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Southern Planter

A MONTHL[illegible]

DEVOTED TO

Practical and Progressive Agriculture, Horticulture, Trucking, Live Stock and the Fireside.

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The Southern Planter.

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PRACTICAL AND PROGRESSIVE AGRICULTURE, HORTICULTURE, TRUCKING, LIVE STOCK AND THE FIRESIDE.

Agriculture is the nursing mother of the Arts.--XENOPHON.
Tillage and pasturage are the two breasts of the State.--SULLY.

63d Year. Richmond, October, 1902. No. 10.

Farm Management.

WORK FOR THE MONTH.

The month of September, like the month of August, has not been one of the most propitious for the maturing of the crops. It has been too cool, indeed so cool that frost has been felt before the middle of the month in several places in this State, whilst in the West and Northwest injury from that cause to the crops has been severe in many sections. In Eastern and Middle Virginia and North and South Carolina, there has been sufficient rainfall to keep the land moist, but not overwet, and had the temperature been higher, growth and maturity would have been rapid. In the Valley and Southwest Virginia, and in Western North Carolina, the drouthy conditions, which have been the peculiar feature of the summer—a condition most unusual in those sections—have continued and crops are cut short and pastures bare. Corn in all those sections is going to be in short supply during the winter, and feed of all kind will have to be fed with a careful hand to make it last out until spring. The general corn crop of the country still promises to be the greatest ever grown, probably in excess of 2,600,000,000 bushels, so that there will be an abundance to be had for money, but we do not expect the price to be low, as the empty corn bins of the West and Northwest will take millions of bushels to fill them, and farmers there have had a lesson which will impress itself and cause them to hold a supply sufficient to carry them over a year of deficient yield in the future. The wheat crop of the world is estimated at several million bushels in excess of that of last year, but harvest conditions have been very unfavorable in England and Europe generally, so that there will likely be much of the crops of these countries not fit for flour. This will no doubt have some effect in keeping the price from falling to what it otherwise might have done. The oat crop promises to be a large one, though there will be much damaged grain from unfavorable harvest weather in the North and Northwest. Both corn and long feed promise to be short in the States south of Virginia, and there will likely be a brisk demand for these products from those States all through the winter. The indications are that the cotton crop will be much smaller than appeared at one time probable. The weather of August and September has been most unfavorable for the crop, and the condition of the crop at this writing, 20th September, is a very low one. We doubt much whether the yield will be as large as that of last year. With small stocks, and a greater demand, this should make the price of cotton harden, and we would urge cautious selling. It will, in our opinion, pay growers to hold a considerable part of the crop as long as possible. The tobacco crop in this State is turning out much better than at one time seemed probable. The showery weather has helped the late set plants very much, and if frost holds off for ten days longer much of the crop which, in July, looked likely to make nothing will be a good marketable product. The indications for frost should be carefully watched, and cutting not be too long de-

layed. The markets are opening with a strong demand for almost all kinds of tobacco, and primings are selling for prices which, a few years ago, would have represented the value of nearly the best of the crop. There is every indication that good well-cured tobacco is likely to sell well. Let care be taken to cure the crop to meet market requirements. In our last issue will be found advice on this subject from the proprietors of one of the largest warehouses in this city. Peanuts and sweet potatoes have improved much during the past two months, and the crop will be an average one. The second crop of Irish potatoes promises to be one of the best ever grown. The moist showery weather of August gave it a good start, and now all that is needed is the absence of frost until it is sufficiently matured to dig. The demand for this crop for seed is always good.

The plowing and fitting of the land for the wheat and winter oat crops should be pushed forward as fast as possible. In our last two issues we wrote fully on this subject, and refer readers to what we then said. Both crops should be sown as soon as the land can be got into good condition, but the importance of a fine, well prepared seed bed is so great in the influence upon the yield, that it is better to seed a little late rather than to seed on a poorly-prepared bed. Fine preparation of the soil is of greater influence than a heavy dressing of manure or fertilizer. It should always be borne in mind that all the cultivation that can be given either of these crops, except it may be a harrowing of the crop in the spring, which, though often omitted, is yet of great use in helping the crop, must be given before the crop is seeded; hence the great importance of leaving nothing undone that can conduce to a finely-broken surface soil and a compact subsoil. Plow deep, harrow, and roll frequently. Much good has been found to result in the West from the practice of subsurface packing. This is practically a reversion to a practice that has been in use in England ever since we can recollect. The roller used for the purpose in England is one made with two large wheels, having the rolling surface made V shaped, the point of the V being left about one inch broad. These two wheels are set on an axle so as to run one on each side of the furrow thrown by the plow so as to pack the seam between each furrow. A third wheel is set on the other end of the axle to run on the unplowed land. This roller follows the plow, waiting to start until three furrows have been turned. Its use has been found of great benefit, especially when plowing sod land for wheat. The close packing of the seams of the furrow prevents seed from getting down under the furrow, where it rarely germinates or grows, and thus leads to a thin growth of the crop. These subsurface packing rollers can be had from Western implement dealers, but we have not seen them advertised in the East. We have used the English form of roller, and can speak favorably of it. In its absence, the corrugated iron roller advertised in our columns by a Charlottesville firm, which is practically the same as the roller known in England as a Cambridge roller, can be usefully substituted. It has a corrugated surface the whole width of the roller, and will pack the soil well; after which, the surface should be finely harrowed. Wheat never grows well with a loose subsoil. Do not seed until after we have had a sharp frost or two to kill the flies. In some sections these have been troublesome again this year, and in these places wheat should not be sown until after the flies have been trapped on a strip of wheat seeded early and then plowed down, thus destroying the eggs and pupa.

The sowing of Crimson clover, Sand vetch and English vetch, should be continued as advised in our last month's issue. Although it is now getting late to seed Crimson clover, yet if the fall is an open one, it may yet make a good stand if seeded before the middle of the month. Sow with a mixture of wheat and oats or rye, or all three grains, 10 lbs. of Crimson clover and a bushel of the mixed grain per acre. Vetches may be seeded all the month, and English vetch into November. Sow these also with the mixed grain, but do not sow more than three-fourths of a bushel of grain per acre with 25 or 30 lbs. of vetch seed.

Cut and cure all forage crops as early in the month as possible. Their succulent nature makes them slow and difficult to cure if the cutting is too long delayed. The power of the sun is now fast waning and the dews at night are heavy; curing, therefore, will require constant attention. Sorghum and corn fodder should be cut and set up in small shocks. Cow-peas and Soja beans should be cut and allowed to lie broadcast for a few hours and then be put into small cocks. These, after standing a day or two, according to the weather, should be then broken out and exposed to the sun and wind for a few hours, and then be put up into larger cocks to cure out. The value of these two crops as a substitute for bran or other protein feed, is so great that they are worth much labor to save.

Let the corn crop be cut up at the roots and be set up in shocks to cure. Do not waste half the crop you have labored to produce by leaving the stalks in the field. You would laugh at the idea of leaving your timothy in the field and only saving the seed, and yet corn fodder is just about as valuable for feed as timothy hay. In this issue will be found a report of an

experiment made in feeding corn fodder as compared with timothy.

Sweet and Irish potatoes should be dug before the frost has cut down the tops. In digging these crops be careful not to damage the tubers more than possible, and do not leave them in the hot sun after digging longer than necessary just to dry off the damp soil. In this issue we give information as to the storing of sweet potatoes, which require more care to save them in winter than Irish potatoes. Irish potatoes, after being dug, should be put up in pies of about fifty bushels, and be covered with straw sufficient to keep out frost, and a few boards to shed the rain, and be allowed to remain there until they have passed through the sweat. They may be allowed to lie in the barn or under a shed, if more convenient. After the sweat is over, sort the tubers carefully and take out all damaged ones and put the rest into pies or kilns and cover with straw and two or three inches of soil, and they will keep all winter.

Sugar beets and mangold wurtzel beets should be pulled and the tops be cut off before frost has touched them. After being frozen they never keep. Put them up in pies or kilns after they have dried a few hours, and cover with straw and a few inches of soil, and they will keep all winter. It is better not to put the soil on until after they have been pied a few weeks so that excessive moisture shall have dried out.

Ruta bagas and turnips should be allowed to continue their growth until the latter part of November. They will gain much size and weight during this and the following month.

The cutting of tobacco should be hastened as much as possible as frost may now be expected at any time.

Cotton should be picked as fast as it opens. Do not let it remain on the plants to be stained and wasted by the storms. Sun a few hours before bulking.

Whenever other work in the seeding of fall crops or the saving of fodder and other crops does not press keep the teams at work breaking the fallows and plowing all land intended to be cropped next year. The ground is now cooling off fast, and green crops and vegetable matter of all kinds can now be safely turned under without danger of souring the land. The showery weather we have had has induced large growths of weeds. These should be utilized for making humus about the value of which we wrote last month. Bury them deeply, and, when possible give a dressing of lime on the top after plowing, and harrow in lightly. Wherever the subsoil is a good one subsoiling should also be done, so as to increase the depth of soil. There is a large supply of phosphoric acid and potash in nearly all our subsoils which only requires to be made available to ensure large crops. The way to make these available is to bring them within the influence of the weather and the rain by breaking the soil and subsoil loose, so that the humic and carbonic acid, which develops in decaying of vegetable matter, can act upon them. Lime also will largely help to render these available. There is great gain apart from these advantages to be made in utilizing the fall and winter months in plowing the land. In the spring work always presses, and especially if it be as has been the case for several years, a wet and late spring.

See that all implements and tools not in use are got under cover and cleaned. It is astonishing what a great loss is sustained every year by farmers in not seeing to this care of their implements.

Have all barns, sheds and pens cleaned out, thoroughly repaired and lime washed, so that the stock can be housed comfortably as soon as necessary.

LIME AS AN IMPROVER OF LAND.

During the course of the year we have frequent enquiries as to the advisability of applying lime to land, and as to its value as an improver of the soil. As the fall and winter months are the season of the year when lime should be applied to land, we propose now shortly to give advice on this subject in order that it may come pointedly to the notice of our readers when the advice can properly be at once acted upon. We have always held strongly to the opinion that lime can be profitably applied to nearly all the lands of the Atlantic Coast States, and very probably to nearly all land everywhere. It is a mistaken idea to suppose that lime is only useful to correct well ascertained acidity in land, such as upon marsh lands or lands recently reclaimed from a marshy condition. Whilst upon lands of this character its use is absolutely essential in order to restore fertility, yet upon lands where the acidity is only so slight as to be barely ascertainable, its use has been found most valuable. Even a slight degree of acidity is sufficient to prevent the free multiplication and active work of the soil microbes on which so largely depends the fertility of all land. Its action, however, is not confined solely to its power to correct acidity. Lime has a powerful physical and chemical action upon the soil and the mineral plant food therein. On light sandy soils it acts as a binder of the particles together, thus rendering them more susceptible of retaining moisture, and

better media in which plants can obtain their nourishment and support. On heavy clay lands lime acts as a disintegrator of the soil. It breaks up the atoms of the soil, and thus renders it permeable by the roots and rootlets of plants. In this way it renders such soils drier and better snsceptible of fine cultivation. Chemically, it acts as a solvent of inert plant-food, rendering the potash especially, and phosphoric acid generally, more easily accessible to the needs of the crops. It also acts as a solvent and disintegrator of tongh plant fibres and vegetable matter in the soil, thns rapidly redncing these substances into humus-making matter. Whilst, therefore, lime is not directly a plant-food itself, except to a very limited extent, and probably to only a small class of plants, it is yet indirectly most vitally important to the vigorons growth of all plant-life. All the different forms of lime componnds are usefnl to a greater or less extent, bnt probably the form in which it is most nsefnl is in that of the Carbonate, which is that of the com mon limestone of the mountains of this State and of oyster-shell lime. In England, where lime is largely used, and in this country, where it has been at all used, it was formerly thought to be necessary to apply it in heavy dressings. We have applied it at the rate of five tons to the acre, and this was not an uncommon quantity to use. Recent experiments have conclusively shown that it is equally effective when used in much less quantity and at more frequent intervals. It was formerly thought that it was as unwise to apply it to land when phosphatic fertilizers of any kind were also applied as it was to apply it to land when farmyard mannre was also applied. This, however, is now found not to be so. Whilst it shonld never be applied along with farmyard mannre, as its effect is in such a case to liberate and waste the nitrogen, it may with safety and with some forms of phosphatic fertilizers with increased profit be used with phosphatic fertilizers. In illustration of these nses of lime, we quote the results of experiments made in Maryland. In 1889, '90 and '91, gypsum (plaster) 370 lbs. per acre; qnick lime, 2,000 lbs. per acre; and shell marl, 8,000 lbs. per acre, were compared on corn and wheat on a well drained loam soil. The results show that the sulphate of lime (gypsum), and the qnick lime (carbonate of lime), produced marked effects the first year of appli cation, but that the carbonate showed no effect until the second year. In the sum total of the three years' crops, all of the applications proved to be quite benefi cial and the quick lime produced the greatest increase in yields. In another series of experiments with corn and wheat, carried out during 1890 and 1891, stone lime, 2,000 lbs. per acre; oyster-shell lime, 2,000 lbs. per acre; ground oyster-shells, 2,000 lbs. per acre; marl, 4,000 lbs. per acre; and gypsum (plaster), 233 lbs. per acre, were compared on stiff clay naturally inclined to be wet. In all cases, the yields were increased by the application, the ground oyster shells being especially effective, and much more so than the marl. In a series of experiments begun in 1893, on a rotation of corn, wheat, and hay, the resnlts to the close of 1899 show that the application of lime to this land was a beneficial and profitable procedure. In a series of experiments begnn in 1896 on stiff clay land inclined to be wet, varying amonnts of lime, 10 to 60 bnshels per acre, were compared on a rotation of corn, wheat, and hay. The resnlts for fonr years (1896 1899) show that small applications of lime have proven to be as efficient at the end of fonr years as the larger applications, and that the relative profits np to date are in favor of applying 20 bushels per acre.

On the hay crop, the 10 bushels gave the largest net retnrn. Since 1896, experiments have been in progress to test the effect of lime in connection with green manure. Stone lime was applied at the rate of 40 bnshels per acre. Cow-peas were sown, which were turned nnder for wheat. Wheat was followed by clover, which was cut for hay, and the land planted to corn. The net gain from the wheat, hay, and corn was $4.97 in case of cow-peas alone, and $5.03 in case of cow-peas and lime. In another series of experiments, the results showed that lime applied so as to slake in the soil produced a slightly better total yield than when first slaked and then harrowed in; that stone lime and shell lime were of about the same value on the soil; that lime, with fertilizer, was more profitable than fertilizer alone; that all applications of lime increased the yields of the crops. In a series of experiments condncted for fonr years at the Rhode Island Station—to ascertain the effect of lime used in connection with phosphatic fertilizers—ten plots of land had lime applied at the rate of one ton to the acre in 1894. Since that time, up to 1899, eight of these plots have had applied like amounts of phosphoric acid in different forms on each plot. The plots have each grown corn, oats, and hay in the four years. In 1894, the yield of corn on the cob on the plot on which no form of phosphate was used, but which had been limed, was 2,613 lbs. per acre. On the plot which had neither lime nor phosphate, the yield was 1,893 lbs. per acre. On the *limed* plot, to which dissolved bone black was applied, the yield was 4,510 lbs. of corn on the cob per acre. On the *unlimed* plot, to which dissolved bone black was applied, the yield was 3,698 lbs. per acre. On the *limed* plot, to which acid phosphate was applied, the yield was 3,953 lbs. of corn per acre. On the *unlimed* plot, to which acid phosphate was applied, the yield was 3,255 lbs. per acre. In 1895, the oat crop on the plots lodged so badly in consequence of a severe storm during the early period of growth, that no satisfactory

conclusions could be reached. For the years 1896 to 1899, inclusive, the hay crop on the *limed* plot, to which dissolved bone-black was applied, amounted to 19,837 lbs. per acre. On the *unlimed* plot, to which dissolved bone-black had been applied, the yield was 9,820 lbs. per acre. On the *limed* plot, to which dissolved bone had been applied, the yield was 19,281 lbs. per acre. On the *unlimed* plot, with dissolved bone, the yield was 8,564 lbs. per acre. On the *limed* plot, to which acid phosphate (rock), was applied, the yield was 20,205 lbs. per acre. On the *unlimed* plot, with acid phosphate, the yield was 8,951 lbs. per acre. On the *limed* plot, to which fine-ground bone meal was applied, the yield was 22,012 lbs. per acre. On the *unlimed* plot, with bone meal, the yield was 11,855 lbs. per acre. On the *limed* plot, to which no phosphoric acid in any form was applied, the yield was 15,737 lbs. per acre. On the *unlimed* plot, to which no phosphoric acid was applied, the yield was 2,547 lbs. per acre. The yields of hay given are those of the material at the time it was harvested. Deducting 20 per cent. to allow for shrinkage, and estimating the value of the additional hay produced by liming at $12 per ton, we obtain the gross gain from liming. Now, deducting $7.50, the estimated cost of the one ton of lime applied in 1894, we obtain the following as the net gain per acre in the use of the various phosphates on the limed plots for the hay crop of 1896 to 1899, inclusive:

Forms of Phosphoric Acid to the Acre Applied to the Different Plots.	*Net Gain in Four Years from the Use of One Ton of Lime Per Acre in 1894.*
Dissolved bone-black	$40 58
Dissolved bone	43 94
Dissolved phosphate / Rock (acid phosphate)	46 52
Fine ground bone	41 26
Basic slag meal	27 09
Floats	40 33
Alumina phosphate (raw)	37 36
Alumina phosphate (ignited)	62 35
No phosphoric acid	55 81
Double superphosphate	55 79
Average net gain	$45 10

It will be noticed that the lowest net gain was $27.09. This was on the plot where Basic slag meal was used. This is undoubtedly due to the fact that the Basic slag meal itself contains large quantities of lime, and explains its superior action to the other forms of phosphoric acid used when applied to the unlimed land. It produced 13,193 lbs. of hay per acre on the unlimed plot, as against 10,560 lbs., the highest produced by any other form of phosphate.

We commend the attention of our readers to the foregoing facts. We are satisfied, from our own experience in the use of lime (which has been a pretty extensive one), and from the experiments made in this country (of which the above are examples), that if farmers would apply lime before seeding wheat, that they would realize a good return on the outlay, both in the wheat and following crops, and that a saving could in this way be made on fertilizer bills.

HAY PRODUCTION.

In a recent issue we drew attention to the heavy crops of hay which Mr. Clark is producing on his farm in Connecticut, the secret of which he claims to be perfect preparation of the land before seeding, seeding grass alone and heavy annual dressings of chemical fertilizers, specially mixed for the purpose. In connection with this question and as illustrating the soundness of his system, which is the one we have all along advised to those who desired a good stand of grass, when once land has been properly fitted for producing it by being filled with humus, we note that in an experiment made in Rhode Island three grass plots were treated exactly alike during the experiments, excepting that one plot had received no nitrogen for eleven years, while the second had received a small dressing, and the third a large dressing of nitrate of soda annually since 1892. The large application of nitrate of soda yielded much the greater profit. In 1901 the value of the hay from the plot receiving the heavy dressing excelled the cost of the fertilizers by $40.70 per acre, and for the three years of the experiments by $90.72. In all instances the use of a complete fertilizer gave the best results. The formula used in 1901 in top dressing the grass consisted of 807 pounds of acid phosphate, containing about 16 per cent. of total phosphoric acid, 200 pounds of muriate of potash, and 400 pounds of nitrate of soda per acre. This application furnished the large dressing of nitrate of soda per acre. The experimenters believe the results of 1901 to indicate that an application of 400 to 500 pounds of acid phosphate, 250 to 300 pounds of muriate of potash, and 350 to 400 pounds of nitrate of soda per acre would perhaps have been more economical. The original grass mixture sown on these plots in 1898 consisted of 7½ pounds each of common red clover and red top, and 15 pounds of timothy. In 1900 the plot without nitrogen contained 222 grass stalks per square foot, the plot with the small dressing, or one-third ration of nitrogen, 271, and the plot with the full dressing of nitrogen 236. During the last season of the experiments the plot receiving the full dressing of nitrate of soda had the heaviest stand of timothy, the relative percentage of timothy and red top being 67 and 33 per cent. respectively. The increase in nitrate of soda produced a heavier stand of timothy and with it a larger yield of hay. This plot yielded at the rate of 9,390 pounds or over 4½ tons of hay per acre.

MIXED CROPS OF CORN AND COW-PEAS.

In Bulletin No. 55, Delaware Experiment Station, page 9, Article VI, Mr. Gettys claims "No crop of field corn intended for cribbing should be planted without the addition of seed peas in each hill, etc. He claims that it increases the yield of corn. Will you give me your views on the subject through your columns?

Would Black peas be as good as any, and should they be planted the same time as corn?

Westmoreland Co., Va. "CABIN POINT."

In our July issue we commented on the practice of growing corn and cow-peas together as advised and practiced by Mr. Gettys, and quoted at length from the Bulletin of the Delaware Experiment Station, which gave the results of an experiment made there with the mixed crop. Whilst Mr. Gettys strongly urges the growth of the two crops together, we do not see that he claims that it results in an actual increase of the corn crop in bulk, but that it results in securing a better balanced food for stock, whether in the form of silage or dry fodder; and this view is borne out by the experiment made at the Delaware Station. This improvement in the feed value of the crop is, it is claimed, and apparently with correctness, obtained at no increase of cost over that of a corn crop alone, except to the extent of the money invested in the cow-pea seed. The peas supply the protein which is needed to balance the carbohydrates of the corn, and thus obviate the necessity for the purchase of cotton-seed meal or other protein feeds. In the Delaware experiment, the actual yield of one acre of the mixed crop was 16 tons 150 lbs. A careful division of the two crops was made, and it was found that 76 per cent. of this yield was made by the corn crop and 24 per cent. by the peas. We have known 20 tons of corn alone to be made on an acre of land. The Director of the Station says "it must be admitted that no demonstration has as yet been made that the pea vine noticeably increases crop tonnage." To the enquiry, therefore, as to how much of gain will result to those who plant cow-peas with their silage corn, the reply may be as follows: Shred and feed corn fodder judiciously; under this condition peas planted with corn will add to the food supply of the farm an equivalent of one ton of cotton seed meal for each area of 12 acres in silage crops. With cotton-seed meal selling at $30 per ton, peas growing in corn may return $2.50 per acre, at an approximate increase in cost of the total crop of 50 cents per acre for the cow-pea seed. There is another advantage claimed for the mixed crop when grown for silage, in that it enables a greater weight of silage to be stored in a silo than is possible with corn alone. Experiments made at the Delaware Station go to show that a circular silo 17 feet in diameter filled with settled silage to a depth of 23 feet, would contain 92 tons of corn alone, or 132 tons of mixed corn and peas if grown in the proportion of 75 per cent. of corn and 25 per cent. of peas, which was about the proportion shown in the crop there grown. This means that without expenditure of any kind, the capacity of a silo may be increased by practically 43 per cent., in itself a sufficient reason for the addition of peas to a crop of silage corn.

As to the variety of peas to be planted, Mr. Gettys strongly favors the Whippoorwill as ripening its vine more evenly than the ranker-growing varieties, and rendering the harvesting less difficult, as it confines its growth in great measure to the corn row in which it is seeded. The Black and Wonderful peas on good land, and in a favorable season, make such an immense growth of vine that the probabilities are that the crop could not be harvested with any of the corn harvesters or mowers in use, as the rows would be so tangled together, and this would result in adding so much to the cost of harvesting as to overbalance any profit. The peas should be planted at or just after the first working of the corn, unless the corn was planted late, when both might be seeded together.—ED.

JAPAN CLOVER.

Editor Southern Planter:

The success of some self-sown grasses and clover is the cause of this letter. The cost, and at times the difficulty, of securing a catch of sowed grasses is well known to farmers, and a practical way of obviating these troubles would be a blessing indeed. Perhaps my little experience may be of use.

For hay, we must go on in the old way, that is, sow seed of the kind required. Timothy for market, and better grasses for home use. But for pasture it is another thing.

Fourteen years ago a field of high land was seeded with clover, timothy, red top, and orchard grass, for a pasture. Afterwards the fences between this field and some creek bottom land were taken away, and the pasture now comprises thirty acres, about half dry ground, the remainder subject to overflow. The sowed grasses have disappeared, native grasses, with a heavy accompaniment of Japan clover, having displaced them. But what a fine pasture it is, no better in this neighborhood.

