

ESTABLISHED IN 1840.

THE SOUTHERN PLANTER AND FARMER

DEVOTED TO

Agriculture, Horticulture, and the Mining, Mechanic and Household Arts.

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

CH. B. WILLIAMS, ED & PRO'R. | JNO. M. ALLAN, HORT'L EDITOR.
FRANK G. RUFFIN, CO-EDITOR. | WM. L. HILL, GEN'L AGENT.

New Series. RICHMOND, VA., OCTOBER 1859. Vol. III.—No. 10.

CONTENTS :

AGRICULTURAL DEPARTMENT:	PAGE
Field Experiments on Clover Seeds and Permanent Pasture.....	577
Agricultural Education in Germany.....	585
The Michigan Agricultural Society—Industrial Education.....	590
Tobacco.....	591
The most Economical Fertilizers.....	591
Rotation of Crops.....	596
Agricultural Resources of the Cape Fear section of N. C.....	598
Great Truths in Agriculture.....598. Attention to Cattle.....	599
Improvement in Agriculture Demanded.....600. Peat Fuel.....	600
Tying Horses.....601. Grease Your Wheels.....	601
Hoe out your Row.....602. Indian Corn and its Uses.....	602
Harvesting Potato-s.....603. Sow Timothy.....	604
Application of Manures.....605. Stone on Land.....	6'5
Agriculture in Austria.....606. When to Gather Beans.....	606
Insects and Their Extermination.....607. Rust on Wheat.....	609
Undraining Land.....610. How much Manure do we Use on an Acre?.....	610
Sheep Raising.....	610
HORTICULTURAL DEPARTMENT:	
Editorial Correspondence.....	611
American Pomological Society..... 613. Pennsylvania Horticultural Society.....	615
Napoleon III. Strawberry.....616. Poison Oak.....	616
Potato Bug.....617. The Kittatinny Blackberry.....617. Cost of Grape Trellis	617
Sugar Beet.....619. Flowers at Marriage Feasts.....619. Tomato Sugar.....	619
Laws of Sex in Plants, by Thos. Meehan.....	620
Harvesting Navy Beans.....	623
How shall Gardening be made Profitable?.....	624
Hollyhock.....	624
MINING DEPARTMENT:	
Coal—Iron Interest of Virginia, by E. T. Tayloe.....	626
The World's Minerals.....	627
MECHANIC ARTS:	
Murfee's Subsoil Plough.....628. Routt's Hay Rake and Seed Sower.....	629
Naval Clock—Straw Paper.....	629
EDITORIAL DEPARTMENT:	
Va State Agl. Society—Supplemental Premiums.....630. Rail Road Arrange-	631
ments.....	631
Agriculture our Hope.....	635
Historical Sketch of the Iron Interest of Va.—errors corrected.....	637
Editorial Notices.....	637

FERGUSON & RADY, Printers, 1328 Main Street.

NOAH WALKER & CO.

WHOLESALE AND RETAIL

CLOTHIERS

1211 Main Street,

RICHMOND, VA.

Chief House—Washington Building, 165 and 167, Baltimore St., Baltimore, Md.
Branch Houses—Petersburg, Va., Norfolk, Va., Washington, D. C. feb—1y

SMALL FRUIT INSTRUCTOR

“WHAT MAKES IT VALUABLE IS because it contains so much practical, original matter in such a small space.”—John J. Thomas.

“The directions for growing Strawberries and Raspberries are the best I have ever seen.”—Henry Ward Beecher.

We could give hundreds of just such testimonials, showing the value of this little work. It should be in the hands of every person, whether the owner of a rod square of ground or a hundred acres. Tree agents should have a copy. It contains 40 pages. Price 10 cents. Full price list, wholesale and retail, and also terms to agents and those desiring to get up a club for plants sent FREE to all applicants. Parties at the South should order plants in the Fall Address PURDY & JOHNSTON, Palmyra, N. Y., or PURDY & HANCE, South Bend, Ind. aug—3m

The Purest, Best and Cheapest



SOLD BY ALL GROCERS. sep—6t

J. HALL MOORE, M. D DENTIST,

Corner Franklin and Fifth Streets,
RICHMOND.

Special attention paid to preserving the Natural Organs.

Artificial Teeth inserted upon GOLD, SILVER or VULCANITE.

TEETH EXTRACTED WITHOUT PAIN, by a new and safe process. aug—1y

RICHARDSON & CO.

LAND AGENTS

113 MAIN STREET,

RICHMOND, VA.

(NEW MANAGEMENT.)

ST. CHARLES HOTEL,

Corner of Main and Fifteenth Streets,
RICHMOND, VIRGINIA.

CHAS. P. BIGGER, Proprietor.

Two Dollars per Day.

sep—3t

SOUTHERN PLANTER & FARMER

New Series, vol. 3, May-Dec. 1869

Missing: no. 6, June and no. 9, September



THE SOUTHERN PLANTER & FARMER,

DEVOTED TO

Agriculture, Horticulture and the Mining, Mechanic and Household Arts.

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

CH: B. WILLIAMS, EDITOR AND PROPRIETOR.
FRANK G. RUFFIN, Co-EDITOR.

New Series. RICHMOND, VA., OCTOBER 1869. Vol. III--No. 10.

Field Experiments on Clover Seeds and Permanent Pasture.

In the part of the Journal of the Royal Agricultural Society of England recently issued, Dr. Voelcker gives a report of experiments on clover seeds and permanent pasture. Subjoined are the experiments :

FIELD EXPERIMENTS ON CLOVER SEEDS, MADE IN 1867

AT ESCRICK PARK HOME FARM, BY MESSRS. COLEMAN AND HULL.

