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THE

SOUTHERN PLANTER

DEVOTED TO

AGRICULTURE, HORTICULTURE, LIVE STOCK AND THE HOUSEHOLD.

Office, 26 Wilkerson's Hall, Ninth Street.

T. W. ORMOND, - - - - - - PROPRIETOR.
W. C. KNIGHT, - - - - - - EDITOR.
W. C. JACKSON, - - - - - - ADVERTISING AGENT.

45th Year. OCTOBER, 1884. No. 10

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SOUTHERN PLANTER.

DEVOTED TO

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

T. W. ORMOND, - - - - - - - - PROPRIETOR.
W. C. KNIGHT, - - - - - - - - EDITOR.

45TH YEAR. RICHMOND, OCTOBER, 1884. No. 10.

PROF. PAGE ON CHESS.

Mr. Editor,—Without the slightest intention to enter into the controversy, "*Whether Wheat Degenerates into 'Cheat' or 'Chess,'*" I beg leave to state, in the interest of scientific truth, the following facts:

Professor Asa Gray, who is acknowledged to be one of the ablest botanists in this or any other country, calls cheat or chess, "*Bromus*," and puts it in the "*Grass Family*," "*Sub Tribe*," *2d. Agrostidoe*," *species 37th*, "*Bromus or Brome Grass*," of which he describes three varieties as follows:

1st. *Bromus Secalinus* [cheat or chess].—Coarse grass common in grain fields and barren and waste grounds.

2d. *Bromus Racemosus* [upright chess].—Found in the same places.

3d. *Bromus Nollis* [soft chess].—Found in the same places under similar circumstances.

All of these are coarse grasses, annuals or biennials, and have been introduced from abroad. (See *Gray's Manual of Botany*, page 566.)

The late Dr. William Darlington, than whom there is no better authority in this country, says, in his work on "*American Weeds and Useful Plants*," that the two varieties most commonly found in our wheat fields are "*Bromus Secalinus*" [cheat or chess] and "*Bromus*

Racemosus" [upright chess]. After giving the botanical description of the plants, he says: "This foreigner is a well known pest among our crops of wheat and rye, and occasionally appears in the same fields for a year or two after the grain crop, but, being an annual, it is soon choked out by the perennial grasses, and the fallen seeds remain like myriads of others until the ground is again broken up or put in a favorable state for their development. The best preventive of this and all similar evils in the grain field *is to sow none but good, clean seed. Among the curious, vulgar errors which infest the minds of credulous and careless observers of natural phenomena may be mentioned the firm belief of many of our farmers* [*some of them, too, good practical farmers*] *that this troublesome grass is nothing more than an accidental variety or casual form of degenerate wheat, produced by some untoward condition of soil, or unpropitious season, or some organic injury, though it must be admitted, I think, by the most inveterate defender of that faith that in undergoing the metamorphosis the plant is surprisingly uniform in its vagaries, in always assuming the exact structure and character of* BROMUS." [Italics mine.]

"A similar hallucination has long prevailed among the peasantry of Europe in relation to this supposed change of character in the grasses. But in the Old World they were even more extravagant than with us, for they believed that wheat underwent sundry transmutations; first, changing to rye, then to barley, then to bromus, and finally from bromus to oats. I believe the most credulous of our countrymen have not been able yet to come up with their Trans-Atlantic brethren in this matter. This grass has been cultivated within a few years [1860] as "Willard's Bromus," and the seed sold at a high price. The farmers found that they not only did not get a valuable grass, but were really propagating a worthless and pernicious weed, being thus doubly cheated."

These are the words of William Darlington, M. D.—[Work American Weeds and Useful Plants, second edition, page 386.] And such is my reverence and respect for his opinion on such subjects that I would not say a word more except that the position I occupy demands that I should. Briefly, then, I would say, that I knew my brother, the late Col. Powhatan R. Page, to dibble in adjoining rows tail-end wheat, cheat and inferior oats, and that each came true to its kind, and I have carefully analyzed all the above varieties of Bromus taken from the wheat field and out of the wheat field where no wheat was ever planted, and I have always found each variety botanically true. Flint, in his work on Grasses and Forage Plants, says: "Nothing more clearly illustrates the want of accurate knowledge of subjects intimately con-

nected with agriculture and immediately affecting the farmer's interests than the history of the introduction and propagation of this worthless pest to our grain fields." "I have examined it with care with strong magnifying glasses, and, to avoid the possibility of mistake, submitted specimens of it to Professor Asa Gray, of Cambridge, and to Professor Dewey, of Rochester, both of whom, after examination, pronounced it genuine chess or cheat." This was said of Bromus Secalinus or Willard's Bromus.

Note the fact that such distinguished botanists as Gray, Dewey and Flint ignore entirely the idea of transmutation from wheat and oats to Bromus, and Darlington mentions it simply to correct a traditional error of inaccurate observation.

If it can be truly shown that such transmutation ever takes place, it will go farther to establish the "Darwinian Hypothesis" of the "Origin of Species" than anything yet made known. But, think you, that such a natural phenomenon would have escaped the grasp of the gigantic mind and world-wide observation of Charles Darwin, of whose thirst for knowledge on such subjects it might well be said, as Pollok said of Byron,

> He—"Drank from old and fabulous wells,
> And plucked the vine that first born prophets plucked,
> And mused on famous tombs, and on the wave
> Of ocean mused, and on the desert waste,
> The heavens and earth of every country saw,
> Where'er the old inspiring Genii dwelt,
> Aught that could rouse, expand, refine the soul,
> Thither he went and meditated there;
> Drank every cup of joy, heard every trump
> Of fame, drank early, deeply drank, drank draughts
> That common millions might have quenched;
> Then died of thirst because there was no more to drink."

In the foregoing article I make no positive denial of the possibility of the transmutation of wheat into cheat or oats into cheat. I only state what is known and believed by the most eminent botanists in this country, and in doing so, I throw the burden of proof upon those who affirm that such transmutation takes place. Let them prove it by such a series of experiments and observations as will stand the scrutiny of men trained in scientific methods of research.

Very respectfully, &c., JNO. R. PAGE.

University of Virginia.

[We fear that the readers of *The Planter* are tired out with the question of the origin of chess, but we are glad to get Dr. Page's communication, as his position entitles him to speak on the subject. Whilst he appears to take sides with the scientists, as we think it natural he should do, yet we must say that nothing he has quoted from learned botanists has weakened our faith in the theory of degeneration. As we have before said, we have the greatest respect for science, which has done, and is still doing, so much for

the advancement of the bnsiness, happiness and wealth of mankind, bnt the scientists have their vagaries and even superstitions errors, which are not less absurd than that they denounce as such in respect to the question *now* in hand. We might mention the matter of *lunar influences* on the tides and on the weather of the earth's surface, to say nothing of crops that are to be planted, for success, in given lunar periods. Even our lexicography is, to some extent, based on a similar superstition, for the word *lunacy* is defined by Webster thus: "*Luna, the moon*, strictly the condition of an insane person who has lucid intervals, which formerly were supposed to depend on the phases of the moon."

When scientists look deeper into this chess question they will know more abont it. We cannot admit that a large majority of intelligent and observant farmers are wrong and they are right. The degenerated chess plant is, doubtless, correctly classified under the *genus Bromus* by the botanist, but this does not answer the enqniry as to the origin of this species of the genus. *Species* are ever multiplying by cross-impregnation, and how is it logical to say that there can be no degeneration? Read carefully the statements made by intelligent farmers on pages 415-16 of the Angust number of the *Planter*, and let the scientists say how they can be accounted for.—Ed. S. P.]

SEED DEGENERATION.

Editor Southern Planter:

Dear Sir,—I feel like apologizing for writing on a subject which many of our prominent agricultural papers have refused to re-open, and do so only that facts may be put before your readers which may have never occurred to them.

In your August issue you suggest that the oat seed may, or does, degenerate into cheat. I ask, in the cases brought forward as evidence of this fact, whether the cheat seed grew on an oat plant or a cheat plant, as it is important? For I can testify to the fact of cheat seed growing on a cheat plant, but I never saw one growing on an oat plant. As the two plants are so very different, they are easily distinguished from each other as soon as the blade appears and long before the seed stalk appears. One peculiarity, my impression is, being that cheat never stools; but oats rarely fail to do so, even on poor ground.

Mr. Pollard says, in the September issue, that Fall-seeded oats showed cheat, but not Spring-seeded. Two reasons can be assigned for this: *First*, Cheat, like wheat, requires Fall seeding to come to maturity; and again, the Fall-seeded oats may have been Winter killed so badly as to show more plainly the cheat, which I hold must have been seeded with the oats. He says again, near the barn the fowls depredated on the oats, and nearly all was cheat. This case, as with cases of cheat-growing round stacks, may be readily accounted for by the fact that fowls and birds will not eat the cheat seed or plant, but will eat the oats and oat plant; thus the latter was eaten and the

former left to mature. He further says, he does not think cheat will germinate.

Let Mr. Pollard gather the cheat seed when wheat is harvested and plant at the same time wheat is seeded, and I think he will reap at the next wheat harvest what he sowed in the seed time.

I purchased thirty bushels Fultz wheat from Pennsylvania, and when it arrived found so much cheat seed in it that I concluded not to sow it; but it was so late in the season I was unable to get more and sowed it. The crop following was so full of cheat that I would not use the wheat again for seed; and that field still has cheat on it. A portion of this article will answer Mr. Pettit.

If we admit that wheat and oats will degenerate into cheat, where are we to stop? for a friend recently told me that he seeded a portion of his low grounds on James river to timothy by itself, and the next season he found that it had nearly all turned to *cheat*. I told him to wait another year and it would all turn back again, and so it did, and made a fine timothy meadow, but only because the timothy was perennial, and the cheat being an annual was choked out. Another farmer reported his seeding of Orchard grass as having turned to cheat, but, for reasons above stated, it turned back again the following season. But unless care is taken the oat or wheat crop planted on that land in future will, in favorable seasons for cheat and unfavorable for wheat or oats, turn to cheat, for the seed is in the land waiting for its turn.

Again, if cheat grows on wheat and oat plants, and also on its own stem, there must be two varieties of cheat.

But I think, on a proper examination of the subject by every farmer who has a cheat experience, the peculiarities of the case can be clearly reasoned out, and he will find his seed wheat or oats had cheat seed amongst them, or he had a previous cheat experience, and the seed had never become eradicated from the land. Our imaginations can hardly stand the stretch of believing that the poor, forlorn little cheat seed, which neither chickens nor cattle will eat (either seed or plant), if they can get anything else, has the power of transforming itself promiscuously into wheat, oats, timothy, Orchard grass, or any other plant, either as plant and seed, or plant alone or seed alone, and that if such was the case, that we had better "hang up shovel and hoe" and embark in a profession where chance has no hold to *cheat* us out of reaping at harvest what we have sowed in the seed time.

Yours, &c. W. Gordon Merrick.

[That plants and seeds will degenerate is not a questionable fact. Wheat and oats have an apt tendency to degeneration. This is marked as well by the grain as the

physical structure of the stalk and blades. Whether these changes extend to *transmutation* is the real question. Our opinion, before expressed and still entertained, is, that there are causes existing in nature, not understood, which favor and produce changes in plants of one class into something of a like class, either better or worse, and nearly always the latter. Upon this principle the *flora* of the world is vastly multiplied, so that with a given *genus* the skill of the botanist is taxed to fix and discriminate between *species*. Fruits and grains have a similar tendency, and the work of the scientist is to ascertain causes, and so control and direct them as to prevent degeneration and advance the improvement of products.

We have not the time or the inclination, now, to enter into an argument with our correspondent on this subject, as our pages now, and for several issues past, contain so much of the views of others. We will say, however, in reply to the last paragraph of his communication, that there is a falacy in the idea, or suggestion, that chess will ever *turn back* to wheat or oats from which it may have degenerated. The tendency of all things in nature is downwards and never upwards. Man, uninfluenced by the laws of civilized life, reverts to barbarism. All the products of the earth are best utilized when restrained and directed by proper culture.

What reply can be made to the several articles printed in the *Planter* more than thirty years ago, and reproduced in our issue for August last, pp. 415–16? These are direct experiences, and cannot be gotten over except on the belief that the authors are untruthful.—Ed. S. P.]

BERMUDA GRASS.

Editor Southern Planter:

In reply to "Enquirer's" letter in your last issue, I do not believe that "Bermuda" grass will stand the Winters of Virginia. This grass (about which there seems to be some ignorance and doubt in this country) is not a native of Bermuda, but was introduced there from the East Indies. From Bermuda it was first brought to the Southern States some ten years ago. It is the Cynodon Dactylon (Linn.), and in India is known as Durbha or Doab grass. In Australia, where it is largely grown on race-courses, cricket grounds, etc., it is called "Couch" grass. It forms a handsome, carpety turf, and is of a peculiar bright pea-green color when growing, its blades somewhat resembling the well known Thrift or Sea Pink (*Statice Armeria*). In dry weather it turns brown, and in cold weather dies off completely. It seeds freely. The seed is small, round, and of a greyish-brown color, weighing forty pounds to the measured bushel. That offered in this country is generally imported from Sydney, N. S. W. I think it would be of little value for preventing washes, or for any other purpose in this country north of Savannah, Ga., as our Summer droughts and Winter frosts would kill it. It would have to be treated as an annual.

It has been often confounded with two totally different species of grasses, which are also called Couch. One of these, called in England

"Twitch," or "Couch," is Triticum Repens, a wild wheat, with fleshy stolons, and a great pest to the farmer, as it cannot be eradicated except by burning. This would be valuable for stopping washes, &c., on river banks, as its roots form a dense mat. Another grass, called Couch, is the "Dog Bent," or "Wire grass" (Agrostis Canina), also a great pest in some parts of this State; is similar in its properties to the Triticum, and could also be employed on banks, etc.; is propagated best by roots.

Cynodon Dactylon seed can be purchased for about two dollars per pound; Triticum Repens, for about one dollar per pound, and Agrostis Canina roots for planting at one dollar per bag. They can be supplied by Mr. T. W. Wood, seedsman, of this city. W. G. W.

Richmond, Va., August 16th, 1884.

REPLY TO MR. CARPENTER ABOUT VIRGINIA LANDS.

Editor Southern Planter:

In your editorial suggestions, on page 467, to Mr. Carpenter, you omit one most essential matter, and that is the careful study and perusal of a Southern agricultural journal as a means of acquiring *gumption*. I presume that Mr. C. is an Ohioan and familiar only with Ohio farming ideas. These serve for that State, but are in particular unsuitable for Eastern Virginia. General principles apply alike to all sections, but they are so often modified by the changed conditions of soil and climate in various localities as to compel radical differences in the handling of crops and soil. In no way, in my judgment, can an immigrant better realize the difference between Virginia and his native Northern State, and acquire the knowledge requisite to accommodate his practice successfully to overcoming the difficulties necessarily arising through these differences than to study the teachings of a well-edited Virginia farming magazine. An Ohioan myself, my advice to Mr. C. is to subscribe for the *Southern Planter* back to July, 1882, the time it took its present form; farther back would be all the better; and study the articles therein of Dr. Pollard, Dr. Ellzey and other able writers, who are, by long practice and experience, thoroughly conversant with the needs and capacities of Virginia soils and means of their improvement. I would specially commend, in addition, the recent letters of General Wickham on sheep, and that of Mr. Stacy on wheat fertilizers, page 465. No Ohio farmer can easily go amiss who clings to sheep as indicated by General Wickham, and who ties to clover as laid down by Mr. Stacy. Such valuable guides as these to success, I believe, cannot be had by any new-comer outside of the *Southern*

Planter. There is enough agricultural gospel in the articles of these clear-headed farmers to save any Yankee from that ruin which seems to follow the usual course of trying to make Virginia soils and climate conform to Northern modes. In a former article I stated that the Northern man, in order to succeed in the South, must, as a rule, adopt Southern ways. The best way is that of broadly successful, level headed men, such as I have named above. If there be a better plan to ascertain their modes and to get true Virginia farming wisdom than by reading the *Southern Planter* back to July, 1882, I am not aware of it. If I were, I should warmly commend it to all new-comers.

Inasmuch as I was reared on an Ohio sheep farm, and am most favorably inclined to sheep as the principal stock of a farm, my preferences for land in Virginia run naturally to those counties which permit their permanent growth. All the foot-hills of the Blue Ridge west of the line drawn from here to Danville are the best of grazing lands for sheep, and Mr. C. should give them a careful observation before locating in the flat counties. But no matter where he pitches his tent he should pin his faith and his practice to the teachings of Ellzey, Pollard, Wickham, Stacy and other able correspondents of the *Planter.*

Washington, D. C., September 1st, 1884. R. S. Lacey.

A VISIT TO NAG'S HEAD.

During the sultry season when the farmer has little else to do but to let nature take care of the maturing crops, a trip to the sea-shore is about the best thing he can do to get cool and enjoy himself generally. And Nag's Head is just the place for such a recreation. It is situated, as you know, about mid-way on that long stretch of sand beach between the ocean and the North Carolina Sounds, and is a part of Dare county. One of the finest railroads in the country connects Norfolk with Elizabeth City, a quaint old North Carolina town of four thousand inhabitants, quietly reposing under the shade of willow-oaks, elms and cypress, on the banks of the Pasquotank river. The cars run along-side the wharf, and the fine steamer Shenandoah takes you down the river into the broad waters of Albemarle Sound and lands you at Nag's Head Pier.