I try to pasture closely, turn the stock out early; in fact, they run on it all winter, although there is then very little to eat. But the cattle are on hand, browsing bushes and watching for the first sprigs of green. Of course they are fed at the stable yard in addition.

By pasturing closely broom sedge is kept down; indeed, makes but little show. There is some of our native blue grass, crab grasses of different sorts, weeds

that are eaten, and in the low ground especially, some that are not; but the main stay is Japan clover, one of the greatest blessings that have happened to this part of Virginia. It is not perfect. It is killed by frost; it does not make hay, although I have seen it eighteen inches high. I am told stock prefer other clovers; perhaps they do, but with me it is eaten clean, and the cattle are plump and well nourished, never had better, if as good.

An account kept with this pasture in 1899 shows that it kept horses, hogs, and cattle, whose pasture was worth $160. So, allowing $1.00 per month for cows, $2.00 for horses, and proportionately for young cattle, this compares well, I think, with a good blue grass pasture.

For pasture I should still sow a variety of grasses, principally red top and orchard grass. If they grow, so much will be gained, but if they fail, I know that our valuable native grasses will come in accompanied by that inestimable foreigner, Japan Clover.

We are told that Bermuda grass is the grass for the South. As a legume is better than a grass, why is not Japan Clover better than Bermuda grass. Both die down in the winter, a failing they have in common. Bermuda, where not wanted, is a pest, while the clo ver is easily destroyed. I prefer the clover.

We have so much land that we can afford permanent pastures. To sow grass seed once in ten or twenty years is not much of a burden. The only reason for sowing at all is to keep out weeds until the Japan Clover is established.

Louisa Co., Va. GEORGE CLENDON.

PRINCIPLES OF SOIL MANAGEMENT.

Manuring.

Editor Southern Planter:

The greater interest taken by farmers during the last two years in the keeping of live stock—due mainly to the good work of the agricultural papers and also to the high prices of meats—will, without doubt, induce them in the future to keep still more live stock. More live stock means more manure, and the greater demands made on the growing of forage crops to bring the stock profitably through the winter, will also cause the farmers to pay better attention to the care of and the applying of manure—this being the best fertilizer the farmer can use.

Without doubt, under conditions still prevailing in large sections of our country of low-priced land, and scarce, therefore high priced labor, the ownership of a farm which requires the least labor, even if the results leave many things to be desired, will often deserve the preference.

This economizing in labor is, I think, the main cause of the comparative little care taken in the handling of manure. I do not want to discuss here the question whether it is better to haul the manure every day on the land or to pile it up in the barn-yard until the time for its application has come. These questions have been discussed so often in the agricultural papers that every reader is familiar with them. Both methods have advantages and disadvantages. It is a great saving of labor if the manure is hauled every day to the field; but it is unquestionable that the crop following the top-dressing will be more benefitted than by applying the manure shortly before the crop is sown. In top dressing the manure, especially the vegetable matter, is exposed to the decomposing influences of the weather, causing sometimes considerable loss, and much of the mineral matter may be washed away on rolling land. On the other hand, if the manure is piled up in the barn yard, it makes double work and a certain loss cannot be avoided, but it can be gotten into the very state of decompo sition for improving the mechanical condition of the soil, and if immediately plowed under, no further loss occurs. Shortly we can say: By top dressing with manure we fertilize the crops. By immediately plowing it under the soil. Each farmer must ascertain for himself which method to follow, and which is best adapted to the profitable managment of his farm.

The great value of manure over chemical fertilizers lies in the amount of vegetable matter it contains. Our virgin soils, were rich in humus, which made plowing easy, retained moisture, and in being converted into carbonic acid, helped to liberate plant food. With the disappearance of the humus by constant cropping without replacing it, some of the heavier soils have almost become unmanageable, and the lighter soils are affected by the least drought. In order to restore these soils to their former fertility by careful tilling and manuring, the state of decomposi tion of the manure should be given the closest attention. It should be strictly in conformity with the physical properties of the soil.

In order to treat the matter intelligently, we must divide the soils into certain groups. The variety of soils is so great, and even the same kind of soils have to be treated so differently under different climatic conditions, that no attempt can be made here to go into a detailed description of the treatment of some of these soils. But a clay soil, no matter what the conditions are, will always require a different treatment from a sandy soil, and a loam from a humus soil. I therefore think that the dividing of the soils into the four large groups—clay, loam, sandy, and humus soils—will for our requirements answer all practical purposes.

1. Management of Clay Soil.—The trouble which confronts the farmer in managing these soils, however fertile they may be, is their bad mechanical condition. It must, therefore, be the aim to overcome this by tilling and applications of large quantities of strawy manure at one time. It is of no use to try to accomplish the same end with small quantities of manure, as it is a peculiarity of these soils not to respond to small quantities of either manure or lime. Each straw, when it is plowed under and decomposed, leaves a fine channel behind making the soil porous, and not only giving access to water and air, but also permitting the roots of plants with a weak root system to penetrate the soil in all directions in their search for plant food.

The danger of lodged grain from such heavy appli-

cation of manure is very slight, because the decomposition in these cold and little active soils is not only slow, but we can grow crops on these soils like rape, horse and hog beans, fodder, beets and others, which will only make good crops in fresh, heavily manured soil, and at the same time, through the necessary cultivation or strong root development, prepare the soil for the following barley and wheat crops. These, again, can profitably be followed without manuring by strong rooted crops, such as corn and oats. For instance, such rotations as these are possible and advisable:

Rape,*	*Clover*,	*Beans*,	*Fodder Beets*,
Wheat,	Wheat,	Wheat,	Barley,
Corn,	Corn,	Oats,	Clover.

The following rotation in a stiff upland clay soil which was not fit for pasture, gave very good results, and may serve as an example:

1. *Clover.**
2. Wheat.
3. Corn.
4. *Beans* or *Peas.**
5. Wheat or Rye.
6. Corn or Oats.
7. *Beets*, *Potatoes*, or *Green Fodder.**
8. Barley.

This rotation, though a little complicated, was very satisfactory, because each crop was placed where it was benefited by the preceding crop. There is further a variety of crops, the best insurance against unfavorable weather, and there is enough wheat and rye (producing the best straw for making manure) for the rotation (about one-third of the acreage), to obtain the necessary manure for the heavy application, about six four-horse loads per acre, necessary to obtain the desired results. There are also enough hoed crops to keep the soil free of weeds.

If cows are kept on heavy soils which make a poor pasture, but otherwise produce fine crops, they should generally be fed in the barn over summer, or at least the greater part of it, if this should not prove too expensive. On large farms, where the hauling of the green fodder from the large fields on account of the distance would take up too much time, an area sufficiently large for this purpose near the barn should be separately managed with the following rotation:

1. *Green fodder.**
2. Wheat.
3. Different small crops.

The liquid manure may be applied to the green fodder. In the third field a variety of small crops, such as early potatoes, cabbage, turnips, carrots, etc., for which the garden is not large enough, are generally grown. Part of this field may also be laid out in clover, making a good, and when top-dressed, an early green fodder.

On small farms the dividing of the area into eight or nine fields is not always advisable, at least not on rolling land or on any land not of a uniform texture. It may happen that some fields will contain all good land and others only the poorer land, making crops in these fields, on the successful growing of which the farmer may depend, somewhat risky in years of unfavorable weather. For these farms a modified form of the popular five and six field rotations:

Five Fields.	*Six Fields.*
1. *Corn.**	6. *Corn.**
2. Wheat.	7. Wheat.
3. Clover and grass.	8. Wheat.
4. Timothy, once cut.	9. Clover and grass.
5. Pasture.	10. Timothy, once cut.
	11. Pasture.

will probably give the best results.

These rotations, which have given good results as long as the soil was rich in humus and easily available plant food, have the great advantage, that they require less teams than almost any other rotation. In the five field rotation only one field is plowed every year, in the six field rotation two. On an impoverished clay soil, which can only be profitably managed by constant tilling, they have the disadvantage that the soil is plowed only once in five years and a little more in the six field rotation. As already stated so, long as the soil is rich in humus this is of little moment with the disappearing of this, it becomes the main question. The soil is not in the best condition for wheat if it is drilled in the corn stubble, as it usually is. Wheat after wheat will only do well in a rich soil.

If the clover is cut twice and the timothy the next year once (the red clover having died out the second year) the soil, deprived of considerable plant food, will make a poor pasture the following year. If the greater part of the clover and timothy is sold and only a few head of live stock are kept, there is not sufficient manure made to preserve the good mechanical conditions of the soil. At the end of each rotation there will be less humus in the soil than there was in the beginning; the scant quantity of manure applied is no compensation for the loss through decomposition of the humus that was originally present in the soil. The results of such management are too well known. When a change in this system of rotation is deemed necessary, the following change in the rotation, which is more in conformity with the nature of the clay soils, may prove of advantage:

Five Fields.

1. *Clover.**	6. *Clover*, cut once.*
2. Wheat.	7. Pasture.
3. Corn.	8. Corn†.
4. Legumes*.	9. Legumes.
5. Wheat.	10. Wheat.

Six Fields.

1. *Clover.**	1. *Clover*, cut once.*
2. Wheat.	2. Pasture.
3. Corn.	3. Corn.
4. Legumes.*	4. Wheat.
5. Wheat.	5. Legumes.
6. Oats.	6. Wheat.
1. Clover.	4. Corn fertilizer.
2. Pasture.	5. Legumes, etc.*
3. Pasture.	6. Wheat.

In Northern countries, two fields in pasture in a six-field rotation are too much in proportion to the winter feed; in Southern countries, with a mild fall, this is all right. In some of the rotations the fall manure cannot be applied, and it will be necessary to divide

* Means manured.

*Full manure.
†Half manure.

it up, but if the rotation is to be arranged according to the number of fields, this cannot be helped.

Clay soils are, as a rule, fertile, and if they are only worked right, the keeping of a large number of live stock to convert the crops into manure, by which light soils are so much benefited, is not necessary, if only the rough fodder is returned to the soil. Green manuring in conjunction with chemical fertilizers is less effective on heavy soils, because the green crops do not possess the decomposing resistance and loosening effect of wheat and rye straw, and the tilling of clay soils so much depends upon the weather that the preparing of the seed bed for the green crops at the right time cannot always be depended upon, though this has to a great extent been overcome on large farms, by the introduction of steam, and electric plows.

The heavy soils are the granaries of the world, and if properly managed, surpass all others in the production of grain, clover and beets. It is true that the tilling, especially in a country like ours, with constant changing weather, generally going from one extreme to the other, is rather difficult. It requires close attention, many and strong horses, strong farm machinery, plenty of help and an intelligent management. It will happen sometimes that unfavorable weather interferes in carrying out the adopted rotation, and that only two thirds or one-half of the acreage to be sown with rye or wheat can be seeded with these crops, and spring crops have to be substituted. But the large crops grown on these soils and the fine live stock kept on these farms are a sign of their profitableness. The pleasant environment and the generally fine landscape in countries with clay soils make these lands the most desirable that can be farmed.

District of Columbia. H. WINKELMAN.

CLOVER WITHOUT MANURE, A FAILURE.

Editor Southern Planter:

On a hillside, sloping moderately toward the southeast, on the opposite side of the river, but in plain view from my house, is a field containing about twenty acres. I know the history of that field as well as I know the history of my own farm. It has been cleared about fifty years. It was light clearing, the timber being chiefly pitch-pine, interspersed with oak and hickory. Its location being near the old Indian village of Friedenshutten, or Wyalusing, which was a station of the Moravian missionaries, it is probable that it was once cut over for fire-wood, which would account for the trees being no larger on a good soil. On the surface were a good many detached rocks of gray lime, composed almost entirely of small shells cemented together, which were hauled off and burned in a kiln before the land was cleared, leaving it quite free from stones. There is no doubt there was a plentiful supply of lime in the soil. Its sheltered situation, not being exposed to the northwest blasts of winter, allowed the snow to lie on the ground until it melted off in the spring, giving a protection to the wheat plants when sown with wheat.

For many years after this field was cleared it produced splendid crops of wheat without a single failure. Judge Stalford, the owner, was a good farmer, and during his lifetime the land was as well tilled and taken care of as land could be without the application of manure. After taking off a crop of wheat, the field was usually seeded with clover, which, sometimes was mowed, but usually pastured two or three years until the clover ran out, when it was plowed (generally summer fallowed), a good crop of wheat taken off, and re seeded with clover. Once or twice a crop of corn or a crop of oats, followed by wheat, was taken off and seeded with clover. Long before the Judge's death, about twenty-five years after the field was cleared, I noticed that it was difficult to get a good stand of clover, and when there was a "catch" there was by no means a vigorous growth. The land was getting "tired" and "sick." The clover, when it grew, told the story in the most positive language, and hung out the signals of distress to the view of every observer. That the land was naturally good and strong, it had given abundant proof. It was not the kind of land that favors the frost in heaving out the clover plants, and leaving their roots bare. Its sheltered situation was favorable for the growth of clover as well as wheat; but the clover could no longer find the especial fatness it feeds upon, even when reaching down with its deep roots into the subsoil.

When the Judge's health failed, the field was rented for $6 per acre, and the renter summer-fallowed it by plowing three times, doing his work well, sowing in good season, and obtained a good crop of wheat. He followed the wheat with rye and had a moderate yield. He sowed it the following spring with oats, and they were hardly tall enough to bind. After another crop of rye, it was seeded with clover, but it only grew in spots, and on these the plants were feeble and sickly. On half of the field, there was nothing to speak of, neither clover, grass nor weeds. The best spots were cut with a machine, the remainder left because it was not worth mowing.

Judging from the past, a good crop of grain, and a good catch of clover without manure, or some other fertilizer, is now utterly impossible.

Mr. Waldo F. Brown has stated that there are fields in his vicinity (in Butler county, Ohio), which have been tilled and cropped for forty years without the application of any fertilizer whatever, and have been kept up to the full standard of their original fertility, merely by the use of clover and a judicious rotation of crops. The statement only proves that those fields were very rich, and that it takes a long time to exhaust them. The deepest and strongest wells can be pumped dry. The ocean itself would ere long be evaporated if no rivers were flowing into it.

Mr. T. B. Terry, for a time, became a convert to Jethro Tnll's doctrine that *tillage* is manure, and that clover and tillage would keep up the fertility of his farm withont the dung of animals or commercial fertilizers. Mr. Terry has retnrned to his old faith in barnyard manure, especially when it is kept without leaching in his covered barnyard.

Farmers talk about land becoming "clover sick." The land is not sick; it is becoming impoverished, hungry and weak. Let them give it a good top dressing of rotten manure, then sow their clover seed, and see how qnickly it will get well and prodnce clover again. It may be that rotten mannre contains the living organisms which form the tnbercles on the roots of clover, withont which it is said that no nitrogen can be extracted from the atmosphere. Clover gathers up the fertility in the soil and makes it avail able. Its long roots penetrate deep into the subsoil, and bring back the fertility that has escaped beyond the reach of most other plants; bnt clover roots are not long enough to reach the sewers of London and Liverpool and bring back the life-blood of the soil that has been shipped away from our fields in the many thousand cargoes of wheat, corn, cotton, butter, cheese, pork, beef, and lard, which have been sent to those ports. J. W. Ingham.

HOW TO STUDY PLANT FOOD.

Editor Southern Planter:

Fertilizers are the same thing, so far as they are useful to farmers, as the ordinary farm-yard mannre; and this is the first thing to fully grasp. The food of plants is confined to three substances, known in the fertilizer trade as *"Nitrogen," "Potash,"* and *"Phosphoric Acid."* There are other snbstances necessary to the growth of plants, but ordinary soils contain all of these that are necessary. Lime is not a direct plant food in the sense that soils may be deficient in same, for there is always plenty of lime in all soils for the actnal needs as food, but lime has the property of improving the mechanical condition of soils, and improving also the availability of actual plant food. On this account lime is frequently nsed liberally, especially on sandy soils or on black soils. Plaster or gypsum is used for much the same purpose, bnt may not be considered as needed plant food in the same sense as we regard nitrogen, potash, and phosphoric acid.

Ordinary farm-yard mannre is valuable in increasing the growth of plants simply for the nitrogen, potash and phosphoric acid it contains, so far as plant food is concerned. It is generally believed that farmyard mannre has also a valuable mechanical action on soils, bnt this is distinct from its use as plant food. However excellent may be the mechanical condition of a soil, without the plant food, no plant life can flourish. It is important to consider the trne value of manures to understand fertilizers; that is, we mnst keep in mind that so far as plant food is concerned, manures and fertilizers are precisely the same thing. If farm-yard manure is broken up with chemicals and the great mass of vegetable matter removed, we then have fertilizer in form and appearance precisely the same as regnlar commercial fertilizers.

When we get down to bed facts on the fertilizer matter, it is a very simple matter and easily understood. Farm-yard manure, if concentrated as are fertilizers, would be called a fertilizer, though nothing bnt manure was used in the mannfactnre. Suppose five tons of farm-yard manure were freed of its great mass of water and vegetable matter, we wonld then have a brownish gray powder with an analysis about as follows: Nitrogen, 2 to 3 per cent.; potash, 2 to 3 per cent., and phosphoric acid, 1 to 2 per cent.

Here we have the basis of fertilizers, a formula established by natnre. The phosphoric acid in this manure would not be solnble in water, and wonld be only slightly available; hence, the acid phosphate of commercial fertilizers is really more valnable, as it is always available.

Once we have the general nature of plant food clear in the mind, the value of a manure or fertilizer is readily understood. If a manure or fertilizer is offered for sale, its value depends on the qnantity of plant food it contains, and not on its gross weight. A bnshel of shelled corn is not sold at the same price as a bushel of corn on the ear.

We now come to the only other point of great importance in nnderstanding fertilizers—the fact that all three of these plant food substances are equally necessary, and that no excess of any one, or of any two, for that matter, can make up for a shortage of any one; that is, if we have enongh nitrogen and phosphoric acid in the soil for a full crop, but only enough potash for a qnarter of a crop, only a quarter of a crop can be grown.

From this point, the importance of studying the plant-food removed from the soil by the varions crops becomes clear, also the necessity for buying plant food to fill these losses. It is easy to get the analyses of different crops, as almost any State Agricnltnral Experiment Station will furnish them. The analyses of fertilizers are pnblished by the same authority, and are also on all fertilizer bags. It is a mere matter of figuring ont how mnch plant food will be needed by a crop, and how much manure or fertilizer it will take to supply the needed quantity; and this is about all there is to the fertilizer problem, which seems to have given us so mnch bother. V. J. Lance.

Whilst our correspondent is no doubt correct in saying that farmyard manure, as compared with commercial fertilizer, is only valuable for the nitrogen, phosphoric acid and potash it contains, we must demur to his conclusion that, apart from this, its only other use is as a mechanical agent. It is now clearly established that its value as a creator of humns as a sonrce of carbonic acid and of humic acid, and especially its ability to snpply and nourish the microbic life which is essential in a fertile soil, and without which plant-food, in whatever form supplied, cannot be properly utilized, gives to farmyard mannre a much higher value than its mere mechanical and food action. Soils devoid of humus and microbic life,

however well supplied with plant-food, will never prove satisfactory as crop producers. Mere chemical plant-foods can never alone supply these requisites. Hence, however valuable these chemical plant-foods may be, and we rate them highly, they alone cannot meet crop requirements. Farmyard manure and humus-making crops are the basis of all good farming, and should be supplemented with chemical fertilizers supplied according to the food requirements of the crops to be produced.—ED.

CURING PEA-VINE HAY.

An Answer to Enquiries.

Editor Southern Planter:

My article on curing pea-vine hay has brought such a large number of enquiries that I shall have to answer them in a general way.

First, as to time of mowing the vines. We usually mow after the vine matures well and some peas are dry. The vines are then easier to cure than if cut while young and sappier. If cut earlier, say just as the peas begin to form good, I should stack them as fast as cut, as I do mature vines. But in addition to the two strips of wood nailed cross-shape to the pole, a foot above the ground, to keep vines from being harmed by too close contact with the earth, I should nail two more, also cross shape, about half way up the pole. This would keep the stack from setting too close, leaving them open to dry out faster.

The poles should be about ten feet high and set in the ground at least one foot deep, or deep enough to prevent the wind from blowing over the stack. Do not trample the vines in stack. Let them settle by their own weight, as thrown up. Let the vines be the height of the pole, or a little less. Slope off at the top to shed water as well as possible.

It is best to shred as soon as the vines are dry enough. The time necessary to cure will depend altogether upon the dryness or wetness of the weather. The stack will heat at first, and then gradually dry out. If shredding is not intended, they should be housed as soon as cured, to be fed as needed. Some leave them in the stack during the winter till needed. This is a most wasteful thing to do. For the pea-vine being stalky, and to some extent open to the weather, deteriorates more than any other kind of hay from exposure.

I have found pea hay somewhat harder to cure this year than usual. Late rains caused a second growth, and the vines were very sappy to the last. Then heavy and continuous rains were driven by hard winds deeper into the stacks than I ever saw before. We had to tear down and sun a few stacks on which rain had fallen steadily for several days. Still I find it much the best to stack as fast as I cut, without previous sunning.

The Star Pea Machine Company, Barnettsville, S. C., make an absolutely perfect implement. It shreds the vines and shreds the peas all at once.

Kittrell, N. C. O. W. BLACKNALL.

HOW TO CIRCUMVENT THE HESSIAN FLY.

So little complaint of the Hessian fly has been heard at the Ohio Experiment Station this season that there is ground for the hope that there will be no more trouble from it for a few years to come. but it will be wiser for farmers to be on their guard lest it may reappear suddenly as it did in 1899.

It is possible for every farmer to determine for himself whether the fly is likely to appear in destructive numbers in his wheat each season. To accomplish this, let a small strip of wheat be sown alongside of the intended wheat field about two weeks before the time when the main crop is usually sown in that particular locality. As soon as the wheat comes above the ground, examine the young shoots carefully every day with a magnifying glass. A cheap lens, magnifying about three diameters, which can be bought of any optician or department store for a dollar or less, is sufficient. If the fly is present its minute, reddish eggs, one-fiftieth of an inch long, will be found in the creases of the young wheat blades. Once seen under a glass, these eggs can easily be seen by the unaided eye as red specks. Often two or more are found together, lying end to end.

Usually egg-laying occupies about a week, and if the fly, on her appearance, finds a little wheat ready for her, she will soon deposit all her eggs, after which the main crop may safely be sown in the assurance that by the time it appears above ground the eggs will all have been laid on the earlier sown wheat.

Many farmers suppose that the so-called "flax-seeds," which are found in October and November at the base of the wheat stalk, are the eggs of the fly, but this is a mistake; these "flax-seeds" are the full grown larvæ of the fly, which undergo their transformation into the winged insect within the brown cases called "flax seeds."

CHAS. E. THORNE, *Director.*

[After the eggs have been laid on the trap crop, this should be plowed down and the ground be rolled solid. This will effectually destroy the eggs and embryo flies.—ED.]

A TEN-YEAR COMPARISON OF VARIETIES OF WHEAT.

Thirty-four differently named sorts of wheat have been grown in comparative test at the Ohio Experiment Station for ten years past. One of these—Penquite's Velvet Chaff—is used as a standard of comparison, and for this purpose is grown on every third plot of the series, and the other sorts are valued as their yields rise above or fall below those of the Vel-

vet Chaff plots between which they lie.

In the ten-year average, the Mealy heads the list with an average yield of 4½ bushels per acre more than that of the Velvet Chaff. Poole and Red Russian, which are synonyms of the same variety, come next, with yields ranging from 3½ to 3¾ bushels per acre above that of the Velvet Chaff. (Harvest King is also Poole wheat, recently introduced under a new name.) Gypsy has yielded 3¾ bushels, and Early Ripe 3½ bushels per acre more than Velvet Chaff.

Varieties averaging between two and three bushels more than Velvet Chaff are Nigger, Fultz, Mediterranean and Currell's Prolific; while New Monarch and Valley and its synonym, Egyptian, nearly reach the two bushel mark, and Democrat has averaged more than one bushel in excess of the standard.