The field upon which the following experiments were made grew barley in the preceding year. The usual mixture of clovers and Italian ryegrass was sown with the barley. The seeds came up well, and the plant was tolerably good and uniform on the piece selected for the experiments. Apparently the selected piece of land was uniform in depth and in its general character. It was divided into eleven equal and adjoining plots of 1-20th of an acre each. The eleven plots were treated as follows, as regards manure :

Plots.	Name of Manure.	Quantity of Manure per plot.	Rate per acre.		
			tons.	cwt.	lbs.
1	Nitrate of soda.....	22½ lbs.	0	4	0
2	Sulphate of Ammonia.....	22½ lbs.	0	4	0
3	Mineral superphosphate.....	22½ lbs.	0	4	0
4	Common salt.....	22½ lbs.	0	4	0
5	No manure.....				
6	Muriate of potash.....	22½ lbs.	0	4	0
7	Sulphate of potash.....	22½ lbs.	0	4	0
8	Sulphate of lime.....	1 cwt.	1	0	0
9	Mineral superphosphate and nitrate of soda.....	22½ lbs.	0	4	0
10	Mineral superphosphate and muriate of potash.....	22½ lbs.	0	4	0
11	No manure.....				

The artificial manures were sown by hand on the 11th of April; the clover was cut on the 12th of June for the first time, and a second cutting was obtained August 24th, 1867. The produce of each plot was carefully weighed on the same day, and as soon as cut, when the results incorporated in the following table were obtained:

Table showing the produce of Artificial Grasses (mixed Clover and Ryegrass,) on Experimental Plots of 1-20th of an Acre each, made at Esrick Park Home Farm, York, in 1867.

Plots.	Manure used.	Weight of Clover.								
		First cutting.			Second cutting.			Total.		
		cwt.	qrs.	lbs.	cwt.	qrs.	lbs.	cwt.	qrs.	lbs.
1	Nitrate of soda.....	8	2	7	2	0	7	10	2	14
2	Sulphate of ammonia.....	10	2	0	2	1	17	12	3	17
3	Mineral superphosphate.....	5	2	14	2	2	9	8	0	23
4	Common salt.....	5	2	16	2	2	7	8	0	16
5	No manure.....	5	1	28	2	3	4	8	1	0
6	Muriate of potash.....	6	1	21	3	1	14	9	3	7
7	Sulphate of potash.....	5	1	12	2	2	7	7	3	19
8	Sulphate of lime.....	4	1	23	2	2	3	6	3	26
9	Mineral superphosphate and nitrate of soda.....	10	3	16	2	0	0	12	3	16
10	Mineral superphosphate and muriate of potash.....	9	0	0	4	3	2	13	3	2
11	No manure.....	6	0	17	2	3	2	8	3	19

Mr. Hull kindly furnished me with the following notes, which he took on the field during the progress of the experiments:

The manures were sown on the 11th of April, and no perceptible change was produced by any one of them until the 23d of April, when the clover seeds on plot 1 and plot 9 could readily be distinguished from those on all the other plots by their darker green color and more vigorous growth.

FIRST CUTTING.

Plot 1 was dressed with nitrate of soda alone, and plot 9 with a mixture of nitrate of soda and superphosphate. Both plots had a darker green color than the rest throughout the experiment.

The nitrate of soda on plot 1 encouraged the growth of the ryegrass to such an extent that it quite smothered the growth of the clover plant.

Plot 2. *Sulphate of Ammonia*.—The ryegrass grew vigorously, but was not so long and coarse as the ryegrass on the plot dressed with nitrate of soda, while it was superior in quality in comparison with the latter. The clover on plot grew fairly, but was weak.

Plot 3. *Mineral Superphosphate*.—Ryegrass good, but clover thin, very weak, and much blighted.

Plot 4. *Common Salt*.—Ryegrass and clover fair, but short.

Plot 5. *No Manure*.—Appearance of plant much like that on the preceding plot.

Plot 6. *Muriate of Potash*.—The clover on this plot was very good both as regards color and vigor of growth, and the ryegrass also was strong and of good quality.

Plot 7. *Sulphate of Potash*.—Clover good, but ryegrass weak.

Plot 8. *Sulphate of Lime*.—Ryegrass very thin and unhealthy in appearance; the worst piece of the eleven experimental plots.

Plot 9. *Nitrate of Soda and Superphosphate*.—Clover plant quite smothered by ryegrass, which grew very long and coarse, and of quality little better than good oat straw.

Plot 10. *Superphosphate and Muriate of Potash*.—Decidedly the best plot; clover remarkably strong, with a good broad leaf of a dark green color. Ryegrass also very vigorous and of excellent quality.

Plot 11. *No Manure*.—About the same as plots 3, 4 and 5.

SECOND CUTTING.

Plot 1. There was scarcely any clover in the second cutting, and ryegrass also was very thin and weak.

Plot 2. Clover very weak; ryegrass much better than on the preceding plot, though short.

Plot 3. Much the same plot as 2; ryegrass not quite so strong.

Plot 4. Ryegrass and clover short and weak.

Plot 5. Clover fair; ryegrass short.

Plot 6. Ryegrass good; clover leaves broad, and of a good color.

Plot 7. Clover good, but ryegrass weak and thin.

Plot 8. The produce on plot 8 small and weak.

Plot 9. Merely a few plants of clover were left on plot 9 after the first cutting, and the ryegrass was very thin and weak; the soil appearing to have been quite exhausted by the first cutting.

Plot 10. Clover very good, with a good broad and dark-colored leaf; the ryegrass also strong and healthy. By far the best plot.

Plot 11. Much the same as 4 and 5.