"Before the war," as we say now when we wish to bring to mind the scenes of other days, Nag's Head was to the North Carolinians what Joe Segar's "Hygeia" was to the Virginians of the past generation. It is still the favorite resort of the sons and daughters of Tarboro', Edenton, Plymouth, Elizabeth City; and the tobacco-growing regions about Henderson and Greensborough, and the cotton fields of distant Mecklenburg send their brave sons and fair daughters here to

enjoy the ocean and the wild waves. Our experience leads us to venture the opinion that a more agreeable resort for its size cannot be found along the Atlantic Coast for bathing, hunting and enjoying one's self with rational satisfaction.

Among the sand hills in the neighborhood of the hotel, reside a curious population, known thereabouts as "Bankers." They are what would be called on the Florida coast "Wreckers." Their ordinary occupation is fishing and hunting the wild fowl of the waters of the Sound. Their cottages are surrounded by small patches of sandy loam, yielding them their supply of vegetables and corn. These people are remarkable for their honesty rnd simplicity of character.

In plain view from the hotel is Roanoke Island, where the first English Colony in the New World was planted in 1584 under the auspices, if not under the personal direction, of the celebrated Sir Walter Raleigh, after whom, as a perpetual historical memorial of the event, the capital of the State was named. The island is nearly as large as Nantucket, and much better cultivated. It has a thrifty agricultural and fishing population of nearly two thousand. On the western side of the island are the remains of the fortifications so gallantly defended by the Richmond Blues when Burnside's Expedition was landed there in 1862. It was here that the Captain of the Blues, the brilliant and lamented O. Jennings Wise, was killed, with many of his brave men.

The principal productions of Dare county, besides alligators, snakes and musquitoes, are corn, wheat, cotton, peanuts, fruits and vegetables in abundance. The people are healthy, robust and cheerful, marked by practical good sense and abounding in hospitality. If you have never ventured among them, Mr. Editor, I would advise you next year to solace your labors by a visit in person to the farmers of this highly-favored region of the Old North State, enjoy the cooling breezes of the shore, and take a drive about Roanoke Island with Captain Brinkley, who will take pleasure in telling you what he knows about farming and fishing.

From the broad piazzas of the hotel you have a magnificent view of the Ocean on the east side, and of the Sound on the west. This is the only resort on the Atlantic Coast where the sun rises and sets in salt water. Steamers from Elizabeth City, Edenton and New Berne touch at the hotel pier every day. If you are fond of "wantoning with the breakers," the sea-girt shore wooes you to its enlivening embraces, and if you prefer the more quiet enjoyment of bathing in placid water, you can take a dip in the Sound with nothing more formidable to disturb you than the crabs nibbling at your toes. H.

WHEAT AND CHESS.

Editor Southern Planter,—I differ in conclusion from Mr. Langstaff, p. 407, August issue of *Southern Planter*, though my experience with wheat and chess has been similar to his. There is a deal of truth in the ancient maxim that nature abhors a vacuum, and we see it nowhere more strongly exemplified than in her covering waste places with vegetation. When wheat is killed out by frost, some useful plant, or weed, will surely spring up. One year it may be chess, another year rag weed; in one instance coming under my observation a most luxuriant crop of poke, or wild hellebore, took entire possession, and so on throughout the category of vegetation. The earth is literally full of seed germs, which await only the proper conditions of heat, moisture, etc., to spring into life, and I would as soon attribute the growth of one species in transmutation as a sequence of the accidental absence of wheat as the other. When hard wood is cut off the land up here in my part of Virginia, and after being worked a few years is then thrown out, field pine follows, and it in turn will be followed by hard wood. As a rule, after pine has occupied a tract long enough for the soil to recuperate, and is then removed, all kinds of hard wood spring up.

In the Rocky Mountains, where the pine is removed either by fire or the miner, harder woods soon occupy the ground. In one place I saw a new growth of aspen literally cover a whole mountain side clear up to timber line—the line at which timber of any kind ceases to grow—inside of ten years after the original growth of pine was cut and burned down, yet no other denuded mountain in that locality threw up aspen. It appeared that each range or canon had its own particular species. Little trouble is experienced in Iowa in securing wood lots. Breaking and working the prairie sod for a few years fits the soil for profuse spontaneous growths of all kinds of hard woods.

Mr. Lawes, in England, experimented with fertilizers upon a lawn known not to have been broken or plowed within four hundred years, and found that each one induced growths of grasses, differing, not only from the others, but from the permanent grass of the sward; in some instances differing from any known grass of the locality. A division of Federal soldiers occupied my farm in 1865, and from all their numerous sink holes, poke subsequently grew in rankest profusion, but nowhere else on the farm. It has of late, however, wholly disappeared. I found in Jefferson County, East Tennessee, that the soil taken from cellars or wells possessed surprisingly strong fertilizing qualities wherever applied to the surface, being followed by poke or other weeds, which demand strong, fresh soils. I speak of these matters simply to show the profusion of nature—the why she exhibits it or preserves the

vitality of seeds is not essential to our argument. When we grant that she has literally filled the earth with her germs, which grow whenever some particular conditions of climate or circumstance obtain, it does seem to me that we are not forced into assuming transmutation in order to account for the presence of cheat on a frosted patch in a wheat field. Did she always throw up cheat on these spots, as she does rag weed on the unfrosted places after the wheat is taken off, we might apply transmutation thereto. In my experience cheat is not by any means a sequence of a Winter's heaving, and, in my opinion, it demands certain conditions precedent precisely as does poke, field pine, hard wood, tropical or arctic growths. The fact that cheat may not have ever been seen in any particular field, and then unexpectedly appears in a frosted wheat spot, proves absolutely nothing. The frosting is the natural condition or requisite precedent to the appearance of the cheat, just as the application of special fertilizers by Lawes induced the growth of grasses foreign not only to the lawn, but to the country itself. Kill the wheat and some other plant will occupy its place. It may be cheat; oftener it will be rag weed. Transmutation seems wholly unnecessary, for nature's law is that the fittest shall survive, and cheat is certainly more tenacious of life than wheat. On the site of an old barn on my father's farm cheat was perennial, and crowded out all other grasses for years. The vitality of seeds covers an inexplicable problem to me. No matter what changes occur to the soil or in climate, nature is ever ready with old, or with wholly distinct and unknown varieties and species of vegetation to occupy it. How much or how little of the root from which the tree may sprout in future years, or ages even, is essential to be preserved under nature's law, is unknown to me. I realize simply that no waste place will be permitted, and that too without the intervention of transmutation.

R. S. Lacey.

GOOD YIELDS OF WHEAT.

Southern Planter,—Enclosed please find check for $2.50. Sorry I have not paid you before, but it was not because I did not appreciate your paper. I consider every Virginia farmer ought to have it. We had a fine wheat crop this year. I had a field of twenty-two and a half acres that made 690 bushels, and made from two acres measured by wheat drill forty-two to the acre, eighty-four from the two acres—many farmers making twenty-six and twenty-eight. One lady, Mrs. James S. Gilliam, made forty-six to the acre from three acres. One farmer, Mr. W. A. Hudnall, made over 400 bushels from ten acres.

Yours respectfully, H. H. Blackwell.

Wicomico Church, Va., July 28th, 1884.

HOW TO FORETELL WEATHER.

Mr. Editor,—In your August number of the *Planter* an article with the above caption was read with much interest. It is proposed to explain for the benefit of "country members" the different clouds as understood by meteorologists. The following varieties and sub-varieties are recognized, viz.: 1. *Cirrus.* This is the most elevated of all the forms of clouds; is thin, long drawn, sometimes looking like carded wool or hair, sometimes like a brush, or broom, sometimes in curl-like or fleece-like patches. It is the "cat's tail." 2. *Cumerlus.* This form is somewhat elevated, and appears in large masses of a hemispherical form, or nearly so, above, but flat below, one often piled above another, forming great clouds, common in Summer, and presenting the appearance of gigantic mountains crowned with snow. This cloud often affords rain and thunder gusts. 3. *Stratus.* This form is moderately high, and appears in layers or bands, extending horizontally. 4. *Nimbus.* This form is moderately high, and is characterized by its uniform grey tint and ragged edges; it covers the sky in seasons of continued rain, as in easterly storms, and is the proper rain cloud. The name is sometimes used respecting a rainy cumulus or cumulo-stratus. 5. *Cirro-Cumulus.* Very high, and consisting like cirrus of thin, broken, fleece-like cloud, but the parts are more or less rounded and regularly grouped. It is properly called "mackerel sky." 6. *Cirro-Stratus.* High, and having the patches of cirrus, coalescing into long strata, between cirrus and stratus. 7. *Cumulo-Stratus.* A form of cloud between cumulus and stratus, often assuming at the horizon a black or bluish tint. Fog is a cloud motionless, or nearly so, lying near or in contact with the surface of the earth, and storm-sand is cloud lying quite low, without form, and driven rapidly with the wind (west). So much for the classification of clouds.

If one could read the signs, each day foretells the next; to-day is the progenitor of to-morrow. When the atmosphere is telescopic, and distant objects stand out unusually clear and distinct, a storm is near. We are on the crest of the wave, and the depression follows quick. It sometimes happens that clouds are not so indicative of a storm, as their total absence. In this state of the atmosphere the stars are unusually numerous and bright at night, which is also a bad omen. It appears that the transparency of the air is prodigiously increased when a certain quantity of water is uniformly diffused through it." "Mountaineers predict a change of weather when, the air being calm, the Alps covered with perpetual snow, seem on a sudden to be nearer the observer,

and their outlines are marked with great distinctness on the azure sky." This same condition of the atmosphere renders distant sounds more audible.

There is one redness of the East in the morning that means storm, another that indicates wind. The first is broad, deep and angry; the clouds look like an immense bed of burning coals; the second is softer and more vapory. At the point where the sun is going to rise, and in a few minutes in advance of his coming, there rises straight upwards a rosy column, like a shaft of dyed vapor, blending with, and yet partly separated from the clouds, and the base of which presently comes to glow like the sun himself. The day that follows is pretty sure to be windy.

It is uncertain to what extent birds and animals can foretell the weather. When swallows are seen hawking very high, it is a good indication, because the insects upon which they feed venture up there only in the most auspicious weather.

People live in the country all their lives without making one accurate observation about nature. The good observer of nature holds his eye long and firmly to the point, and finally gets the facts, not only because he has patience, but because his eye is sharp and his inference swift. There are many signs, the result of hasty and incomplete observations, such as for instance the way the milky way points at night indicates the direction of the wind the next day; so also every new moon is either a dry or a wet one. There are many other stories about the moon too numerous to mention. Again, when a farmer kills his hogs in the Fall, if the pork be very hard and solid he predicts a severe Winter, if soft and loose, the opposite, overlooking the fact that the kind of food and the temperature of the Fall make the pork hard or make it soft. Numerous other instances could be cited to prove that the would-be-shrewd farmer does not interpret nature in the right way, and that his conclusions being hasty and incomplete, are wrong, and until he studies nature understandingly, using a little common sense, so long will he be more or less under the ban of superstition and ignorance.

M.

Manuring with Clover.—Almost any one who has not thought of the matter will be surprised at the quantity of broken clover leaves, stems and blossoms that will be left on a field after the hay is cleared off. This is excellent but expensive manure, and its amount is greatly enhanced if the clover has been wet and has had to be handled frequently in curing. In a heavy rain much of the value of clover hay is washed out and goes to fertilize the soil.

FIELD CULTURE OF HOPS.

It is much to be regretted that this valuable product is increasingly perverted, year by year, from the manufacture of bread to that of beer. The adulteration of baking powders with alum, ammonia and other injurious substance threatens ultimately to cause the total disappearance of wholesome stale bread from this country, and those who have been in Europe will recall with regret the almost universally prevalent hopraised bread of the Continent.

Hops succeed well on any soil suitable to Indian corn, yielding best like that plant, on a rich, mellow, dry loam of alluvial origin. It is scarcely worth while to attempt their cultivation on sterile or wet soils. They require deep and thorough plowing—first in the fall, then again in the spring just before planting, the plow to be followed by the harrow until a root-bed is prepared as fine as a garden. Owing to the great width apart at which the furrows are laid off, as for watermelons, manuring in the hill is practicable and advisable; and I have found well rotted chip dirt an excellent dressing for hops.

The ground having been thoroughly pulverized, the marking off may be done with a two-runnered sled, the driver riding on it to insure a sufficient depth to the mark. If the furrowing is done with a plow, it is well to lay off a land with stakes wide enough to contain four, six or eight furrows—some even number—then furrowing to stakes, splitting the land each time across in the middle until the furrows approach each other as closely as desired. It is easier to make straight furrows this way than to work without stakes. When the driver has a furrow on only one side of him, he is less likely to do good work than when he is "splitting out the middle" between two which are equi-distant. The furrow should be about eight feet apart, and, if possible, running east and west and north and south. If manured in the hill, a shovelful is deposited in each cross.

The roots, consisting of pieces with two or three joints each cut from old hills, are dropped at each cross, three in a place. The chip-dirt may be thrown from a wagon directly on the roots, covering them to a depth of two inches; or it may be deposited previously, and the roots dropped beside it and covered with a hoe.

As the hop is diœcious, it requires the planting of a certain proportion of male roots—say one hill in a square of ten or twelve. To insure accuracy on the part of the droppers, it is best to take every twelfth row, and at every twelfth hill thereon drive a small stake or in some other way make it conspicuous before planting commences: these twelfth hills are for the male roots. These male roots are essential to the securing of the best results, as they promote a greater secretion of the valuable characteristic principle of the hop, the lupuline.

The first year the plantation is not expected to produce anything. The vines will trail over the ground, but they must be kept out of the way sufficiently to allow of careful cultivation with the shovel-plow or cultivator between hills, and with the hoe closely around them where the roots lie near the surface. In autumn it is well to gather the vines

together in a bunch on each hill as a mulch. I never knew moles or meadow mice to molest the roots. Poles must be planted the second year, two to each hill, one on each side, 18 inches apart, meeting and bound together at the top. If planted east and west, the two will brace each other against the most prevalent winds. In this section iron-wood furnishes the best and cheapest poles. In the rich, moist soil of northern slopes among the river hills, this tree will be found growing in vast numbers, tall and straight. This is especially the case where the undergrowth had been grubbed out and the forest trees left. After one cutting of poles has been taken off another set will spring up and reach sufficient size by the time the first wears out—if they are properly housed in winter. The ordinary crow-bar is heavier than necessary for use in setting poles. The upper three feet of the implement may be of gas-pipe, welded below to a prod suitable for the purpose. In a new plantation, all the vines should be encouraged to grow, and be assisted by being tied to the poles if neccssary. The tying ought to be lightly done with ravelings from old gunny sacks or hop-baling, or with common grocery twine; the two ends of the strings being simply twisted between the thumb and finger until they will kink down loosely. Thorough cultivation is continued throughout the season.

Of the various methods of harvesting, I consider the Bavarian the best; in this system the vines are cut close to the ground at maturity and left on the poles until the strobiles or hops ripen. At any rate, any one who has ever quaffed beer from one of the tall stone mugs of the old *Hofbrauhaus* of Munich will not hesitate to accord superiority to it. It is important to harvest the hops before the frost touches the vines, and also before fall winds and rains set in, as these agitate the catkins and cause a considerable loss of the rich yellow powder or lupuline, which constitutes the chief element of value. If the vines are cut up before the poles are drawn, it prevents laceration of the roots. It is well to have a large dry goods box of a height adapted to the size of the pickers—boys or men—with a flap of a gunny cloth stretched across the top leaving an opening at one side through which the hops can be dropped into the box. This guuny cloth prevents leaves and dirt from falling into box, so permitting the poles and vines to be laid across the top of it for the convenience of the pickers. From the box, the hops are crammed into sacks or bales for the kiln. A good size for the sack is five feet in length, by half that width. The hops should be pressed in loose, to prevent heathing and spoiling.

No beginner in the business should try more than an acre of hops the first year, and he may find difficulty in finding help to pick even this amount, unless he lives close to a town or village.—*S. P., Washington County, O., Country Gentleman.*

For some time after new potatoes come into market the old will, if well kept, be superior in quality, if not in price. New potatoes are watery and lack the starch essential in mixing with flour for bread.

TOP DRESSING MEADOWS.

Few American farmers know what a perfect meadow is. We do not give the requisite preparation of the ground; the adequate amount of seed, the proper quantity of manure, or the right varieties of grass to make a permanent and profitable meadow. The English farmers understand this business well and practice it liberally; consequently American travellers noting the deep verdure and luxuriant herbage of an English meadow, are astonished at the difference between it and an American field, and suppose there are insuperable obstacles in the soil and the climate, to which are owing the brown and bare appearance of our grass lands. But the English farmers frequently spend more than the whole value of an American farm in laying down one of their fields to grass, and they have a common proverb among them that "it breaks a man to make a pasture." But they acknowledge that the soil returns all favors of the kind granted to it by also believing that "it makes a man to break a pasture."