Jones' Square Head has averaged two and one-half bushels less than Velvet Chaff, and Jones' Winter Fife nearly two bushels less, while Early White Leader, Early Red Clawson, New Longberry, Martin's Amber and Royal Australian—a synonym of Clawson, have yielded nearly a bushel per acre less than Velvet Chaff.

American Bronze, Bearded Monarch, Deitz, Fulcaster, Hickman, Hindostan, Lebanon, Lehigh, Missouri Blue Stem, Rudy, Sibley's New Golden, Silver Chaff, and Yellow Gypsy, have given yields varying but little either way from that of Velvet Chaff.

CHAS. E. THORNE, *Director.*

ENQUIRER'S COLUMN.

Enquiries should be sent to the office of *The Southern Planter*, Richmond, Va., not later than the 15th of the month, for replies to appear in the next month's issue of the *Planter*.

Rye.

I write to know which you think the most profitable for a grain crop—oats or rye. I have had such poor crops of oats that I am thinking of trying rye; but as I have no experience with rye, I would like to have your opinion. I have twenty acres of highland in corn and cow-peas which I wish to sow in some grain crop for feed, but it will be the latter part of October or the first of November before I can seed it, as I have the corn to gather before I can plow the land. Would rye do well seeded as late as that? Please answer in the October number of the *Planter*.

Campbell Co., Va. J. A. DAVIDSON.

A good crop of oats at present market prices for the grain is more profitable than a crop of rye. The oat straw is valuable as feed for stock, whilst rye straw makes poor feed. The oats are also better feed than rye, though rye makes fair grain feed for cattle and hogs. Where rye straw can be sold to collar-makers, it usually makes the crop a very profitable one, but this market is only a limited one, and it requires that the straw shall be kept straight and unbroken in the harvesting and threshing. When oats got down to the low price of two or three years ago, we advised that rye should be substituted for the oat crop as being the more profitable, especially on thin land which will make more bushels of rye to the acre than oats. Oats, to succeed in the South, ought not to be sown later than September or October at the latest, unless seeded in February or March, when, if the spring be a late one and cool, the rust proof oat will sometimes make a very fair crop. In your case, as you cannot seed before November, we think rye will be more profitable than oats. Rye may be seeded up to December, with a fair prospect of making a good crop. It is a very hardy grain, and rarely suffers from winter killing—it being grown successfully further north than any other of the cereal crops.—ED.

Rotation of Crops.

Will the following rotation of crops improve the fertility of the soil in a limestone section?

1. Break fallow of timothy and plant in corn, and at the last working of corn sow in Crimson clover, to be plowed under in the following spring, and seeded to cow-peas and peas cut for hay and stubbles disced up and sowed to wheat?

2. Would it be a good chance to get clover sowed with wheat on above-mentioned stubble?

3. What is the best variety of peas for this section?

Washington Co., Va. S.

1. Yes. The rotation should improve your land, especially if 250 or 300 lbs. of acid phosphate to the acre is applied to the pea crop.

2. Yes. We think it likely the clover would succeed. Sow it at the same time the wheat is sown as early in October as it is safe to sow wheat for the fly.

3. Either the Black or Whippoorwill.—ED.

Contract for Purchase of Mowing Machine.

If a farmer has given his order for a machine to either the McCormick, Deering, Champion, Milwaukee, or Plano Harvesting Machine Companies, which companies have gone into the trust, and are now no longer known, but constitute The International Harvester Co., and the machine has not been delivered, can the farmer be held up to the order, and thus be compelled to patronize this trust? May be there are other farmers interested in this same question who would be glad to know through your valuable paper.

Henrico Co., Va. F. B. AUSTIN.

The changes in the business arrangements of these makers will not warrant a buyer from them breaking a contract into which he has entered with any of them individually. He will be entitled to get what he contracted for, and this is all he can ask.—ED.

Keeping Winter Apples.

Please tell us in the next issue how to manage winter apples after they have been picked carefully.

Lunenburg Co., Va. CHR. RICKERS.

Apples are best kept in a fruit room in which a dry equable temperature of about 35 to 40 degrees can be

maintained. They should be stored in bins through which ventilation can be maintained by slatted sides and bottoms. In the absence of snch a room they will usually keep well stored in barrels in a dry cellar or barn with sufficient straw packed around them to keep ont frost. Before being put up in the barrels they shonld be allowed to pass through the sweat which follows soon after picking, being stored for this purpose in a dry, airy room or shed not in too large bulk. The keeping of apples much depends upon the season in which they were grown. When this has been wet they rarely keep well however stored.—Ed.

Spraying Apple Trees.

Please state in your paper at what age it is necessary or advisable to commence spraying young apple trees. I have read a good deal abont spraying, but have never seen any definite statement on this point.

Spotsylvania Co., Va. C. J. Hillyer.

Spraying shonld commence when the trees are in the nursery, if a perfectly healthy growth is to be maintained, as they are just as subject to the attacks of insects and of fnngoid and scale diseases then as at later periods of growth.—Ed.

Horse Sucking His Tongue.

I have a nice horse which has a habit of sucking his tongue; it does not interfere with his health or his use, so far as I can see. He is in good condition. Any remedy or information you can give through the *Southern Planter* will be gladly appreciated.

Durham Co., N. C. R. B. F.

This is only a habit contracted by the horse probably at some time when his tongue was sore. See that his teeth are not injurying the tongne by being rough or ont of place. We do not know of any way of breaking the habit.—Ed.

Keeping Root Crops in Winter.

Can you tell me through your colnmns the best way to keep winter vegetables fresh—salsify, carrots, etc.—in a cellar?

Augusta Co., Va. H. D. Peck.

Salsify usually keeps well left in the ground where it grew, unless the frost is very severe. Cover the rows with some long litter or straw. In order to be certain of a supply, however, even if the frost be very severe, dig a portion of the crop as late in the fall or in early winter as possible, and put away in boxes or bins in a dry cellar bnrying the roots in dry sand. Carrots keep well stored in the same way. Also parsnips. Tnrnips will keep well stored in pies or kilns, covered with straw and two or three inches of soil. Cabbages may be saved in trenches, covered with straw and soil.—Ed.

Onion Sets—Fall Setting of Irish Potatoes.

I want to set some White Silver King onion sets in November. Is it too late now to sow the seed in beds to make sets by November? The weather has been so dry here I could not get the seed to come up.

I also want to plant some Irish potatoes in November to come np early in the spring. Please give me your advice in the next issue.

I live 150 miles sonth of Richmond, Va.

Wayne Co., N. C. T. E. Person.

1. It is too late to sow seed to make sets for planting now. The seed for these should be sown in spring and the sets then ripen abont June or July, and are kept over nntil time to plant in the fall, say, October.

2. The planting of Irish potatoes in the early winter has not yet been much practiced, but we have had several reports of successful resnlts in Virginia and North Carolina. In these cases the sets were planted in November and December. The land should be well prepared and then the rows be laid off three feet apart. These rows shonld be opened very deep by running the plow at least twice in each. Sow a good potato fertilizer in the rows and mix with the soil by running a cultivator throngh them. Then drop the sets at the nsnal distance apart, say, twelve or fifteen inches. Cover lightly with the soil, and then cover thickly with strawy barn-yard manure, and upon this throw a furrow from each side of the row. In the early spring as soon as safe to do so for frost, rake down the ridge thus made and cultivate the crop as usual. If the potatoes should come up before danger of frost is past throw a light furrow on to them.—Ed.

Fettilizing Orchard with Green Crops—Working Orchard—Spraying—Onion Growing—Whitewash, &c.

1. Is it necessary to sow peas among peach trees (bearing age), after harvest, when the cover crop for winter will be part crimson clover? What do you think of mixing rye with crimson clover to sow in November; what would be the right proportion and amount of the mixture per acre? How early after harvest (last peaches picked by August 1) wonld you plant the cover crop? Would yon cnt for hay or turn under in spring?

2. Do you know of any large orchards planted on hillsides, not terraced, and yet, by proper management, are kept from washing?

3. What do you think of the Extension Acme Harrow for hillside orchards—nsed after once plowing?

4. What is the "general" spray that can be applied for two or more peach tree pests—*i. e.*, scale, curculio, leaf curl, etc. If there is such a one, what may be the best time for nsing, so as to "kill two birds with one stone?"

5. What do know of the "Sudduth Pear," grown by Augnstine & Co., Normal, Ill.? They declare it is free from blight all throngh the life of the tree. Do yon know of *good healthy* pear trees being grown from cuttings? What stock would you use in grafting?

6. In planting large acreages of onions, do the growers carefully *set* each bulb in the row, or merely drop them and then cover? It would take a great deal of

time to set each bulb *by hand* over large areas, and make also large expense.

7. I have been told that the whole cow-pea plant grown on "prairie" soil (black limy soil) is poison, and especially the root. Can this be so?

8. Please give a formula for making a cheap whitewash that will *stick*, and save constant rewashing after every hard rain.

Macon Co., Ala. F. H. CARDOZO.

1. We would not sow cow-peas in a bearing peach orchard after picking if intending to sow crimson clover for a winter cover. It is too late then for the cow-peas to make a profitable growth. Rye may be seeded with the crimson clover. We prefer, however, to sow a mixture of wheat, oats, and rye, with the clover, as this mixture makes a better hay than rye alone, and also a better yield. Sow ten lbs. of clover with one bushel of the mixed grain. Whether to cut for hay or turn under depends on the luxuriance of growth of the peaches. If the trees are making plenty of wood, cut for hay and then cultivate the ground until time to sow the winter cover crop, say August. If the trees need help, plow down.

2. There are peach orchards planted on the mountains in the West of this State and in West Virginia and West Maryland, which are not terraced and yield well.

3. We have never used this harrow, and therefore can give no opinion.

4. See our Spray Calendar, published every year in February or March.

5. We do not know anything of the Sudduth Pear, except what we have seen published by the sellers of it. If it be blight proof in the South it is an acquisition, as we know of no pear that is. Keiffer and Seckel are the nearest to being so.

The best pear trees are raised from seedling stocks. These are budded usually the first summer after transplanting from the seed-bed. The best stock for grafting is the pear stock. The only other reliable stock is the French Quince.

6. Each set or young plant is carefully set, not dropped.

7. We do not believe anything of the kind.

8. What is called Government Whitewash is the best. We have frequently published the formula. It is simply stone lime slaked with hot water, to which is added a few pounds of salt, a little rice flour made into a paste by boiling, and a small quantity of glue melted in boiling water.—ED.

Insects Affecting Sweet Corn.

Mr. W. N. Kennedy, of Dinwiddie county, Va., wrote us that large numbers of a little yellow skipper were infesting the stalks of his sweet corn and late corn generally, and he feared would prevent same making a crop. We submitted the facts to the Entomological Division of the Department of Agriculture, and have received the following reply, to which we invite attention.—ED.

AUGUST 25, 1902.

Dear Sir,—In the absence of Dr. Howard I acknowledge your letter of August 23, with enclosure from Mr. W. N. Kennedy, Rowanta, Va., requesting information in regard to an insect which is affecting the stalks of late sweet corn. From the description which your correspondent gives, and the fact that the so-called little yellow skipper is maturing from maggots in the tassel of corn, I judge it to be one of a little group of scavenging insects. The description might fit one of perhaps a hundred of these insects. Some of the best known forms are termed frit flies, and a few are injurious to the stems of wheat and grasses. One of these is called the stem maggot. It is quite likely that the insect in your case is one of this group. Others are called pomace flies, and are found in vinegar and decomposing or fermenting apples and other fruit, about cider mills, wine presses, etc. Still others are leaf miners, and do injury to cabbage and clover by mining the leaves; and some develop in damp, decaying portions of grains.

It seems probable that there is no injury in the case reported, and that the insects are merely attracted by decomposition of the corn, due to the presence perhaps of the corn ear worm. This insect is quite distinct from the frit flies or any of their relatives. It is, as you doubtless know, the larva or caterpillar of a large moth.

I would advise your correspondent to obtain specimens and send them, living if possible, to this office, when I will doubtless be able to identify them, and can afford more satisfactory information. I enclose herewith two prints of maggots and the flies which produce them, which have scavenging habits.

If you think any of this matter worthy of publication, as a means of drawing the attention of your correspondents to the case, and to obtain specimens for identification, I will be pleased to receive a copy of the issue in which this letter appears.

Yours very truly,

F. H. CHITTENDEN,
Acting Entomologist.

Woodland Pasture—Johnson Grass—Hairy Vetch.

I have a piece of woodland. The soil is deep, rich and somewhat moist. It is partly ditched so that water does not stand upon it long at a time. The growth is sweet gum, ash, and others of the leafy kind.

When I began to pasture upon this, eight years ago, it was set in reeds among the trees. Pasturing this winter and summer has killed out the reeds, and dog fennels are taking their place.

I want to improve this for pasture without injuring the trees. Are there grasses that I can sow that would catch and grow without preparation? What kind and quantity per acre? Would Johnson grass do it, and would there be danger of its spreading to cultivated lands? What do you think of Johnson grass as a hog grass on this rich, deep soil?

I have other pasture lands where I have mowed the weeds and left upon land. Would "Hairy Vetch,"

sowed upon this be a success or a failure?

Please answer through the *Planter* and oblige.

Washington Co., N. C. W. T. HOPKINS.

Yes. Sow a mixture of Wood Meadow grass, Orchard grass, Red Top and Virginia Blue grass. If you can harrow the land with a heavy drag harrow, so as to cut up the present turf before seeding the catch will be much better. Sow two bushels of the mixture to the acre. Johnson grass is not suited for this purpose. It is really a sorghum and grows best on land suited for a forage crop and not shaded. There is a wide diversity of opinion about Johnson grass. In the extreme Southern States, where the winters are not severe enough to kill out the roots when exposed, it is regarded as a nuisance, but in this and the ad joining States we think it may often be grown with advantage, as it is so persistent in growth and yet can be got rid of when desired by plowing and exposing to the winter cold. Hairy Vetch will not succeed unless the land be first plowed or cultivated. If this be done it will grow freely.—ED.

Sick Hogs.

My experience leads me to think that the sick hogs described by G. A. Moore in August number, and by N. S. W. in the September number of the *Planter* are affected with excess of worms. I have found that shutting the hogs up, putting a small, but constant supply of copperas in the swill trough and then feeding on bran mash rids them speedily of the worms. Soaking corn in lye all night and mixing powdered copperas with it on feeding next morning is excellent for hogs running in a pasture lot.

District of Columbia. JAMES A. BETHUNE.

Seeding to Grass.

Please advise me on the subject of sowing grass seed. I have a lot of about six acres I wish to sow in oats together with a mixture of clover, timothy and herds grass. Please advise me on the subject.

Land is now in corn.

Dinwiddie Co., Va. SUBSCRIBER.

In the August and September issues "Subscriber" will find this subject of grass seeding fully discussed. In this issue also will be found further information on the question.—ED.

Hog Moth Catterpillar..

Find under separate cover a specimen of insects, found on our fruit trees, eating the leaves off and leaving trees leafless. Please give us full particulars regarding same, and what must we do to get rid of them. Answer through next issue of *Southern Planter*.

Charles City Co., Va. NEDVIDEK BROS.

The specimen is a remarkable caterpillar. It is of a brownish red color, nearly three fourths of an inch long, and when in a perfect condition is provided with five pairs of more or less curved plume-like appendages which are about three-eighths of an inch long. These rise at nearly equal distances from either side of the back of the caterpillar and give it a very peculiar appearance. They break off so readily that is rare to meet with a perfect specimen. This insect is *Phobetron pethecium* Abb. and Sm., the hog moth caterpillar, and is somewhat rare. It is a somewhat general feeder, having been recorded as occurring on cherry and apple trees, white birch, various kinds of oaks, sugar maple, ash, witch hazel and chestnut. Like other caterpillars, it hatches from eggs which are very peculiar and appear like drops of transparent gelatine of pale brown color. These are deposited by the parent moths upon the surface of a leaf and are very difficult to detect. The caterpillars on attaining maturity descend to the ground and spin oval cocoons to which several of these peculiar plume-like appendages described above may be attached. The moth escapes the following summer from its peculiar retreat by opening a small lid. This species is a leaf feeder, and where it is sufficiently abundant to cause any considerable damage it can be readily controlled by spraying the infested branches with Paris green or London purple.

Winter vetch (*Vicia Sativa*) finds great favor at the New York Experiment Station at Geneva as a cover crop. Sown in midsummer or early fall it makes a magnificent growth, thoroughly covering the soil and often is green in the spring, after the severest winter weather. It is then plowed under and not only adds much needed humus or vegetable matter to the soil, but supplies a large quantity of nitrogen which the plant has extracted from the air. The soil here is rather of a clayey nature underdrained with tile.

SELECTION OF SEED CORN IN FIELD.

In selecting stock seed in the field, the most convenient plan is to make a partition in the wagon bed. As the husker goes along the rows, he can easily throw the good ears from the good stalks into one campartment, and the poor ears or ears from poor stalks into the other. A second selection must be made at the seed-house, and all undesirable ears thrown out which escaped the eye of the husker. In order to do this most satisfactorily and economically, the selected corn can be thrown out of the wagon into a general bin at the seed house. Here other men can select the seed to be finally preserved and pile it up in sections, discarding all inferior ears.—[A. D. Shamel, Illinois.]

THE TOP BUSHELS.

When preparing for the wheat crop and sowing it, keep your thoughts to the harvest time and strive to add a few more top bushels. Benefits will come through preparation of the ground, intelligent fertilization, good seed and careful sowing. Better net results will usually be obtained if your efforts are directed along these lines than to expand your acres.

Trucking, Garden and Orchard.

WORK FOR THE MONTH.

Harvesting, storing and shipping the snmmer grown crops should engage the attention and largely occnpy the time of the growers. Apples and pears should be carefully gathered—not be shaken or knocked from the trees, as is too often the practice, and should be at once removed from the orchard and not be allowed to remain in heaps nnder the trees, as is often done. They should be stored in a dry, airy shed or room, not in too great bulk, until they have passed through the sweat and then be either stored in a fruit-room or house where they will be safe from frost or be barrelled up and shipped. A fruit-room or house should be dry and well ventilated, and the temperature should be kept at or abont 35 to 40 degrees. See that all bruised, damaged or decayed fruit is carefully culled out, and also that the small fruit is not mixed with the large. Make the fruit grade No. 1 all through the lot to be shipped, and pack so that the barrel is uniform throughout, and mark plainly No. 1 or first quality. The damaged fruit should be kept at home and be nsed, as far as needed and proper, for drying or preserving, and the balance be fed to stock. It rarely pays to ship. Seconds or small fruit should be shipped in separate barrels, and be plainly marked "Seconds." The adoption of this rnle will ensure the best price for all the frnit. In packing, see that the barrels are packed tight, so that the frnit will not be injured in transit. Good apples are likely to sell well.

Elsewhere in this issue will be found advice as to the storing of sweet and Irish potatoes.

Carrots, parsnips and salsify will often keep safely in the gronnd where grown all the winter. In order, however, to be certain of a supply if the frost should be very severe, it is wise to lift part of the crop and store in a dry cellar, from which frost can be exclnded. The roots shonld be packed away in dry sand, and will then come out crisp and fnll of flavor. Beets and tnrnips may be stored in the same way, though tnrnips will keep good merely covered with straw in a cellar or with straw and a little soil in pies out of doors.

Kale and spinach should be sown for winter and spring cutting, also tnrnips for salad.

Cabbage, canliflower and lettuce seed may be sown for plants to set out in spring. The beds should be where they can be protected in winter when necessary. Lettuce plants shonld be set in cold frames for pushing on for winter use. At the end of the month cabbage plants may be set ont for the early spring crop in the eastern and middle sections of this State and North and Sonth Carolina. Make the land rich, and lay the rows off east and west, and set the plants on the south side of the ridge forming the row, so that they will be protected somewhat from the cold and get the benefit of the snn. Celery should be earthed up a little as it grows, just snfficient to keep the plants compact. It is too early yet to earth np to blanch. This may be done late in November, unless wanted for an early market.

Land may be got ready for planting with orchard trees and bush frnits, bnt it is too early to plant. This should be done in November and December. Plow the land deeply and break the snbsoil either with the plow or in the places where the trees are to be set out with a grnbbing mattock. We strongly favor the late fall planting of orchard and bnsh frnits in the South, as in this mild climate much root growth is made in the winter and early spring, and the trees are thus enabled to get an early start in spring and are not likely to suffer so much in the event of a dry hot snmmer.

Clear np all trash, leaves, prnnings, weeds and waste of every kind in the orchard, vineyard and garden, and burn the same, and thns destroy insects eggs and fnngoid spores, which, if left around, will make trouble next year.

Seed all land not needed for vegetable crops or for trees with crimson clover and a mixtnre of wheat, oats or rye. This will conserve fertility and add to the hnmns content of the soil when plowed down in spring.

STORING SWEET POTATOES.

The sweet potato is more susceptible to injury from frost and from rotting during winter than the Irish potato, and therefore more care is required in storing them. Where only a small crop is grown for home use, they will nsually keep well if stored in a dry frost-proof cellar well buried in pine tags. The temperatnre of the cellar should be kept at abont 40°. In mild weather, it should be ventilated freely, and in case of hard frost, outside openings shonld be closd and a lamp be kept burning. When a large qnantity is to be stored, a house should be built for the purpose. Prof. Waite, of the Department of Agricnltnre at Washington, who owns a farm in Maryland, where

he makes a specialty of sweet potato-growing, thus describes, in the *American Agriculturist*, his potato house and the means he uses to ensure keeping and a choice market product:

The best type of storage-house is probably in the form familiar to most people as that of a bank barn. The basement of such a building is very easy to keep at a uniform temperature. The extreme dryness of a living room is not required for the sweet potato, but a slightly milder, moister atmosphere is probably superior. My largest sweet potato house, which is 28 by 40 feet, is built entirely above ground, but the walls are double ceiled on the inside with 6-inch pine boards with paper between. The space between the 2 by 6 inch studding is packed with pine needles. The floors underneath and overhead are double with paper between. Only a few openings for windows are made in the building, and these are provided with shutters, making a very tight, warm room. The sweet potatoes should be put into the storage-house the same day they are dug. In fact, just as soon as they are dried out and sorted. They should be handled as carefully as possible. Sweet potatoes intended for storage should be handled about the same as choice fruits. The ordinary ⅝ basket is a popular package for carrying and transporting sweet potatoes. They can be hauled in these baskets and carefully dumped in the bins without serious injury.

The sweet potato-house should be heated to the temperature of 98 to 100 degrees three or four days before the potatoes are put in, until it is thoroughly dried out. While the potatoes are going in, and for a week to ten days after that time, the house should be kept very hot. As much as 80 degrees, and some would prefer to have it from 90 to 100 degrees. I used to heat my houses 98 to 100 degrees, but concluded, from the slight shrivelling which I noticed, that this was too warm. My crop last year was fired at about 80 degrees. It generally takes about a week or ten days after the last potatoes are in before the bins are thoroughly cured out. Only an expert can tell when to stop firing. A few symptoms, however, can be given which will enable one to judge pretty accurately.

While the potatoes are being heated up, they sweat rather profusely, the air in the house smells moist, and dew deposits on the windows at night. The heat and ventilation gradually carries this moisture out of the house, and the air begins to smell dry and dusty. The potatoes next to the stove and on top of the pile will begin to sprout slightly, and if this is accompanied by the dry smell and feeling of the house, it can safely be assumed that the crop is cured. The firing dries up all sores or broken ends on the potatoes, compels them to go through a sweat, and then takes up the moisture which this sweating develops. It compels the potato to go through some physiological change which puts it in condition for keeping. The result is that if the temperature is gradually lowered to about 60 degrees, potatoes which have been fired properly will keep all winter long. These heated potatoes are also slightly improved in quality, and are known on the market as kiln-dried potatoes.

ANNUAL MEETING OF THE VIRGINIA STATE HORTICULTURAL SOCIETY.

The Executive Committee of this Society met at Charlottesville on September 1st, when it was decided to hold the annual meeting of the Society at Lynchburg, on December 2 and 3. Owing to the shortness of the fruit crop generally, it was decided to postpone the intended exhibition of fruit until next year and substitute as a special feature lectures on the packing of fruits, with specialists to lead in the various heads, and with exhibitions of the various packages most used in different markets. Further particulars of arrangements for this meeting will appear in these columns in the November issue.