We owe to Messrs. Lawes and Gilbert a series of most valuable and instructive field experiments on the influence of different fertilizing matters on the quantity and quality of the product of permanent pastures. The changes which several of the fertilizers employed by Messrs. Lawes and Gilbert produced in the character of the herbage of several of their experimental plots are so instructive that for some years past I have made it a point to pay a visit to Rothamsted Park at the time when the grass crop is in the height

of perfection. Having frequently seen with my own eyes in what a remarkable degree the growth of true grasses, especially the coarser kinds, is encouraged by nitrogenous fertilizers, and having also noticed the changes which a mixture of salts of potash and superphosphate produces on permanent pasture in the relative proportions of leguminous plants and true grasses, I was quite prepared for similar changes in the produce of the Escrick experiments. But the difference in the quality of the produce of some of the experimental plots at Escrick Park was more striking than that which I had previously witnessed at Rothamsted Park, or anywhere else.

The Italian ryegrass on plot 9 I found at harvest-time, as Mr. Hull truly observes, so exceedingly coarse, that it appeared scarcely better than good oat straw, and very few clover plants could be seen. Again, the effect which muriate of potash, and in a still higher degree a mixture of muriate of potash and superphosphate produced on the clover plant was truly magical.

I never before witnessed anything so striking and instructive as these experiments on artificial grasses. There must, of course, be a good reason why in this instance the quality, as well as the quantity, of the grass crop were so much more powerfully affected by the different manures than I found to be the case in other experimental trials. We know that the character of the soil materially affects the quality and the weight of the crops we raise upon different classes of soil. It is, therefore, natural to connect the remarkable results obtained in the Escrick Park experiments with the peculiar character of the soil on the experimental field. I have, therefore, taken care to obtain a fair average sample from the field on which the grass experiments were tried, and after drying the sample at 212 Fahr., I submitted it to a careful analysis, according to which the composition of the soil may be represented as follows :

COMPOSITION OF THE SOIL OF THE FIELD AT ESCRICK PARK HOME FARM, ON WHICH THE EXPERIMENTS UPON CLOVERSEEDS WERE TRIED.

Organic matter and loss on heating,	-	-	-	-	4.28
Oxide of iron,	-	-	-	-	.61
Alumina,	-	-	-	-	2.16
Carbonate of lime,	-	-	-	-	.39
Sulphate of lime,	-	-	-	-	.25
Carbonate of magnesia,	-	-	-	-	.23
Potash,	-	-	-	-	.14
Soda,	-	-	-	-	.05
Phosphoric acid,	-	-	-	-	.08
Insoluble siliceous matter (sand),	-	-	-	-	91.81

100.00

Even a superficial inspection will show at once that this is an extremely poor and very light sandy soil. Mr. Coleman, moreover, informs me that the field from which this soil had been taken, had been badly farmed, and that it was, in consequence, in a poor agricultural condition.

It will be noticed that this soil is remarkably poor in available potash, and I may add, in almost all the more valuable fertilizing constituents found in good soils. The total amount of oxide of iron and alumina was not quite 3 per cent., and of lime there was not a half per cent. On the other hand, it abounds in silica, for on examination I found the 92 per cent. of siliceous matter which enter into the composition of this soil to consist almost entirely of pure fine grained quartz sand.

I need hardly say that a soil containing 92 per cent. of sand and very little clay, and a still smaller proportion of the more valuable soil-constituents, has to be regarded as extremely poor. Such soils are readily exhausted by cropping, and though they will yield fair crops when liberally supplied with manure, they are naturally very unproductive.

The extreme poverty of this soil in available potash at once intelligibly explains the benefits which both the cloverseeds and the Italian ryegrass derived from the application of muriate of potash; and presents us with a good illustration of the utility of chemical analysis and the aid of the chemist, of which the practical farmer may occasionally avail himself with advantage.* The analysis clearly points out a deficiency of potash and also of phosphoric acid; and hence the employment of potash manures on land of that description may be recommended with confidence. The composition of land like that of the soil of the experimental field, moreover, shows that lime or clay marl may be applied to it with advantage, and that it is impossible to grow any good roots, or barley, or wheat, or clover, on land of that character, without giving it a liberal dressing of phosphoric manures. Moreover, the loose and porous nature of the soil, and the want of a fair proportion of clay in it, clearly indicates the necessity of manuring it but very moderately with ammoniacal or nitrogenous manures; for as the proportion of available mineral constituents which enter into the composition of the ashes of our usual farm crops is but small, and the solubility of these matters in water is greatly facilitated by ammo-

* Our readers will find that the formulas we furnished for experiments in our September number will give them a cheap, and for all practical purposes, a correct analysis of their soils.—Eds. S. P. & F.

niacal salts, such poor soils are all the more rapidly exhausted when the crops grown upon them are too liberally manured with fertilizers rich in nitrogenous matters, or in salts of ammonia.

For the sake of better comparison, I have calculated the yield of each experimental plot for an acre, and placed the results in the subjoined table :

Table showing the Green Produce per acre of 11 plots of Artificial Grass (Cloverseed and Ryegrass,) grown at Escrick Park Home Farm, 1867.