Until we have these ideas in regard to meadows we shall continue to have the poor apologies for them which are so common, and which are better fitted to plow under for a corn crop than for any other use, and yet the greatest need of our agriculture is permanent grass lands, and such meadows as will yield four or five tons of hay per acre or fatten one bullock to the acre. It is a mistake to think that our climate forbids it. There are some few fields of this kind that have been made, and thousands that have made themselves by an indigenous growth of the famous blue grass of Kentucky, and where one attempt succeeds others may. These considerations are timely just now when the hay has been cut and taken in, and the meadow is left without protection from the heat and drought and without food to make up for the exhaustion of the crop which has been taken off. Our grass seedings are make-shifts and merely incidents in a short rotation, in which the sod is plowed under to begin a new course, and in this case its value is no more than that which has been given to it in its preparation. We cannot get something from nothing, and if we want a grass field to last 40 or 50 years we must lay out in its preparation more work and value than for one which is exhausted in three days.

It takes time, however, to realize all our hopes and desires in this direction, but much may be done by caring for such grass as we have in a better manner than is usual. And we may profitably make a beginning by top dressing the meadows now, to enable them to make a quick recovery from the cutting and to strengthen the roots against the Winter.—*New York Weekly Times.*

Drought in India—American farmers will be interested in knowing that they need fear no competition from India in the wheat markets of Europe, for a twelve month at least. The drought that has prevailed in India is likely to make this one of the famine years, when food must be imported rather than exported.

WHAT BECOMES OF FERTILIZERS WHEN APPLIED TO THE SOIL?

A NEW THEORY.

I once believed that guano on wheat should be applied in the Spring. My reason was that if applied in the Fall at seeding time the constituents of the guano, being soluble, would be dissolved and carried away by the Winter rains, particularly when these rains are abundant. I have since discarded that belief as utterly false. After thinking over the matter and reasoning about it, I have come to the conclusion that the great Architect of the Universe would not have made the rain to destroy what is essential to plant growth; in other words, the food of plants.

I hold now that the true theory is that whatever fertilizes the soil soon becomes fixed by a law of assimilation as a part and parcel of the soil; that it cannot be separated by the solvent action of water from the soil; that fertilizers applied to the soil can be lost only when the soil is bodily washed away; that neither wind, nor water, nor sunshine can, in any way, waste or damage the fertilizer when once the soil has taken fast hold of it and completely assimilated it.

I will illustrate my meaning by saying that you may take a ton of the best Virginia soil and filter water through it for a year without diminishing, in the least, its productive capacity. If this were not so, how does it happen that creek beds and mill-ponds are always so fertile? If it be said that this is the result of vegetable decomposition, then would not the soluble products of this decomposition be sent adrift at every freshet when the water comes tumbling down with so much velocity? With the accumulated wealth of fertilizing material, and that entirely soluble, it seems to me that in every instance it would pass off with the current and leave the creek bed or mill-pond comparatively poor. I hold that this is not so; that whatever loss occurs is a loss of soil bodily with all this fertilizing matter locked up in it.

After assimilation takes place, then nothing can rob the soil of its fertilizing constituents except the roots of plants. It seems to me that this arrangement is so wise as to wear the impress of Deity. If this theory be true, then fertilizers should be applied in the Fall, so as to allow sufficient time for perfect assimilation by the soil. Nor do we take risk in fertilizing heavily, for what is left after the crop has matured is permanently fixed in the soil for the benefit of crops yet to follow.

The capacity of the soil for assimilating and fixing plant food must be very great. I have on one of my fields, an old-house place, that has

been in cultivation thirty years. The last time I had the field in cultivation the yield was very poor—far below the cost of production—except this old house plaec, and on this the yield was very heavy. Land once made rich will remain so a long time, because only the roots of plants can rob it of its fertilizing material.

I am aware that the view I have presented is at war with the accepted theories of science, but I think it has some foundation in reason and common sense.

I shall be satisfied if it begets and awakens investigation by thinking men, competent to determine whether it be true or false.

PETER PURYEAR.

Boydton, Va.

SUGGESTIONS TO FARMERS.

[For Southern Planter.]

In this essay it is the object of the writer to set forth his views as to the most important needs of the farming class. It is impossible, in an article of this length, to treat the interests of this class, who are the bone and sinew of the nation, as fully as they deserve; indeed, it would take volumes to do that, for agriculture is a business of such vastness and complication that its various branches each demand separate discussion. But if the following suggestions should prove of benefit to any struggling tiller of the soil, the object of the writer will have been attained.

As the primary and fundamental qualification for success, I should recommend *a small area* of land. In the time of slavery much larger farms could be worked than since, for a very obvious reason. But when the slave property was wrested from us by dint of arms—a blessing in disguise—we were unable to comprehend at once the changes in our policy and conduct rendered necessary by the altered condition of our affairs. This was perfectly natural, and it would have been phenomenal had it been otherwise, for "it is hard to teach an old dog new tricks." Consequently, after the war our Southern farmers continued to cultivate, as before, the same broad but not always fertile acres, with scarcely any capital, and with trifling free labor. Thus they continued year after year, with all this territory encumbering them like a millstone about their necks, and devouring with an insatiate greed all their resources and energies. If they used bought fertilizers, it was over such a large area as to preclude the possibility of remuneration. For in order to derive substantial benefit from the use of guano, it must be applied in a sufficient quantity to overcome the sterility of the soil; a

thin application is much less profitable than a heavy one. But let us return to the *post bellum* farmer. Unable to superintend in person the large and time-claiming expanse of fields, the ardent but overtasked disciple of Cincinnatus was compelled to employ a manager to assist him, which still further weakened his emaciated purse. This state of things continued until an order of court commanding the sale of all or a portion of the farm far debt put an end to the battle against odds which the farmer was making. Alas! how often, oh! how often, have we seen this very state of things in Virginia and the South since the war! The energetic but unfortunate, the toiling but thriftless, the meritorious but ill-requited farmer, with despondent mien and sickened heart, sees his goods and chattels and his land melt away under the hammer of the auctioneer. He is burdened with debt; debt contracted by store orders to the army of hands necessary to till his large plantation. Debt—due for fertilizers which, even if of any value, could not possibly yield profitable returns from the large space to which they were applied. Debt, due to the commission merchant, and lastly, his taxes unpaid. With such facts as these before their eyes, is it a wonder that our young men of the South have refused to farm here and have gone West, or else attempted to cleave a way to fortune through one of the over-crowded professions? But of late, and the writer heralds it with delight, our people are awakening to the necessity of curtailing the extent of their land, and thereby tilling more thoroughly and reaping more profitably.

There have been a number of articles written of late in favor of cultivating small farms, and thanks to providence, they are having weight, they are beginning to tell. In this policy lies the sovereign remedy for the ills of farmers. In small farms conducted on the high pressure system there is thrift, there is prosperity, there is success. Take from one hundred to five hundred acres, till it thoroughly, use all the stable manure that can be raked, raised and scraped, and if that is not sufficient, get the best guano also, and farm altogether on the elaborate and enterprising plan, if you wish success. Make a compost heap now, in September, and put in it all matter that will decompose. Now also is the time to fix shelter and racks and troughs for your cattle during the approaching Winter. Increase your stock to the largest number you can winter by buying cattle after frost falls, when they will be cheap, and feed all your rough food to them in the barnyard during Winter, and in the Spring the result will be that you have a fertilizer that is superior to any on the market. It is almost needless to add that the second growth of clover, cut and fed to the cattle during Winter, will

ensure a splendid stand of clover if their manure is hauled out and scattered in March or thereabouts. If you have a field of clover or of orchard grass, or of both together, without a sufficient stand, what is easier than to follow the above practice and perfect the stand. And in spreading manure, as well as sowing grass seed, be sure to put a plenty on one acre before you leave it for another; do not half enrich two, but enrich one; do not have a sprig of grass here and there when your seed has come up, but have a beautiful carpet of green over the whole, which will be effected by putting down plenty of seed. As to what is a plenty, there are different opinions, but in sowing grass seed always lean towards thick seeding. My experience leads me to recommend a peck of timothy seed to the acre, or three bushels of orchard grass, or a peck of clover. Each should be sowed both ways, and the orchard grass should be double-screened.

Following these suggestions, the practice of which has caused the prosperity of farmers in the North, we may hope with certainty to see our Sunny South, to which Nature has been so lavish in her gifts, rise from her thraldom and eclipse in prosperity that less favored section which has been temporarily dominant.

AMICUS AGRICOLÆ.

RAPE.

Editor Southern Planter,—In your last issue is an enquiry from "M" respecting the culture of rape and its value as food for sheep.

It is a plant that has been very little cultivated in this State, and not much in this country, as food for sheep, though the seed has, to some extent, been grown in the North and West to extract oil from.

The seed is sown in Virginia near the cities in the spring, and sold in the markets under the name of spring kale, to boil as a salad before cabbages are ready. It is preferred to curled winter kale by the market gardeners for spring sowing on account of its more rapid growth. Rape is a biennial plant which has been grown in Europe for centuries under different names, principally for sheep grazing or for seed to extract oil from. Green rape is very rich in flesh-forming constituents as well as fatty matters. It can be sown in the fall or spring. Being a rank feeder, it should be sown on good ground. If the land is not good it should have a good dressing of barn-yard manure or animal bone fertilizer. It can be sown either broadcast or in drills, but does best drilled thinly in rows as close together as they can be worked with plow or cultivator. Three to five pounds of seed are required

per acre. The poorer the land the more seed should be sown. The stems will grow three or four feet high. They are thick, juicy and covered with succulent leaves of considerable value for sheep-feeding, though the stems are often preferred by the sheep. They fatten with considerable rapidity upon this rich food. To keep them in health it is well to supply them with some salt and a small stack of straw to pull at in wet weather. Cut sheaf oats given in troughs are also an admirable addition to their food if any signs of unhealthiness becomes apparent through feeding on this very nourishing food.

If the field is large where the rape is sown, it is well to partition off a portion with a movable fence, so that the sheep may be allowed a fresh piece at intervals. And if I may be allowed a diversion, I would say that a movable fence is admirable when sheep are grazed upon turnips, so as to allow them only a small piece at a time, that they cannot bite turnips all over the field, causing them to rot. It likewise gives the sheep fresh land and manures it equally.

A first-rate crop of rape in England will feed twenty sheep per acre for twenty weeks. Of course the number a crop will carry depends on the season and the crop. In Virginia and the South I am inclined to think that it would be a good time to sow rape early in September and graze it in November and December, taking the sheep off in very frosty weather and putting them on again in the spring. Or it can be sown in October and grazed in the spring; or sown in February or March, according to locality, and grazed when ready.

The growing and grazing of rape is an admirable plan of improving the soil, as it leaves it in splendid condition for following crops. Dwarf Essex rape is the best to sow; my price for which is fifteen cents per pound. T. W. Wood.

Richmond, September 5th, 1884.

[Mr. Wood, who has favored us with this reply to an enquiry in our last issue, is an intelligent Englishman, doing business as a seedsman in this city.—Ed. S. P.]

Setting Milk in Wells.—Before the days of ice creameries and refrigerators our grandmothers learned the advantage of setting milk in deep cans in wells. They got more and better cream by this method, but there were some disadvantages connected with it. The milk would occasionally be spilled, and this soured the water and made it unfit to drink. The cream was disturbed in bringing up, and altogether it is much better to use the modern creamery, taking cold water from the well if ice cannot be had, and changing the water once after it has absorbed the heat from the new milk.

Cleanliness—Every housekeeper is exceedingly touchy in regard to any implied aspersions upon her capacity as a good housekeeper. And especially in regard to cleanliness. But it must be confessed that there are housekeepers, probably among the circles of acquaintance of our readers, who have not such a fine instinct of the virtue cleanliness as to practice it as much and as well as they might. Just as in reading, the accomplished student can perceive the meaning of a writer much more clearly than one who merely reads mechanically, so there are housekeepers who do not truly appreciate the true inwardness, so to speak, or the full meaning of this word. For instance, there are housekeepers whose domain is infested with vermin, the names of which are not mentioned in polite circles; where dust prevails, where out of doors waste matters collect and where at times the cellar and even the food in it are moldy. One has said that dirt was matter of any kind out of place; a few rose leaves strewn upon the carpet is as much dirt as some spilled coal or ashes on the kitchen floor, dust in the parlor, mold or mice in the cellar, or bugs in the beds. And this is very true, and moreover, this waste matter is all injurious to health. Dust is a collection of a variety of poisonous germs which may carry infection and disease; mildew and mold upon our or the dry specs of it in dust produce serious disorder in the system when breathed or swallowed; the drainage from garbage heaps and cesspools finds its way into wells and produces various kinds of fevers, Summer complaint, and malaria; and vermin which suck our blood often poison us by so doing. Just now when that frightful disease, cholera, casts the shadow of its dark wings over the land it is well that this matter should be thought over. Cholera is bred of filth and uncleanliness; and foulness paves a broad and easy way for it to pass into our homes without delay; everything that trespasses upon the most scrupulous cleanliness should be cleared away by fire, or by burying deep in the soil, and the greatest care should be taken to secure the perfect purity in all that is eaten and drank. For it is in this way that the provoking encouragement of the worst diseases are produced.

HARVESTING BUCKWHEAT.

Buckwheat may be made a very profitable crop, although it is often treated scornfully and called the lazy farmer's crop. It is no blame to a crop that it may be easily grown and yield a large proportionate income from a little labor performed. On the other hand, such a crop may justly be considered as a desirable one, for no man in his senses works for the pleasure of it or without the hope of an adequate recompense. And there is no other crop on the farm that can be put in and taken out of the ground so quickly and occupies it so short a time, that yields a better profit than this. It is true that this easy crop rarely gets justice done to it; but that again is not its fault; and the farmer who takes little pains with his buckwheat, is quite as apt to neglect his corn or potatoes or his cows. The farmer, however, who does his

whole duty by this crop will never have any reason to complain of its shortcomings in regard to liberal return, for fifty bushels of grain per acre can be grown when it is put in upon good soil, well plowed; and when it is carefully harvested. Perhaps no other grain needs more care than this, because of the peculiarities of its character; its tenderness to frost; its looseness upon the stock and the ease with which it shells and becomes lost and its softness and readiness to heat and sweat in the chaff or grain bin and suffer damage thereby. On this account it needs to be cut before frost; a damp day or time is to be chosen for the cutting and when it is thrashed it needs frequent airing until it is quite dry and then should be stored in a dry, airy place and not in large bulk.

Buckwheat will continue to bloom and ripen seed at the same time until very late or until its growth is stopped by a killing frost. In a late season we have had it green and growing and blooming until December upon high and dry ground where it escaped early frosts. But it is rarely that it escapes frost until October and then only upon high, dry land. Low fields should always be cut first and a watch should be kept against the first frost, so as to forestall it and get the crop down ahead of it. If this cannot be avoided, the grain should be cut immediately and put in shock when the immature grain will, in great part, fill out and ripen. But to be safe it is well to cut it when the lower grain is ripe and hard and the top grain has formed and filled. The latter will be filled from the yet green straw and the frost will not injure it. The grain hangs by very slender stems, which when dry break with the least shock and if cut on a dry, windy day, one half of the crop may easily be shelled out and scattered over the field. Early in the morning or late in the afternoon and in the evening, when the straw is damp from dew, is the time to cut the grain. It then lies in the swath for several days and during this time the substance of the straw nourishes the grain and fills it out. It is desirable to cut the stubble rather high so as to raise the straw up from the ground and give it plenty of air which helps the grain to ripen thoroughly. For the same reason that it is cut when damp, it must be raked when damp and it is put up in small bundles or gavels, kept loose or bound and set singly on end. The tangled heads of the grain keeps the bundles together and the butts of straw should be set somewhat spreading to stand firmly upon the ground and avoid oversetting by the wind. In this state it remains until it is quite dry and the grain is hard enough to stand threshing. It is then loaded into wagons with the usual racks, but to save the shelled grain, someasheets or blankets are spread on the wagon to catch it. It is taken at once to the threshing floor and threshed. To secure easy threshing, a dry, windy day is chosen for this work. The straw and chaff still retain much moisture and this prevents the possibility of stacking or putting away the crop in the barn, as it would certainly heat and suffer damage. For the same reason the threshed grain must be separated at once from the chaff and then should be spread upon a clean floor for a few days until it is dry enough to go into a bin, or to the mill to be ground, and even

in the bin it needs frequent turning and airing through the Winter to prevent it from heating.

Buckwheat can be threshed in several ways. Where it is a special crop and is grown for making flour, farmers make a threshing floor in the field by scraping and sweeping smooth a piece of ground 20 or 30 feet in diameter. The straw is spread here as it is drawn from the field and threshed by the tramping of horses or cattle in the oldfashioned way. This rough and ready method has some advantages and some obvious drawbacks. A slow but common method is to thresh with flails on a barn floor. This may do when the farm is not provided with a threshing machine but the machine does the work very quickly and very well when a necessary precaution is taken. This is to take out the concave, or upper covering of the cylinder, and put in its place a suitable piece of smooth, hard wood plank. The grain is quite soft and brittle, and close contact of the spikes of the machine will break much of it, but this change removes this danger. In feeding the machine it is well to crowd it rather hard so as to save the grain from injury as much as possible; the straw then forms a soft cushion, against which the spikes will beat and knock out the grain without damaging it.

On account of the softness and moisture of the grain, buckwheat should be ground upon a dry, windy, cool day. A sharp cold day late in the Fall will make quite a difference in the quantity and value of the flour. As the flour will not keep well it is sold as soon as it is ground; and as the demand is chiefly for Winter use, for the popular buckwheat cakes, it is advisable to dispose of the crop as soon as possible. The highest prices prevail for the first flour in the market, as soon as the cool Fall weather arrives; after which the market value gradually declines through the Winter, until the Spring, when good seed buckwheat is always scarce and brings goodprices.—*Montreal Family Herald.*

FARM LIFE.