WALTER WHATELY,
Secretary and Treasurer.

STRAWBERRY CULTURE—FALL PLANTING.

Editor Southern Planter:

A thing that is worth doing is worth doing well, says the old adage. Of all things this applies to the fall setting of strawberry plants. One who plants in fall almost always does so with a view of getting a crop of berries the next spring. To insure this happy result the conditions must be right. For while the strawberry plant likes cool weather and even cold weather short of the coldest, it cannot grow when the ground is actually frozen. Therefore we must aid it to make all possible growth before heavy freezing sets in and to extend its root growth. The foliage is apt to be killed down by frosts in the mild intervals between cold spells of winter.

The three prerequisites to this end are good plants, good planting, and good soil. The well-grown, well-rooted plant has already much of the size necessary to enable it to sustain a good crop of fruit. Besides, it has the vitality which will enable it to grow much faster in proportion to its size than a small, weak plant. Properly set, the plant grows faster than if it had not been transplanted at all.

I will begin with the soil. It is, of course, better to have a rich soil to begin with—one in which the fertilizing properties become thoroughly incorporated with the soil—a part of the soil itself. The ideal conditions are where the land has been made rich for a prior crop—like Irish potatoes or spring or summer trucking of some kind. Plants are easier to live and quicker to grow off on such land than where a great deal of manure of any kind is applied just before planting.

Not all, probably not the majority of growers, are fortunate enough to have such land available for strawberries. Therefore, I will give the best plan to follow where poor or ordinary land has to be used for this purpose.

Cotton seed meal is by long odds the best and safest manure for young plants, especially in fall, when heat and drought sometimes follow planting. Being of vegetable origin, it does not fire or bnrn, even when com ing in contact with the roots, like mineral or animal fertilizers. Then, it is quick enongh and yet not so solnble as to be quickly lost unless at once appropriated by the plants like nitrate of soda.

I break the land well in September and harrow well with disk harrow if cloddy or turfy. In October or November I prepare it for planting, by running off rows three feet apart. In these are sown cotton seed meal at the rate of 500 to 700 lbs. an acre. This is as much as it is usnally safe to apply in the drill. Mix the cotton seed meal with the soil by running a small harrow, or lacking that, a plow, down the drill. Then list on this with a fnrrow from each side. Knock this list down pretty low with hoes or a drag, and you are ready to plant.

An endless number of implements are used by different people to open the hole to set plants—spades, trowels, hoes, poles, etc. A thoroughly effective implement may be economically made by a piece of inch plank four feet long and four inches broad. Most of the board shonld be trimmed down to lighten it and form a handle. Six inches or more of one end must be left spade shape and sharpened at the tip. If the land is stony or rough, several inches of this end should be shod with iron, especially if much planting is to be done. A planter made of oak or any hard wood plank or sapling, will usually last to set several acres without ironing.

Armed with this implement, a man can walk upright and open the hole fast and well. In these broad holes the plants should be set, spreading the roots out as much fan shape as practicable, and the dirt pressed firmly around the roots, care being taken that the hole is well filled from the bottom up.

To grow off at once, the plants must not be set too deep, while if set too shallow they will be apt to die. The right depth is that which covers and hides all the roots after the dirt is packed down around them.

If stable manure is to be used, a good way is to apply it evenly around and between the plants as a top-dressing in November or later. Little, if any, of its properties are lost by exposure in cold weather. Instead, they are washed into the soil within reach of the plant roots, which appropriates them at once. Thus used, they also answer a good purpose as a mulch to lessen the heaving and lifting effects of heavy freezes.

Above I have given the directions for field planting on a more or less large scale. In a garden bed, when intensive cnlture can be given to obtain big results, the plants can be set much closer—say fifteen inches apart in the rows, the rows fifteen inches apart, with a two foot walkway between each three rows. In this mode of planting, the cotton-seed meal should be applied broadcast and well chopped in. Mannre can be applied as a top dressing as in field culture.

Kittrell, N. C. O. W. Blacknall.

BITTER ROT OF APPLES.

Bitter rot is a disastrously destructive disease upon the apple fruit. It has prevailed at times over very large areas of the territory of the United States, but is especially liable to occur South of the 39th parallel of north latitude. In Illinois, in 1900, the loss in fonr counties was estimated to be $1,500,000 and as great proportionally to the acres in orchards elsewhere.

Appearance of Diseased Apples.

It begins in one to many brown specks anywhere upon the unbroken skin of the apples, and each point of infection enlarges so as to become a very distinct, dark colored, circular and somewhat sunken spot, beneath which the tissues are dry (never soft and watery) and tough. Great numbers of pustnles so small as to be scarcely visible to the unaided eye, arranged in close concentric circles, cover all but the onter border of the discolored spot and give to the snrface a roughened appearance. In very dry weather these pustules are merely minute, raised, dark-colored points, but when the air is snfficiently moist each conically shaped point opens by breaking throngh the skin of the fruit and discharges a little pinkish mass of a mucilaginous or waxy substance well seen under a lens. This material may at length form a reddish, minutely roughened crust. Each spot may remain distinct or several on one apple may rnn together so as to form an irregnlarly shaped, depressed patch. The whole fruit at length becomes shriveled into an angular, hard body, called a "mummy." It does not further decay.

The pinkish or reddish material from the spots in the fruit is composed of myriads of spores. These cannot be distributed by the wind becanse they are held together and to the fruit by an adhesive substance, which, however, is very soluble in water. The spores are carried in splashes of rain water or may be distributed by insects. The fungus lives over winter in the old, dried fruits (mummies) and in wound like infected spots, called bitter rot cankers, on the limbs of the tree. During the month of May or later a fresh crop of spores may be produced from the mummies and from the limb cankers. The former more often fall from the tree. The first infection of the season apparently comes from the cankers and can be traced on the younger apples spreading below those in cone-shaped fignres in the trees, where the spores have been carried by rain.

The disease goes slowly from tree to tree in an orchard, probably throngh the agency of insects.

In July and later, where the disease has not become widely spread, search should be systematically made in the orchard for infected trees as determined by the spots on the apples. This can best be done from an ele-

vated position like the platform of a spraying outfit. If diseased apples are found the infecting canker (or mummy) should be looked for just above the uppermost of the spotted fruit. The canker and infected fruit should be removed, taking care not to distribute the infection in the process. This is of the utmost importance if the contagion is to be stopped.

In the winter time the mummies and cankers can be removed or the fungus probably destroyed by spraying the trees with copper sulphate.

The disease can be kept in check during the summer by repeated applications of Bordeaux mixture.

FIRE BLIGHT OF PEARS.

So much has already been written on the subject of pear blight, that it seems like thrashing over old straw to again revive the subject. But the control of pear-blight is one of the great practical questions of the fruit grower of Delaware.

The disease cannot be cured after it once attacks a tree; it can be prevented, however, if orchardists are only careful enough to destroy sources of infection; and since the disease, as a rule, spreads from without inwards, or from younger shoots and spurs to older wood, its progress can be checked by the prompt and effectual removal of diseased parts.

As is well known, the disease is caused by a minute germ or bacillus. This germ only needs to come in contact with a blossom or be introduced into the tissue of a leaf, young shoot or bud for the disease to manifest itself. From that point it extends inwardly and downwardly.

One of the great sources of infection is observed in the spring, when blighted twigs are often seen to exude a milky-looking substance. This latter is the pear blight virus in an almost pure state. If examined under the microscope, it is found swarming with rod-shaped organisms or bacilli. From this, too, the organism can be isolated and grown upon artificial media, and from these pure cultures, blossoms, buds, twigs and leaves can be inoculated and the trouble reproduced.

To show the relation of the milky virus exuding in the spring from blighted trees to the spread of the disease, a quantity of the latter was collected on April 25, 1902, just at the time that the trees were coming into bloom. This was diluted with sterile water to make a turbid fluid, which the microscope showed was swarming with pear blight germs. By means of a camel's hair brush dipped in the diluted virus, a number of blossoms were touched in their centres and thus infected with the germs. The blossoms so inoculated were then enclosed in bags.

Two weeks later, all of the twigs which bore inoculated blossoms were blighted for a distance of four to eight inches, and bore black dead and shriveled leaves.

One shoot whose blossoms were inoculated six weeks previously, was blighted for the entire length of the shoot, a distance of fourteen inches, and was beginning to extend into the shoot from which it sprang.

It is thus certain that the germs of pear blight only need to be brought into contact with the blossoms for infection to follow, and for the blight to extend downward from these points.

It has been shown that bees and other insects are largely instrumental in disseminating the virus from one blossom to another; and while it would be impossible and unwise to banish the bees, even if we could, it is possible to remove much of the virus which they are so instrumental in carrying.

This will consist in a thorough inspection of the orchard in the spring before the blossoms open, and the cutting out and burning of all blighted limbs, branches and spurs. This will prevent in a large measure the wholesale infection of the blossoms, either on terminal growths or spurs, at which time nearly all of the blight gets its start in the tree.

Again, if one will inspect a pear orchard any time during the months of May or June, one will observe a greater or less number of blighted terminal shoots and spurs. These represent blossom, and perhaps bud infection as just noted. If these blighted parts be allowed to remain, the disease will extend and serious consequences will follow.

If the terminal blighted shoots are cut out, the progress of the disease from these points can be stopped, provided care is taken to cut well below the blight and through the healthy wood.

When spurs are affected, it is seen as clusters of dead leaves. These being so short, it does not take long for the blight to extend from them down to the larger limbs. If not cut off on the first appearance of the blight in them, the disease may have already extended into the branch when their excission would be useless.

Hence, soon after blossoming, the trees should be watched carefully, and every evidence of blight removed as fast as it makes its appearance. Delay, especially as regards the excission of blighted spurs, is fatal; that is, it will necessitate the later removal of a large quantity of wood, even to large limbs, which might otherwise be spared.

Most farmers practice pruning for blight, but they commonly do it whenever convenient, rather than at the right time, or perhaps not until the tree is badly involved.

Following the two spring prunings—the first before the blossoms open and the second during a period of a month following blossoming—there should be a third inspection and pruning in the fall before the leaves drop, cutting out at this time any evidence of blight which may have escaped the previous operation.

DELAWARE EXPERIMENT STATION.

KEEPING VEGETABLES AND FRUITS IN LIME.

It may be just the time to remind my friends of the newer scheme of keeping fruits and vegetables in lime. Procure a quantity of air slaked lime. Put a layer in a box; upon this layer place a layer of freshly-picked, nearly ripe tomatoes; then another layer of lime, and another of tomatoes, and so forth, until the box is full. Keep this in a cool place, such as an ordinary cellar, and the tomatoes will most likely keep for a long time in first-class condition. Grapes, pears, and possibly other fruits and vegetables may be stored in this manner with some assurance of having them keep all right for months. I hope that many of the farmer readers will try this plan this fall, and be in position to report about the outcome later in the season.—T. GREINER, in *Practical Farmer*.

Live Stock and Dairy.

THE RAZOR-BACK HOG.

We had thought that we had lived beyond the time when a correspondent of the *Planter* would have ventured to say that for any purpose, except that of outrunning any "nigger" on the plantation, a Razor back hog had any good qualities to commend him. But such, however, apparently is not the case, as a correspondent in this issue claims that a Razor-back was better for his purpose—that of making hog meat on practically a forage and truck crop diet—than either a Jersey Red or a Berkshire. He does, however, concede that a cross of a Berkshire boar on a common sow was even better than a Razor-back. We have long understood that the parties making the celebrated Smithfield hams have always claimed that a strong admixture of Razor-back blood in their sows was an advantage in giving to the hams that peculiar lean character and high flavor for which the hams are noted; but we have never known any one to claim that such an admixture of wild blood conduced in any way to the production either by grazing or corn feeding of a profitable general market hog. If this be so, then the efforts of those breeders who have given so much time and attention and spent so much money in perfecting the breeds of pure-bred hogs has been practically time and money wasted. We are not prepared to concede this. The facts and the figures are against such a conclusion. Experiments have been made at several Stations as to the results to be accomplished by crossing Razor-backs on pure-bred hogs. In every instance, so far as we know, the only result has been to produce a hog which failed to respond as quickly to good feeding as the pure bred hog, however fed. The claim has been made that the introduction of Razor back blood would give vigor and a better disease-resisting hog, but if this be needed in the best pure-bred hogs, then breeders have failed in their work. We believe that the best strains of pure bred hogs are as vigorous and healthy as hogs can be when kept under proper conditions and fed as hogs ought to be; and that this is so, is proven by the fact that such hogs will make a pound of meat at less cost than any grade hogs, and make it in less time. If hogs are wanted to merely roam over a plantation and get their own living and make a few pounds of hard, tough meat by the time they have attained almost a patriarchal age, then we grant that the pure-bred hog does not fill the requirement. But if, as we take to be the case, a hog is needed that can convert green food and corn into fat, tender, juicy meat, and make a weight of this meat from 300 to 400 lbs. before twelve months have passed over his head, then only a pure-bred or high-grade hog can meet the requirement. The prime object in feeding stock of any kind is to convert farm products of bulky capacity and low value into products of limited capacity and high value, so that they can be transported more easily to markets, and as a result leave greater profit to the producer of the raw products. No one who has had any practical experience with coarse-bred, low grade hogs or scrub cattle, will for a moment contend that they can compete with high-grade and pure-bred hogs and pure bred beef cattle in accomplishing this end. We have known pure-bred Berkshire hogs to make 250 lbs. weight by the time they were six months old, and pure bred Shorthorn Angus and Hereford cattle to make 600 lbs. weight at six months old. Where is the man who ever saw a Razor-back hog make 250 lbs. weight, even at twelve months, or probably ever in his life, however long it might be, or a "scrub" cow to make 600 lbs. at even nine months of age? With the average low price of staple farm products, and the cost of producing them, if the farmer is to make a profit at all on his capital invested, he must have animals to consume them which will convert them into a high-priced product in a very limited time, and only animals which have been bred so as to intensify their natural proclivity to assimilate food and convert it into meat quickly, can meet this requirement.

SAVE AND FEED THE CORN FODDER.

Every year millions of tons of corn fodder are allowed to go to waste, and a large part of this waste occurs in the South. Thousands of cattle in the South suffer every year for want of rough forage, and thousands of tons of hay are grown and bought to supply some of this deficit. A very large part of the hay so grown and bought is timothy hay, a feed that supplies only the same constituents that are found in the corn fodder wasted. According to Professor Armsby, one of the best authorities on feeds, more than one-third of the digestible nutrients of the corn crop are found in the fodder and stalks, and not two-thirds in the grain. Compared with timothy hay, a ton of corn fodder contains practically the same number of pounds of digestible matter. The Missouri Experiment Station has devoted the last seven years to an attempt to ascertain the actual feeding value of corn fodder as compared with timothy hay, and to study the method of combining it with other feeds, so as to increase its feeding value. The results of three years' feeding experiments show—1. That yearling steers may be wintered on whole corn fodder from which all ears were re-

moved, alone, without grain or other food, and neither gain or lose in weight on the average. 2. That similar steers, when fed all the bright timothy hay, they would eat, and no grain made in each case a slight gain. 3 More pounds of fodder than of hay were necessary to keep up the weight of the cattle. 4. That between 30 and 40 per cent. of the fodder was refused and not eaten by the cattle. All things considered, it is safe to say that when fed alone a ton of fodder has something like half the feeding value of timothy hay. No one, however, disputes the assertion that it is poor business to winter steers merely to keep them at the same weight. To obviate this, therefore, and still utilize the fodder the Experiment Station has tried the effect of combinations with other feeds. What the corn fodder lacks is protein. The following show the results reached with different combinations :

The first trial with two year old steers on full feed took place from December, 1899, to April, 1900—119 days, four two-year old steers in each lot, full fed on shelled corn. Here are results :

Timothy hay lot—	*Pounds.*
Corn eaten.....(166½ bushels)	9.331
Hay eaten	3,813
Total gain	802
Average daily gain per steer	1.69
Grain per pound of gain	11.6
Gain per bushel of corn	4.81
Corn fodder and clover hay lot—	
Corn eaten.....(186 bushels)	10,385
Corn fodder eaten	1,889
Clover hay eaten	1,126
Total gain per lot	917
Average daily gain per steer	1.94
Grain required per pound gain	11.3
Gain per bushel of corn	4.93

In this trial the steers on corn and timothy hay made a gain of 802 pounds, or 1.69 pounds daily per steer, while those on equal parts corn fodder and clover hay gained 917 pounds daily, or 1.94 pounds per steer. The grain required to make a pound of gain was on the timothy lot, 11.6 pounds, and with the fodder and clover lot, 11.3 pounds. A bushel of corn made when fed with timothy 4.81 pounds of beef, and when combined with equal parts of fodder and clover 4.93.

The second trial took place between January 6 to April 16, 1901—100 days, four two-year-old steers in each lot, full fed on shelled corn :

Timothy lot—	*Pounds.*
Corn eaten.....(157 bushels)	8,819
Hay eaten	2,540
Total gain	789
Average daily gain per steer	1.97
Grain per pound of gain	11.2
Gain per bushel of corn	5
Corn fodder and clover hay lot—	
Corn eaten.....(190 bushels)	9,469
Corn fodder eaten	868
Clover eaten	2,475
Total gain	1,140
Average daily gain per steer	2.85
Grain per pound of gain	8.3
Gain per bushel of corn	6.75

In this trial, through an oversight, the cattle were allowed practically all the clover they would eat, and, as a result, the amount of fodder eaten was comparatively small, which, in a measure, vitiates the results. But the striking difference in the gains made, and in the cost of the gains, cannot fail to be impressive, and still further emphasize the superior value of clover and the importance of using this roughness in full feeding.

It will be noted that in this experiment a bushel of corn produced 5 pounds of gain when combined with timothy and 6.75 pounds when fed in connection with clover and corn fodder—a difference of 1.75 pounds, which, at $5 per 100, means 8¾ cents per bushel of corn.

The first trial with yearlings took place from January 1 to March 15, 1898—74 days, four yearling steers in each lot—no grain :

Timothy lot—	*Pounds.*
Hay eaten	4,736
Gain per lot	123
Average daily gain per steer	.42
Digestible matter per pound of gain	18 23
Fodder and clover lot—	
Corn fodder eaten	2,510
Clover hay eaten	3,288
Total gain per lot	234
Average daily gain per steer	.80
Digestible matter per pound of gain	9.26

Thus the combination of fodder and clover hay made almost twice as much gain as did timothy hay. It is true that the steers on clover and fodder ate more than the timothy lot, but the digestible organic matter required to make a pound of gain was with timothy 18.23 pounds, while with corn fodder and clover only 9.26 pounds, or little more than half as much.

The second trial lasted from December 30, 1899, to April 10, 1900—101 days, four yearling steers in each lot—four pounds of shelled corn daily per head :

Timothy lot—	*Pounds.*
Corn eaten	1,612
Hay eaten	6,753
Gain per lot	262
Average daily gain per steer	.65
Fodder and clover lot—	
Corn eaten	1,612
Corn fodder eaten	3,631
Clover hay eaten	3,593
Gain per lot	357
Average daily gain per steer	.88

Here the gains were for the timothy lot 262 pounds, and for the fodder and clover lot 357 pounds or 36 per cent. more, although both lots had the same amount of corn.

The third trial lasted from January 29 to April 19, 1901—80 days, four yearling steers in each lot—6 pounds of shelled corn daily per steer :

Timothy lot—	*Pounds.*
Corn eaten	1,920
Hay eaten	4,943
Gain per lot	318

Daily gain per steer	1
Fodder and clover lot—	
Corn eaten	1,920
Corn fodder eaten	2,298
Clover hay eaten	3,619
Gain per lot	543
Daily gain per steer	1.67

In this trial, the daily allowance of corn per steer was six pounds instead of four, and the gains were proportionately larger. Yet the advantage of a combination of fodder and clover over timothy is quite as marked as in the preceding experiments. The gain from corn and timothy was 318 pounds and from corn, corn fodder and clover hay it was 543 pounds, or 70 per cent. more.

The fourth trial lasted from December 26, 1901, to April 24, 1902—120 days, four yearling steers in each lot—6 pounds of shelled corn daily per head :

Timothy lot—	*Pounds.*
Corn eaten	2,880
Hay eaten	8,152
Gain per lot	658
Daily gain per steer	1.37
Fodder and clover lot—	
Corn eaten	2,880
Fodder eaten	2,568
Clover eaten	4,958
Gain per lot	744
Daily gain per steer	1.55

Again the results show the superiority of a combination of fodder and clover over timothy. The gain from timothy was 658 pounds, from the fodder and clover 744 pounds.

It will be noted that in every case the amount of roughness consumed by the cattle getting a combination of fodder and clover was larger than by the lot getting timothy, thus confirming the proposition laid down in a former article that the addition of a food rich in protein was accompanied by a larger total food consumption. This has been true with animals on full feed when the protein was supplied in the grain as well as when supplied in the roughage, and seems to hold true with cattle on half feed and with those on roughage alone. That the better balanced rations were more efficient is clearly shown by the gains. That the larger gains obtained from the better balanced rations —when clover, cowpeas or alfalfa supplied the protein —were much more economical and profitable is self-evident, since these roughnesses may usually be bought at less per ton than timothy, and are produced at decidedly less per ton when the effect upon the fertility of the farm is considered.

Making full allowance for the increased amount of roughness eaten when clover was added to ration, allowing for the fodder uneaten—*i. e.*, the coarse stalks —the inevitable conclusion from these four years' work is that a combination of corn fodder and clover hay is fully equal to timothy hay, whether fed without grain, with a small allowance of grain, whether on half feed or on full feed, and whether with yearlings or aged cattle, In other words, the farmer can by this means make the whole, coarse fodder serve every purpose, in cattle feeding at least, for which timothy is now used. Under these circumstances, it is fair to say that timothy and corn fodder have essentially the same feeding values.

MAKING HOG MEAT IN THE SOUTH.

Editor Southern Planter :

I read with much interest the enquiry of J. S. Wilson, of Wilson county, N. C., and your reply in the September issue of the *Planter*. Your plan, while good, may not suit his case, and as I have had some experience along that line I will write it, hoping it may benefit some one if it does not Mr. Wilson.

I wish to see more short letters from the farmers themselves, giving their experience. Tell what you have done and not what you expect to do. When questions are asked, don't let the Editor do all the talking. Let us have more speaking out or writing out from the men who have had experience on that subject. "In a multitude of counselors there is safety."

The principles of agriculture and stock-growing are the same the country over. Surrounding circumstances should be considered and planning done accordingly. The Editor cannot cut and dry a successful plan for any one except himself. Each one must work out his own plans. It is by reading such papers as the *Planter* that we are best prepared to do wise planning for ourselves. Read the advice of all, and then apply your own judgment and experience to the problem.

I have been farming and studying farming for thirteen years. The first eight years of this time was spent upon a fifty acre farm of my own. The first three years of this eight I put my attention mostly to the cultivation of cotton. When cotton got down to 6½ cents a pound I affirmed I would not raise any more at that price. I then turned my attention to the raising of vegetables and hogs, and it is my experience with hogs that I now want to give. I bought a pair each of Jersey Reds and Berkshires. I bought full bloods at a high price. I soon found out the Reds were not the hog for me at all. I then bought some Razorback pigs to test with Berkshires of same age. I found the Razorback to be the best hog for my use. The kind of feed I fed required a hog with a large stomach, and as the Razorback had the largest stomach he could eat more than the Berkshire, and in the end would beat him right much. I would add further, that a cross with a Berkshire boar on common stock sows gave me a better hog still, and this is the one I stuck to. I succeeded in marketing between four and five thousand pounds of fresh meat annually. This I did during the months of December to April. I kept a lot of good common-stock sows. I killed and cleaned all pigs that would dress out forty pounds and shipped them off by the 1st of April. This cut

my stock down pretty well to sows only. These with good attention would give me a quantity of pigs ready for peas and potatoes in the fall. As the Editor says, we cannot feed as the Western farmer does. There is not so much money in heavy meat; but there is good money in light pigs nicely cleaned and put on the mar ket at any season of the year. My first crop ready for hogs was the refuse from my early cabbage crop. Then followed squash, Irish potatoes and melons in great abundance. These I gathered from the field and hauled to the hogs. I sowed peas in corn at the last plowing, set out a quantity of sweet potatoes, gathered corn as early as it would cure, and turned hogs in the field after putting a ring in each one's nose to keep him from rooting. Peas and potatoes make a complete ration for them. With mire to wallow in and plenty of pure water to drink they did well.