Plots.	Manures used.	Produce per acre.								
		First cutting.			Second cutting.			Total.		
		tns.	cwt.	lbs.	tns.	cwt.	lbs.	tns.	cwt.	lbs.
1	Nitrate of soda.....	8	10	28	2	1	28	10	12	56
2	Sulphate of ammonia.....	10	10	0	2	8	4	12	18	4
3	Mineral superphosphate.....	5	12	56	2	11	68	8	4	12
4	Common salt.....	5	12	46	2	11	28	8	4	12
5	No manure.....	5	9	72	2	15	80	8	5	40
6	Muriate of potash.....	6	8	84	3	7	56	9	16	28
7	Sulphate of potash.....	5	7	16	2	11	28	7	18	44
8	Sulphate of lime.....	4	9	12	2	10	69	6	19	72
9	Mineral superphosphate and nitrate of soda.....	10	17	96	2	0	0	12	17	96
10	Mineral superphosphate and muriate of potash.....	9	0	0	4	15	40	13	15	40
11	No manure.....	6	3	4	2	15	40	8	18	44

An attentive perusal of the preceding figures will bring to light several particulars, on which a few observations may not be out of place :

1. In the first place, it will be noticed that two plots were left unmanured. In all experimental trials, at least two, or, if possible, three plots, should be left unmanured. Although the crop in a field may appear quite even, and the soil uniform as regards depth, texture, and general character, the weight of the produce of such a field invariably differs to some extent in different parts. Natural variation in the productive powers of different portions of the same experimental field must be expected to occur in all cases ; but these variations must not surpass a certain limit, or else no fair and legitimate deduction with respect to the efficacy of the manuring matters employed can be made from the results of the experiments. Many of the anomalies which so much perplex the experimenting farmer, I am inclined to think, are often solely due to inequalities in the soil, or to differences in the agricultural condition of the several experimental plots. For this reason, it is absolutely necessary, in field trials, to determine whether the natural variations in the productive powers of different parts of the experimental field are not so great as to spoil the experiments altogether. In the case

before us, it will be seen that one of the unmanured plots yielded, when calculated per acre, 8 tons, 5 cwt., and 40 lbs., and the second plot, 8 tons, 18 cwt., and 44 lbs.; the variations in the produce of the two plots thus amounted to 13 cwt. and 4 lbs., showing no greater difference than can be expected under favorable circumstances.

2. Neither common salt nor sulphate of potash appears to have had any effect upon the produce, for it will be seen that the weight of the clover seeds on plots 4 and 7, dressed respectively with salt and sulphate of potash, was somewhat less than that of the unmanured plots. I attach no value to the apparent diminution of the produce on plots 4 and 7, for the increase is not sufficiently large to entitle us to infer from the result that the same matters used on these two crops had an injurious effect upon the crop.

3. On plot 8 sulphate of lime was used at the rate of 1 ton per acre. This is a very large dose. Although sulphate of lime or gypsum is but sparingly soluble in water, and for that reason may be used with perfect safety in much larger quantities than in this experiment, provided it is well mixed with the soil, a large dose of finely-powdered gypsum, when applied as a top-dressing to young clover seeds, appears to injure the plants and to retard their growth.

4. It is worthy of notice that whilst common salt had no effect upon the produce, muriate of potash materially increased it. We have here another direct proof that soda is incapable of taking the place of potash in the nutrition of plants.

5. On plot 3 mineral superphosphate alone had no effect whatever on the crop. This is an interesting result, for it seems to indicate that the great deficiency of potash, which is characteristic of the soil of the experimental field, entirely prevented the display of the useful functions which we know perfectly well that superphosphate of lime does discharge on land of a better character. On poor, light sandy soils, we may learn from this that a purely mineral superphosphate cannot be used with advantage for clover seeds. I may observe in passing, that on such soils mineral superphosphate has even little effect upon root crops, for which phosphoric manures are so largely used with the best effect.

6. It is remarkable that whilst plot 3, manured with mineral superphosphate, gave no increase whatever; and plot 6, manured with muriate of potash, gave an increase of 1 ton, 4 cwt., and 42 lbs. over the average produce of the two unmanured plots (average produce 8 tons, 11 cwt. and 98 lbs..) the mixture of both manures

on plot 10 gave the largest weight of cloverseed and ryegrass per acre of any of the eleven experimental plots.

In the first cutting, plot 10 produced 9 tons, and in the second nearly 5 tons of green clover seeds, or both cuttings yielded in exact weight 13 tons, 15 cwt., and 40 lbs., which is an increase of 5 tons, 3 cwt., and 64 lbs. per acre over the average yield of the two unmanured plots.

Plot 10 gave not only the largest increase per acre, but the quality of both the clover and ryegrass was much superior to that of the produce of any other of the various experimental plots.

7. There is another circumstance connected with the result obtained on plot 10, which deserves the best attention of the practical agriculturist. It will be seen that, although the first cutting produced a heavy crop of clover seeds of by far the best quality of any of the experimental plots, the land was left in a better agricultural condition after the first cutting than where no manure at all was applied, and a much smaller weight of green clover seeds was reaped at first; for on plot 10, the second cutting yielded nearly 5 tons of green produce, in addition to the first, whereas the two unmanured plots 5 and 11 yielded only 2 tons, 15 cwt. of additional produce in the second cutting. The liberal supply of available potash and soluble phosphates thus had the effect of greatly increasing the weight of the crop, improving its quality, and leaving the soil in a better agricultural condition for the next crop.

8. Again, it will be noticed that on plot 6, on which muriate of potash alone was employed, the second cutting weighed more than the second cuttings of the other plots, except that of plot 10, where superphosphate was added to the potash-salt. It therefore appears that the beneficial effects of potash on soils so poor in this element as the land on which these experiments were tried, has a more permanently beneficial effect than some of the fertilizing matters which were used on other plots.

9. On the other hand, nitrate of soda unmistakably had a tendency to exhaust the land; for it will be noticed that on both the plots 1 and 9, on which nitrate of soda was used, the second cuttings weighed less than those of the unmanured plots.

As already mentioned, the nitrate of soda on plots 1 and 9 encouraged the growth of very coarse and inferior ryegrass, which completely smothered the clover plant.