It is a common complaint that the farm and farm-life are not appreciated by our people. We long for the more elegant pursuits, or the ways and fashions of the town. But the farmer has the most sane and natural occupation and ought to find life sweeter if less highly seasoned than any other. He alone, strictly speaking, has a home. How can a man take root and thrive without land? He writes his history upon his field. How many ties, how many resources he has! His friendship with his cattle, his team, his dog, and his trees; the satisfaction in his growing crops, in his improved fields; his intimacy with Nature, bird and beast, and with the quickening elemental forces; his cooperation with the cloud, the seasons, heat, wind, rain and frost. Nothing will take the various social distempers which the city and artificial life breed out of a man like farming—like direct and loving contact with the soil. It draws out the poison. It humbles him, teaches him patience and reverence, and restores the proper tone to his system.

Cling to the farm, make much of it, put yourself into it, bestow your heart and your brain upon it, so that it shall savor of you and radiate your virtue after your day's work is done.—*Scribner's Monthly*

WHEAT AND ITS CULTURE.

Something more than two-thirds of the wheat grown in the United States is of the Winter variety, and in the large extent of country where Winter wheat is an important crop, preparations for seeding should now be in active progress. While it is not considered necessary to take a whole season in preparing the seed bed for wheat, there is the same necessity for getting it in the best possible condition. The difference between former practices and present methods is that knowing now by experience what is required, farmers are able to accomplish the desired result with less waste of time.

The land must be clean. Not only do live weeds choke the wheat but dead weeds cumber the ground, and when plowed under make the soil so porous that it absorbs a vast amount of water in Fall and Winter, which, freezing and thawing, expands the soil, snaps the roots and throws the wheat plant on the surface. It is in the fact that heavy clay soils are only slightly pervious to water that their advantage in holding wheat roots consists. Farmers sometimes say that the roots get firm hold so that they cannot be thrown out. No matter how firm the hold the roots may get, frost will break them though they were tenfold as strong as they are. A good growth of wheat is a help, not by making the roots go deeper, but by covering them so that they will be partially protected from sudden freezing and thawing. Under a sod, frost never penetrates so deeply, and when once frozen early in the Winter the soil does not thaw until Spring. A close matted growth of wheat, completely covering the roots, is in this respect very like a sod.

One of the important points in wheat culture is to obtain a large spreading but not tall growth of the wheat plant in the Fall. This will insure a similar condition of the wheat roots, while a tall growth, not spreading, indicates that the roots have struck downward rather than pushing out horizontally near the surface. It is desirable to secure a large leaf growth in the Fall, provided it be of the right kind. In a wet, cool season wheat makes such a growth. In hot weather, especially if dry, the thrifty appearance of wheat is no indication at all of its probable condition the subsequent Spring or of the yield at harvest. Hence there is a great variety of opinions among farmers as to the advantage of large growth in the Fall, those who have secured it of the right character deeming it very important, while others say they can succeed just as well to sow very late and let the plant barely make its appearance before Winter.

There is no invariable rule as to the date for sowing wheat. It is far better to be governed by the weather. So long at it continues dry and hot wheat should not be sown, no matter if such weather continue until October. But after heavy rain or a succession of rains, followed by cooler weather (and all the better if there has been some frost) it is safe to sow wheat. This may come, as it did in many localities a year ago, early in September. It is after early wheat seeding under such conditions that the largest and best crops of wheat are grown. The Winter wheat crop this year is generally conceded to be very large,

although the Winter was everywhere unusually severe. The fact is owing to the favorable growth of the wheat plant, which enabled it to endure the severe cold without injury.

Something also depends on the mechanical condition of the soil and where its fertility is placed. The best farmers no longer plow under manure for wheat, nor do they attempt to make the soil in fine tilth to any great depth. Two or three inches of the surface is sufficient to enrich or to make fine for the seed bed. If we go deeper it is only with the effect of discouraging growth where it is wanted and encouraging it where it is not desired. It is for the purpose of compacting the soil that the roller is often and justly commended to wheat growers. But the fault of the roller is that it only compacts the surface. The lower soil, where firmness is most desired, is rather made more loose and friable. Rains and time will compact soil better than any other means. It is to secure these natural aids that land intended for wheat should be plowed as early as possible and only cultivated on the surface until ready for seeding. One of the very best implements for this purpose is the smoothing harrow, whose slanting teeth press the soil downward while sufficiently pulverizing the surface.

After the wheat is up in the Fall something may be done to induce a spreading habit of growth. It is well known that checking the first leaves will induce the plant to spread at the root and send out three or four and often more in place of one. Pasturing wheat with stock in dry weather is seldom hurtful, and often beneficial to subsequent growth. Sheep are better than cattle for this purpose, as they will not trample the ground sufficiently to destroy the plants, and what manure they drop will be so divided as to be a benefit rather than an injury. But sheep gnaw closer to the root than is good for the plant, and at the best they will only eat in patches. Something that will cut the leaves of the young wheat plant when three to five inches high, cut them uniformly and without too much tramping of the ground, would undoubtedly be beneficial to the crop. On a level, smooth surface a light mower will cut off the ends of the young wheat leaves most effectively.

With such treatment on rich soil and with a good growing season wheat may be made to nearly cover the ground before Winter, and the danger of Winter killing can influence results. Harrowing and rolling wheat ground after the plants are above the surface will serve the same purpose to same extent, though the bruising of the wheat leaves which these operations effect more injurious to the plant than a a clean cut of the leaves with a mower. The experiment of clipping the leaves of wheat in the Fall is well worth trying on a small scale, whether it can or cannot be made practicable for large fields.—*New England Farmer.*

Fall plowing.—If land is to be Fall plowed for any purpose the earlier it is done the better. If a growth of annual weeds start they will not have time to ripen their seeds if the plowing is done in September. All the seeds thus germinated help to make the land cleaner and by their decay richer.

CULTIVATION OF CIGAR TOBACCO.

PLANTERS SHOULD CATER TO THE WANTS OF THE TRADE IF THEY WISH TO PROSPER.

AWAY WITH THE OLD AND ADOPT NEW IDEAS.

Most of the growers of tobacco have their own peculiar methods to which they seem to be wedded. It is difficult to change their methods, as we found recently in trying to instill our views into the head of a very intelligent neighbor, as to the desirability of putting less seed in the hill for potatoes than a full grown potato to each hill. When I told him of late years that I was in the habit of cutting my potatoes, and was satisfied that two or three eyes to the hill were better than a larger amount of eyes to a hill, he quietly replied, "that his father had followed that course for many years, and he thought that his father knew how to raise potatoes."

This settled the whole matter, and nothing more needed to be said. This is the case with many tobacco growers. You may tell them manufacturers desire a finer wrapper, and one that burns well, and probably the growers will say in reply: "Well, our tobacco is fine enough now, and don't weigh anything as it is." As though they would like it if it was as heavy again. To its burning qualities, these same men will say: "I guess it will burn well enough," hence the growers will decline to buy lime or do any thing to get a good burning leaf. This is all wrong. The idea of following old time fashions, such as putting a stone in one end of the bag of grain to make it balance on the horse's back, should be out-grown.

WHAT THE CIGAR TRADE WANTS.

The trade demands, at the present time, a fine silky leaf, of good fragrance and of good burning quality, and the grower who proceeds counter to the demands of the trade will have to accept of low and unremunerative prices at harvest. The day has gone by when tobacco of the Irishman's lot, who, in describing it, said that "the leaves were as big as a barn door and as thick as his coat," will sell.

DIFFERENT VARIETIES OF TOBACCO CONTRASTED.

In contrast with the above described lot, look at the Sumatra leaf. I have seen bales of it carrying nearly 150 leaves to the pound, while twenty and twenty-five leaves of thick seed leaf, and sometimes even less, will weigh a pound. The pound of Sumatra is worth $1.50 to $1.90, while this large, Connecticut leaf is worth only about ten to fourteen cents per pound. Our growers now have a variety known as Havana Seed, of which I have tied up hands taking 108 leaves to weigh a pound. Ordinarily, sixty leaves will weigh a pound. Now, suppose we take fifty leaves as an average. Fifty leaves will make 100 first wrappers, and fully an equal number of second wrappers. Thus one pound wraps 200 cigars; or five pounds to the thousand, and when used the veins are very small, and the cigar is beautiful, commanding a higher price than the coarse ones usually made from heavy wrappers.

The fine ones sell readily, while the others are disposed of only at low figures.

TO PRODUCE FINE, DESIRABLE LEAF.

Again, we find fine tobacco selling readily and at remunerative prices, while the other is a drug on our hands. To produce fine, desirable leaf, we should fit our land well, supplying such plant food as will produce the quality of leaf desired and to have it in abundance at the proper time. A sufficient number of plants should be set to the acre so that a great overgrown leaf may be avoided. I think somewhere about 6,500 to 7,000 plants to the acre is the most desirable number. Constant attention in the growing season should be given to the crop, so as to induce a rapid growth, that there may be abundant time for ripening properly. It is all idle for growers to say that these attentions are of small avail in getting what is desirable. It isn't all luck in producing a good crop. There is a necessity for an intelligent manipulation of the crops for us to produce what we most desire.

Frequent hoeing is of great advantage. It keeps the crust broken, lets heat and light and moisture into the ground, and thus hastens the growth. Hoeing oftentimes disturbs the cut worm. I do not think that so much time should be expended on the hoeing as was the case in olden times. Some growers would pull away all the earth from the plants, often disturbing the roots in so doing, finally pulling up clean fresh earth about the plants, I prefer to leave the plant wholly undisturbed if possible. I have seen a man work all day on a third of an acre, while another grower would do an acre in the same time. I prefer to spend the time in hoeing it over again, and think better results will follow such a course.

THE BEST TIME FOR TOPPING.

The question of the best time for topping tobacco is settled by different growers according to their own preconceived opinions. Much depends on the fertility of the soil, the amount of manure in the soil to throw out the upper leaves and fully develop the lower ones. If the land is in high condition and the season is propitious, I prefer to let the blossoms show pretty well before topping. The upper leaves are apt to leave a whiter ash, and attain a larger size. Again, the grower can usually top a larger portion at the time he goes through the field the first time. The true Havana seed is liable to blow over, producing crooked, uncouth looking plants, and this is a strong objection to letting it stand long after the seed buds make their appearance. The weather, too, has something to do with it, if very dry. I don't care to exhaust any of the resources of the plant and hence top earlier. I will be seen there are many circumstances which come in to modify any and all rules.—*Farmer's Home Journal.*

Deep-sea Fish.—These fishes are all flesh eaters, with well-developed dental systems; the absence of light prevents the growth of ma-

rine algæ in these depths, and as a general rule the fish found below 150 metres are of necessity predatory. These deep-sea fishes, as Dr. Gunther reminds us, do not belong to any peculiar order, but are chiefly modified forms of surface types: some of these modifications being no doubt very extreme, but serving as indications not only of the struggle for existence, but also of the forms to adapt themselves to the extreme conditions under which they live. The most remarkable phenomena in connection with their deep-sea life is doubtless the tremendous pressure which has to be borne. No one seems to doubt that these deep-sea forms live as active a life as surface forms; indeed their very appearance seems to indicate a swiftness and energy of movement not to be surpassed by surface swimmers; and we may believe that the abyssal pressure has a great deal to do with keeping their feebly calcareous bones and delicate muscular system compact and in a condition for effective use. The placid state of the water at these depths must also be borne in mind—no storms affect them, and the extraordinary attenuation of some organs may be directly ascribed to this phenomena.

AGRICULTURE.

Every day you can hear it said that the South will cease to be agricultural. If by this is meant that mining, manufacturing and smelting will be, as in New England, the nearly sole occupation of our people, it is a mistake. If it means that there will be great diversification of industries, so that corn, wheat, cotton and tobacco, rice and sugar shall not be the main reliance of our people, it is true. While these are large money producing crops, they already furnish less than half the money value of the production of the South. Beyond all doubt our people have, in the last ten years, learned more of the real money producing value of their section than they ever learned since the settlement of Jamestown, and more than the most sanguine since the war thought they could attain. Our people are becoming saving people—laying up, accumulating, investing. Take Piedmont Virginia. We shall always make tobacco, but it will be better in quality and produced on a smaller acre. We shall raise as much wheat, but it is already raised on much less land, and this will be so of these standard crops. We shall, in fact we are, raising more hay and less oats, and so we are increasing our cattle, sheep and horses, and probably hogs, dairy productions, vegetables and fruit, as money producing crops have greatly increased. More is everywhere sold, from all good plantations—certainly much more in proportion to cost. So far, therefore, from agriculture ceasing or declining, our lands are improving and producing more money to the area cultivated than ever before. True we shall have a great area of waste or uncultivated land, but the increased activity in sheep and cattle raising and fruit, and the canning of fruits and vegetables is making an inroad on the old fields. The State of Virginia is too valuable for its products to be given up. Its productions range from the frigid zone to the tropics in fruits, flowers, trees, grain

and grasses. We shall some day astonish the world in our exports, and they will be the production of "forest, field and mine"—valuable for their quality, and profitable for their abundance. We can afford to foster and push manufacturing and mining, lumbering and milling. Our lands are wide enough for all. And if we are wise we will so adjust these diversified industries that one shall help the other, and all combine to render Old Virginia independent, prosperous and contented.—*Lynchburg Advance.*

A Bird's Appetite.—Dr. Wood says: "If a man could eat as much in proportion as a bird, he would consume a whole round of beef for his dinner. The redbreast is a most voracious bird. It has been calculated that to keep a redbreast up to its normal weight, an amount of animal food is required daily equal to an earthworm fourteen feet in length. Taking a man of average weight, and measuring bulk for bulk with the redbreast, I tried to calculate how much food he would consume in twenty-four hours, if he ate as much in proportion as the bird. Assuming a sausage nine inches in circumference to be a fair equivalent of the earthworm, I find the man would have to eat sixty-seven feet of such sausage in every twenty-four hours. I mention this in order to illustrate the amount of work which is done by insect-eating birds."

CULTIVATION OF RAMIE REVIVING.

Every one interested in American agriculture and textile industry will no doubt learn with pleasure that the Ramie production is reviving in the United States. A. N. Y. Ramie manufacturing company is now offering a good price for the crude bark. The cultivation of that valuable and prolific plant, suspended for want of an outlet and regular market, is now certain to become a very profitable adjunct to the American agriculturist, also to the textile industry.

Owing to a new process suppressing the clear scraping of the plant heretofore required from the farmer, the crude Ramie bark is now in demand for textile manufacturing, and at the very remunerative price of five cents per pound. As already known there is no cultivation so easy and so luxuriant as that of Ramie, even in the Northern states, since the plant is a nettle and not a semi-tropical growth as formerly understood. This fact was so conclusively demonstrated in New Jersey, after the Centennial Exposition, that the government of that state offered a liberal premium to encourage the production of this remarkable textile. But the bill signed in 1878 by General McClellan, governor of the state, became inoperative, for the reason above stated, viz.: the plant was to be scraped, decorticated, and prepared for manufacturing, as done by hand in China. Though many inventors offered ingenious contrivances as substitute for the hand work of the Orientals none reached the point of perfection and economy required.

The natural obstacles are the chlorophile and thick gummy matters increasing the fibre. No scraping machine can reach the inner filament without great expense and waste. This explains why the various prizes offered, principally by the British government of India, during the last fifteen years, have never been won.

Departing from that erroneous theory, a textile specialist of New York has, after several years of study, found a perfect process to disintegrate and prepare ready for spinning the crude Ramie bark, which can be furnished by any Ramie grower.

This process, which is also effective on any fibrous plant, has been licensed to the "RAMIE FIBRE MANUFACTURING COMPANY," now buying the same bark in question.

The production of this Ramie will be very profitable, since it is perennial, and when well planted from roots, yields two crops of one ton each per acre in the North and West, and three or four in the south, also in some parts of California.

At the rate of five cents per pound for the bark farmers may easily get $200 per acre annually.

It can be produced in almost every state of the Union, but whenever the winter is severe the roots should be covered with straw.

It is well known that when Ramie is planted with fragments of roots, in rows and distanced as potatoes, it grows fast and thick, drives away weeds and keeps the soil shady. It therefore requires less labor than other crops. After each cutting numerous fresh sprouts shoot forth, and a constant production of roots permits a continuous extension of the field.

Ramie grows close and straight from four to five feet high. It is full of sap, and the crude bark is removed as easily as that of basket willow, and more quickly by simply crushing. This simple crude bark dried and baled is to-day the product in demand as above stated. We must add that the leaves and woody part of this plant make excellent manure for the soil. The crude Ramie bark, when treated by the process in question, is disintegrated and bleached ready for spinning the finest yarn.

This valuable transformation system, unknown elsewhere, and used only by the "Ramie Fibre Manufacturing Co.," is secured in the Patent Office, and will no doubt be the agent of great evolution in the textile industry.

COMBING AND SPINNING OF RAMIE.