Later I had turnips and sweet potatoes to feed in abundance. They then had full run of nearly all the fields and had crimson and red clovers and peas and potatoes still. I fed very little grain, and this mostly to suckling sows. I found pigs, peas and potatoes beat 6½ cents cotton a long way. Besides my lands rapidly improved under this management.

This is already too long, so I will have to close; later I will write again and tell you how to clean and dress a pig, for I know there are some who make a mess of it. I will also tell how I raised three big crops a year on same land after I quit cotton.

I wish to say that I am not now on a farm of my own; but manage one for another man. I have this year 630 acres in corn, 175 in cotton, 80 in rice, 75 was in oats, now in peas, 10 in potatoes.

Washington Co., N. C. W. H. HOPKINS.

We shall be delighted if our subscribers will take Mr. Hopkin's advice and write us their experience. We don't know it all "by a long way." We want to learn more, and the experience of practical men will help us and help our readers very much.—ED.

DORSET SHEEP.

Mr. T. O. Sandy, of Nottoway, Va., writes us that he has purchased a number of Dorset sheep and intends to establish a flock of this breed. The sheep he has purchased are pure blooded animals and consist of a buck, an imported animal two and a half years old, weighing 350 pounds, and a number of ewes with their this year lambs. Amongst these lambs are four bucks which were dropped last February, well grown and of fine conformation and type, which he would sell at reasonable prices. The ewe lambs he will keep to breed from. Dorset sheep seem to be coming into favor in the South. The peculiar value of the breed for the South lies in their ready production of winter and early spring lambs, which can be so much more easily cared for here in our mild winters than in the cold North and West. The ewes are great milkers and very prolific, and thus make for their owners to put on the best early markets both fine lambs and plenty of them. In our advertising colums will be found the advertisements of one or two other breeders of Dorsets in the State, amongst them Mr. Lindenkohl, of Albemarle county, who has some of the finest bred sheep in the country.

THE ANGORA GOAT.

Experience of the Maine Agricultural Experiment Station.

The first problem we met was suitable fencing. We soon found that while they do not jump they are good climbers and that they will go over any fence the top of which they can reach with the fore feet. The horns on some of the ewes point backward in a V shape. In the case of a woven wire fence with square openings even with four inch mesh they will push their heads through the openings and get hung by their horns. With this kind of a fence it was necessary to visit them two or thee times a day to release the prisoners. The Ellwood poultry fence (not poultry netting) of the American Fence Company with small diamond shaped openings has proven perfectly satisfactory. It costs about a third more than the ordinary woven wire fence of equal height.

In 1901 we gave them too extensive a range and they did but little clearing up. In May 1902 six ewes, one buck and five kids were put in an acre of young woodland of a mixed growth, most of the trees three to six inches in diameter. There was a quite thick growth of underbrush. The small underbrush of birch, maple, hazel bush, etc., have been cleaned up so that where there are no alders or evergreens the ground under the trees is as clean as though it had been burned over. Sweet fern they do not like very well but they have cleaned all of the hardhack out of this piece. Ferns and brakes have been eaten to some extent. They have eaten the leaves and young sprigs of bushes in preference to grass. Birches two inches or more in diameter they have not injured but they have stripped the bark from every maple. Even maple trees six inches in diameter have been thus killed. We have found them to be fond of the bark of apple trees, even eating the bark from old trees.

To clean up birch or evergreen woodland they have proven very effective. There has been practically no cost for the summer's keeping. The twelve goats have been kept without other food on one acre of young wood land. They have required no care other than an occasional visit to see that they are all right and that they have water. Salt was given occasionally.

CHAS. D. WOODS, *Director.*

Orono, Sept. 15, 1902.

STOMACH WORMS IN SHEEP.

The exceptionally wet season has produced conditions very favorable to the development of animal parasites. The eggs of young embryos need moisture

for development, and this year there has been plenty. The effects are now realized in the great loss of lambs, due to twisted stomach worms.

The symptoms of stomach worm disease are not very characteristic, and therefore do not admit of close de scription. They are dullness, loss of appetite, in creased thirst, diarrhea may or may not be present, a part may show an accumulation of fluid between the jaws, grinding of the teeth; there is a stiffness of the back and hind parts, and a lagging behind the flock. In acute cases there may be evidence of pain, as colic, eating unusual material, and much bleating. Some die suddenly without showing evidence of the disease. The majority linger for a week or two and then die. Old sheep are not much affected.

The parasite causing the disease is found in the fourth stomach. It is small, being only about one-half inch in length, and threadlike. If a lamb be killed, these worms may be seen to be pinkish from the blood they have abstracted from the stomach wall. If a lamb dies and the stomach be not opened for a couple of hours, the worms will be white, and being matted together, resemble the fibre of the food. The inexperienced will probably fail to recognize them, although thousands may be present.

The treatment is as follows: Take one part of coal tar creosote and one hundred parts of water and mix well. With a two ounce hard rubber syringe having a short bit of rubber tubing on the end, administer one syringeful to each lamb. Use care not to hold the head high or to force the dose too rapidly, so as to cause strangulation. With such an arrangement, a whole flock may be easily treated. One to three treat ments given a few days apart may be necessary.

It is also a good policy to turn the lambs off the reg ular pasture into the cornfield. They will do little damage to the corn, and in eating the lower blades and grass get food free from all contamination. Yard ing and giving dry feed may also be resorted to. The main object is to get the sheep off the infected pas ture.—A. W. BITTING, Veterinarian, in *Country Gen. tleman.*

VALUE OF A PEDIGREE.

Editor Southern Planter:

Several years ago I selected the best sow of a litter of half-blood Poland China pigs and bred her to an animal of as good blood as herself. As might reasonably be expected, the result was a litter of pigs much inferior to either parent. While both animals were nice specimens of their kind, the prepotency or power of transmitting their best qualities had been destroyed by the intermixture of the inferior blood. If I had bred the sow to a full blood male, I could have rea sonably expected an improvement over the mother in the offspring, as full blood stock is prepotent over half bloods or grades. A neighbor said a few days ago that he did not care about a full blood male, as his sow was only a grade. This was the best reason for wanting a full blood. We should always grade up instead of down. As full bloods are prepotent over grades, some full bloods are more prepotent than others, and, by means of a pedigree, these best animals may be selected—that is, stock that are descended from the best and have the advantage of heredity. An inferior animal is not made more valuable by having a pedigree, but a good animal, with a good pedigree, is more valuable than a good animal, the descendant of inferior stock. I believe in selecting a good animal with a good pedigree, but would reject an inferior one, no matter how good the pedigree. Judging from their purchases, some people buy for the pedigree alone. This is a mistake. An inferior animal is so much the worse for having a pedigree that may be traced back to a good family of animals. A pedigree is a good thing when we use it as a guide for the purpose of securing the best blood, but when it is used merely to give stock a good name, without the good qualities of the animal to back it, it is used improperly. It may be used for the purpose of imposing inferior stock upon a purchaser, who relies upon the reputation of the stock, and who often gets deceived. Such stock gives better stock a bad name, and often good stock fails to find a purchaser just because some one has been so deceived.

Albion, W. Va. A. J. LEGG.

SALE OF SHORT HORNS AND POLLED ANGUS CATTLE AT RADFORD, VA.

We invite the attention of our readers to the public sale of Short Horn and Polled Angus Cattle, to be held at the Fair of the Southwest Virginia Agricultural and Live Stock Association at Radford, Va., on October 14, particulars of which will be found in our advertising colums. This sale affords an opportunity for farmers to buy some of the choicest bred stock in the country, which should not be missed.

PICTURES OF LIVE STOCK.

It is our intention to make our Special New Year's issue in January next one of great interest to Live Stock owners, and in order to add to its attractiveness we hope to publish pictures of some of the best stock in the South. To enable us to do this, we ask Live Stock owners to send us photographs of some of their animals for selection and reproduction. These should reach us not later than the end of this month, so that we may have time to have the plates produced. Write name and addrsss of owner on back of the photograph. Later we will ask for information as to breeding, &c., of the animals selected for publication.

The Poultry Yard.

COST OF EGG PRODUCTION.

The Cornell Experiment Station, New York, has conducted a series of co operative experiments in egg production, which have been of so extended a charac ter as to afford some very reliable data of great value to poultry keepers. We abstract the following infor mation from a very exhaustive Bulletin published on the subject:

These experiments were begun in the fall of 1901 and were intended primarily to furnish information as to the cost of the production of eggs during the win ter months and incidentally to give such information as it was possible to secure as to the number of eggs laid per fowl and the effect of various systems of care, feeding and management.

Several poultry men who make more or less of a specialty of producing eggs in the winter and who had expres ed a willingness to undertake the work, were asked to co operate in the experiment, and several pens of the University flock were also used. In all cases possible the owners were asked to include their whole flock, and in several cases this was done. The smallest flock contained 25 fowls, the largest 600, ex clusive of males In all, 2,133 hens and pullets were included in the experiments. Those who participated were C. G. Brainard, Waterville; O. W. Mapes, Mid dletown; C. S. Menges, Yorktown; Mrs. George E. Monroe, Dryden; E. C. Stewart, Ithaca; Henry Van Dreser, Cobleskill, and White and Rice, Yorktown, and to them thanks are due for cordial assistance and painstaking care in keeping the records asked for.

No restrictions were placed upon the owners as to how the fowls were to be fed, cared for or managed. In brief, they were asked to go ahead and produce the greatest possible number of eggs at the lowest possi ble cost, and to report each week the kind and amount of food consumed and the number of eggs produced. From the reports so received the results in the follow ing pages have been compiled. Frequent visits were made to each of the places, and there is every reason to believe that the experiments were carefully con ducted and the reports honestly and accurately made. The responsibility for accuracy must, however, remain with those participating and not with the Experiment Station.

Following is a description of the flocks and the method of feeding each:

Flock A.

This flock was composed entirely of White Leg horns. There were on December 1, 1901, 60 hens hatched in 1899; 340 hens hatched in 1900, and 200 pullets hatched in 1901. With the flock were 22 cocks and cockerels; 21 hens were sold and 21 died during the course of the experiment. The percentage of mor tality was, therefore, 3.5.

This flock was fed three times a day beginning with the mixed grain of corn, wheat, oats and buckwheat which is scattered in the straw or litter. The noon feed consists of a mash fed hot in winter, made up of boiled and mashed vegetables, corn meal, wheat bran, wheat middlings, ground oats and animal meal. After this is eaten up clean they are given a ration of either fresh cut bone or sliced vegetables. At night they are fed all the mixed grain they can eat up clean with a little extra scattered in the litter for the early birds in the morning.

Flock B.

This flock was composed of 150 White Leghorn hens hatched in 1900. Three cockerels were added to the flock on January 1st. There were three hens that died or were so sick as to be removed, thus giving a per centage of mortality of 2. They were fed as follows:

In the early part of winter, oats and peas were the first feed in the morning, and after they were gone whole wheat was substituted. This feed was scattered in the litter on the floor and care taken that they did not have all they wanted, so they were hungry for the mash, which was fed about 10 A. M. This was fed in troughs. The mash was mixed with hot water and fed warm, not hot. It contained all the ground grain and the meat scrap. All of this was fed that the hens would eat up clean and quickly. As soon as the mash was eaten they were fed a very light feed of oats or wheat scattered in the litter. At noon they were fed beets, all they would eat up until the next noon, cut in two lengthwise and laid in the troughs. At night they were fed all the whole corn they would eat scat tered in the litter. The litter was wheat straw, and was changed frequently.

Flock C.

This flock was composed of 150 White Leghorn pul lets hatched in 1901. Three cockerels were added on January 1st, and four pullets died or were removed at various times during the experiment. The percentage of mortality was 2 66. This flock was owned by the same party as Flock B, and the food was all weighed together for both flocks, only the eggs being kept sep arate. The total food consumed was divided pro rata between the flocks according to the number in each.

Flock D.

This flock was composed of 50 White Leghorn hens hatched in 1900 with four cocks; of these, five died at various times during the experiment, giving a mortal ity of 10 per cent. The daily practice as to feeding is given by the owner as follows:

As soon as the hens leave the roost a very light feed of grain, usually wheat, is given. This is followed with green food, then another light feed of grain. By dividing the morning portion into two feeds the fowls are kept active nearly all the forenoon. About 11 o'clock the mash feed is given. This is fed warm and the birds are allowed all they will eat. The after noon feed is largely cracked corn. This is a liberal feed, and is given soon enough to allow the birds to finish before dusk.

Flock E.

This flock contained 150 White Leghorn pullets hatched in 1901 with 12 cockerels; 3 died during the course of the experiment, making a mortality per centage of 2.

Flocks D and E were also owned by the same person, and were fed and cared for alike. The feed was all weighed out together, and the amount consumed divided pro rata between the flocks according to the number in each.

Flock F.

In this flock there were 50 White Leghorn pullets hatched in 1901. With them were three cockerels—two with the flock and one confined in a small pen alternately. Thus giving two days with the flock and one of confinement to each cock. During the experiment 5 died, giving a mortality of 10 per cent.

This flock was fed a mash in the morning, vegetables, and after January 11th, whole grain at noon and whole grain again at 4 P. M. The whole grain was always fed in the litter.

Flock G.

This flock was composed of 25 Brown Leghorn hens about half hatched in 1899 and half in 1900. With the flock were two cockerels. Two hens died, giving a mortality of 8 per cent. This flock was fed and cared for like Flock F, and belonged to the same party.

Flock H.

In this flock there were 25 Black Minorca pullets. There were no males in the flock, and as any of the pullets became indisposed they were removed and their places supplied with others, thus keeping the number constantly good. No record was kept of the number removed, but it was not large.

The fowls were fed three times a day regularly, whole grain in the morning, mash at noon and whole grain at night; green food, including clover, was *not* fed in the mash, but at some time following the grain food, usually in the morning, occasionally in midafter noon.

Flock I.

This flock contained 26 Black Minorca females and two males. Three of the females were pullets, the remainder were partly one year old and partly two year-old hens. One died, giving a mortality of 4 per cent. This flock was owned by the same party as Flocks F and G, and was fed and cared for like them.

Flock J.

On December 1, 1901, this flock contained 458 females and 29 males. They were of various breeds and ages as follows: White Leghorns, 178 hens, 139 pullets and 16 cocks and cockerels; Buff Leghorns, 31 hens, 20 pullets and 2 cocks and cockerels; Black Minorcas, 7 pullets and 1 cockerel; Silver Pencilled Wyandottes, 22 pullets and 4 cockerels; White Wyandottes, 52 females, all pullets but 8 or 9, and 3 cocks and cockerels; Barred Plymouth Rocks, 9 hens and 3 cocks. During the course of the experiment 7 were sold, 23 were killed and 26 died. The percentage of mortality was therefore 5.7.

This flock was fed whole mixed grain in the morning scattered in the litter, whole grain again at noon, and a mash at 3:30 P. M., with fresh ground meat and bone twice a week. No green food or vegetable food was given.

Flock K.

This flock was composed of 96 White Leghorn pullets, hatched in 1901, and one cock, 20 White Wyandotte hens, hatched in 1900, 134 White Wyandotte pullets, hatched in 1901, and 13 cocks and cockerels and 100 cross-bred White Wyandotte—White Leghorn cross-bred hens hatched in 1900. There were 14 sold during the course of the experiment and 4 died. The percentage of mortality was 1.1.

This flock was fed about 7.00 A. M., noon, and 5.00 P. M.; the time of the evening feed varies, being earlier in winter and later in summer. The morning and evening feeds consist of whole grain, viz., wheat, oats and corn mixed. The noon feed consists of a mash composed of wheat bran, wheat middlings, corn meal, ground oats, meat meal and cut clover moistened to a crumbly consistency with skim milk or water, always the former when available. Aside from the clover all green feed is fed about middle of forenoon. Oyster shells always before them.

Flock L.

In this flock were 100 pullets of mixed breeding, White Leghorn very largely predominating, 2 males were with the flock, and during the course of the experiment 5 hens died, thus giving a percentage of mortality of 5.

These fowls were about seven to eight months old at the beginning of the test, and up to within a few days of December 1 had always had wheat and corn (cracked or whole) where they could help themselves whenever they felt like eating, with skimmed milk to drink.

The feeds used, except the whole grain, were mixed together, and given as a morning feed in the form of a mash during December and January; the wheat and buckwheat were fed at noon, by scattering in a litter on the floor, and the whole corn was given at night.

During February and March, while Mapes' Balanced Ration was used, it was simply made into a mash by adding either warm water or warmed skimmed milk, and placed in the troughs either two or three times a day. There seemed to be no difference in results secured, whether the feed was given in two feeds or in three feeds.

Food Cost of One Dozen Eggs.

As has been already stated, the primary object of the experiment was to obtain the food cost of one dozen eggs. This varied very much for the different flocks and in the different periods, ranging from something over five dollars to something less than six cents.

The average cost for the whole time, taking each flock as a unit, was 16¾ cents per dozen. The range being from 8.7 cents (Flock C) to 33.9 cents (Flock I).

The chief factors in determining the cost of one dozen eggs are the cost of the food and the number of eggs laid. In general the latter was the more important factor. That is, those hens that laid the most eggs produced them at the least cost per dozen, regardless of the cost of the ration.

Profit and Loss.

By "profit and loss" is simply meant the relation between the cost of the food consumed and the value of the eggs produced at market rates. No account is made of anything else, and it is therefore not really a discussion of profit and loss, but the term is used for want of a better. The discussion is given to bring out some factors of interest that appear by reason of the varying numbers of eggs laid and the fluctuation in

the market price.

The winter of 1901–2 was remarkable both becanse of the high price of foods and the high price of eggs, the latter rnnning mnch farther toward spring than nsnal. In fact, the highest quotation for the whole winter, namely 36½ cents, was for the week ending February 21.

GENERAL SUMMARY.

Flock.	Breed.	Age.	"Profit" Excess of value of eggs over cost of food per 100 fowls		Food cost of one dozen eggs.		Percentage of eggs laid.		Cost of food consumed per 100 fowls.	
			Amt.	Rank	Amt.	Rank	Amt.	Rank	Amt.	Rank
C	White Leghorn...	pullets	62.10	1	.087	1	36.1	1	31.28	6
K	Mixed.....	mixed	53.10	2	.113	4	34.9	2	39.07	12
E	White Leghorn...	pullets	43.98	3	.11	2	28.6	3	31.30	7
F	" "	mixed	38.77	4	.112	3	26.8	5	30.	3
A	" "	hens	33.62	5	.136	5	26.8	4	36.16	10
B	Black Minorca.....	pullets	20.32	6	.146	6	21.6	7	31.26	5
H	Mixed.....	mixed	17.76	7	.176	9	21.7	6	37.92	11
J	Mixed.....	pullets	15.09	8	.163	7	17.7	9	28.62	1
L	Mixed.....	hens	8.14	9	.176	8	18.1	8	31.71	9
D	White Leghorn...	"	6 88	10	.195	10	16.	10	31.02	4
G	Brown Leghorn...	"	1.80	11	.203	11	14.6	11	29.46	2
I	Black Minorca.....	"	--14.46	12	.339	12	9.3	12	31.32	8

In the seventeen weeks, from December to March 29, in twelve flocks, representing eight owners and 2,100 fowls, the average daily production of eggs was 23.2 per 100 fowls.

During the same time the average food cost of one dozen eggs was 16.3 cents. The flocks that laid most eggs during December and Jannary laid most eggs also in March.

The egg production of pullets (hatched in 1901) was notably in excess of that of hens, particularly in the earlier periods when the price of eggs was highest.

The average cost of feeding 100 hens for the seventeen weeks was $32.43

The average excess of prodnction over cost of food for seventeen weeks was $23.93 per 100 fowls.

The outlook is that poultry will be scarce and high next winter. Farmers sold off a year ago when feed was scarce, and the wet snmmer was unfavorable to young chicks and turkeys.

SKIM MILK FOR POULTRY.

Another way of disposing of the surplus skim milk with profit is to feed it to the poultry. As a feed for poultry, it furnishes the material for making growth in a palatable, easily-digested form. For this reason it is easily valuable as an addition to the grain ration which is liable to lack in the materials to make growth. The Indiana Experiment Station fed two lots of growing chickens exactly alike, except one lot was given all the skim milk it wonld eat, in addition to the grain ration. The lot having grain, but no skim milk, made an average gain of 2.62 ounces per week. The lot receiving skim milk made a gain per week of 4.46 onnces. The conclnsion of this experiment was as follows:

"If skim milk be added to the ration fed yonng chickens, it will increase the consumption of other foods given. The greatest increase in gain was coincident with the period when the greatest amonnt of skim milk was consumed. Skim milk is especially valuable as a food for yonng chickens during the hot, dry weather, and becomes of less importance as the chickens grow older and the weather becomes cooler."

The New York Experiment Station found skim milk a very economical feed for producing growth in chickens. In these experiments the skim milk was valued at 25 cents per hundred pounds, bnt some careful poultry feeders believe 50 cents per hundred not too high a valuation. Skim milk can be fed sweet or after it is qnite thick and sour. It is necessary, in feeding it in any form to poultry, to take great care that the tronghs or utensils in which it is fed be kept clean. Lack of attention to this point is about the only cause of poor resnlts from feeding skim milk as an addition to the grain ration for poultry.—*Missouri Experiment Station Bulletin.*

OLD-FASHIONED METHODS.

While there are many improvements along the line of caring for fowls, some of the older methods are good and cheap. Take lice or bed bugs. What is better, or what living thing can stand a good smoking out of sulphur? Close up the honse, burn five cents' worth of sulphur in an iron pot. If one thinks one smoke is not enough, repeat in two or three days.

An acquaintance of mine bought a honse in which parties moving out said they had fought bed bugs and kept them down, but never were rid of them entirely. This man shnt up the house, gave it too good smokings, using ten cents' worth of sulphur, and has not seen or found a bug in two years.

I am this season using silicate of soda, water glass, to preserve my eggs for winter. If I had known abont it several years ago, I conld have laid in a snpply, as it was used several years ago in the paper mills qnite extensively to make book paper smooth and hard. I shonld be pleased to know if any experiments have been made to know how long this solntion holds good; if the water glass I now have eggs in will not be equally good to put in eggs another year.—MORTON INGALLS.

The Horse.

ELIGIBILITY FOR REGISTRATION.

Will a colt out of a thoroughbred mare by a standard bred horse (both registered), be entitled to registration as a *"standard bred,"* without showing a certain or required amount of speed?

Edgecombe Co., N. C. W. H. M.

THE TROTTING STANDARD.

When an animal meets these requirements and is duly registered, it shall be accepted as a standard-bred trotter:

1. The progeny of a registered standard trotting horse and a registered standard trotting mare.

2. A stallion sired by a registered standard trotting horse, provided his dam and grandam were sired by registered standard trotting horses, and he himself has a trotting record of 2:30 and is the sire of three trotters with records of 2:30, from different mares.

3. A mare whose sire is a registered standard trotting horse, and whose dam and grandam were sired by registered standard trotting horses, provided she herself has a trotting record of 2:30 or is the dam of one trotter with a record of 2:30.

4. A mare sired by a registered standard trotting horse, provided she is the dam of two trotters with records of 2:30.

5. A mare sired by a registered standard trotting horse, provided her first, second and third dams are each sired by a registered standard trotting horse.

The colt not coming within any of these requirements cannot be registered.—ED.

NOTES.