When I saw the experimental field late in the autumn of 1867, after harvest, the contrast in the appearance of the various experimental plots was most striking. Whilst the land on plots 1 and 9

appeared quite burned up and exhausted, and scarcely any clover was visible, the potash plots could be readily distinguished by a dark green color and healthy look of the remaining herbage in which clover predominated.

We may thus learn from these experiments, that nitrate of soda alone, or even in conjunction with superphosphate, should not be used as a top-dressing for artificial grasses on very poor sandy soils, like the soil of the experimental field, inasmuch as nitrate hastens the exhaustion of the potash naturally present in such soils in very small proportions. Indeed, nitrate of soda, and, in a minor degree, ammoniacal salts, are the worst artificial manures that can be used under such circumstances. It may further be observed, that no just estimate can be formed of the real value of a special manure if no account be taken of the condition in which the land is left after the crop has been removed from it. This is not the first time that I have noticed this tendency of nitrate of soda to produce rapid exhaustion of naturally poor soils, and I would therefore strongly recommend farmers to abstain from the employment of it as top-dressing for grass or corn crops which are intended to be grown on naturally poor sandy soils.—*Journal of the New York State Agricultural Society.*

Agricultural Education in Germany.

LETTER FROM HON. J. M. GREGORY, LL. D., REGENT ILLINOIS INDUSTRIAL UNIVERSITY.

Germany is the land of great scholars and great schools. No where else in Europe can one find such numbers of highly educated men, and so many gigantic institutions of learning. And Germany has taken the lead in industrial education. It was among her philanthropists and educators that the idea first took substantial shape to adapt schools to the practical affairs of life; and now the most successful of these schools are to be found among the German people.

The first industrial schools were charitable institutions to prepare poor and orphan children to earn their own living. But the idea soon took a higher form, and the Agricultural and Polytechnic schools began to be established, to teach science in its applications to the useful arts. For nearly three-fourths of a century have the German States been working at this great problem, and the history of its successive stages of evolution is interesting and instructive. Blunders were committed, but by patient perseverance their conse-

quences were surmounted, and the splendid success which is to day crowning these schools, is the best proof of their present value, as it is of their prospective growth. The governments, convinced of the immense public value of technologic schools, are vying with each other in their more liberal endowment, and they bid fair to become at no distant day the great schools of Europe. Immense buildings are being erected for their accommodation, apparatus of the most costly character is being provided to render more effective and practical their instructions, and hosts of students are crowding to them from both Continents.

At first they were regarded with little favor by the Universities, but their success has so fully demonstrated their utility, that now the University men are their foremost advocates and friends. A few of their special champions profess to believe that they will ere long supersede the Universities; but the great majority, both of University and Polytechnic educators, see in the Polytechnic but the natural outgrowth and necessary advance of human learning, and in the union of the two forms, they find forshadowed the new future of education.

The question of the union of the Polytechnic schools with the Universities has been debated long and earnestly by German scholars and statesman. The argument on both sides has been exhausted. The suffrages are finally settling down with a surprising unanimity in favor of the union. Among the Professors of both, of the Polytechnic schools and the Universities with whom I talked, there were but two who favored the separation of the two classes of education, and they on grounds merely local or incidental. And this decision in favor of a union embraces Agricultural, as well as other technical instruction. The celebrated Baron Liebig, the father of Agricultural Chemistry, is among the most ardent advocates of the union of Agricultural schools with the Universities. "You know I am opposed to isolated schools," said the old Baron to me as I sat with him in his library. It was under his influence that the Agricultural Department was added to the old University at Halle. The new Polytechnical school at Munich, where Baron Liebig resides, is not only connected with the University so far that many students attend lectures in both, but it is also itself a University, bearing the title of the "Polytechnic University," and requiring for admission the same preparation that is required by the other Universities, excepting the Greek language. This Munich Polytechnic is one of the largest and newest of this class of institutions. Its buildings of

magnificent extent and splendid architecture, will cost when completed about \$750,000 and would cost in Chicago, over a million dollars. The apparatus for the illustrations of only a single physical science cost about \$12,000, and the chemical laboratory is of great size and beauty. An entire separate laboratory is being provided for Agricultural Chemistry and a distinct professor employed for this department. I asked the directors if they did not fear the high standard of qualifications required for admission would bar out students? He replied, "make your school good—see to it that that you have good teachers, good apparatus, libraries &c., and the students will be sure to come." There is sound sense in this view.

The Polytechnic men all say that the aims of the first Polytechnic schools were too low and limited. They sought only to give *practical knowledge* as it is sometimes called,—or knowledge of the arts themselves,—without regard to the stage of preparation, or the general culture of their students. They were unable to carry the education far enough to reach the best results. Now everywhere they are raising the standard for admission and adding more of general and liberal study to their courses of instruction.

AGRICULTURAL EDUCATION.

The history of Agricultural education in Germany is only one of the chapters of the history of Polytechnic education. At the outset the Agricultural schools were for poor peasant children. But with the progress of thought and experiment, this branch of education enlarged and elevated its aims, till it has become finally to be an honored and useful department of University instruction.

There now exists in Germany, three somewhat distinct classes of Agricultural schools. The first are schools for the education of practical farmers or farm laborers. These schools provide a Winter course of theoretical instruction, and, in most cases, send the students home to work on the farm during the Summer season.

These schools are of different grades, the instruction in some being somewhat thorough and complete, while in others it is quite meagre and merely elementary. They have doubtless accomplished much good, but they are said to be giving away before the multiplication of a higher order of schools.