Doctor Forbes Watson of the British India office has recently published an interesting report on the Ramie or Rhea question. This exhaustive report reviews the story and the struggle of that textile plant in connection with the industry. Vast sums of money have been sunk in the attempt of scraping the green plant by mechanical agencies, and for preparing the fibre by the flax method of scraping the green plant by mechanical agencies, and for preparing the fibre flax method of combing. The result has been and will always be unsatisfactory.

The most curious part of Doctor Watson's statement is that he still

clings to the possibility of solving the problem through the same condemned principles. He recommends another decorticating and scraping machine, which is not different from its numerous predecessors.

It is evident now that the Ramie fibre will never be adopted by spinners unless it is cheap and completely prepared for combing.

Even the best prepared Ramie, or China grass from the Chinese is uninviting; for the reason that it is so gummy that few manufacturers can prepare it conveniently. Those who did attempt to use it had to look for a special chemist to ungum it, and to special combers to card it. After all this trouble and expense the Ramie yarn of England has never been up to the standard of a vegetable silk as intended.

The reason for this shortcoming is that the silicious or gummy matters always crystalized fast on the scraped filament, cementing the fibre bundles so closely that a violent combing or carding was required. Consequently the long silky fibre, being broken or cut, makes the yarn hairy and unglossy. Hence the inferior values of the result, though the fine, strong and silky fibre of Ramie gives higher expectations. We have good reasons to believe that these high expectations will soon be realised by the American textile industry.

A new departure in the treatment of Ramie fibre is inaugurated, as above mentioned, and the manufacturer will have the staple cheap, radically ungummed, and prepared for the finest spinning. Doing away with the old dfficulty, a new method extracts and divides chemically the fibre from the raw bark, and in such a superior condition, that no violent combing will be necessary.

In order to preserve its length and lustre, the Ramie fibre, thus prepared, should be combed by the worsted system, and made into slivers applicable to any purposes, such as tassels, dress-cards, passementerie, shoe thread, sewing thread, blankets, table linen, window curtains, plush, velvet, chenille, etc. The Ramie fibre mixes very well with wool, with silk, flax, etc. It is the finest, the strongest and the glossiest fibre after silk, and as it takes dyes readily, its application is unlimited.—*American Textile.*

Agricultural inventions.—A peanut planter has been patented by Mr. Christopher C. Boykin, of Ivor, Va. The invention covers a combination with slides having cups, of adjustable plates adapted to be set nearer to or farther from the same, to regulate the capacity of the cups, with various other novel features to improve wheeled planters for planting peanuts, peas, or other seeds.

A cultivating harrow has been patened by Mr. Joyeux Collins, of Tyro, Ark. This invention covers a novel construction, so the harrow can be drawn along a row of plants to cultivate both sides at the same time, or the space between two rows, so as to cultivate their adjacent sides at the same time, the side parts of the harrow, in either case, adjusting themselves to the inclination of the sides of the ridges. —*Scientific American.*

LETTER FROM COL. HARRISON, COMMISSIONER OF AGRICULTURE.

RICHMOND, VA., September 5th, 1884.

Editor Southern Planter,—My engagements having been pressing, I have delayed until now to publicly acknowledge the invitation of your esteemed correspondent, Col. Normand Smith, through the *Planter*, p. 370, to have "this (his) soil analyzed, and recommend what fertilizers should be used to insure a paying crop."

First thanking Col. Smith for his public-spirited offer (experiments of that sort are risky, expensive and troublesome), I beg leave to say, in reply, that soil analyses for practical purposes in the line under consideration have long since been conceded to be useless, because—

The proportion of fertilizing matter of certain soils needed to make land productive is so small that chemical science may well be unequal to the task of making a quantitative analysis of each element, even though it be present in sufficient amount to make good crops. This is no reproach to the chemists, or to the science of which they are the exponents, and which has reached a high degree of advancement and usefulness; it only means that there are things too minute for human methods, for weights and measures. For example:

An acre of average soil one foot in depth weighs in round numbers four millions of pounds; if of so-called "light," *i. e. sandy* soil, much more; if of "stiff" land, considerably less. Now suppose 300 pounds of super-phosphate, containing thirteen per cent. of phosphoric acid, evenly distributed through this mass, we have thirty-nine pounds of phosphoric acid mixed with four millions of pounds of earth, less than one pound in a hundred thousand, or one ounce in 6,666 pounds—one ounce to three and one-third tons of earth. Take out of this the average sample that the chemist works upon, one hundred grammes, and it would contain an amount of phosphoric acid too minute to be determined, although it may under certain circumstances produce a marvelous effect in the crop which has received just that dressing.

If we take nitrogen instead of phosphoric acid, the difficulty is still greater. Except Peruvian guano, few of the standard fertilizers contain as much as four per cent. of nitrogen, and yet we know that on certain soils as small an application as two or three hundred pounds of *ammoniated* fertilizer will have a striking effect—far beyond what is produced by one containing no nitrogen—so that an application of eight or ten pounds of nitrogen to the acre will show in the deep-green and vigorous growth of wheat or other crops. It would be incredible,

if experience had not established the fact, that a pound or two of nitrogen mingled in a million pounds of earth can be hunted up and appropriated by the rootlets of plants and the evidence of their having found it clearly shown in the growth of the plant, but probably there is no chemist on earth who could detect by analysis any difference between a sample of earth which had received no fertilizer and a similar sample from an adjoining plat on which eight pounds of nitrogen to the acre had been evenly distributed.

It is true that there are many things concerning soils which are easily determined by analysis. Often lime and potash are present in large quantities, and sometimes nitrogen, but this latter is not of frequent occurrence, and we are now considering cases where fertilizing principles may be present in quantity appreciable by vegetation, but not by analysis. For this reason, and for others which cannot be given here, I would not undertake to recommend a course of treatment based upon soil-analysis.

But I have formed a conclusion from the facts stated that the land wants *nitrogen*, although that should not be the case with an "old pasture." The product of each plat seems to have been in proportion to the amount of nitrogen in the fertilizer applied *in every case.*

My experience is that except on very rich land it is hard to get a paying crop of *wheat* after *corn*. If you use fertilizers, the cost thereof eats up all the present profit; the reward must be looked for in the improvement of the land, and in the stand of grass or clover which may be due to the fertilizer. Col. Smith "fails to see any profit in any of his experiments *except the manure.*" Now that seems to me the most losing one of all, unless he credits it very largely by the improvement of the land. He has strangely omitted to charge anything for hauling the sixteen loads of stable manure from Richmond and spreading it on the land. Unless I am widely mistaken as to the distance hauled, fifty cents per load would not be an over-estimate of the cost of carting and scattering, even with a manure spreader. This charge, added to the cost in Richmond, would put the manure plat much the lowest on the debit side. It is my belief that 250 or 300 pounds of Peruvian guano, with seven per cent. or eight per cent. of ammonia, would have given as good a crop of wheat, at less cost, but would not have improved the land nearly as much.

I much regret that Col. Smith did not state more particularly all the facts bearing on his interesting experiments; the texture of the soil, whether light or medium (he merely states that it is "gray, underlaid with stiff yellow clay"), how long it had been pastured and how long

since the pasture had been broken up, how the stable manure was applied (I presume it was harrowed in with the wheat, but this is not stated).

The cheapest way for Col. Smith to supply nitrogen, which I think his experiments show to be the element lacking in his land, is, as I believe, by the use of clover and peas. Peas act well as an ameliorating crop in all this region.

I would commend to Col. Smith's attention the article of Mr. Stacy, of Amelia, in the last *Planter*, though no doubt he has observed it.

While I have your ear, Mr. Editor, let me say a word through you to the public as to the cheapest way to destroy the smut germ in wheat. Each morning take about enough wheat to suffice for the day's sowing; empty on the barn floor, sprinkle with water and dust with slaked lime, stirring the mass until the grains are well coated with lime. It takes very little lime to do this, although the wheat will much increase in bulk—probably one-fourth or more. This is much less troublesome than dipping in bluestone or lime, and equally effectual; but it will only answer for wheat to be sown broadcast. I would not attempt to put it through a drill.

And now indulge me a little longer while I say a few words more about the "chess" question, only because my name has been mentioned by a gentleman whose ability as a lawyer and general intelligence entitles his opinions to great weight—one whom I am sorry to see upholding what I consider a mischievous error. At the same time he does me no more than justice in making the distinction between "suggesting a doubt" and "denying" that wheat or oats degenerate into chess. It would not be becoming in me to deny the possibility of what so many far wiser than I believe implicitly, but I assuredly do not believe it, and have never seen any testimony (well authenticated) that when carefully considered did not seem to me to amount to nothing as proof of a case of transmutation. The facts given on pp. 426, 427, to my mind prove nothing, and I am surprised that an acute lawyer set them down as *evidence*. The statement in brief is this: "Oats sowed rather late—succeeding Winter unfavorable—most of his neighbor's oats killed out—but *his* were not." (Just here is the fatal flaw in the chain of evidence. I hold that *his* oats were killed just as his neighbor's were, and that what he took to be oats was "chess" *ab initio*.) "When heading out time arrived, it was found that instead of oats the growth was nearly all chess."

I am unable in this to see anything that in the least strengthens the position of the advocates of "degeneracy." Capt. Pettit asks: "If

what thus came up did not spring from the oats, *what became of the oats?*" He has answered the question (to *my* satisfaction)—"killed"—like his neighbors'! Where did the seed of the chess come from? He has answered that question too, or furnished a solution of the difficulty. The land had previously been in cultivation and had grown up in old-field pines. It had probably gotten infected with "cheat," the seeds of which, like some others, are almost imperishable, under certain circumstances, but will stay in the ground ready to germinate when proper influences are brought to bear. Being very hardy, the "cheat" lived while the oats were killed.

The writer asks: "What farmer of observant mind has not noticed the thick growth of 'chess' where oats or wheat had been stacked the previous year?" My answer to this is, That if your grain is infested with "*chess*" you will see it growing around the old stock-yards, otherwise *not*. There is very little growing in that way on my farm, because there is little in my wheat. And I think the man who does not believe in the transmutation will have, other things being equal, less of it than the man who does believe will have. In this view the question assumes practical importance; aside from it, it is only a matter of speculation.

There is plenty of weed growth around my stock-yards—mostly cresses and dock—if there is cockle in the wheat, I find *that* too. Simply cases of "entangling alliances."

Another writer lays great stress upon the fact that "chess" was found in *Winter* oats but none in *Spring* sowed oats. The explanation of that is, I think, that these hard seed require, like partridge-pea, cold weather to make them germinate.

Your friend, RANDOLPH HARRISON.

THE WORLD'S EXPOSITION.

The Address of the State Board of Control—A Strong Appeal.

The Board of Control of the State's interest in the World's Exposition at New Orleans, at a meeting held on the 2nd of September, 1884, directed that an address be issued explaining the progress and purposes of the Board, and appealing for instant and earnest co-operation from the people of this State who take an intelligent interest in its prosperity.

The Exposition, in grandeur of display and extent of space, will exceed any ever made on the continent. It is held in the finest city in the South, and will attract millions of people. It has been announced in public proclamation by the President of the United States, and Congress has aided it with over a million of dollars. Mexico has appropriated $200,000; Louisiana, $100,000; the city of New Orleans,

$100,000, and her citizens $500,000; North Carolina, $20,000; and other States about $500,000.

The principal building will cover thirty-three acres, and is the largest ever built.

It seemed to us a great opportunity for Virginia to show her kindliness of feeling towards a sister Southern State, and to exhibit to the world the attractions, and the wealth, and the progress of her people. We thought it fortunate that our Legislature had met in special session, and at our request the Governor, without hesitation, sent a message recommending an appropriation of $10,000. To our great surprise the committees of both houses refused to report any bill. They adjourned to meet on the 22nd day of October, only eight days before our exhibit must be prepared. We were compelled either to abandon the attempt or go forward without the aid of the State, and without delay. We determined to make our appeal to the corporations and people of the State for help. The great railroad corporations have responded promptly. The Chesapeake and Ohio, the Richmond and Danville, the Norfolk and Western, and the Richmond and Alleghany are already at work calling exhibits from along their lines, which will cost them many thousands of dollars. The merchants and manufacturers of Richmond are devising plans to make a fine display for that city. The miners of the Southwest are first in the field with offerings. The railroad lines give us special transportation rates. We have received from New Orleans the first instalment of $5,000 guaranteed us to help in the emergency. With this encouragement we feel warranted in completing our preparations.

The United States Commissioner has appointed five assistant commissioners to look after the interests in the separate departments of mines, manufactures, agriculture, and stock. We have appointed agents in all parts of the State, and established depots at principal points. We have appointed a committee to ask financial aid from municipal corporations and individuals, to be refunded in case the Legislature makes an appropriation.

There are only fifty-six days for preparation. It is impossible for this Board alone to make or secure a considerable exhibit. It is possible for the people of this State, heartily co-operating, to make, with all the treasure and energy they have at command, the Virginia section a place to which every Virginia visitor shall go with pride, and any other visitor with wonder. At this moment it is not thought best to seek for great variety, but to secure the best of every class to make the whole display massive, simple, and striking. We ask for correspondence and suggestions, and for volunteer help. Articles delivered at the depots and passing the examining committee, will be sent and returned free of charge to the exhibitor. All communications should be addressed to the nearest agent or to secretary.

By order of the Board. W. W. FINNEY, *Secretary.*

Organization.—United States Commissioner, J. M. Blanton; Alternate, J B. Pace; Mills and Furnaces, R. E. Blankenship; Manufactures, Norman Randolph; Tobacco, P. H. Mayo; Mines, Jed. Hotch-

kiss; Agriculture, Randolph Harrison; Live Stock, William E. Stuart.

Board of Control: His Excellency William E. Cameron, J. M. Blanton, J. B. Pace, V. D. Groner, Randolph Harrison, L. Lottier, H. C. Parsons, A. H. Drewry, C. R. Boyd.

Agents: Richmond, Thomas Christian; Petersburg, Dr. D. M. Brown; Danville, W. T. Sutherlin; Lynchburg, Peter J. Otey; Norfolk, John L. Roper; Charlottesville, R. T. W. Duke; Staunton, W. A. Burke; Lexington, W. H. Barclay; Roanoke, Joseph H. Sands; Winchester, Hon. F. W. M. Holliday; Alexandria, Herbert Bryant; Abingdon, Walker Armistead; Fredericksburg, Joseph Scott; Cripple Creek district, Andrew Porter—post-office, Speedwell.

Executive Committee: His Excellency W. E. Cameron, Governor of Virginia; Hon. J. M. Blanton, United States Commissioner; Hon. Randolph Harrison, Commissioner of Agriculture.

Principal Depots: Richmond, Danville, Staunton, Roanoke.

OVER-PRODUCTION.

[For the Southern Planter.]

There seems to be a conspiracy of factors operating in the physical world to create over-production in every department of human industry. Starting with the fact that there was 80,000,000 bushels of last years' crop of wheat carried over into this year, with the present as the largest yield ever made in this country, with the assurance that the crops of England and all Europe are better than they have been for eight years past, and the additional facts that Egypt, Turkey and India are just putting themselves in position and condition to grow wheat for the markets of the world, and the promoters of this industry in these countries are fully alive to the fact, that to be made profitable it must be cultivated in the most improved manner, with the best implements to save labor and cost, and that transportation facilities must equal the best anywhere, or there can be no profit earned for the capital invested.

The outlay necessary to push the industry wherever made necessitates its most thorough and exhaustible perseverance for the following reasons: The amount of capital seeking investment has passed beyond the boundaries of profitable employment. This is demonstrated by the wild-cat stock speculations so frequently and so generally indulged in. If opportunities to earn fair profits in legitimate industries were plentiful, capital would not gamble so frequently as now. Hence, wherever there is a fair opportunity for making a profit, by the liberal employment of all the best known facilities, though they are complicated and expensive, the industry will be pursued and pushed to completion.

It will not be possible in the future to pursue these industries in distant countries just when prices are high and abandon them during a period of low prices, because the investment necessary to succeed is no longer the primitive methods of the East, but the complicated and expensive methods of the West. Hence, to be made profitable, they must be *persistently continued* and the newest and best labor-saving methods continually incorporated, or the investment must be abandoned.

From this outlook it must be manifest that there is no possible prospect of prices ever recovering from their present status permanently. What, then, shall we of the South do?

It is manifest that where transportation and the necessary charges for marketing wheat amount to twenty-five cents per bushel, there wheat cannot be grown; that is, wherever wheat will not net over fifty cents per bushel, it cannot be grown. This will be the case all through the Great West.

I learn that the cost of fallowing and seeding a crop of wheat is at least $3.50 per acre; that interest on land and taxes amount to $4.50; that to make an average of twenty-five bushels per acre, either farm-made manure must be handled and hauled out, or fertilizer applied, and in either case it cannot be accomplished for less than $3 per acre. It will cost to harvest, handle and thresh at least $2 per acre. Now, put these together, and you have $13 as the cost of an acre of wheat, without anything for the wear and tear of implements, buildings, &c. If the farmer succeeds in averaging twenty-five bushels per acre, which nets fifty cents per bushel, he would be minus fifty cents per acre of the cost of production. Wherever these figures apply, there wheat must cease to be a staple money crop. It must be supplemented by meat, which will bear transportation and other charges.