Mr. Henry G. Herring, of the Retirement Stud, near Bridgewater, Rockingham county, Va., writes as follows concerning the farm horses, of which nearly a hundred head are owned on the place:

"The most highly prized, of course, among our trotting bred matrons is the gray mare Erena, 2:19¾, by Alcyone, out of Estelle, dam of Rutledge, 2:27¼, by Clark Chief, 89. By Allerton, 2:09¼, she has thrown Allercyone, 2:17¼, and two other standard performers, while several of her produce by other sires are likely to make records. Her foal of 1902 is a shapely chestnut filly, by Supremacy, 2:29¼, and she was bred back to that son of Bell Boy, 2:19¼. Rose Pompon, by Algernon, son of Allie Wilkes, 2:15, and Tuti Feori, by General Hancock, dam Miss Gate, by Restoration, has a large, handsome brown filly at her side by Supremacy and was bred back. Two other trotting bred foals that we think well of are by Restoration, one of them being out of a mare by Algernon and the other from a daughter of Ali Pasha, the son of Almont, 33. Restoration was bred by Major Foxhall A. Daingerfield, while a resident of this county, and sired by Sam Purdy, out of Nellie Buck, grand dam of Mosul, 2:09¼; Partiality, 2:24¼; Nutwith, 2:29¼, etc. Jessie Nelson was barren this season, but the yearling from her by Restoration is one of the best ever seen on the plantation of any breed. The bay gelding, 3, out of her, by Algernon, took first and second prizes in his class at the Harrisonburg Horse Show in August. Jessie Nelson is a daughter of Africa, 11393, and Sister, by Claytonian Chief, second dam by Alburn, son of Almont. We have eight weanlings and one yearling by Chorister, thoroughbred son of Falsetto, all out of good mares, and we look for them to make high class hunters and jumpers. Our collection of half-breds also includes a number of the get of Sam Corey, thoroughbred son of Long Taw. One of our most highly prized youngsters is by Chorister, dam Loving Bell, by imported Aerolite. We had Chorister here for a couple of seasons, but he is now in the Stud of Dr. James Kerr, Warrenton, Va., and Loving Bell was bred back to him last spring. I omitted to mention that we have a number of the get of Black Squirrel, Montrose, Woodford's Cripple, Mark Diamond, and other saddle stallions, which are highly finished and more beautiful than any other bred I know of."

William A. Walker has sold to a gentleman in North Carolina for use as a road horse the little bay gelding Dr. Williams, 4, by Egwood, 2:16½, dam Bessie Hunter, by Woodburn Hambletonian. This gelding is handsome and acts well enough to develop speed with handling. Dr. Walker has purchased from parties on the Eastern Shore of Virginia a good looking chestnut stallion, five years old, by a son of Onward, dam by Walker Morrill, the sire of Lamp Girl, 2:09, and regards him as the making of a fast horse.

The second annual exhibition of the Richmond Horse Association, which begins on October 14th and continues through the week, promises to be a grand affair, both in point of attendance and the class of exhibits. Many of the most noted show horses in the country will be here, and amidst the glare of electric light some dazzling performances may be witnessed over the tan bark in the spacious arena. The new amphitheatre at Reservoir Park is a splendid affair, and will accommodate at least ten thousand people. It was built especially for the Richmond Horse Show Association and is excelled by no building of the kind in the country. The Richmond Horse Show is doubtless a fixture here, and merits the patronage and support of our best people, and that it will be liberally accorded is not to be doubted.

BROADROCK.

SADDLE HORSES FOR SALE.

Mr. John F. Lewis, proprietor of Lynnwood Stock Farm, Lynnwood, Va., is disposing : Kentucky saddle horses, as will be seen by his advertisement elsewhere in this issue. Mr. Lewis is going more extensively into breeding Percherons, Shorthorns and Berkshires, devoting his entire time to them, hence the sale of his Kentucky saddle horses. The stock offered is first class, and ranges from weanlings to seven-year-olds.

Miscellaneous.

THE FARMER AND EDUCATION.

Editor Southern Planter:

Education is the great modern fad. A great moral force is found to reside in the alphabet, and that A, B, C, &c., in their many and various combinations, are going to effect a total revolution, and to make men not only intelligent but virtuous, and the decalogue is to become obsolete; only educate all at public expense, and the reign of righteousness will have come, and come to stay. At least such is the necessary inference from the claims of the advocates of public schools.

But it is evident, from the recent biennial report of the State Superintendent of Instruction that the people of Virginia do not take this roseate view of the benefits derivable from free schools; on the contrary, it would seem from this report that they care little or nothing at all for education, which is extremely unfortunate, for though education is by no means the panacea, moral and intellectual, for human depravity and stupidity, it is nevertheless true that the uneducated community is seriously handicapped in the race for wealth and influence, and therefore happiness. Education is power, and it is the powerful, and not the saints, that do and that shall inherit the earth. Hence if Virginians wish to inherit a fair portion of the earth they must improve, vastly improve, their public school system, and become educated, or at least much better educated.

The following epitome of the report shows the wretched and disgraceful condition of public education in our State:

Total school population (white)..... 426,054
Total enrollment, only (white)..... 258,222
Total average attendance, only (white)..... 156,472

(that is to say, 64 per cent. of the white population not attending public schools.)

Forty-three per cent. of the white schools illegal, or 2,658 schools out of 6,056; and of the 2,658 schools 1,051 have an average attendance of between 14 and 10 pupils, and 146 have an average attendance of less than 10; Louisa had only 2 legal schools out of 64, Buckingham only 9 out of 59, Dinwiddie only 6 out of 59, Prince Edward only 5 out of 42, etc.; many schools established to accommodate men who have daughters or some other relative they wish appointed to teach the schools, or to satisfy wild and insane tendencies; school-houses unfit for human habitation; school term so short children forget almost as much during the long vacation as they learn during the short school term; teachers in many instances inadequately prepared, etc., etc., and the superintendent thinks "a rigid investigation would show a worse state of affairs in many sections of the State."

Now, who is to blame? It would hardly do to lay the blame upon our last Governor and our last Attorney General, now Governor, and the Superintendent, and the Secretary, who composed the Board of Public Instruction, for they are all honorable men, ambitionless, forgetful of self, and with an eye single to duty. The people, then, are to blame, and appeal, therefore, is made to them to begin with the new school year and see that affairs are conducted with an eye single to the cause of good education, for any increase of efficiency of the school system means benefit to them, and benefit proportionate to the efficiency. Let the people demand that there be no longer any illegal schools; that is, schools under twenty average attendance, because to expect good from smaller schools is like expecting a fire from two sticks; and if possible, see that schools do not fall below twenty-five average attendance, which is the smallest number from which, according to the Superintendent, much good can come. But the people must be earnest and wide awake, and must get behind the State Board, otherwise school affairs will remain in the same disgraceful rut, for political boards, whether school or other are notoriously inefficient, and neglectful if those whom they represent are not constantly behind them.

Probably, however, the people will deny that they are to blame, at least wholly, and will charge that the State Board of Instruction is the chief offender; that the Board has been entrusted with the duty and the power, and that if after the expenditure of $7,914,872 on public schools in four years the schools are in the condition reported by the Superintendent, then the Board has not only been neglectful, but grossly so, and not only neglectful, but equally incompetent too, for the Secretary says in the press, the Board has made "utmost effort to do its duty," and if four years of "utmost effort" results in present school conditions, then truly the Board is not only incompetent, but very incompetent, but between Board and people I shall not attempt to decide. But one thing I will say that the people of the State must, for their own good, be better educated, and that, to be better educated, they must get behind, stimulate and uphold those charged with the administration of school affairs.

Richmond, Va. L. H. Blair.

PULLING AND TOPPING CORN VERSUS CUTTING BY HAND OR MACHINE.

[Article prepared by Mr. W. S. Mott and read at meeting of Farmers Club of Gloucester county, Va.]

While I promised my brother members at our last meeting to give them an article on the comparative costs of handling the corn crop, as above mentioned, I fear I will not be able to deal with it as explicitly as I would like, or I think the subject warrants.

To begin with, it is shown by statistics that something like 90,000,000 tons of corn fodder are annually raised on the 80 to 90 million acres normally planted in this country, which fodder is to a great extent wasted, the enormity of this loss will be emphasized when we realize that the normal hay crop of the country is about 65,000,000 tons, valued at $500,000,000. Why not save our fodder entire and sell the hay, provided it be proven feasible to handle it cheaply enough to make it an object, and it would seem to the writer, after contemplating the value of the hay, almost entirely fed for roughage, it would alone solve the question as to its being worth the expense of saving. But I have wandered in my earnestness to impress upon the mind the value of the crop. As to the cost of handling, I will give the few figures at my command, and will be pleased to have them compared with estimates made by others better informed. I find by inquiry that it is the experience of most local farmers, who have kept any strict accounts of cost of handling in the different ways, to be in favor of cutting up, to this extent, that in tests made in this and adjoining counties, where the wage scale is comparatively the same, it has been demonstrated that to top and pull an acre of corn that will yield four barrels per acre, costs 75 cents and board per hand, paying at the rate of 50 cents per day, and that under same conditions it costs 50 cents and board to cut down and shock one acre, throwing the cost at least 25 cents per acre in favor of cutting down, to say nothing of avoiding the risk of the elements by adopting the latter plan, for it will be seen that the provender cut down was in a sense saved when in shock. Also in a letter received by the writer from Professor Ferguson, Assistant Professor of Agriculture at our Experiment Station at Blacksburg, where he claims repeated tests have been made in the manner of handling the corn crop, he says, in a very summary way, that as far as handling it in the antiquated and time-worn way of topping and pulling, he can give me no figures, as they regard it a too wasteful and by-gone practice to follow in these modern days; but further states that putting the wage scale at what they have to pay day and monthly help, that it costs them 30 cents per acre less to handle the crop with the harvester than by hand, paying 80 cents per day, and $20 per month. They estimate that it costs them on the college farm 70 cents per acre with harvester and about $1 by hand, so it would seem that all tests made thus far are decidedly in favor of cutting down and more forcibly in connection with a machine against hand. But here, before concluding, let the writer express his humble opinion in regard to the harvester versus hand; he has tried both, and is decidedly in favor of the harvester, where the acreage is large enough for the machine to more than earn the interest on the investment; in other words, if it costs, as the Professor says, 70 cents an acre to handle the crop with it, and the machine costs $125, there must be acreage enough for it to cut yearly to earn the interest on same $125, at the local wage scale rate, that it costs to cut an acre by hand, and also enough extra to keep it in repair for the natural life of the machine, otherwise he thinks he had better cut by hand, provided he can command labor at time needed, the last mentioned having been a strong factor in inducing the writer to buy a harvester. It made him independent and able to harvest his crop at proper time, and at nearly one-half the cost of hand labor. For instance, he cut down in 1½ days 15 acres of corn that averaged eight barrels, and two monthly hands shocked and tied tops of same in two days; now, allowing at the rate of day labor, the comparison will be seen as follows: three horses and driver, $3.38; two hands, $3.00; 30 lbs. twine at 11 cents, $3.30; total, $9.68; cost per acre, 64½ cents, against one dollar, which it always cost me by hand, with one exception, which I find from some old notes made at the time, of lumping the crop that season with parties at a price that brought it down to 71 cents, which, at this low price hand work, is still beaten by the harvester, not to mention the fact that when cut by hand it then has to be bound after shucking, so as to handle to advantage, making another item in favor of the machine.

There are many other points of interest in the matter of the corn and fodder crop, its comparative feeding value with other long food, etc., which I will not attempt, but leave for another time to some of my more competent confreres.

Gloucester Co., Va. W. S. Mott.

WOODS AND MALARIAL DISEASES.

Editor Southern Planter:

A good cause has frequently been injured for a time by the impetuous ardor of its advocates. There are facts about forestry, and the necessity of preserving a certain proportion of woodland where it already exists for fuel and timber, and planting out groves in destitute places, but the main fact has been buried out of sight under a pile of doubtful matter by enthusiastic writers until the subject is not likely to receive

the attention which its importance demands. Even Lieut. M. F. Maury, one of the most learned and astute of modern scientists, had the weakness to assert that a few rows of Sunflowers, planted between the Washington Observatory and the marshy banks of the Potomac, had saved the inmates of that institution from intermittent fevers to which they had been formerly liable.

The Hon. George P. Marsh, in his book, "The Earth as Modified by Human Action," after discussing the subject cautiously, throws the weight of his influence in favor of Maury's idea, that a few rows of trees, or even sunflowers, would protect a farm-house, or a village, against the malarious influence of a stagnant, putrid swamp, where vegetable decomposition was rapidly going on!

The American Horticultural Society, in 1889, passed a resolution embodying the same principle in a different shape—that the removal of the native forests tends to cause, or increase, malarious diseases.

Now, with all respect for the opinions of these learned men and this august society, I would say the truth seems to be exactly the reverse, and that malarial districts of great extent have been rendered healthful and salubrious by *cutting down* the timber, clearing up the land, letting in the sunlight, and the wind to dry up the stagnant water, purify the air, and destroy the miasmatic germs of malarious diseases.

All Northern Pennsylvania, when first settled by white men, was subject to fever and ague, which attacked every family, and each member of the family. The strong men shook as well as the weak and the young. Its visits from house to house were not seldom, but frequent, and when once it came it was never in a hurry to go. It was the prevailing epidemic and remained so until much of the country was cleared of its woods and under cultivation, and then it disappeared, except perhaps in the neighborhood of some pond of stagnant water full of decaying logs and leaves. So entirely has fever and ague left this part of the country it would be hard to find a resident under fifty years of age who had ever seen a case unless it was imported, or saw it when abroad.

Mr. J. A. Foote, writing to the *Rural New Yorker*, says: "I speak as a resident of Indiana for fifty-six years, and assert that I believe there is a vast improvement in the health of the people, and that the mortality from malarious diseases now is not one fourth what it was forty or fifty years ago in proportion to population.

"An old physician tells me that there is no comparison to be made between the past and the present in respect to the general health, and that as to malarial diseases there is not one case now to ten in those days when there was twice or three times the extent of forest there is now."

About the year 1846, after a hot dry summer, fever and ague broke out among the people living near a large mill pond in Herrick township, Bradford county, Pennsylvania. Nearly every person for miles around was attacked by the disease. The water in the mill-pond (which had nearly become dry) was stagnant and offensive to the smell. There were woods on nearly all sides of the pond, but the trees did not prevent the malaria as Lieut. Maury believed they would After the pond was drained the fever abated, and there have been no cases since. There is no doubt that the shade of woods is favorable for preserving the rain and snow water from evaporation, and causes it to sink into the ground for the benefit of springs, wells, and mill streams. Creeks which once supplied an abundance of water for mills at all seasons, after clearing off most of the woods have become nearly dry and the mills are abandoned.

There is no doubt that a forest will break the force of the fierce winter blasts and make it more comfortable for men and animals who live in its midst or on the lee side of it, and that fruit trees will bear better and oftener for its protection. There is no question about the necessity of preserving a certain proportion of woods for growing timber, without which it is hard to see how the business of civilized life could be carried on; but when people talk about the removal of the forest causing malarial diseases, irregularity and uncertainty of the rain fall, extremes of drouth and flood, extremes of heat and cold, and diminished humidity of the atmosphere, they are going beyond the bounds of truth and reason, and are likely to injure the cause of forestry which they are endeavoring to advocate.

Malaria has mostly disappeared in the few districts of the eastern counties of England and in most parts of Holland, France, Italy, and Algiers by drainage. The certain prevention against malaria is not in planting trees or sunflowers, but in thorough drainage of the marshes and the destruction of garbage and decaying substances which generate the germs.

J. W. INGHAM.

MEETING OF THE MUTUAL FARMER'S CLUB OF FREDERICK CO., VA.

The Mutual Farmer's Club met at "Lost Stream," the residence of John L. Bond, August 30th, 1902. The meeting was called to order by President Rees at 10:45. The minutes of last meeting were read and approved.

Carroll C. Clevenger, John L. Bond, and Edward L. Just, were appointed to select and refer questions for the next meeting. A motion was carried that the reading of the "Advertiser" come after the referred questions.

H. S. Lupton, N. W. Solenberger, and J. W. Bran-

son, were appointed a committee to prepare resolutions upon the death of Samuel L. Pidgeon.

Under the head of referred questions, D. W. Branson answered the following: "Tell us how to make the best butter." Mr. Branson read an essay in which he outlined a method that had been used by him very satisfactorily for a number of years. He especially emphasized the importance of keeping everything in connection with the dairy scrupulously clean. After some discussion on butter making, Mr. Boyer was called upon to answer the question, "The farmer's interest in good seed." Mr. Boyer thought that the farmer should be very careful to sow good seed, and if that of his own raising was not suitable, he should spare no effort to purchase good seed elsewhere.

The question referred to C. M. Solenberger was continued till next meeting. The meeting adjourned a few minutes before noon to enable the committees appointed to perform their work ready for the afternoon session.

The after dinner stroll was taken through the apple orchard, where an abundance of fine apples were seen.

Upon resuming business, Mr. Solenberger read the "Advertiser," after which the committee appointed to prepare resolutions produced the following:

Whereas our Heavenly Father, in the dispensation of His providence, has seen fit to remove from our midst one of our much esteemed members, Samuel L. Pidgeon; and

Whereas the Mutual Farmer's Club realizes that it has sustained a great loss in his removal, not only be cause of his rare and commendable qualities, but also because of his connection with the early history of the Club; therefore, be it

Resolved, That we, the Mutual Farmer's Club, extend our heartfelt sympathy to the members of his family in their sore bereavement; and be it further

Resolved, That these resolutions be published, and a copy sent by the Secretary to the afflicted family.

H. S. LUPTON,
N. W. SOLENBERGER,
D. W. BRANSON,
Committee.

Under the head of New Business, Senator Lupton suggested the feasibility of a circulating library, which resulted in the following committee being appointed without instructions to investigate the matter: S. L. Lupton, L. M. Boyer, and C. C. Clevenger.

The committee appointed to select and refer questions for next meeting reported as follows:

(1) Considering the price of feed and the shortness of crops, would it be advisable to feed to stock or sell grain and stock. Referred to Daniel T. Flood.

(2) Considering the labor attached to the making of butter and the price usually obtained for the product, would it not be better to allow calves to do the milking and sell for veal? Referred to Lewis Pidgeon.

(3) Give your opinion on selecting, planting, and growing fruit trees. Referred to S. L. Lupton.

Under the head of Miscellaneous Business, Dr. Brown read a tribute to Samuel L. Pidgeon. A motion was carried that the paper be offered for publication. Mr. P. H. Gold, a visitor, gave a short account of his experience with Soja beans as a forage crop.

Nothing further claiming attention, an invitation was accepted to meet at the residence of S. L. Lupton, September 27th, 1902.

JOSIAH L. REES, *President.*
W. E. BRANSON, *Secretary.*

Dr. Brown's Tribute to the Late S. L. Pidgeon.

Mr. President and Gentlemen of the Mutual Farmer's Club:

Since our last meeting, another honored gray head has bowed to the conqueror of us all. It is with sympathetic feelings of grief that we now present this brief tribute of respect to the memory of our honored and departed friend. In him our Heavenly Father in his infinite wisdom, has taken from our midst another charter member of our Club. When we take a retrospective view of his long and useful life, we find his reputation without reproach. As he lived, so he died, a follower and devout believer in the religion of Christ. One of the principal characteristics of his life was liberality in judging men and their actions, with charity to all—ever ready to place the best construction on words and actions of men, always disposed to lend a helping hand to promote the welfare and good of others. Truth and manly sweetness dwelling on his tongue, a quiet, unassuming deportment in his social intercourse, made admiring friends of all who had the pleasure of his acquaintance. Blessed by his Creator with a clear mind and warm heart for the right; a true and loyal friend, and in the Club ever ready to do his whole duty, an indefatigable worker for the advancement of its varied interests.

The Mutual Farmer's Club deeply mourns the loss of so valuable a member, and to the family extend their heartfelt sympathy in this their great affliction. We have the consolation of knowing that so long as memory lasts his good name will be greatly cherished and deeply enshrined in the hearts of his family, relatives and friends.

"Through shining paths where an Almighty Hand,
Where love, hope, faith and joy have spanned
The gulf between, till full of new might,
He turns with sweeter life and warmer glow,
And holds his hands to those that climb below."
Ah, well, not long till we shall be
A silent one of the company.

F. YARDLEY BROWN.

THE

Southern Planter

PUBLISHED BY

THE SOUTHERN PLANTER PUBLISHING COMP'Y,

RICHMOND, VA.

ISSUED ON 1ST OF EACH MONTH.

J. F. JACKSON,
Editor and General Manager.

B. MORGAN SHEPHERD,
BUSINESS MANAGER.

TERMS FOR ADVERTISING.

Rate card furnished on application.

TERMS OF SUBSCRIPTION.

The Southern Planter is mailed to subscribers in the United States and Canada at 50c. per annum; all foreign countries and the City of Richmond, 75c.

Remittances should be made direct to this office, either by Registered Letter or Money Order, which will be at our risk. When made otherwise we cannot be responsible.

Always give the Name of the Post Office to which your paper is sent. Your name cannot be found on our books unless this is done.

Subscribers failing to receive their paper promptly and regularly, will confer a favor by reporting the fact at once.

The Date on your Label shows to what time your subscription is paid.

We invite Farmers to write us on any agricultural topic. We are always pleased to receive practical articles. Criticism of Articles, Suggestions How to Improve THE PLANTER, Descriptions of New Grains, Roots, or Vegetables not generally known, Particulars of Experiments Tried, or Improved Methods of Cultivation are each and all welcome. Contributions sent us must not be furnished other papers until after they have appeared in our columns. Rejected matter will be returned on receipt of postage.

No anonymous communications or enquiries will receive attention.

Address— THE SOUTHERN PLANTER,
RICHMOND, VA.

Detail Index to Enquirer's Column.

PUBLISHER'S NOTES.

A Liberal Offer.

We will send THE PLANTER from October, 1902, to January, 1904, to any one who is not now a subscriber to the journal who will send us fifty cents, either by money order, in coin, or in postage stamps. We make this offer in order that we may lighten the work of our Subscription Department in the months of December and January, when thousands of new subscribers and renewals usually crowd upon us and overwhelm us with work and result in much delay to subscribers, and not a few mistakes, however careful we may be. This offer makes the price of the journal only about three-fourths of a cent per week. A subscriber writes us, in September, that one issue of it is worth $10 to any farmer. We would ask our old subscribers to bring this offer to the notice of their friends and neighbors, and urge them to send in their subscriptions; or, better still, obtain the money and send it along with their own renewal. We are making arrangements for the issue of a specially attractive number for January, 1903, which alone will be worth much more to every farmer than the cost of the whole year's subscription.

Binders for the Planter.

We have received a new supply of binders for the *Planter*, and shall be glad to send one holding the numbers for a year to any one sending us 25 cents in stamps or coin.

THE SUPERIOR DISC HARROW.

The Superior Drill Company of Springfield, Ohio, is advertising its splendid Disc Harrow in another column. This harrow is something of a novelty in that it is mounted on wheels. The advantage of this arrangement is at once apparent, as it does not have to be hauled around in a wagon, but rides on its own wheels. It is also easy to work in the fields. All you have to do is to hitch up the team, throw over the lever, and put your boy on it, and he will do the work as well as a man. Look up the advertisement.

MAGAZINES.

The Century for October has for its frontispiece the full-length portrait of Andrew Carnegie, recently painted by John W. Alexander, and Mr. Carnegie is the subject of an appreciation by Hamilton W. Mabie.

A subject of wide and growing interest which occupies the leading place in the number is "The New Photography." Mr. Alexander Black, in a paper entitled "The Artist and the Camera," presents an imaginary discussion of the question whether photography is an art, both sides being fully represented, and Alfred Steiglitz, founder of the Society of the Photo-Secessionists, writes of "Modern Pictorial Photography," to the progress of which this society has largely contributed. In proof of this The Century presents seven of the most notable artistic examples taken from the Society's exhibition of 1902.

Two papers are devoted to the subject—novel in magazine literature—of John Alexander Dowie, Dr. James M. Buckley, well known for his study of similar subjects, writing under the title of "Dowie, Analyzed and Classified," and John Swain contributing a descriptive study at first hand of "the modern Elijah," entitled "The Prophet and his Profits." Both are illustrated by drawings by F. De Forrest Schook, made at Zion City, Ill., the present seat of the Dowieites. Mr. Swain's article bears on its face the evidence of authenticity, but, at the same time, it presents, with much anecdote and incident, his own point of view of Dowie's character and pretensions.

The other illustrated articles cover a wide range. A picturesque and novel subject is treated in a paper by Roger Riordan, entitled "The Quest for Cages," in the Collectors Series, with numerous pictures by Alfred Brennan of bird cages of various nations. The Century continues to minister to the general interest in New York this month by two articles on the Subway—one of a picturesque character by Arthur Ruhl, illustrated by Lungren and Vanderhoof, and the other on "Difficult Engineering in the Subway," by Frank W. Skinner of the "Engineering Record."