The second class embraces what, in America, would be called Agricultural Colleges, but which the Germans style Agricultural Academies. They were all as far as I could learn, of somewhat early origin, having been established before the question of union

with the Universities were started. They are isolated schools aiming at a high and thorough course in all sciences pertaining to agriculture and at such practical instruction as their modern farms afford. The opinion was frequently expressed to me that these schools would at an early day be united to the nearest Universities. The third class of Agricultural schools consists of the Agricultural Departments of the Universities. These are all of somewhat recent origin, having been established in conformity with the conviction that Agricultural education of the best form ought to be provided for by the Universities.

I shall give your readers the best idea of the character of these several classes of schools by describing one of each class as they fell under my own observation. But as this description will probably fill a letter of itself, I may use the space remaining in this, to present some general views of Agricultural education in the German States.

And foremost among the questions which will be asked me is this: Has Agricultural education in Germany, on the whole, been successful? I put this question one morning to Baron Liebig in his library, intimating to him that doubts on this point existed in America. The splendid old man stretched himself up, and with flashing eye exclaimed: "*The success has been immense;*" and then in proof of the truth of his statement he added: "In Hesse, for example, the value of the land has increased three hundred per cent. under the improved method of culture introduced by the diffusion of Agricultural science. And this increase has not come, as your lands increase in value in America, by increase of population, but by the actual improvement in the fertility of the soil. The immense quantities of the artificial fertilizers, the phosphates and sulphates now used in Germany, are evidences of the progress of Agricultural science. Lands, which were worn out and nearly useless, have been renovated and rendered abundantly productive by the improved methods and manures."

Mr. Bancroft, the American Minister to the Prussian Court, told me that when he first visited Berlin, fifty years ago, that city was in the midst of barren sands. Now it is surrounded with fruitful fields and waving forests. Agriculture, science-taught, has transformed the sands to fertile soil. And all this the Germans claim as the fruits of their Agricultural schools. If another proof were wanting of the acknowledged utility of these schools, it could be easily found in the fact that they are being rapidly multiplied throughout the German States. Men do not multiply useless institutions; but

the Agricultural schools are multiplying in great numbers. And these institutions are increasing in influence as rapidly as in numbers. The scope of their course of instruction and the value of their educational influence are constantly increasing, and as a consequence, their place in public esteem grows more and more prominent.

The German Agricultural schools have introduced two measures which have helped greatly to increase both their influence and usefulness. First they have organized an extensive and thorough system of agricultural experiments for the discovery of new truth and the solution of the great questions of agricultural science. There are now, chiefly in Germany, thirty-three agricultural experiment stations, fitted up with the necessary laboratories, stables or farms, for carrying forward careful sets of observations and experiments both in soil, culture and animal husbandry. These stations are under the direction of thoroughly trained chemists, who know how to adjust all the conditions of each experiment and to test with the utmost nicety the results. These experimenters meet annually to discuss the experiments and compare observations, as well as to suggest new problems for solution. The reports of these experiments carefully written out, are published in a periodical devoted to this interest and thus are offered constantly to the agriculturists of the country. I had the pleasure of visiting several of these stations and of noticing the ingenuity and scientific precision with which the experiments are conducted. Agriculture must gain greatly in certainty and power when the workers at these stations shall have had time to ripen their observations and systematize their conclusions.

The second measure of which I spoke, is the establishment of a system of itinerating lectures for the diffusion of agricultural knowledge among the farmers. I did not learn how widely the practice yet prevailed, but in Baden the Professors of the agricultural school at Weisbaden go out through the villages and from school house to school house, giving instruction to the practical farmers, in plain familiar lectures, and it is said with the happiest results. A double advantage results from this work; agricultural science is diffused among the people, and the agricultural schools secure a higher place in the public esteem.

The circumstances of Germany favor the success of agricultural schools. The general prevalence of education gives a large number of young men prepared to enter upon the study of the sciences, and the number of well educated men affords the requisite supply of qualified

teachers. In these two respects no country so well compares with Germany as the United States. In another important point we have a great advantage even of Germany. There the minute subdivisions of the lands often consigns the farmer to a hopeless poverty and utterly forbids the free introduction of new methods of culture. Agriculture in the German States is not the chief employment of the people. But the extent of our farms and the prominent place which agriculture occupies among the industries, gives to the American Agricultural College a field such as no European country affords.

The Germans, in many respects, more nearly resemble the American people than any other nation on the European continent. Even England is less like the American republic. In the care of the government for the education of the people, in the absence of the spirit of caste, in the prevalence of free thought, in the general spirit of earnest investigation, the German States resemble the American; and the success of the German Agricultural Colleges affords no slight ground of hope for the success of similar institutions in our own country. It is true there are notable differences between the two countries, and especially in their agriculture; but the general principles which have been proved true for the one will be found true for the other, and thus the German schools may afford us many useful hints for the conduct of our own.—*Western Rural*.

Paris, August, 1869.

The Michigan Agricultural Society.

LETTER FROM PROFESSOR COOK.

The Junior Exhibition, which was held August 25, made no little stir with us. The audience was large, and very appreciative. Upon the rostrum sat the entire Board of Agriculture, Gov. Baldwin, included. Twelve Juniors took part on this occasion, and have received from several representatives of the Press, who were present, generous praise for the felicitous expression of the many apt and practical thoughts contained in their orations and essays.

Hon. George Wilward, of the Battle Creek Journal, gave an admirable lecture in the evening, on "Labor and its Influence upon the progress of the World's enlightenment." He showed that the mental and moral status of a people held intimate relations with their productive industry. It was a most happy vindication of Industrial education, and I am glad to say, it is to be published entire.

Our grounds and green house are very beautiful, and that this attractiveness is appreciated is evinced by the many visitors, none of whom seem to go away unfriendly.