In my own locality I am perfectly satisfied that we can make our inexpensive lands produce twenty-five bushels of wheat per acre. I know that I am met with the statement that Charleston rock has been used and no effects manifest, but as yet I have found no one who has failed to get a good crop of clover on the land where they have used the rock liberally, and put the land in fine pulverent condition when they seeded the clover. If any have failed to get clover, having complied with the reasonable conditions of success, I would like them to report through the *Planter*. I want the truth in the premises. We need the truth upon this point at this time. I am persuaded that Charleston rock is our panacea. It will give us the command of the wheat market, at least so long as our lands cost so little in interest and

taxes, and we have the command of transportation at about six to eight cents per bushel.

It will not do to say that Charleston rock gives no results till you have used it for the special purpose of producing clover and it has failed you.

I will not ask the same consideration for it that what is sold for raw bone and other fertilizers are conceded. I know that several of my neighbors have been using bone and other raw bone wheat fertilizers liberally for years, but they have little, and some of very scrubby, clover. I ask not that the application of equal amount of Charleston rock shall give equal result with these standard bone fertilizers, but I claim that it will give better results; and I am sure *wherever bone will give clover, there Charleston rock will.* It is the phosphoric acid that gives the clover, and the rock yields it most abundantly. It will not do for those who get clover from bone to say the rock won't give it. Try it fairly before you pronounce your judgment.

But here, lest it should be thought that I have some interest in the sale of Charleston rock, let me say once for all, I have none at all. But I am deeply interested in the welfare and success of my fellow farmers, and am frequently grieved to see how persistently they continue the use of expensive dissolved and ammoniated fertilizers, while they can produce so much better results by the use of the inexpensive rock.

For the present I would simply say, cheer up, my brothers; the price of our product will induce at least double the domestic consumption than ever before occurred. It will enter into the rations of our domestic animals much more largely than ever before, and we will thus find a home market for the surplus we have been shipping abroad. If the prices are low, we will retain much more of its fertilizing properties on our lands, and on the whole the change will be found advantageous.

If we can grow twenty-five bushels per acre, as I am certain we can, we can grow it to a profit and live by it. To do this every farmer must make himself a master of his business. He must learn to handle the most complicated machinery and to use everything that will reduce the cost of production. We are engaged in a competitive race for superior skill and capacity to handle our inheritance. Will you suffer yourselves to be distanced in the race? Shall the South be put to the blush and acknowledge that she is inferior to her brothers in other sections of the country? I am confident I may answer for you—No!

G. B. Stacy.

NEED OF IMPROVED SEED WHEAT.

The lack of success in the culture of wheat south of the thirty-third degree of latitude, is due to several causes, the principal ones being soil and seed. As a rule, the rich lands in the locality named are by no means as suitable for wheat as the heavier clay soils of the high lands. A rank growth of straw is not desirable, even in the more favorable localities. What is most needed, in order to attain even a fair degree of success, is a variety that is comparatively rust-proof.

Of all the varieties that have been disseminated, the Dallas is now the most popular. The Dallas has a full, plump, amber-colored berry, with stiff straw and good heads. The Nicaragua variety, which was introduced and tested in Campbell county, Georgia, did not meet the expectations of the growers on account of the poor quality of the flour produced from it.

If not misinformed, the anti-rust wheat advertised in another column is the genuine "Bill Dallas" wheat. At all events, there is an unusual demand for it, which is likely to continue for several years.

Another variety, which is known as the Early Red May, is quite popular in the lower portions of the wheat-growing belt. It has a short head, short straw, and small berry. It varies much in yield, ranging from twelve to twenty-five bushels to the acre. A prime quality which it possesses is that of early ripening; another, is that of producing a certain crop when other varieties fail. It originated in Virginia, and soon became quite popular in Central Georgia and Alabama.

There is need of more persistent experiments in the producton of rust-proof varieties that will surpass any of those yet introduced. There is no variety but what has some defects, which, by careful selection of seed, ought to be eliminated. An early-maturing, heavy-yielding variety, and one that will surpass all others in quality and quantity when manufactured into flour, is the variety that is needed, and one that, we feel quite confident, will soon be forthcoming.—*Farm and Fireside, Louisville, Kentucky.*

Soil Analysis.—Not so much is said now as formerly about the advantage of analyzing soil to learn what fertilizers are needed. It is a very uncertain and unpractical method of finding soil deficiencies. If crops are poor in favorable seasons it is evident that some element of plant food is deficient. The lack is more likely to be phosphoric acid than anything else. Try that. Then if it does not produce the desired result, add nitrogen and potash. These will invariably bring a crop if applied in large enough quantity, however barren the soil.

Liquid Manure.—Labor is too dear in this country to profitably use liquid manures. If the soil is kept well fertilized, frequent cultivation will supply crops with moisture more cheaply than it can be drawn on the land and distributed.

Editorial.

ORCHARDS AND GRAFTING.

Nothing contributes more to the comfort of a farmer's family than a good orchard, which should mainly consist of apples, peaches and pears. Grapes and the small fruits, such as raspberries, currants, gooseberries, &c., should also have attention. An orchard of well selected fruits, properly cared for, brings its profits also. On average farms these profits may be small, but will afford ample pin-money to the wife and daughters of the household, and the fruit which will fall from the trees, and are otherwise worthless, will go far towards fattening a few pigs, so called by our Northern friends, or hogs, as we say. The Summer and Fall varieties of apples are especially desirable for this purpose, and the sound and perfect fruit should be dried by the *evaporatiny* process, to be ready for a market at a large profit on the labor expended. This labor the household can perform, without disturbing the farmer whilst engaged on his field crops. The fruit of Winter varieties should be gathered at the proper time and stowed away for use in the family during the Winter, and the surplus beyond a liberal family consumption may be sent to market, and if carefully assorted and packed, will command a good price. In respect to the Summer and Fall apples we have omitted to mention that the cider and vinegar which may be made from them supply other comforts and necessaries in a family, and a further source of profit from a surplus of either.

We now propose to give some few practical directions as to starting and caring for an orchard. What we may say is mainly our own practical experience, after having grafted with our own hands the trees necessary for two orchards, and nurtured them into bearing; and these orchards, after the lapse of about twenty years in one case, and about thirty in the other, are now in full vigor, except as to one from some neglect after it had fallen into other hands.

The land selected for an orchard should be a *naturally* drained soil, having a porous subsoil which will not retain water longer than is necessary for the healthy use of the roots of trees or plants which grow in it. If it is contemplated to plant the trees in the Spring the land should be well plowed (and better if subsoiled) in the Fall, *and then well enclosed and kept so*, to prevent all injurious depredations. The next thing is to secure the catalogue of a reliable nurseryman, and note on it the number and kinds of fruit trees to afford a proper variety, and to fill the ground allotted to them. Then arrange that the trees

are to be delivered in good condition not later than the middle of the following March. At the first spell of good weather nearest to this period the land should be harrowed and cross-harrowed to a good tilth, and then checked off at right angles with a single shovel plow at distances of thirty feet for apples and twenty for peaches and pears. A greater distance would not be objectionable if the allotted space for the orchard will allow it, as trees, like other plants, thrive best with ample room. At each intersection of the check-rows a tree is to be planted by scraping out with a hoe enough of the surface soil to receive the roots, after the removal of the tap root with a sharp knife. The tree, as placed, should be aligned both ways, and then *fine earth* must be sifted with the hands between the roots, which, after being covered, may be *jostled* a little to ensure close contact; and then the soil drawn out is returned and *pressed firmly* by the foot.

At the time of planting out the trees early Irish potatoes may be planted in as much of the orchard space as can be devoted to them, and these if manured in the hill or drill will advance the growth of the trees. If the whole ground is not required for potatoes, the balance may be left for cornfield peas to be drilled and cultivated, or sown broadcast, but in the interval of time before the sowing or planting of the peas the ground should be occasionally harrowed to prevent the growth of grass or weeds; and we may here urge the precaution that when a plow is brought into a newly planted orchard great care should be taken not to *run so deep* or so near as to interfere with the roots or to jostle and bruise the bodies of the trees.

An orchard should be cultivated each year until it comes into bearing in such crops as potatoes, peas, beans and turnips, but never in corn or small grain. The manure applied to these crops will give vigor to the young trees. In place of these crops some orchardists advise buckwheat to be sown, as it takes but little from the soil, and when fallen affords a good *mulch* to the land and adds to its fertility. The cultivation of an orchard should cease after it gets into bearing. The land may be then set with orchard grass, and after a good sod is formed calves and sows and pigs may be pastured on it, but no horses or grown cattle should ever be allowed inside of an orchard enclosure.

We have assumed, so far, that the trees for an orchard are to be procured from the nurseries, but it may be that a number of farmers cannot conveniently spare the money to procure them, and that there are others so situated in respect to railway stations as to make transportation inconvenient and expensive. To such we would advise *grafting*, as we did in the two cases mentioned, when reliable nurserymen were

not as convenient, and transportation facilities as good, as they are now. If grafting is determined on, the first step is to procure the scions, or grafts, of the best fruits in the surrounding country. These are twigs of the last growth cut from a fruit-bearing tree, to the length of about fifteen inches and about as large as an ordinary lead pencil. No one having a good orchard of choice fruit will object to permitting a few twigs to be cut from each tree. These scions may be collected at any time during the Winter, from November to February, and as collected should be tied in bundles and properly labeled. They are then to be placed in a box and covered with sand and stored in a cellar, or so protected that they will not freeze. It is best that the sand when put in the box should be dry, so that it will readily fill the spaces between the twigs, but afterwards it should be *slightly* moistened, and kept so, to prevent the twigs from perishing by becoming too dry. With the first mild and open weather in March a plat of ground should be selected in the garden and deeply spaded, or hoed up, chopped and hand-raked until a good tilth is obtained. The day before this work is done the roots to which the scions, or grafts, are to be attached are gathered. This is done by going to any old and worthless apple, peach and pear tree, and with a grubbing hoe or pick dig a few feet from the body of the tree, and when a large root is found trace it outwards and cut from it all the rootlets attached to it, and place them in a large basket or sack to be taken home. A few hours work will be sufficient to secure rootlets enough for five hundred grafts.

Select a comfortable position in a south porch or shed, and proceed to arrange the roots for the reception of the grafts. Take such as conform in size to the scions and reduce their length with a sharp knife to about six inches, and leave attached all the smaller and fibrous roots. One root as taken from the original tree will sometimes bear several cuttings of this kind. As this trimming goes on, lay the shortened and selected roots in a pile and keep it sprinkled with water. When these amount to the number of grafts intended to be planted out, then bring forth the box containing the scions, and proceed with the work in this manner: Each bundle of scions should be worked up separately, that the varieties may be noted and so planted that they may be known. With a sharp pocket knife cut the scions into lengths of about four inches and have only two buds left on each. At the *lower* end give a long (one inch) sloping cut, and take a root of corresponding size and at its *upper* end give a similar cut, then fit the two together as a mitre —the bark of the root and of the graft fitting snugly. With a woollen string, such as is used for knitting coarse socks, tie this lap firmly by

wrapping the entire length of the lap, and the graft is then ready to be set in the garden plot prepared for it. It is most handy to proceed with the grafting until the desired number of each variety is made up. Then go to the garden and stretch a line across the prepared ground, and with a planting trowel, or a sharp wooden paddle, open a hole under the line deep enough to receive the root of the graft, and to cover with the earth the lap and tie, and possibly the lowest bud of the scion. The fine earth must be gently placed by the hand to the root, and the grafts should be about twelve inches apart in the row. Place small stakes between the varieties and number them, so that a written memorandum may be kept. After all the grafts have been planted out place straight fence rails, or poles of same size, on the sides of each row to protect them from disturbance until a union is formed. When the grass and weeds begin to appear the rails are taken off and replaced after the ground has been made clean by a careful scraping. When the grafts have grown a foot in height the rails may be removed, but the young trees should be kept clean during the growing season. In a favorable soil and with proper care they will attain in one year the height of five to seven feet, and will be ready to be transplanted in the orchard the next Spring, and there managed as before described.

We have thought it probable that it might interest some of the readers of the *Planter* to have some practical suggestions as to starting and managing an orchard, and the Fall is the proper time for plans to be laid and for commencing the work, hence we give these suggestions now.

BEE-KEEPERS' CONVENTION AT STATE FAIR.

At the State Fair, the 22d, 23d and 24th of October next, it is expected that there will be an unusually fine display of everything in the apiarian line; a great variety of bees and queens, smokers, hives, swarms at work, &c. The wax-working department will be fully shown, from rendering the comb into wax, refining, making into sheets, with samples of wax from the wax extractor from the crude to the sheets ready for the hive, together with the outfit of a full-working apiary.

The Agricultural Society is doing what it can to render this department an interesting feature of the State Fair, and by this means to supply the best practical information to persons desiring to raise bees, either as a business or to provide themselves with honey for home-use.

To carry this intention more fully into effect, the Society propose that the Bee-Keepers of Virginia and other States shall hold a Bee-

Keepers' Convention on the third day of the Fair, October 24th, for the full discussion of every matter connected with bees—food, handling, preservation, apiarian implements and hives, best varieties, &c., and as this industry has now become of wide extent and importance, it is expected that there will be a large assembly of amateurs as well as professionals, and as the meeting will be open to all, much valuable information will be imparted to those who attend for the purpose of obtaining knowledge on the subject. To make the Convention as successful and large as possible, we hope that our exchanges will make mention of it in their next issues.

[For Southern Planter.]

BEES AT THE STATE FAIR.

To the Bee-Keepers of the South and all interested in this branch of rural economy :

One of the principal attractions at the coming State Fair at Richmond, October 22d, will be the Bee and Honey Exhibit. This feature will be shown under a mammoth tent, forty by sixty feet, with an annex twelve by twenty. Every bee-keeper in the South should turn out and witness this display and the wonderful workings of these little busy bodies, which will be shown in glass cases so arranged that the transformation from the larva to the full-developed queen or mother bee can be fully studied. One exhibitor will show eighteen cases of living bees, representing twelve species or varieties, with their queens and progeny, which alone will well pay any bee-keeper to attend the Fair. In addition, one of the latest and best systems of queen breeding will be fully demonstrated and explained. In fact, the display will be a model apiary, conducted on scientific principles, by one of America's bee-keepers who has spent over thirty years in the study of the bee.

The science of transferring from box, hive or "gum" to the movable frame hive, and all the manipulations necessary to conduct a first-class apiary, with a view for profit, will be fully and practically illustrated. Ye olden time broom-straw and box-hive adherents, turn out in force and witness this exhibit, and when you return home, it will be with the satisfaction of having spent the most profitable day in your existence. Think of the "sample box" of luscious nectar placed on exhibition by a lady who has managed thirty swarms this season, and, as her reward, over 3,000 pounds of honey that will readily command $600 for her three months' work. Every lady in the land can handle bees just as well as this dame; and such "pin money" is not to be sneered at. Let every lady visiting the Fair *inspect* this exhibit.

Another exhibit will be a pyramid of honey, raised by a prominent Virginian, representing over three hundred pounds, the product of one swarm of Bellinzona bees this season.

Several other exhibitors will contribute machinery, wax, honey and bee-keeping appliances, making the exhibit the finest ever seen in this country.

A collection of hives of the very latest design for profit and ease of working will repay the trouble of inspecting by any bee-keeper of the South.

A Bee-Keepers' Convention will convene during the Fair with a view of forming a National Association, to be conducted for the interests of the bee-keeper.

Prominent talent will be invited to address the meetings, of which due notice will be given hereafter. L.

Tomato Sauce.—Tomato sauce which will keep well is made of one dozen perfectly ripe tomatoes, two teaspoonfuls of the best powdered ginger, one head of garlic chopped fine, two tablespoonfuls of vinegar, one dessertspoonful of ceyenne pepper and one of salt. Put the tomatoes into a stone jar and let them stand in a hot oven until they are tender. When cold remove the skins and mix the above named ingredients with the pulp and juice in the jar. Then put it away in bottles and seal tightly. This sauce is said to keep well for years. The tomatoes should be in the oven for several hours, and become thoroughly cooked.

Brine Pickles.—Take a stone jar and sprinkle some coarse rock on the bottom; then put in a layer of cucumbers, then a layer of salt, until you have the jar full. They will make a brine for themselves. As they settle down, fill up if you wish to. When wanted for use, take out what is required, and pour boiling water over them; soak until fresh enough, then put into vinegar. To keep pickles free from scum, they must be washed clean and the little black pickles removed.

Canning Peas.—Peas may be prepared for canning by simply cooking as for the table, leaving out the seasoning, and filling the cans quite up to top while boiling hot. Have the peas rather young and tender. Add the seasoning when you open the cans to use them. Keep them in a cool, dark place, free from dampness.

Chow-Chow.—Tomato chow-chow is made of six large tomatoes, one large onion, one green pepper, one tablespoonful of salt, two of brown sugar, and two small teacups of vinegar. Peel the tomatoes, cut them into small pieces, and chop the onion and pepper very fine; stew gently with the vinegar, etc., for an hour.

The Southern Planter.

SUBSCRIPTION: $1.25 a year in advance, or $1.50 if not paid in advance.

TERMS OF ADVERTISING.

PAGE RATES.

	1 Mon.	3 Mons.	6 Mons.	12 Mons.
One-eighth page	$ 2 00	$ 5 00	$ 9 00	$ 15 00
One-fourth page	3 50	9 00	16 00	27 00
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One page.....	12 00	30 00	50 00	90 00

COLUMN RATES.

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Half column....	3 50	8 50	15 00	27 00
One column.....	7 00	15 00	27 00	50 00

☞ Special rates for cover.

