growing demand for it from judicious, practical men—men whose names can stand a reference. Hitherto this demand has been met from Baltimore, or still farther North. I now propose to supply it from Richmond, with an article at least equal to any made elsewhere. It shall contain 8 per ct. of ammonia, and not less than 45 per ct. of phosphate of lime. All who have heretofore satisfactorily used Manipulated Guano, may safely buy their supply of me; and I ask those who have never tried it to try mine now by the side of Peruvian Guano.

There is no secret in my ingredients or mode of manufacture; and every farmer is at liberty to inspect the whole process. If he approves it, but thinks he can mix it more cheaply for himself, I will sell him the phosphates I use, and he may make the experiment, provided he will buy enough of mine to compare them. All I claim to do is to grind and mix far better than the farmer can, to select a better phosphate than he can, and to obtain it on better terms. My experience in the market already assures me that it is far more difficult to obtain a good phosphate than a good Peruvian Guano; and as, besides this, their complete effect depends on their thorough admixture, which can only be accomplished by perfect machinery, it is better for them to purchase the prepared article than the ingredients, when they are satisfied that they will get what they bargain for. That I profess to furnish all who deal with me. I have leased a large house on Cary street, opposite the Basin sheds, and fitted it up with complete machinery, where I shall superintend the manufacture in person, and where I shall be happy to see all my friends.

While I claim that this article, from the fact that it is reduced to a fine dry powder, will broadcast better than Peruvian Guano, there is no question that for the same reason it will be vastly superior for the drill.

Price, $52 cash per ton of 2,000 lbs., and will vary according to changes in prices of ingredients.

I have appointed the following persons as agents for the sale, from whom it can be obtained, on the same terms as from myself, viz:

CRENSHAW & CO., S. McGRUDER'S SONS,
ALEX'R GARRETT, PEYTON & ARCHER, *Richmond;*
M. HOLLINS & CO., *Lynchburg.*

FRANK G. RUFFIN.

Richmond, July, 1859.