Our Sophomore class has been very fortunate in having Prof. Prentis during the Cornell vacation. His lectures on Economic and Agricultural Botany, are inimitable.

Our new boarding hall is being pushed with commendable energy, and gives great promise of being a fine structure.

We hope and expect to be able next year to take all who come, and to have a room sufficient to make them comfortable. We rejoice that the system of putting four students in one room is to be forever abandoned.—A. J. COOK, in *Western Rural*.

Tobacco.

Messrs. Editors,—As we reside in a county adjoining Person, N. C., and may therefore be presumed to feel some of the Agricultural gloom which "Person" depicts as overshadowing that county, we trust it will be a sufficient apology for this claim upon your columns.

The impoverished condition of our land, due to the exhausting influence of African slavery, that has sucked its life blood for so many years, and the loss entailed by the disastrous results of the late war, have left us in this portion of Virginia, and the adjacent portions of N. C., in a prostrated condition truly alarming. But as the intelligent farmer casts about for something to resuscitate his impoverished farm, and empty purse, he can, in our judgment, find nothing at present so likely to furnish the means of recuperation as the judicious cultivation of tobacco, more especially that quality which is peculiar to this portion of Virginia and North Carolina. This for the present, at least, furnishes the only rainbow of hope to us, and there is no subject of agriculture that, in our opinion, should claim a greater share of our most earnest efforts, than the proper cultivation and proper management of this great staple. We are aware that there is a great disposition on the part of many eminent farmers to discourage the production of tobacco, but we attribute the idea, rather to that almost universal feeling of the necessity of a "change of system," than to any rational deductions as to how we shall best meet our wants in another direction. It is akin to that other notion that we cannot afford to raise our own bacon.

If we are to give up such things as we have been in the habit of

raising on our farms, from the mistaken notion that we cannot compete with the great West, where shall we stop, and upon what shall we rely to purchase these cheap, though essential products of the West? We do not doubt that the West can surpass us in the production of shipping tobacco, yet we are convinced, when we consider the preference on the part of some shippers for our tobacco over the Western staple, with the difference in the cost of labor and the facilities of our shipping market, that we can make shipping tobacco even more remunerative than the Western States.

The fact that our farmers have failed to find the cultivation of tobacco as remunerative as they might have hoped, has been due, in a great measure, to that very common cause of failure, imperfect manuring, and the hopes of realizing a large crop merely from the fact that a large surface was put in cultivation, and a failure to appreciate the fact that the profits have been consumed by a fruitless outlay for labor without a proportionate yield in crop. There is evidently too great a disposition on the part of our people to deceive themselves by expecting results commensurate with, and entirely dependent upon, the extent of their operations. Our youth have been overcharged with the false philosophy of "strike high, though you miss the moon;" "strive at everything, though you accomplish nothing;" till, like a short gun with too much powder, they always shoot too wide for the game. Is it not concentrated force—concentrated capital and concentrated thought—that accomplishes big results? Why should "the pastor" spin out his sermon to the length of "only an hour," and about as thick as a knife blade, yet affect not to be able to see how his brethren can reconcile their consciences to a nap in church? Our youthful neighbor cultivated a hundred thousand hills in tobacco, "with twelve good hands," and he *cannot see* how he only made nine thousand pounds of tobacco, and "got nothing for that." Our old farmers, not content with their five hundred acres, have sold the soil of that to extend their domain to thousands, which now grin barren defiance to their demands for tax money. Indeed, we begin to fear that the period of slavery with us was more propitious to the development of African muscle than Anglo-Saxon brains; at least, it seems to have rendered our minds so diffusive, that the humblest owner of even a single family of slaves began to have serious apprehensions of being ultimately cramped in his operations, unless the *territories* were thrown open to his future muscular developments. But, as your columns very properly eschew political ques-

tions, we leave this expansive subject to be developed by the historian, as to how much this erratic idea contributed to the occasion of the late war.

“Woe to the land to numerous ills a prey,
Where wealth accumulates and”—minds—“decay.”

But for fear your readers will begin to imagine that we are unable to bring our thoughts to a focus, we return to our subject—tobacco. As it is a crop which requires a great deal of labor and handling, it is absolutely necessary that the land in cultivation should be rich, that the tobacco may be large and heavy; otherwise it is the most unprofitable crop the farmer can engage in. For shipping tobacco, the plants should be set out from the 1st to the 10th of June; for the fine manufacturing grades, the plants should be set out as soon as they can be gotten sufficiently grown, for the sooner the crop can be brought to maturity, the finer will be its texture, and it is more easily cured during the early fall; while, on the contrary, the shipping grades are made much thicker and heavier by being allowed to take the rains and dews of the latter fall. The process of curing the yellow varieties consists in drying out the sap by a constant, well regulated heat, which can only be done by charcoal, as it contains no watery element, and produces a very dry heat. The work should be carried on in a barn with very close walls, though it is the opinion of the writer that the process would be very much facilitated by having the roof very open, or even by having the barn entirely open at top, if there could be some means of securing the tobacco in the event of rain, by having a covering at hand which could be put on and taken off at pleasure. We do not know whether such a thing is practicable, but if it were, we do not doubt but the process would be rendered much more certain of success. We are disposed to think, that by this arrangement, the tobacco might be hung much closer in the barn, without being so liable to scalding from contact with the humid atmosphere of a close barn. The process of yellow curing, though we have had but little experience in it, seems evidently to be, to get rid of the watery element of the plant by a dry heat, so regulated as not to produce a too rapid flow (which would run over the leaf and scald it red), and yet not allow the temperature to be so reduced as to fail to produce the evaporation necessary to release the leaf from the perspiration, as it were, which is going on from the plant. And it is quite obvious that a tall barn, with close walls, (except just at the bottom,) and open roof, would much facilitate the process by the establishment of a current of fresh dry air from bottom to top.