☞ Reading notices, 25 cents per line, of brevier type.

EDITORIAL NOTES

AN APPEAL.

Our subscribers must pardon us for again calling their attention to bills which were rendered with the July issue. These bills covered arrearages from January last and prior thereto. Not more than one in twenty have been paid. This is occasioned, we are sure, more from inattention than from indifference; but from whatever cause, the burden falls heavy on the interests of the *Planter*. It cannot be reasonably expected that it must pay cash for printing, paper, free postage, office rent and other expenses for the naked privilege of going to its subscribers. The *Planter*, under its present management, has never owed a cent to any person, and it wants to live in this way. Whenever it becomes necessary to contract debts, then it must stop; or, to curtail expenses, drop from its mailing list the name of every subscriber who is more than six months in arrear. Should such a step become necessary it will be with the hope that all whose names are dropped will pay up arrearages and renew their subscriptions; and if they do not, their bills must be sent to legal collectors in their respective localities.

This is plain writing, but none too strong for fair-minded men. The *Planter* is doing its fair proportion of work for the agriculture of the country, and so has the right to claim what is legitimately due it.

If bills have been mislaid, subscribers will please remit for one or two years, as they may judge their accounts to stand, and due credit will be given and receipt returned.

THE HARVEST MOON—WHAT IS IT?

This question is asked us, and at the first blush of it the reply appeared simple enough, but we found ourself in the condition of *knowing* and *not knowing;* and this may be the case with a large majority of people. A little investigation put us all straight, and the reply is now given: It is thus called because it is an irregular lunation which occurs each year early in September about the time of the English harvest. It is the nearest full moon to the equinox, and by reason of the small angle which, at this time, is made by the ecliptic and the moon's orbit with the horizon, it rises for several consecutive days very soon after sunset. More continuous light from the moon is therefore given at this precise period of the year than at any other. The harvest moon appeared this year on 5th September on its *full*, and for three nights before there were but about thirty minutes difference in time of rising.

A GOOD IDEA.

Many persons using ensilage are at a loss for material with which to weight their silos, particularly in lower Virginia, where stone is scarce. A friend tells us that Major Nowland, upon his King William plantation, has adopted the plan of weighting with his Winter supply of *fire wood.* This he cuts green during the Summer and with it weights the ensilage as the silo is filled, and will reap the double advantage of accomplishing his present purpose with

least labor and securing a supply of well seasoned wood for Winter use.

GRASS FOR A NAME.

We have received from a subscriber in Fauquier County, this State, two samples of grass to be named. We think there can be but little doubt that they are two species of *foxtail*, genus *Alopecurus pratensis*, which abound all over the State and come into head abont the middle of August. It is a grass which has no value whatever, as stock of no kind will eat it. It is simply a pest, but not so much as some other grasses, as its roots are small and do not penetrate the soil more than an inch in depth, and does not appear in cornfields until the crop is laid-by, and it often puts up thickly in hayfields after mowing. It is an annual and less objectionable on that account.

THE TARIFF.

We have several communications on the snbject of the effect of a tariff for protection to agriculture; and strange enough, one from the Dominion of Canada giving the writer's views of its effects there, and his argnment that the effects in the *States* must be the same as in *Canada*. This is a snbject for the political journals, but we inadvertently admitted two articles in our Angust and September issnes on the principle that they discnssed the question in the abstract without regard to political parties. It is so difficult to do this, that we see the propriety of remitting the question of the tariff in all its bearings to the political and partisan papers.

RAMIE.

We have received from the "Ramie Fibre Manufacturing Company," 422 West Fifteenth Street, N. Y., a sample of the stalk of the Ramie plant, with the skin, or bark, partially stripped therefrom, and also a sample of the prepared fibre, which is beautifully white and glossy, showing its value as a fibre plant. We also give in our present issne an article copied from the *American Textile* on the snbject of the cultivation, management and profit of this crop.

THIS AND THAT.

The Lynchburg *Advance* says THIS :

THE BEST.—We have the August number of the *Southern Planter*, Virginia's agricultural paper. This number is very interesting, and from it we shall take the liberty of clipping freely. This number is worth to any intelligent farmer the subscription for one year, $1.25.

One of the most prominent of Virginia's livestock breeders says in a private letter, dated 2d August, 1884, THAT :

"I regard the *Southern Planter* as the best advertising medium in the South. I have sold a great deal of stock from my *Ad.* in it this year."

H. A. S. HAMILTON,
Fishersville, Va.

THANKS.

We acknowledge complimentary tickets for self and lady to the *Indiana State Fair*, held at *Indianapolis* on September 29th, 30th, and October 1, 2, 3, 4. Robt. Mitchell, President; Alexr. Heron, Secreta

The same to the Fair of the Shenand Valley Agricultural Society, to be hel Winchester, Va., on October 14, 15 16 and 17. H. L. D. Lewis, President.

The same from Maj. Hill, Chief Marshall of the Albemarle Agricultural Society, to be held at Scottsville, Va., on October 8, 9, 10.

The same to the *Second Annual Celebration* of the *Order of Cincinnatus*, which takes place in Cincinnati, Ohio, on 17th September, with compliments of L. A. Leonard, Editor of *Times-Star*.

OUR NEWSPAPER.—According to Edwin Alden & Bro.'s (Cincinnati, O.), American Newspaper Catalogue for 1884, there are 14,867 newspapers and magazines published in the United States and the British Provinces. Total in the United States, 14,176; in the British Provinces, 691; divided as follows: Dailies, 1,357: Tri-Weeklies, 71; Semi Weeklies, 168; Sundays, 295; Weeklies, 10,975; Bi-Weeklies, 39; Monthlies, 1,502; Bi-Monthlies, 26; Quarterlies, 83; showing an increase over the publications of 1883 of 1,594. The

greatest increase has been among the Weekly Newspapers of a political character (?) while it has been least among the class publications. The book is very handsomely gotten up and contains some 850 pages, printed on heavy book paper, elegantly bound in cloth. It will be sent to any address, prepaid, on receipt of $1.50.

We present the following as—

THE MILITARY FEATURE OF THE FAIR.—The military feature of the State Fair this year will be specially attractive. The programme was arranged to-day as follows:

Thursday, October 23d, 1884—Infantry—First prize, $1,000; second, $300; third, $100. Open to all white military companies in the United States.

Friday, October 24th, 1884—Artillery—First prize, $300; second prize, $200. Open to all white companies in the United States; three or more batteries to enter.

Cavalry—First prize, $300; second prize, $200. Open to all white cavalry companies in the United States; two or more companies to enter.

Infantry—First prize, $400; second prize, $200. Open to all white companies in the United States from the country or from towns and cities of less than 30,000 inhabitants; three or more companies to enter.

The judges in all the contests will be three United States Army Officers.

BOOKS, &c.

We have received from Sir J. B. Lawes, Bart., of England, a book of 105 pages, with this title: "ON THE COMPOSITION OF THE ASH OF WHEAT-GRAIN, AND WHEAT-STRAW, GROWN AT ROTHAMSTED, IN DIFFERENT SEASONS, AND BY DIFFERENT MANURES. By Sir J. B. Lawes, Bart., LL. D., F. R. S., F. C. S., and J. H. Gilbert, Ph. D., LL. D., F. R. S., V. P. C. S., from the *Journal of the Chemical Society*, Vol. XLV., August, 1884. London: Harrison & Sons, St. Martin's Lane, Printers in ordinary to Her Majesty.

This is a book of great value to the producers of wheat, the world over. We cannot undertake to speak of its contents further than its title indicates. We may hereafter be able to give some of the numerous tables of analyses for the benefit of the readers of the *Planter*.

We have also received from the same distinguished source another book, or rather a quarto pamphlet, with the following title:

MEMORANDA OF THE ORIGIN, PLAN, AND RESULTS OF THE FIELD AND OTHER EXPERIMENTS CONDUCTED ON THE FARM AND IN THE LABORATORY OF SIR J. B. LAWES, BART., LL. D., F. R. S., AT ROTHAMSTED, HERTS; ALSO A STATEMENT OF THE PRESENT AND PREVIONS CROPPING, ETC., OF THE ARABLE LAND NOT UNDER EXPERIMENT. June, 1884.

This is also a book which will furnish a great fund of information to all farmers who take an interest in improved methods of culture. In this book he gives a table of rainfalls for nineteen years, from September, 1851, to August, 1870, and they are termed "harvest years," in contradistinction to the calendar year. We have no trouble in deducing from it support to our theory as to the *weather-sequence*; and the prevailing weather now is a further support of it.

HOW TO TELL THE AGE OF A HORSE. M. T. Richardson, Publishers, No. 7 Warren Street, New York.

This is a pocket manual of great practical value to all who are interested in horses. It has been carefully prepared by one of the professors of the New York College of Veterinary Surgeons, and is divested of all those technicalities likely to confuse the average reader. Numerous illustrations are presented, showing the shape of the teeth from three and a half years up to twenty years of age. Such precise directions are given that by examining and comparing these engravings with the teeth, almost any one may soon become expert in telling the age of a horse. Many a man has found himself poorer in a horse trade from lack of the information which this volume contains. It is compact, and can be easily carried in the pocket, so as to be available at all times when wanted.

The chapter on horse character, or how to tell whether a horse is kind and gentle or ugly and vicious, is a valuable feature of the book. It is neatly printed and handsomely bound in extra cloth, with ink side stamp.

FROM THE PALMYRA (N. Y.) COURIER, AUGUST 22d, 1884.—There is no advertising Agency in the United States that stands so well with the newspapers as that of Geo. P. Rowell & Co., of New York. It is a thoroughly honorable house, as sound, financially, as the bank of England, and its managers are gentlemen in every sense

of the word. We have done business with Messrs Rowell & Co. for the past twenty-five years, and during that long period we have never had a bill disputed or payment delayed. It is a pleasure to do business with this house, and we know that every publisher in this State is glad to receive their favors.

DICK'S HAND-BOOK OF WHIST.—Containing Poe's and Clay's Rules for playing the modern scientific game; the Club Rules of Whist, and two interesting Double Dummy Problems. This is a thorough treatise on the game of Whist, taken from "The American Hoyle," which is the standard authority. It covers all the points and intricacies which arise in the game; including the acknowledged code of etiquette observed by the players, with Drayson's remarks on trumps, their use and abuse, and all the modern methods of signalling between partners. Price, 25 cents.

WE have on our table before we go to press, bnt too late for a thorongh reading, which we are always glad to give them, the following magazines for October, the current month:

Harper's Monthly, which from illustrations and table of contents is interesting as it always is. We notice the portrait of an old slave, the trainer of Col. W. R. Johnson, the great racer and breeder of thoroughbred horses, and his own (the slave's) autobiography given in his simple dialect.

The *North American Review*, which contains amongst other good articles, one on the "*Moral Character of Politics*," which is very appropriate at this time.

The *Lady's Book* is also on hand, and as rich as usual.

CATALOGUES.

J. W. RANDOLPH & ENGLISH, of this city, send ns their catalogue for August, 1884. It contains a long list of second-hand law and miscellaneous books, some of them now very rare and valuable. They also make a list of missing volumes which they wish to purchase. All new books received as published. See their advertisement.

CREAMING MILK BY CENTRIFUGAL FORCE, by J. D. Frederickson, Little Falls, N. Y. This is a valuable publication for dairymen.

FIGURES THAT MEET THE LOW PRICES FOR WHEAT, by the Southern Fertilizing Company.

THE NEW WHITE GRAPE, by F. B. Hayes. This grape is attracting much attention.

THE ASHLY ALMANAC AND PRIMER, issued by the Ashly Phosphate Company, Charleston, S. C. These are amusing and facetious publications, which throw much light on the use of South Carolina Phosphate as *floats*, *ash-element*, *acid superphosphate*, also *kainit*. Sent free on application.

PREMIUM LIST of the *Shenandoah Valley Agricultural Society* for the Fair to be held at Winchester, Va., on October 14, 15, 16 and 17 of this year.

PREMIUM LIST of the *Botetourt Fair* to be held at Fincastle, Va., October 1, 2, 3, 1884.

CATALOGUE of G. S. Josselyn, Fredonia, N. Y., of American grape vines, small fruit plants, &c.

ELLWANGER & BARRY'S CATALOGUE of small fruits. Their new grape—the *Amber Queen*. Specialties in the line of apples, peaches, &c., and of bulbons flower roots for Fall planting. Address them at Rochester, N. Y.

PREMIUM LIST of the *South Carolina Agricultural and Mechanical Society*, for the sixteenth Fair to be held at *Columbia*, on November 11, 12, 13, 14, of the current year.

PREMIUM LIST of the *Lackawanna County Agricultural Fair*, to be held at *Scranton, Pa.*, on September 30 and October 1, 2, 3. Premiums, $6,000. A. B. Stevens, President; D. W. Jones, Secretary.

Ohio Crop Report for August and September, 1884, with analyses of fertilizers, rainfall, &c., from State Board of Agriculture. W. I. Chamberlain, Secretary, Columbus, O.

We have received from J. A. Everitt & Co., of Watsontown, Northumberland County, Pa., a work entitled "A Revolution in Wheat Growing," which treats fully of some wonderful new varieties of wheat, and tells how any farmer can increase his crop from four to ten bushels per acre without any additional expense for labor or fertilizer. It is handsomely and originally gotten up. It is sent free to all wheat growers who apply as above.

NEW ADVERTISEMENTS.

Notice.—The November number of the *Planter* will be issued and mailed on the 18th October, to be in advance of the *State Fair*, which commences on the 22d October. Persons who desire communications to appear must send them before the close of the first week of October, and advertisements should be in hand by the 12th.

Maj. R. L. Ragland advertises the "Dallas" wheat for seed. He has sent us a sample of the grain, which is a large and clean amber-colored berry. We have frequently seen this wheat favorably mentioned in our exchanges, and have an article in our present issue in respect to it. Notice also in our September issue an article headed "Sheaves from our Gleaner," p. 437, which enforces the importance of good seeds. When good seeds, good drainage, and good culture prevail, *chess* will disappear, and we will no longer have occasion to tire our readers with disputations on its origin.

Henry T. Miller & Co. renew their *Ad.* for one year. No one who has underclothing made by this firm will have occasion, or a desire even, to seek for a better or more trustworthy establishment.

Mr. G. B. Stacy advertises the *Ostrey* seed-wheat. Mr. Stacey's excellent and practical articles on wheat culture, which have appeared in the *Planter* for several years past, afford evidence of practical judgment as to seed as well as culture.

Col. R. J. Hancock, of Albemarle County, advertises thoroughbred horses, cattle, sheep, and Berkshire hogs. No Virginia breeder has a higher reputation than Col. H.

Walker, Watts & Collins, Richmond, Ky., advertise a sale of Jacks and Jennets on 12th November next. All persons interested in raising the mule—the best farm animal of the South—should put themselves in communication with this firm.

Messrs. J. W. Randolph & English, this city, send us their *Ad.* See notice under Catalogues.

Early Cluster Peas, by J. S. Collins, Moorestown, N. J.

Chester Hogs, by L. B. Silver, Cleveland, Ohio, through Lord & Thomas, Chicago, Ill.

Fay Grape, by G. S. Joselyn, Fredonia, N. Y., through Alden & Bro., Cincinnati, Ohio.

Great Western Gun Works, through E. Duncan Sniffin. N. Y.

We invite attention to the *Ad.* of David Nichols. His book on Drainage is a good one, and the subject is one of first importance to farmers.

We invite especial attention to the advertisement of the St. Clair Hotel. Mr. Hunter, the proprietor, is a most worthy and enterprising citizen, and his hotel fronts the Capitol Square, making its location desirable and pleasant. He is a Virginia farmer, and supplies his hotel with many things direct from his farm. No one is more devoted to the agricultural interests of the State than he is. His rates are low, and he deserves the patronage of

country people, whilst traveling people of all classes will find his house pleasant and convenient.

We call attention to the change of advertisement—with cut of vehicle added—of W. C. SMITH, of this city. Honest workmanship, first-class material, and a continuous prosecution of his business for twenty years, or more, is sufficient evidence of a deserving patronage.

Messrs. H. M. SMITH & Co. have changed and placed their advertisement of seasonable implements and machines, to which we invite attention.

The *Texas Siftings*, price $2.50, and *Southern Planter*, price $1.25, are furnished together for one year at $2 80, and in addition the *Siftings* contributes to each joint subscriber ten novels of the best authors in *Sea-Side* editions.

CLUBBING.

Wishing to extend the circulation of the *Planter* until every farmer in Virginia reads it, and a very large number in other States shall do the same, we offer the following clubbing rates, with a free copy to the person who gets up a club:

Five copies,	one year, for	$ 5.00
Ten copies,	"	9.00
Fifteen copies,	"	12 00
Twenty copies,	"	14.00
Twenty-five copies,	"	15.00

We especially call the attention of all *Farmers' Clubs* to this offer, inviting them at the same time to make the *Planter* the medium for communicating all valuable facts and experiences which may be gained in their respective associations.

POULTRY.

The *Planter* has not heretofore been able to devote the space and attention to an important domestic interest which it deserves. To meet the growing demand for thoroughbred poultry and all the best information in regard to its management, we have arranged with the proprietors of the *Poultry World*, of Hartford, Conn., to supply the readers of the *Planter* with their new monthly publication, known as the *Poultry Post*.