Sylvester Baxter continues his series on Civic Improvement by a paper on "Art in Public Works," in which he considers the esthetic possibilities in aqueducts, water-towers, power-houses, reservoirs and bridges, and the pictures by Guerin present successful examples in illustration of the author's argument.

In The Century's "Year of American Humor" there are two diverting stories, "On the Links," a tale of love and golf, by George Hibbard, and "John Henry's Lobster Trust," by Walter Leon Sawyer, both illustrated, and an article by Katherine A. Chandler on "The Sense of Humor in Children," with specifications.

The October-December number of the Forum which, it will be remembered, is now published quarterly, contains articles by specialists, reviewing the progress of the last three months in various departments of thought and activity. Henry Litchfield West deals with "American Politics," devoting special attention to the President's speeches and the Congressional campaign, while A. Maurice Low treats of "Foreign Affairs," including the changes in the British administration, the renewal of the Triple Alliance, and the continued unsettlement in China. A. D. Noyes writes on "Finance." Henry Harrison Suplee on "Applied Science," Frank Jewett Mather, Jr., on "Literature," and Henry T. Finck on "Music." Russell Sturgis' paper on "Sculpture" is an exhaustive analysis of recent tendencies in this form of art as practiced in America. The subject of "Education" is divided between Ossian H. Lang and Dr. J. M. Rice, the former discussing the general outlook, and the latter giving an account of some special investigations into the teaching of arithmetic. The concluding articles in this number are a paper on "The Political Situation in Russia," by Isaac A. Hourwich, and a criticism of Herbert Paul's book on Matthew Arnold, by Prof. W. P. Trent.

The October St. Nicholas presents "Slushy the Roustabout," by Howard E. Ames, as the long story. It is the fascinating record of a real boy who served in the United States Navy. In this same number appears a couple of capital articles on home amusements and an unusually long list of good stories and pictures.

The long story appearing in the October St. Nicholas is the true story of a poor lad in the United States Navy. "Slushy the Roustabout," by Howard E. Ames, U. S. N., got his name from his unkempt appearance and hang-dog manner. The author, who is a surgeon, found that the boy was suffering from a disease that rendered him temporarily unfit for work. He put "Slushy" on the sick list, cured him, and made him his protégé. The story has to do with the boy's really remarkable career; and now, year's later, he called on his benefactor, in frock coat and high hat, the picture of a well groomed man.

Every lad, with an ounce of ambition, will be interested in "Slushy," and all the more because his is the record of a real career.

Lippincott's Magazine for October con-

tains a complete novel and many short stories. The novel, by Mary Moss, is entitled "Fruit Out of Season." It is fresh, clever and witty, and the reader is bound to ask himself, "Should Virginia Dryden, of thirty, have acted differently?" or "Did Jack McCall, of twenty one, make a fool of himself?" Some of us have known similar cases, and can draw inferences. Miss Moss has a happy way of plunging into the story she has to tell at the first page, without a tiresome introduction, and the interest thus caught is held unbroken to the last word.

Marie Van Vorst's stories run in the order of good, better, best. This, her latest, called "The Primrose Way," in the October Lippincott, excels anything she has yet published, which is praise indeed. The quaint humor of Josiah Allen's Wife is abundantly demonstrated in her tale called "Dr. Marsh's Fortunate Call." It is both pathetic and amusing, dealing with the sex which is "weak and easily flattered." A sharp contrast is presented in the story contributed by Cy Warman, entitled "The Persecution of a Pup," which is a powerful animal story. Alfred Stoddart's hunting tales have won him many friends. This, entitled "The Witch of the Hunt," is about a daring girl, a race, and what came of it, "Passing the Love of Woman," by Cryus Townsend Brady, is the story of a temptation such as seldom falls to man's lot. It is a fine example of Mr. Brady's master-hand. Clinton Dangerfield's "The Master of Fate," is distinctly original in scheme. The sole survivor of a shipwreck, cast upon an island, finds a dozen friends who had met the same fate one year before. Their touching eagerness for news of family and friends at home makes him reluctant to pass along bald facts, and he is assailed with a desire to tell each suppliant what he would like to hear rather than ugly truths.

From no other periodical can so sane and accurate a view of current politics be gained as from the Review of Reviews. The October number of that publication is noteworthy for its very clear and full editorial exposition of the issues involved in this fall's campaign, the effect of Speaker Henderson's retirement, the meaning of the tariff agitation in the Middle West, and President Roosevelt's attitude on the trust question. The President's remarkable speaking tours through New England, in the South, and to the West as far as Indianapolis—where an abrupt ending was necessitated by the abscess on the President's leg—are described and pictured for the reader more comprehensively than in most daily or weekly journals. In fact, this record of the year's campaigning up to date is something unique in our periodical literature. It includes a survey of State political activities, East, West, North, and South. Neither Josiah Quincy's conservative leadership of the Massachusetts Democrats nor Tom Johnson's capture of the Ohio Democratic organization, on be half of the pro-Bryan radicals, is ignored. The editor of the Review has added an other chapter to the unequaled "History of Our Own Times" that he is writing month by month.

THE TIME FOR PAINTING.

The best time for painting is pre-eminently during the fall months, after the weather has become settled. Dampness, either on the surface to be painted or in the atmosphere surrounding it, is fatal to durable work, no matter what kind of paint be used. To obtain the best results from painting, the hygrometer, which tells the proportion of moisture in the air, would be quite as important as the barometer.

However, without getting the matter down to so scientific a basis as that involves, it is quite possible to avoid moist, "clammy" weather and pick out clear, dry days for doing the work. Such days are at no season more frequent than during the fall, after the "equinoctial storm" has cleared the sky of the surplus moisture left over from the reign of "general humidity."

This point is insisted upon here because the kind of paint recommended in these articles—zinc white combinations—is as impervious to moisture from one side as from the other, consequently moisture can be sealed into the surface behind it as well as kept out from in front of it. Take this as an axiom—a paint that will not blister or crack in time when applied to a moist surface will not protect any surface from atmospheric moisture. Hence we see the great importance of painting only on dry surfaces and in dry weather.

There are paints which can be used on moist surfaces or in moist weather, but the reason is that they allow the imprisoned moisture to escape through them, and paints which permit the escape of moisture will also permit its entrance.

STANTON DUDLEY.

Perhaps the most interesting character in the story of the American Revolution is Alexander Hamilton. A study of the man, his characteristics and guiding motives, was prepared by John Fiske before his death, and appears as the leading article in the October Cosmopolitan. No paper could illustrate more clearly the difficulties through which the American Union had to pass on its way to the excellence already attained and the perfection which it must ultimately reach.

DORSETS AT THE GROVE STOCK FARM.

In addition to Holstein-Friesian cattle and Berkshire hogs, Mr. T. O. Sandy, of Burkeville, Va., will hereafter breed Dorset sheep. He has just brought in from the North a car-load of splendid individuals, some imported and others by and out of imported animals. Look up his advertisement elsewhere in this issue.

One of the old reliable manufacturing institutions at Albany, New York, is the firm of P. K. Dederick's Sons, manufacturers of hay baling presses. Ever since 1860 their shops have been pointed out as one of the permanent industries of the city. They have been enlarged from time to time to keep pace with the demand for their celebrated presses. We believe that the Dederick's are the original hay press makers, but it cannot be said that the Dederick presses are so widely known merely because they have been longest in use. Their superior worth has always distinguished them. The firm has always been alert to catch and appropriate new ideas, making improvements and seeking not only to maintain the name of being the original and leading hay press makers, but actually to make the best presses at all times on the market. Their efforts are each year rewarded with most pronounced success. The Dederick line of presses which comprehends many styles are prime favorites everywhere. Our illustration shows the Dederick,

a press which embodies all the latest improved devices and is singled out by balers as being everything a hay press should be. Any one interested in the hay pressing business should not think of placing an order until he has sent for the Dederick catalogue and acquainted himself with the various presses in the Dederick line. The Dederick advertising is to be found elsewhere in this paper. Look it up and write for the catalogue, which is mailed free.

The California method of combating an early or late frost is effected by heating the lower stratum of air, thus diminishing radiation. Iron pots, each of which has a cover, and which are somewhat like those for burning charcoal, are used. Thirty-five are required for an acre, and this number will raise the temperature near the surface eight or ten degrees. Seventeen and one-half gallons of crude oil are required. With each gallon of oil one-fifth of a pound of cotton waste, costing about eight cents a pound, is used. Each pot usually burns steadily for about six hours. An electrical thermometer is arranged to alarm the foreman as soon as the temperature falls to thirty-four degrees Fahrenheit, when the fires are at once lighted.

REPORTS.

U. S. Department of Agriculture, Washington, D. C. Bureau of Plant Industry. Bulletin 20. Manufacture of Semolina and Maccaroni.

Section of Foreign Markets. Bulletin 26. Agricultural Imports of the United Kingdom, 1896–1900.

Section of Foreign Markets. Bulletin 28. Sources of the Agricultural Imports of the United States, 1897–1901.

Farmers' Bulletin 160. Game Laws for 1902.

Biological Survey Circular 38. Interstate Commerce in Birds and Game.

Crop Reporter, September 1902.

Cornell Experiment Station, Ithaca, N. Y. Bulletin 204. Co-operative Experiments on the Cost of Egg Production.

Georgia Experiment Station, Experiment, Ga. Bulletin 57. Cantaloupe Culture in Georgia.

Illinois Experiment Station, Urbana, Ill. Bulletin 76. Alfalfa on Illinois Soils.

Michigan Experiment Station, Agricultural College, Mich. Bulletin 201. Aeration of Milk.

Bulletin 202. Fertilizer Analyses.

Missouri Experiment Station, Columbia, Mo. Bulletin 52. Influence of Height of Wheel on the Draft of Farm Wagons.

Bulletin 53. Breeding Experiments with Sheep.

Bulletin 57. Raising Calves with Skim Milk.

New Mexico Experiment Station, Mesilla Park, N. M. Bulletin 41. Spraying Orchards for the Coddling Moth.

Virginia (Hampton Institute) Agricultural Leaflet, No. 1. Notes on Plants. No. 2. Notes on Soils. No. 3. Notes on Farm Manures.

Virginia Weather Service, Richmond, Va. Report for August, 1902.

Wyoming Experiment Station, Laramie, Wyo. Bulletin 54. The Shrubs of Wyoming.

Agricultural News, Barbados, West Indies. August 16 and August 30, 1902.

BOOKS.

Poultry Appliances and Handicraft. By G. B. Fiske. Illustrated. 5 x 7 inches, 130 pages, cloth. Orange Judd Company, price postpaid, 50 cents.

This neat booklet is intended to facilitate and ease the management of poultry on a large or small scale, and this in the most economical manner. By concise descriptions and clear illustrations, it presents many styles and kinds of the best contrivances in the line of nests, roosts, windows, doors, ventilators, home-made incubators, and brooders, traps for vermin, feeding appliances, fountains and water system, food machines, heating apparatus, besides scores of miscellaneous labor saving devices. No one who keeps or intends to keep poultry can peruse these pages without advantage.

The Southwestern Poland-China Record, Vol. 1, 1901. Published by the

Southwestern Poland-China Record Association, Gadsden, Tenn. This is a very praiseworthy attempt to do for Southern Poland China hog-breeders what is done for Western and Northern breeders by the old established Registries, viz., provide a reliable local record and regis ry. H. P. Wilson, of Gadsden, Tenn., is secretary.

Catalogue of Registered Jersey Cattle for public sale at Clarksville, Ohio, October 4, 1902. John A. and Frank Kelley, Clarksville, Ohio.

Wertz's Nursery Catalogue. James G. Wertz, Salem, Va.

The Royal Orchard, Afton, Va Circular to Horticulturists and Apple-Growers as to the making of cider.

The Bible Society of Virginia. Eighteenth Annual Report for the year ending March, 1902. Office 1001, East Main street, Richmond, Va.

CENSUS BULLETINS.

239. Manufactures. Typewriters.
240. Manufactures. Sewing Machines.
241. Manufactures. Carriages and Wagons.
242. Patents in Relation to Manufactures.
243. Manufactures. Locomotives.

HEEBNER'S POWER AND DRY FODDER CUTTERS.

When feeders are considering the re sources at their command with which to get through the winter, they should not overlook the virtue which lies wrapped up in the common corn fodder of which they have such an abundance. Time was when the corn stalk went to the manure pile, or was gathe ed up and burned in the spring. That was before practical feeders and the Experiment Stations had demonstrated its great value, and while the farmer was without adequate machinery to prepare it for the animal's use. Knowing now the high percentage of sustaining power in the dry stalk, and with such an outfit as the Heebner Dry Fodder and Ensilage Cutter, advertised in our journal, to reduce it to palatable condition, there is no longer any excuse for this waste. All kinds of provender-eating stock, especially cattle, greatly relish it, and are not only sustained, but thrive upon it. The Heebner Cutters are most excellently adapted to its preparation. It is not only a cutting process, but the machines crush and shred as well. One has only to see cattle eating it to be convinced both of the worth of the food and the thoroughness of its preparation. Heebner's cutters and the convenient tread-powers they make for their economical operation, have done much to make dry fodder feeding profitable and popular. They should have a still wider—in fact, a very general use—among farmers and feeders wherever the corn crop is a factor. If the advertisement has escaped your notice, look it up. Write to the Company for their catalogue, and see whether fodder feeding, prepared as the Heebner machinery prepares it, does not suggest something of value to you. In writing, kindly mention our journal.

WITH THE ADVERTISERS.

Miniborya Farm wants 20 Jersey heifers. Who can supply them? See advertisement.

"Farmer" is advertising to rent or buy a farm. Good chance for some one.

The Stratton Manufacturing Company is advertising the "Dandy" Bone Cutter. Useful machine for little money.

Half Shorthorn and half Red Poll bull calf offered for sale by W. S. Southall, Elkton, Va.

Berkshire Pigs, 8 weeks old, "bred in the purple," is the way the Duntreath Farms advertisement reads.

Forest Home Farm is advertising some splendid A. J. C. C. Jerseys and thoroughbred Berkshires of the Hood and Biltmore Farms strains. A new advertiser with us, and we bespeak for them the liberal patronage of our readers.

Wertz Nursery makes its usual Fall Announcement in this issue. Healthy and reliable stock is guaranteed.

The Lehman Heater, advertised elsewhere in this issue, will make driving pleasant and comfortable this winter if you will take the precaution to provide yourself with one. Look up the advertisement.

The Marvin-Smith Company, of Chicago, are with us again this season. Many of our readers have dealt with them, but to those who have not we would say, get their catalogue and prices before purchasing any implement elsewhere.

The Hercules Stump Puller is offered our readers in another column.

A Berkshire Boar is wanted by Mr. H T. Pancoast, of Purcellville, Va.

Yager's Liniment—for man and beast—is advertised in another column. It is for sale by all general stores and druggists.

F. C. Louhoff desires to dispose of a fine Poland China Boar to prevent inbreeding.

Gleason's Horse and Cattle Powder is guaranteed by its makers to keep stock in perfect condition if used according to directions. Look up the advertisement.

Hollybrook Farm is advertising some nice Berkshire pigs of both sexes.

Beagle Pups can be had of Dr. C. T. Smith, Jr., of Croxton, Va.

To those inquiring for Angora Goats, we refer to the advertisements of Jos. M. Neil, Jeremy Improvement Company, and E. W. Cole & Co., all in this number. There is also a brief bit of information regarding the Angora in another column.

Mr. W. P. Laird wishes to purchase 200 White Plymouth Rock chickens for breeding purposes. Refer to his advertisement.

W. C. W. is advertising for a car-load of calves. How many can you sell him?

Groceries and Feed at lowest possible prices at D. O'Sullivan's. He says that $3 cash at his store is equivalent to $5 spent elsewhere.

DeLOACH LOSES BUT LITTLE TIME.

WITHIN TWO WEEKS AFTER FIRE DESTROYS ENTIRE PLANT WHISTLE BLOWS AGAIN.

With a commendable energy, inspired by a book full of orders, the DeLoach Mill Manufacturing Company of Atlanta, Ga., have lost but little time by the fire that destroyed their entire plant. Within two weeks to the day after the fire the whistle blew in the foundry and the manufacture of saw-mills was begun with but little loss in daily capacity. The fire occurred on Friday, June 13, and to the superstitious that might have meant a bad omen, but to the DeLoach men it meant a little inconvenience, some machinery orders by telegraph, and a plant of increased capacity.

The day after the fire work was begun on a temporary shed 60 x 400 feet, and as fast as the wood-working machines and machine shop tools ordered by wire began to arrive they were put in place. Within two or three days after the fire the Company had completed arrangements with three machine shops in the city that would enable them to put all their men to work. They employ over two hundred men. Though the fire came in the dull season, they had about seventy-five per cent, more business on hand than ever before in the history of the Company, and in July they shipped about as much as they had ever shipped in the same month.

Their new plant will be another feather in the cap of Atlanta. Their capacity will be increased about one hundred per cent. Every tool placed in the new plant will be the most modern that can be secured, and electrically driven. The main building will be 400 x 80, and around it will be grouped a power-house 34 x 137, a pattern storage-room 30 x 70, office building 31 x 80.

The new plant will have a capacity of 200 saw mills a month, besides the products of the departments manufacturing planers, shingle-mills, lath-mills, edgers, trimmers, grinding-mills, and water-wheels.

Who said the South was slow?—*The Southern Lumberman.*

INTERNATIONAL LIVE STOCK EXPOSITION.

UNION STOCK YARDS, CHICAGO.

November 29th to December 6th, 1902.

At the Exposition this year the colleges will be more fully represented by their students. The stock judging contests promise to be more lively than any yet held. The management of the Exposition will make this a more attractive feature than it has been heretofore. In addition to the $750 Spoor trophy, the beautiful "Bonheur" modeled bull, the Breeders' Gazette and John Clay, Jr., of Chicago, offer a special purse of $250 each for the students' contests. Nothing can encourage the young men more than these contests when friendly rivalry of the true sportsman character prevails. As an educational feature, this contest possibly has no equal in regular school work.

A FREE TRIAL PROPOSITION.

We desire to call our readers' attention to the free trial offer made in another column by the Stratton Manufacturing Company, Erie, Pa., on the Dandy Bone Cutter. This standard machine has been before the public for nine years, and many of our subscribers have used it with perfect satisfaction; such as have not, have now the opportunity of trying one for fifteen days before they pay for it. The Company requires no deposit in advance. All you have to do is to try the Dandy, and then decide whether you want to keep it or not. We need not urge upon poultry-raisers the importance of cut green bone as a poultry food; it has the advantage of costing almost nothing, and certainly it is one of the greatest egg producers in the world. It will pay you to "get a Dandy."

Of what trade is the sun?—He is a tanner.

ABOUT ANGORAS.

Probably the average price paid for mohair during the past season was 25 cents per pound. The product of the lower crosses, which contain a large percentage of kemp, brings a low price (10 or 15 cents), while there were some fleeces that brought 40 cents. There is not a large quantity of this latter quality of hair produced in this country, for the reason that the breeders have not given the matter proper attention. There is a great demand for the better hair, while the lower grades, which enter into the manufacture of carpets and horse blankets, find direct competition in wool.

Prices for good does range from $10 to $25 at this time. One breeder in the East sold fifty head at $25 each. Twenty-four sold at auction at Kansas City in October last year at $17 each. Bucks, like the males of all domestic animals, bring varying prices, which have ranged during the past year from $20 for a fairly good kid to $100 for animals two or three years old. It is not a rare occurrence, however, for a buck to sell for several hundred dollars. For instance, the sweepstakes prize buck at the Kansas City show sold for $1,050, and the buck who took second prize in that contest brought $150.

It is impossible to go into the Southwest, the principal source of present supply, and purchase goats at lower figures than those named, but many of them are not high grades. Those which are high grade become expensive when expressage or freight is paid to distant points.

BURNING OUR PURSE-STRING AT BOTH ENDS.

THIS IS TRUE OF THE ENTIRE SOUTH.

The little town of Pawtucket, in Rhode Island, has one hundred and thirty-one inventors—one hundred and thirty-one men and boys who have patented that number of useful articles and appliances, says the *North Mississippi Herald.*

Rhode Island has a compulsory school law. A man is compelled by that law to educate his children.

In raw material and natural resources, Rhode Island is poor beyond compare with Mississippi. Yet with her manner of education her people have turned to manufacture and invention, and that section is now the richest spot on the continent. Mississippi spends quite as much of her comparative wealth on education as Rhode Island, yet I doubt whether there are one hundred and thirty-one inventors in the whole State. Every town and city in the State, however, has an over-supply of brainy young fellows who have been crowded into the professions—law, dentistry, the ministry, etc. Only a very small per cent. of these have their heads above the level. Many of them will live and die failures. It is not their fault. They have the brains, the energy, the muscle and the determination to do, but there is little left when his brother lawyers or doctors get their share. So in the end he becomes listless and contented with a bare livelihood—a victim of misapplied education

Our lawmakers are largely to blame for this state of affairs. They refused to

see and are still blind to future possibilities. And parents are to blame, too, for not taking up arms against the system, when each year has but added to their further discontent. The same train that carried their boy to New York or Chicago for the completion of his education as a professional man, carried also an order for a wagon from Ohio, a buggy from Indiana, a dress from New York, or a watch from Connecticut, thus lighting both ends of the purse-string at the same time.

Why not teach a boy to make the things that we buy elsewhere?

A DIVIDEND IN PLEASURE.

The primary idea of a greenhouse is simply a building or room where summer can be kept prisoner over winter. It need not be elaborate in any sense. The plainest structure that is built sufficiently snug to keep heat in and cold out, and affords free entrance to light and sunshine, will grow plants just as well as the most ornate building—better, perhaps, for many greenhouses defeat some of the objects aimed at in their construction by excess of ornament, which interferes with light and ease of management. I know of one amateur's greenhouse which is really nothing more than a shed whose board roof has been removed and one of glass substituted, but this plain little building has in it plants which would do credit to the most elaborate conservatory equipped with every modern convenience. The owner of this cheap building picked up here and there some of the material from which he constructed it, buying it as he could afford to do so, and storing it away until he had enough to warrant him in beginning his house. He built it himself, working "between whiles." It is not ornamental from without, but those who go into it forget all about the building in their admiration for the beautiful plants it contains. You could not make its owner believe that the money that went into the house could have been invested in any other way that would have "paid" half so well. No dividends of dollars and cents have been declared on his investment, but he has realized as much pleasure from it as, I presume, his millions ever afforded Andrew Carnegie.—EBEN E. REXFORD, *in October Lippincott's.*

The Santa Fe "New Mexican" says: "The skin of the Angora goat is now coming into use also as a fur robe. When the hair is of one month's growth it can hardly be distinguished from the astrakhan if dyed black. Nearly all the buggy robes that are now sold as wild animal fur are goatskins dyed, and the so-called monkeyskin muffs and cloaks are only straight-haired goatskins properly prepared. One of the most profitable uses that the skin of the Angora goat is put to is that of making trimming, which commands a price a yard equivalent to fifteen dollars for a single hide."

SOME CHOICE PICKLE RECEIPTS.

Chopped Pickle.

2 gallons of green tomatoes.
1 large head of cabbage, cut up as if for slaw.
1 dozen large onions.
1 dozen large cucumbers.
2 dozen green peppers.

Chop up the tomatoes, cucumbers, onions and peppers, and mix them with the cabbage, adding two teacupfuls of salt to them. Put these ingredients in a bag, and let them hang all night with a vessel underneath to catch the drippings. By the next day, these ingredients will be drained dry and ready for pickling. Put them in a kettle, and cover them with strong cider vinegar. Flavor with half pound of white mustard seed, a small box of mustard, 1 ounce of turmeric, 2 ounces celery seed, a coffee-cup full of garlic, 3 pounds of brown sugar. Boil till the ingredients become soft, and the vinegar imbued with the flavof of the spices. Mrs. C. T. P.

Green Tomato Soy.

(An Old Virginia Receipt.)

1½ gallons green tomatoes.
1 gallon cabbage.
1 quart of onions.
1 pint of green peppers.
1½ gallons of vinegar.
3 pounds brown sugar.
3 tablespoonfuls ground allspice.
2 tablespoonfuls ground cloves.
4 tablespoonfuls of ground cinnamon.
4 tablespoonfuls celery seed.
½ box of mustard.
½ pound white mustard seed.
¼ pound turmeric in muslin bag.
1 pint salad oil.
1 pint French mustard.
2 tablespoonfuls of ground black pepper. Slice tomatoes, cabbage, onions and peppers, sprinkle with salt, and drain off the juice before pickling. Boil them in the vinegar, with the spices, till thoroughly done. Do not add the French mustard or salad oil till the pickle is cold.

Sweet Peach Pickle.

Cling-stone peaches are best for pickling, and they should be used before they are fully ripe. Allow 3 pounds of white sugar to 5 pounds of peaches. Peel them and sprinkle the sugar in layers. Put them on in a porcelain kettle as soon as you have finished peeling them, as they will turn dark if they stand. Add a quart of strong vinegar, an ounce of mace, and an ounce of ground cinnamon. Let them come slowly to a boil. Then take out the peaches with a perforated skimmer, and spread them on flat dishes. Let the syrup continue to boil till it thickens. Then put the peaches in jars and cover well with the syrup.

Damson Pickle.

Damsons also should be pickled before they are fully ripe. Prick each one with a coarse needle, so the vinegar can penetrate it. Allow 4 pounds of sugar to 7 pounds of damsons, sprinkling the sugar in layers. Add a quart of vinegar, 1 ounce of mace, and one of cloves. Boil for five minutes, then lay the damsons on

dishes, and boil the syrup till thick. The same directions will answer for apple or pear pickle.

—

CUCUMBER CATSUP.

Cucumber catsup is more easily made than any other, inasmuch as it does not require cooking. Peel and grate up the cucumbers, put them in a bag and squeeze out the juice thoroughly. Then flavor with strong vinegar, salt and black pepper, in the grain, and put in bottles. This is a peculiarly nice condiment to use with fish.

—

GREEN TOMATO SAUCE.

In the late autumn, when you find your tomatoes are threatened with frost, it is a good plan to utilize the green ones in making tomato sauce. I have already given a receipt (obtained from a noted housekeeper), for an elaborate and expensive green tomato soy, but I will now give a cheap and simple one: Cut up your green tomatoes, sprinkle them with salt, let them stand in a bag and drain all night. Make them up with a sauce the next day, with strong vinegar, flavored with both black and red pepper and a little cinnamon and ginger and sugar to the taste. If you have any horse-radish, it will improve the sauce.

MARY WASHINGTON.

SHELBURNE'S WAREHOUSE.

In calling attention to the advertisement of Silas Shelburne & Son, we would say that Richmond has such advantages that they cannot be ignored by farmers who wish the best prices for their tobacco.

The large stemmeries of the American Tobacco Company, the extensive buildings recently acquired by the Imperial Company, the buyers for the Italian, Austrian, Spanish and French Governments, the representatives of the American Snuff Company, and 35 buyers for independent factories and brokers, certainly gives Richmond the strongest and largest number of buyers to be found on any tobacco market in the world.

Richmond offers such facilities as cheap freight rates, low rate money and insurance, and a large supply of skilled labor, as to enable buyers to give the advantage to Richmond on their purchases. Look up the advertisement of the above firm, and correspond with them before shipping yo ir tobacco.

Mr. W. J. Brogden, well known to shippers, is with this firm.

WASHINGTON POULTRY, PIGEON AND PET STOCK SHOW.

Mr. Geo. E. Howard, Secretary of the above Association, advises us that they will hold their Annual Show at Washington, D. C., on December 9th–13th inclusive.

The management is putting forth its best efforts to make this exhibition the best one ever held, and the indications are that they will succeed. Mr. Howard's address is Box 54, Station A, Washington, D. C.

A Neat BINDER for your back numbers can be had for 25 cents. Address the Business Office.

HIS "KNITTIN' WORK.

Aunt Alvira Fifer was what her neighbors called a "regular driver." Possessed of untiring energy and unfailing strength herself, she made little allowance for idleness on the part of any one, and she declared that she could "put up with a mean man easier than with a lazy one."

Aunt Alvira's husband, Uncle Ethan, was a small, wizened, weak-looking man, whom Aunt Alvira declared to be "mighty wiry if he did look so spindlin'."

One day a summer boarder, who chanced to be sojourning in a farmhouse near the Fifer farm, wandered over to the little brown farmhouse and engaged Aunt Alvira in conversation. The visitor sat on the kitchen doorstep and took note of the enormous quantity of stove-wood piled up in the back yard and overflowing from the great wood-shed. The whole yard was strewn with stovewood, and the caller estimated that there were not less than twenty-five cords of it.

"What an enormous quantity of stovewood you have," he said to Aunt Fifer.

"Yes, there is considerable of it," she replied. "I cal'late on sellin' most of it in the fall."

"Who cut all of it?"

"Oh, Ethan did it as sort o' knittin'-work. I think it a good thing for a man to have some sort o' knittin' work to do when he's sort o' restin', an' that woodpile has been Ethan's knittin'-work.—MORRIS WADE, in *October Lippincott's Magazine.*

BOWMONT FARMS.

We invite the attention of our readers to the advertisement of The Bowmont Farms, Salem, Va., elsewhere in this issue. Their offering this month consists of "gilt-edged" family cows from high-testing St. Lamberts, Indian Game, White Wyandotte, and White Leghorn fowls. There is one fact in connection with Bowmont Farm—of which Virginians should be proud—and that is, these farms are regarded as the home of St. Lamberts in America. More high-testing cows of this strain can be found here than anywhere else on the continent.

EWELL FARM PACERS AND TROTTERS.

Mr. George Campbell Brown, of Spring Hill Farm, the owner of this farm, advertises in this issue a sale of fifty head of horses consisting of Trotters, Pacers, and Saddle Stallions, and thirty head of Jerseys, both imported and Tennessee bred, to be held at Ewell Farm on the 31st of October. This sale will afford an opportunity to lovers of horses to obtain some as finely bred horses as are to be found in the South. The stallions in use at the farm are all out of great brood mares, and of the 18 mares the dams of 12 are in the great brood mare table.

Send to Mr. Brown for catalogue and further information.

Mention the *Southern Planter* when writing advertisers.

A POINT IN FAITH-HEALING.

Looking broadly at this vogue of healing faiths and healing individuals, one cannot help being affected by a sense of pathos. It is the old cry of humanity for an escape from physical ills; for, as Bagehot says, and many a philosopher and poet has had occasion to say the same, "though the costume and circumstances of life change, the human heart does not." Dr. Buckley gives certain reasons for the apparent, and possibly actual, success of some of the curers. There is another reason, however, and that is that people always recover from every attack of illness—except the last. Suppose a man has ten illnesses, and dies, as he surely will, with this last one, he has then been "cured," either by doctoring or by "faith-cure" or "mind cure" or no "cure," just nine times. The failure is then only one in ten! As for the final, fatal illness, that always is accounted for satisfactorily to those who are the faithful of the faithful.—The Century for October (editorial).

Editor Southern Planter:

Our State Fair is over, splendid weather, good crowds, &c.

Filston Farm Jerseys won 2d in bull, 1st and 2d in cows, 1st and 2d in young bulls, 2d in 2 year cow, 1st in "American Special."

In Berkshires, we won 6 Firsts and 2 seconds. Never had better specimens of the large Berkshire at the Fairs. Imported "Storm King" easily weighed 750 pounds, and with "Stratton Lizzie" and "Highclere X," both over 500 pounds each, our show attracted much attention.

Can report a very pleasant sale of Jerseys in Virginia. W. McC. Ramsey buys one bull and six females; also sold G. W. Linite, of New Jersey, 1st prize bull.

Berkshire sales continue good.

W. McC Ramsey—1 boar, 15 sows.

W. F. Jackson, of Maryland—1 bred sow.

John Link, of Maryland—1 boar, 1 sow.

Patrick Rodgers, of Maryland—1 boar, 5 sows.

T. M. Carroll, of Maryland—1 boar, 3 sows.

Chas. H. Price, of Maryland—"Lady Leeduke"

E. K. McConkey, of Pennsylvania—"King Lee VI."

Yours truly,

E. M. GILLET,

Glencoe, Md. *Sales Department.*

SEIZING THE OPPORTUNITY.

"Always," advises the pompous person who has accumulated several millions, "always say, 'I will.' Never allow yourself to be dismayed by the outlook. Overcome the outlook. That's the way to succeed."

"One, then," comments the poor person to whom he addresses this homily, "should always say, 'I will?'"

"Yes, sir."

"And you always say it?"

"I do."

"Will you lend me half a million to get my airship in running order?"—W. D. Nesbit, *in October Lippincott's Magazine.*

FUNNY ADVERTISEMENTS.

Curiously worded advertisements, which are funny without intent, are common in the London papers it would seem. A contemporary recently offered a prize, says the Manchest r Guardian, for the best collection of such announcements, and the following is the result:

"Annual sale now on. Don't go elsewhere to be cheated—come in here."

"A lady wants to sell her piano, as she is going abroad in a strong iron frame."

"For sale—A piano forte, the property of a musician with carved legs."

"Wanted—A room by two gentlemen about 30 feet long and 20 feet broad."

"Wanted—By a respectable girl, her passage to New York; willing to take care of two children and a good sailor."

"Mr. Brown, furrier, begs to announce that he will make up gowns, capes, etc., for ladies out of their own skins."

"Bull dogs for sale; will eat anything; very fond of children."

"Wanted—A boy to be partly outside and partly behind the counter."

"Wanted—For summer, a cottage for a small family with good drainage."

"Lost—Near Highgate Archway, an umbrella belonging to a gentleman with a bent rib and a bone handle."

"Widow in comfortable circumstances wishes to marry two sons."

"To be disposed of, a mail phaeton, the property of a gentleman with a moveable headpiece as good as new."

The last is a copy of an inscription painted on a board which adorned a fence in Kent:

"Notis—If any man's or woman's cows gets into these here otes, his or her tail will be cut off as the case may be."

There was a king once who upbraided his couriers for paying excessive attention to ceremony. "Your Majesty," replied a courier, "forgets that you yourself are only a ceremony." This is practically the text of the article which W. T. Stead contributes to the Cosmopolitan for October on the real significance of the Coronation. Mr. Stead throws an interesting light on the King's habits of life and mental attitude toward his subjects, and compares the state of democracy in Great Britain with the democracy of the United States. Even those who do not altogether agree with Mr Stead's conclusions always find him interesting as a writer, and "The Coronation and its Sig nificance" is no exception to the rule.

"What a Father Can Do for His Son" is the title of one of the most instructive articles which has ever appeared in a magazine. Prof. Harry Thurston Peck discusses this subject in the October Cosmopolitan in a way to be entertaining to fathers, mothers and sons. The essay will have a wide range of readers.

MEASURING HAY IN THE STACK.

There has been considerable inquiry in your columns for a method of measuring hay in the stack. I enclose copy of a bill recently introduced by myself and passed in the Legislature of New Mexico:

Section 1. The following rule and method of measuring loose hay in the stack, and specifying the cubical contents of a ton of loose hay, is hereby established:

Sec. 2. Measure the stack for length, width, and the "over." To get the "over," throw a tape line over the stack at an average place, from ground to ground, drawing it tightly. Multiply the width by the over, and divide this result by four, multiply result of division by the length for approximate cubical contents of stack. To reduce to tons, for hay that has stood in stack less than 20 days, divide cubical contents by 512; for more than 20 and less than 60 days, divide cubical contents by 422; for more than 60 days, divide cubical contents by 380. Example: Stack measures 17 feet wide, 58 feet long, and 36 feet over. Stack has stood 15 days. Multiply 17 by 36, equals 612. Divide 612 by 4, equals 153. Multiply 153 by length 58, equals 8,874, which gives the cubical contents in feet. Divide 8,874 by 512, equals 17.3 tons in a stack.

I have carefully tested this rule on several different stacks and kinds of hay. Hay measured in the stack under this rule will bale out in weight to within 5 per cent. of its measurement, which is far closer than any other rule of measurement I have ever been able to get hold of, and in drawing up this law, and the investigation preceding it, I secured over fifty different systems of measurement from almost every part of the United States.

I believe this rule will prove as nearly correct as is possible to be figured out, and hope it may prove of interest to your readers.—Wm. C. Barnes, Colfax Co., N. M., in *Breeder's Gazette.*

A tramp rapped at a door the other day, and asked the woman if she could spare him a piece of bread. "No, I can't," replied the woman. "I am a policeman's wife, and if my husband were in, he would take you." "Well," said the tramp, "if he'd take you, he'd take anybody." (Collapse of woman.)

A colored girl happened to meet a gentleman going down a street in New Orleans, and nearly came in collision with him. Then both made for the other side of the path, and another collision was imminent. They then danced back, and dodged again, when the girl suddenly stopped and said, "See heah, mister, what am dis gwine to be—a schottische or a waltz?"

One of those women who have an antipathy for tobacco entered a street-car the other day, and inquired of the man sitting next to her, "Do you chew tobacco, sir?"

"No, madam, I do not," was the reply, "but I can get you a chew if you want one."—*October Lippincott's Magazine.*

Mention the *Southern Planter* when corresponding with advertisers.

Our Clubbing List.

The following list of papers and periodicals are the most popular ones in this section. We can SAVE YOU MONEY on whatever journal you wish.

	PRICE ALONE.	WITH PLANTER.
DAILIES.		
The Dispatch, Richmond, Va.	$3 00	$3 00
The Times, " "	3 00	3 00
The Post, Washington, D. C.	6 00	6 00
SEMI-WEEKLIES.		
The Dispatch, Richmond, Va.	1 00	1 25
The World (thrice-a-week), N. Y.	1 00	1 25
WEEKLIES.		
Harper's Weekly	4 00	4 00
" Bazaar	1 00	1 40
Montgomery Advertiser	1 00	1 00
Nashville American	50	75
The Baltimore Sun	1 00	1 35
Breeder's Gazette	2 00	1 75
Hoard's Dairyman	1 00	1 35
Country Gentleman	1 50	1 75
The Times, Richmond, Va.	50	65
Religious Herald, Richmond, Va.	2 00	2 25
Central Presbyterian, " "	2 00	2 50
Christian Advocate, " "	1 50	1 75
Turf, Field and Farm	4 00	4 00
Spirit of the Times	4 00	4 00
Horseman	3 00	3 00
SEMI-MONTHLIES.		
Wool Markets and Sheep	50	75
Dairy and Creamery	50	75
Commercial Poultry	50	75
All three	1 50	1 15
MONTHLIES.		
North American Review	5 00	5 00
The Century Magazine	4 00	4 25
St. Nicholas "	3 00	3 25
Lippincott's "	2 50	2 50
Harper's "	4 00	4 00
Forum "	3 00	3 25
Scribner's "	3 00	3 25
Frank Leslies "	1 00	1 35
Cosmopolitan "	1 00	1 35
Everybody's "	1 00	1 35
Munsey "	1 00	1 35
Strand "	1 25	1 65
McClure's "	1 00	1 35
Puritan "	1 00	1 35
Review of Reviews	2 50	2 75
Leisure Hours	1 00	1 25
Blooded Stock	50	50

Where you desire to subscribe to two or more of the publications named, you can arrive at the net subscription price by deducting 50 cents from "our price with the *Planter*." If you desire to subscribe to any other publications not listed here, write us and we will cheerfully quote clubbing or net subscription rates.

Subscribers whose time does not expire until later can take advantage of our club rates, and have their subscription advanced one year from date of expiration of their subscription to either the *Planter* or any of the other publications mentioned.

Don't hesitate to write us for any information desired; we will cheerfully answer any correspondence.

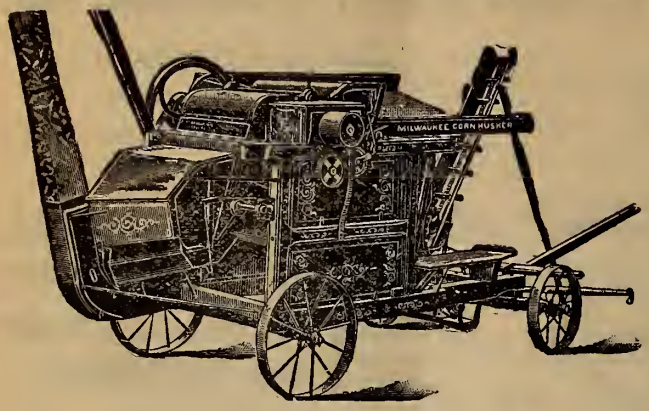
We furnish *no sample copies* of other periodicals.

The manager of the Fresno, California, Fruit Canning Company has invented a plan for the removal of the skins of peaches by means of a solution which has been analyzed by Professor Hilgard, of the State University, and pronounced by him to be harmless. A series of revolving brushes removes the skins, and the rinsing process prepares the peaches for pitting and canning. It is stated that by this process four tons of peaches will produce as much canned fruit as five tons by the old method.

When corresponding with advertisers, kindly mention that you saw their advertisement in the *Southern Planter*.

Milwaukee Corn Husker and Fodder Shredder

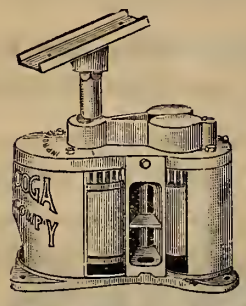
With Blower or Carrier. Manufactured in four sizes: Large machines for threshermen, and small machines for farmers' own use.



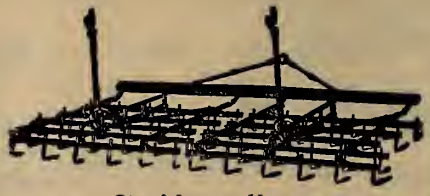
Read list of only a few of the many using the MILWAUKEE Husker.

R. L. Bruce, Medlock, Va.,
J. C. Segar, Lewiston, Va.,
J. A. Graham, Hanover, Va.,
L E. Williams, Enfield, Va.,
Julian Ruffin, Old Church, Va.,
Edmund Ruffin, Old Church, Va.,
A. T. Broaddus, Old Church, Va.,
H. S. Saunders, Shirley, Va.,
C. C. Branch, Toano, Va.,
M. L. Norvell, Island, Va.,
S. H. Ivey, Petersburg, Va.,
J. A. Maddox, Triangle, Va.,
W. H. Walton, Rice Depot, Va.,
T. S Wilson, News Ferry, Va.,
Geo. R. Land, Boydton, Va.,
C. C. Moore, Charlotte, N. C.,
R. F. Broaddus, New Berne, N. C.,
Col. B. Cameron, Stagville, N. C.

The above parties will cheerfully give you testimonials as to the merits of the MILWAUKEE. We are ready at all times to go in the field with any other husker made, and will guarantee the MILWAUKEE to be the best made; and will also guarantee it to do more work than any other made, and shell less corn, and cost less for repairs and last longer. Write the parties that are using them; also write for special circulars and testimonials we have, which will he sent with pleasure.



Chattanooga Cane Mills and Evaporators.



Steel Lever Harrows.

Spring-tooth Harrows, all sizes, plain and with levers; Smoothing Harrows, and anything in the Harrow line always on hand at bottom prices.

Tiger Disc Harrows.

The Scientific Grinding Mills.

Are unequalled for grinding Ear Corn, shucks on or off Corn, Oats, Wheat and all other grains singly or mixed.

Power Mills in five sizes; 2 to 30 horse-power.

Sweep Mills in two styles.

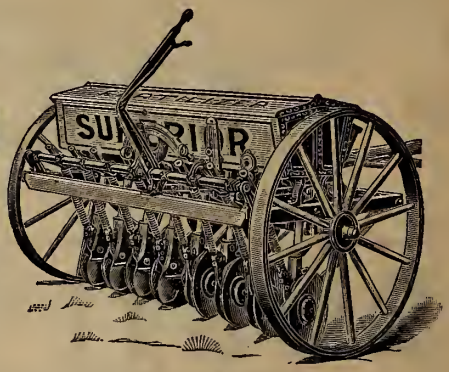
Geared Mills in four styles.

Special prices given on Studebaker and Brown Wagons, Buggies and Carts.

Wheelbarrow Seeders, Cahoon Seeders.

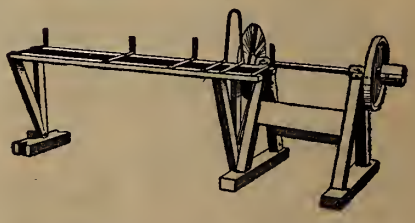
Hutchinson One-Tub Cider Mills, made in two sizes.

Write for special catalogue and price on any implement wanted.



Superior Grain Drills.

Plain and Fertilizer Hoe and Disc Drills—All sizes.



Wood Saws for Long or Short Wood. Wood or Steel Frame.

DON'T FORGET! All the merchants in town who claim to sell Oliver Plows and Repairs only sell the Imitation, Bogus, Cheap Goods. The only place in Richmond, Va., to buy Genuine Oliver Plows and Repairs is at 1436 and 1438 East Main Street, from

ROSS

Fodder Cutters, Fodder Shredders, Cutters for all purposes, Corn Shellers, Grinding Mills, Horse Powers and Wood Saws.

HENING & NUCKOLS, Successors to CHAS. E. HUNTER, 1436-38 E. Main Street, RICHMOND, VA.

Agricultural Implements and Machinery

Cider Mills—with wooden crushing rollers.

The Hocking Valley Cider and Wine Mills
Have crushing rollers made of wood, which impart no taste or discoloration to the juice.

Buckeye Grain and Fertilizer Drill
With hoes or disc. Drills grain of all kinds, corn, peas, grass seed and fertilizers.

Our Five-Hoe Drill
For seeding between rows of standing corn is a great success.

Continental Disc Harrows,
Changed to straight or slanting tooth without stopping team.

Ensilage and Feed Cutters.
Capacities from 600 to 16,000 pounds per hour.

The Union Cutter.
Crushes the stalk after it leaves the knives—far superior to shredding.

The Combined Feed Mill and Horse Power
Is indispensable to every farmer. Grinds corn, shelled or on cob, grain of all kinds, and is a first-class horse-power for any purpose. Three machines in one.

The McCormick Corn Binder
Works like a grain binder, cutting and tieing the corn and delivering in bundles.

The McCormick Husker and Shredder
The most complete machine of its class made The very low price brings it within the means of all.

Corn Shellers
For hand or power, separating corn from cob.

Churns—Improved Buckeye Rocker.
Unequalled for cheapness, with simplicity, strength, durability and perfect work.

Cane Mills and Evaporators.
Turned rollers, steel shafts, brass boxes, enclosed gearing. Made of special iron of great strength.

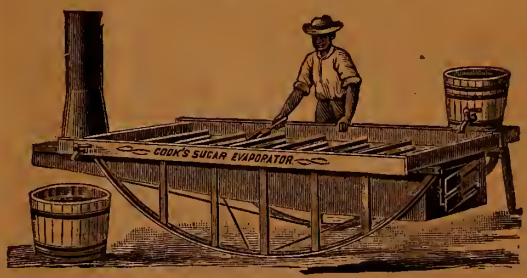
Portable Evaporators
With furnace. Pans of galvanized steel or copper.

Cucumber Wood Pumps
With porcelain-lined cylinder, for wells up to 45 feet in depth.

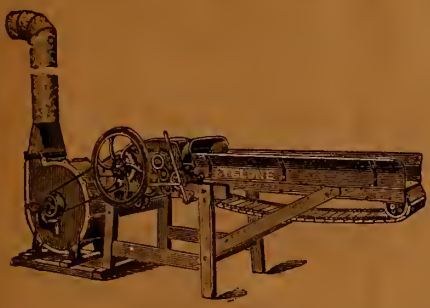
The Hancock Disc Plow,
Improved for 1902.
Will work in any land, and with less draft than any other disc plow.

Disc Drill.

Feed Mill and Power.

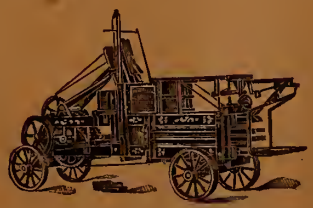


Portable Evaporator.



CYCLONE
Feed and Ensilage Cutters. All Sizes.

Cane Mill.



Belt Power Press.

Hand Power Press.

Full Circle Horse-Power Press.

THE WATT PLOW CO.,

Franklin and 15th Streets,
RICHMOND, VA.