We therefore propose to send to each *new* subscriber the *Planter* and the *Poultry Post* for one year for the sum of $ 50, payment to be made in advance; and for the same price will send both papers to all the existing subscribers of the *Planter* who are not in arrear, and will pay in advance for one year. Their accounts may be settled, and then the advance payment made.

Address,

SOUTHERN PLANTER.

ANIMAL LABELS.

We have a number of Animal Labels, made by C. H. Dana, West Lebanon, N. H. They were taken in payment for an advertisement, and, having no use for them, will sell them at twenty-five per cent. off Mr. Dana's list of prices.

The Labels will be properly stamped with name and number, and forwarded by Mr. Dana to a purchaser.

Orders should designate whether Labels should be required for cattle, hogs or sheep.

Address,

SOUTHERN PLANTER.

A Safeguard.

The fatal rapidity with which slight **Colds** and **Coughs** frequently develop into the gravest maladies of the throat and lungs, is a consideration which should impel every prudent person to keep at hand, as a household remedy, a bottle of AYER'S CHERRY PECTORAL.

Nothing else gives such immediate relief and works so sure a cure in all affections of this class. That eminent physician, Prof. F. Sweetzer, of the Maine Medical School, Brunswick, Me., says:—

"Medical science has produced no other anodyne expectorant so good as AYER'S CHERRY PECTORAL. It is invaluable for diseases of the throat and lungs."

The same opinion is expressed by the well-known Dr. L. J. Addison, of Chicago, Ill., who says:—

"I have never found, in thirty-five years of continuous study and practice of medicine, any preparation of so great value as AYER'S CHERRY PECTORAL, for treatment of diseases of the throat and lungs. It not only breaks up colds and cures severe coughs, but is more effective than anything else in relieving even the most **serious bronchial and pulmonary affections.**"

AYER'S
Cherry Pectoral

Is not a new claimant for popular confidence, but a medicine which is to-day saving the lives of the third generation who have come into being since it was first offered to the public.

There is not a household in which this invaluable remedy has once been introduced where its use has ever been abandoned, and there is not a person who has ever given it a proper trial for any throat or lung disease susceptible of cure, who has not been made well by it.

AYER'S CHERRY PECTORAL has, in numberless instances, cured obstinate cases of chronic **Bronchitis, Larnygitis,** and even acute **Pneumonia,** and has saved many patients in the earlier stages of **Pulmonary Consumption.** It is a medicine that only requires to be taken in small doses, is pleasant to the taste, and is needed in every house where there are children, as there is nothing so good as AYER'S CHERRY PECTORAL for treatment of **Croup** and **Whooping Cough.**

These are all plain facts, which can be verified by anybody, and should be remembered by everybody.

Ayer's Cherry Pectoral

PREPARED BY

Dr. J. C. Ayer & Co., Lowell, Mass.

Sold by all druggists.

WORTHY
Of Confidence.

AYER'S Sarsaparilla is a medicine that, during nearly 40 years, in all parts of the world, has proved its efficacy as the best blood alterative known to medical science.

SARSAPARILLA (extracted from the root of the genuine Honduras Sarsaparilla) is its base, and its powers are enhanced by the extracts of Yellow Dock and Stillingia, the Iodides of Potassium and Iron, and other potent ingredients.

IS your blood vitiated by derangements of the digestive and assimilatory functions? is it tainted by **Scrofula?** or does it contain the poison of Mercury or Contagious Disease?

THE leading physicians of the United States, who know the composition of AYER'S SARSAPARILLA, say that nothing else so good for the purification of the blood is within the range of pharmacy.

ONLY by the use of this remedy is it possible for a person who has corrupted blood to attain sound health and prevent transmission of the destructive taint to posterity.

THOROUGHLY effective renovation of the system must include not only the removal of corruption from the blood, but its enrichment and the strengthening of the vital organs.

RELIABLE witnesses, all over the world, testify that this work is better accomplished by AYER'S SARSAPARILLA than by any other remedy.

BLOOD that is corrupted through disease is made pure, and blood weakened through diminution of the red corpuscles is made strong, by AYER'S SARSAPARILLA.

PURIFYING the blood and building up the system require time in serious cases, but benefit will be derived from the use of AYER'S SARSAPARILLA more speedily than from anything else.

MEDICINE for which like effects are falsely claimed, is abundant in the market, under many names, but the only preparation that has stood the test of time, and proved worthy of the world's confidence, is

Ayer's Sarsaparilla,

PREPARED BY

Dr. J. C. Ayer & Co., Lowell, Mass.

Sold by all druggists: Price 1; six bottles for $5.

VIRGINIA CO-OPERATIVE STOCK FARM,

FREDERICKSBURG, VIRGINIA.

Registered Jersey Cattle, of best butter strains a specialty. The largest herd in Virginia, and most successful at State Fairs, kept on four farms. The Imported Farmer's Glory Bull, Telegraph (9457), and Imported Bull Cetewayo, 2d (6214); Imported Bull Cetewayo's Pride (8241), and the Imported Bull, Jersey Express (5771), all premium Bulls, are at the head of each herd of imported and other registered Jersey cows and heifers of the Coomassie, Farmer's Glory, Cetewayo, and other noted strains. Stock for sale. Blooded Swine, Improved Sheep and Pure Bred Poultry. Send for Catalogues.

Address, **A. P. or M. B. ROWE,**

sep 3t Lock Box 34, Fredericksburg, Va.

—THE—

UPPER JAMES RIVER VALLEY.

All things considered, the advantages of this section cannot well be over-estimated. The advantages are, viz.: Health and salubrity of climate, good and productive soil, abundant supply of pure water, excellent timber, an inexhaustible supply of the staple minerals (coal and iron), accessible to the best markets with rapid transit. These lands are now cheap, yet must rapidly increase in value, and make sure and speedy fortunes to those who secure them at present prices. Send stamp for pamphlet, giving full particulars.

Address

Lock Box 47, Richmond, Va. **W. A. PARSONS.**

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BELMONT STUD & STOCK FARM

Was commenced in 1847, and has been continuously improved, and two grazing farms added, with the kind of stock my experience has adopted as best suited to our country's wants. I have bred only from stallions or mares of my breeding or importation, and suited to the wants of any section, and will sell any of above of three years old and over, and in plain, unpampered condition, will let stallions, if not sold on safe business terms, for seasons of 1884. I have bred of several breeds of Cattle, but of late years *only the Pure Shorthorns*, and have all ages for sale, especially young Bulls, Heifers and Calves. I breed only the best Berkshire Swine, and have a number of Boar and Sow Shoats and Pigs for sale; also, White Brahma Fowls and their Eggs. There may be other stock as good, or better, but my experience has settled on these, and I feel that I am doing a public good to forward the propagation of these improved breeds.

S. W. FICKLIN.

Near Charlottesville, Va., Jan. 1st, 1884. ap 1y

UNIVERSITY of VIRGINIA

The Session begins on the FIRST OF OCTOBER, and continues until the Thursday before the fourth day of July ensuing.

The Institution is organized in separate Schools on the Eclectic System, embracing FULL COURSES OF INSTRUCTION IN LITERATURE AND SCIENCE, and in the PROFESSIONS OF LAW, MEDICINE,

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THE EXPENSES of the student (except such as enter the practical laboratories) exclusive of the cost of text-books, clothing and pocket money, are from $356 to $391, according to Schools selected; or, for those who economize by messing, these expenses are from $266 to $300. No charge for tuition candidates for the ministry unable to meet the expense.

Apply for Catalogues to W. A. WINSTON, Secretary, P. O. University of Virginia, Albemarle county, Va. JAMES F. HARRISON, M. D., Chairman of the Faculty.

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Ostery Seed Wheat--A White Variety.

The Department of Agriculture describes this wheat thus: "This wheat was imported from Ostery, Russia, in 1876, and since that time has been grown upon the College Farm, at Columbia, Mo. It is a beardless white wheat, straw stiff, very hardy and productive. The average yield during the last five years has been thirty-two bushels per acre; average weight sixty three pounds per bushel. In 1882 the weight was sixty-five pounds per bushel, being the best of more than one hundred varieties grown on the College Farm. The grain is quite hard, and millers who have ground it pronounce it of very superior quality for flour."

We have grown this excellent variety for two years It has yielded more than forty bushels per acre for us. It is as early as any wheat grown here. We have fifty bushels for sale. Price F. O. B. two dollars per bushel.

oc 1t .G. B. STACY, Amelia C. H., Va.

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Manufacturers of STANDARD FERTILIZERS for Tobacco, Cotton, Wheat, Corn, Oats, Clover, Grass, Pea-Nuts, Potatoes, Turnips, Garden Trucks, Grape Vines and Fruit Trees,

For the FALL TRADE is presenting the following:

1. Anchor Brand for Wheat,
2. Old Dominion for Wheat,

} Ammoniated.

3. "B. P." (Potash Mixture.)

4. "F. B." (Flour South Carolina Bone.)

And line of goods so full and complete as to meet every shade of demand. Chemically a mechanically perfect, and sold at bed-rock figures.

☞ If no representative is handy to you address the Company direct.

Aug—3t.

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——::CHARLESTON, S. C.::——

FLOATS AND KAINIT MIXTURE of best materials, thoroughly mixed by machinery, containing Bone Phosphate, 25 to 30 per cent.; Sulph. Potash, 12 to 14 per cent., besides Magnesia and Soda and Lime, &c.

SOLUBLE GUANO— ... ... Highly Ammoniated.

DISSOLVED BONE— ... ... Very High Grade.

ACID PHOSPHATE— ... ... For Composting.

ASH ELEMENT— ... ... For Cotton, Wheat, Peas, &c.

FLOATS—Phosphate Rock, reduced to an Impalpable Powder by the Due Atomizer, of Highest Grade. SAMPLE sent on application.

SMALL-GRAIN SPECIFIC—Rich in Ammonia, Phosphoric Acid, Potash, Magnesia and Soda.

GENUINE LEOPOLDSHALL KAINIT.

The above FERTILIZERS are of very high grade, as shown by the *Official Reports* of North Carolina, South Carolina and Georgia.

For Terms, Hand-Books, Agricultural Primers, and good Articles on Floats, Peas and Ash Element, Kainit, &c., address the

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N. B.—Special inducements for Cash Orders. Special Formulas made carefully to order of best materials. [ja 1y]

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GROUND TO A POWDER AS *FINE AS WHEAT FLOUR*

"PHOSPHATE FLOATS,"

FOR APPLICATION TO

GRAIN, GRASSES, AND FOR COMPOSTING.

The Rock is subjected to FREQUENT ANALYSIS by the Company's Chemist and is of the BEST QUALITY.

For TERMS, etc., address the Company.

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JOHNSON GRASS.
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THE PURE, EXTRA-CLEANED

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WHICH YIELDS FROM

Three to Six Cuttings Each Year,

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Four to Eight Tons per Acre,

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ALLISON & ADDISON,

MANUFACTURERS OF

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"STAR BRAND" SPECIAL COMPLETE MANURES

FOR EACH OF THE FOLLOWING CROPS:

TOBACCO, WHEAT, COTTON, CORN, OATS, VEGETABLES AND GRASS.

Pure Flour of Raw Bone, Acid Phosphate, Ground Phosphate Rock, Sulphuric Acid.

—DEALERS IN—

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FACTORY—Opposite Rocketts,

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Insures Dwellings, Stores, Merchandize, and other property against loss or damage by fire

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JOHN B. CARY & SON, Gen'l Agents,

sep 3t Corner 10th and Bank Streets, Richmond, Va.

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FOR IMPROVING THE CONDITION OF

HORSES, MULES, CATTLE, HOGS AND POULTRY.

Giving them an appetite, glossy coat of hair, and can be left off after the animal is improved, without his falling back to his first poor condition. We have certificates from representative men from all sections of the State of the great value of this remedy in the various diseases to which the horse is liable; and also in Hog Cholera and Chicken Cholera. Circulars containing certificates will be sent on application.

Prepared only by **E. P. REEVE, Druggist,**

SOLD BY DRUGGISTS GENERALLY. 602 E. Marshall St., Richmond, Va,

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ORCHILLA GUANO!

The BEST and CHEAPEST for ALL CROPS.

That ORCHILLA GUANO positively and permanently *enriches the land;* that it *increases the crop and improves the quality of the land;* and that it never fails to ensure a *luxuriant growth of grass* for succeeding years, are *facts* which 10,000 farmers, who are using it in the States of Maryland, Virginia, West Virginia and Pennsylvania are willing to testify.

This guano is found on the Orchilla Island, in the Carribbean Sea, and comes to us direct by vessels, and all we do to it on arrival is to screen out the lumps and bag it.

We guarantee Orchilla to contain from 35 to 45 per cent. Bone Phosphate Lime.

And not only does it furnish, in high percentage. this most valuable of all fertilizing elements, but (unlike *acid* Phosphate, which has its sole merit in the small percentage of phosphoric acid which it contains), *Orchilla* furnishes, as shown by an exhaustive analysis by Prof. J. W. Mallett, of the University of Virginia, a number of other valuable fertilizing *substances*, comprising Magnesia, Chloride Sodium, Chloride Potassium, Sesqui Oxide Iron, Carbonate Lime, Sulphate Lime, and others, making up the entire one hundred parts; giving the farmer 2,000 *pounds of actual fertilizer in every ton he buys;* and in a combination, formed in nature's laboratory, that cannot be attained by any manipulation.

THE CHEMISTS ENDORSE IT.

Every cargo of Orchilla is analyzed before leaving the Island, that we may be sure that none is brought away below our guarantee; and this analysis is verified by another analysis after the arrival of the vessel in port. These analyses have always been confirmed by the State Chemists, and others who have analyzed it subsequently.

We refer to Doctors Gascoyne and Taylor, of Virginia; Dabney, of North Carolina; White, of Georgia, and Leihig, Lehman, Williams, Toney and Wilson, of Baltimore, who have all made separate analyses of Orchilla.

ORCHILLA IS LOW-PRICED—because we have left off the cost of manufactnre.

ORCHILLA IS SUCCESSFUL—becanse it is NATURE'S own provision for her exhausted fields.

And by its **wonderful clover-producing qualities,** it converts the cheap and barren high lands, like those of Eastern and Southern Virginia, into soil as fruitful as the Valley of the Shenandoah. All who have ever used Orchilla say, that *as a grass grower it has no equal.*

ORCHILLA FOR WHEAT.

For years the farmers of Maryland and Virginia have been testing Orchilla for wheat, side by side with the high-priced ammoniated goods, and the constantly-increasing *demand for Orchilla* shows how well it has stood the test. Not only has it made as much wheat (for less money), but it has left the *land covered with grass and permanently improved.* Give it a trial. Respectfully,

R. A. Wooldridge & Co., Importers

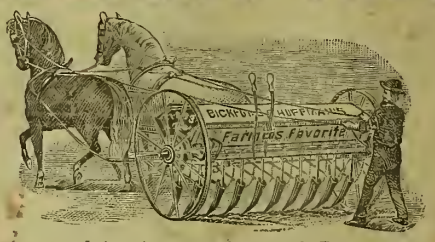
— BALTIMORE, MD. —

TRAVERS, SNEAD & CO., Importers' Agent, 1326 Cary St., Richmond, Va.

We sell Orchilla at a *low price.* Send for our LITTLE BOOK, giving testimonials of ners who have used it for years. nov 1y

THE FARMER'S FAVORITE.

BICKFORD AND HUFFMAN **GRAIN AND GUANO DRILL.**



Sows perfectly,

Corn, Peas,

Small Grain,

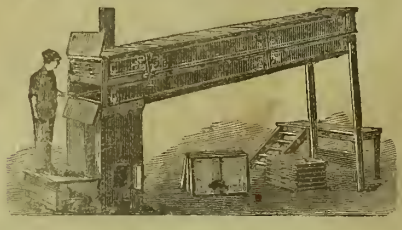
CLOVER

and other

GRASS SEED.

Money and time are saved by the use of a good Drill. It wastes no fertilizer, but puts it with the grain. It puts the grain in regularly and covers it nicely. Grain put in with a Drill is protected from the winter freezes.

A reputation which endures and increases with the progress of time, and after the lapse of years, is more widely and firmly established than ever before, can only be founded upon superior merit. This is briefly the history of the—



American Fruit Evaporator,

of which we have the General Agency for Virginia and North Carolina. Our patrons will confer a favor if they will furnish us the address of acquaintances and fruit-growers who could use an Evaporator profitably, and we will send them circulars and price-lists.

We control in this market, in addition to the above implements, which are each unrivalled in its class, the following machinery, which needs no other praise than the reputation it has established from long use:

The Lane Steam Saw Mill,

The Peerless Portable Steam Engines,

The Porter Manufacturing Co's Engines,

The Peerless and Porter Steam Saw Mills,

The New Monarch Wheat Drills,

The Dederick Perpetual Presses.

We have also the agency for

THE RANDALL HARROW, THE THOMAS HARROW, THE ACME HARROW, THE PERRY HARROW.

All of the above celebrated Harrows are handled by us for this market. Also

The OLIVER CHILLED PLOWS

"The Best Plow in the Market."

This Plow is sold with that easily understood guarantee, and the purchaser is allowed to be the *umpire*. Catalogue for 1884, 208 pages, sent to all farmers, and to dealers in Agricultural Implements on application. It is the most complete Implement Catalogue now published. Address

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