We have been led to these thoughts from a sincere desire to do what we can in suggesting to our people the most available means of meeting their present wants. We by no means advise the cultivation of tobacco as a specialty; on the contrary, we agree with "Person," that a mixed husbandry is absolutely necessary to successful farming, especially in sections remote from market; and as we cannot safely give up "the weed," we urge the reduction of its surface in cultivation to the paying point.

J. V. B.

Halifax, Va., Aug. 28, 1869.

Inquiries and Answer Respecting the Most Economical Fertilizer.

DAVID STUART, ESQ.—Dear Sir,—I have noticed your communications in the *American Farmer* in regard to Navassa guano as a fertilizer. I acted upon your hints, as I thought or understood them, last fall, in seeding my wheat crop. I had concluded that a mixture of manures was best, and thought Peruvian guano for the immediate crop the most efficient of all manures, but for the benefit of the soil and above crop, desired to use with it some phosphatic material, and selected the Navassa guano, mixing them in equal quantities, 150 lbs. each to the acre, and drilled in with the wheat. The crop compared well with those of my neighbors who used the various superphosphates, but I am not sure that I made the best use of the Navassa by using it in its natural state, and now I am at a loss because Peruvian guano is not to be had, and I am fearful, from my observations among my neighbors' crops that have used the manufactured manures, that they will not pay on wheat. I tried the Navassa on clover by itself, 250 lbs. to the acre, but saw very little benefit from it, and I conclude it would not pay on wheat. Can you tell me in what manner I may treat it to make it more available than in its natural state? Would it do to mix and drill in with it unleached ashes, or the salt and lime mixture, or would it be best to take Professor Higgins' plan, as detailed in the March number of the *American Farmer*, using salt and sulphuric acid? He states that this guano may be bought for \$20 per ton, but the advertising price is \$30, and this is the price that I paid for it. Nearly all the Baltimore superphosphates and manipulated manures have been tried here on corn and wheat; none of them have anything like the effect upon wheat that Peruvian guano has, and I don't know one of them that pays on this crop. What do you think of Messrs. Phillips' superphosphate? I have heard a glowing account

of it from Ex-Governor Ross, of your State, as an application to clover in the spring.

Please excuse this liberty in a stranger. Although we are strangers to you, your name is very familiar among us, and your opinions very frequently quoted.

Very respectfully,

JOHN RUST.

Oak Grove, Northumberland co., Va., Sept. 14, 1869.

AN OUTLINE OF DR. STEWART'S ANSWER TO THE ABOVE LETTER.

To Mr. J. R., of Oak Grove, Northumberland co., Va.:

I have by the last mail received your letter enquiring as to the most economical fertilizer under certain circumstances, indicated by your previous experience in the use of such means. I admit that the Navassa is comparatively worthless unless rendered soluble; it is then one of the richest and cheapest supplies of phosphoric acid at the lowest price mentioned (and at which I think it can be had). There are three modes by which its solubility may be increased—the one you quote was claimed by Liebig, and I object to it, as it forms (*necessarily* and inevitably,) a poisonous chloride of iron and alumina so caustic and poisonous to all vegetation that it *may* neutralize the valuable solution of phosphoric acid it liberates, and other manures—but I do not wish to condemn this in advance of actual experience. When I am more at leisure I will give you the other two processes, by which any farm hand can render Navassa soluble, and produce a fertilizer for Spring crops that will not cost \$10 per ton, and excel any superphosphate now sold at \$50; but it will not be found as well adapted to wheat.

For your particular cultivation, I think that the following compound is cheaper, provided you get the elements of known value from a perfectly reliable source, and mix them in your barn, being received in powder, as I will direct. Drill them with the seed at the rate of 200 lbs. per acre (at least), and as much more as you can afford. Will pay better interest on the investment than any other stock.

If possible, repeat the experiment that I published in the August number of *Southern Planter and Farmer*, to test the value of my new mode of cultivating wheat so as to use fertilizers *with insurance*.

Two barrels of sulphate of ammonia; one barrel of sulphate of potash; 5 barrels of powder of sulphated South Carolina coprolite (or phosphoric deposit).

If possible, substitute, in whole or in part, Peruvian guano in powder for the above sulphate of ammonia, using about five barrels of Peruvian for the above. Get these articles wherever you can find them cheaper, but they can be had pure and reliable, in powder, *ready for use*, of Higgins & Reybold, at Delaware City, on the Chesapeake and Delaware canal, as I have and will analyze all their stock *as received*, except Peruvian guano, which it happens I have not analyzed for them thus far.

Yours faithfully,

DAVID STEWART, M. D.

Port Penn, Delaware, Sept. 19, 1869.

N. B.—The sulphated coprolite referred to must contain 25 per cent. of oil of vitriol.

D. S.

Rotation of Crops.

On every farm there is usually raised at least some of the good old-fashioned cereals, corn, wheat, oats, and also potatoes; and perhaps sufficient of these should *always* be grown for family and farm consumption, and to avoid buying. They are not, however, always necessarily the staple crops from which the chief profits of the farm are derived; and it will be found that in every section and neighborhood almost, there are certain specialties particularly adapted to its cultivation, by reason of soil, distance from market, or other circumstances, which make the heavy end of the annual profits.

In the immediate vicinity of Philadelphia, for at least thirty to forty miles round, convenient to railroads, the dairy business (milk and butter,) should undoubtedly be the *main* object—the raising of grain being merely incidental to it.

In many parts of New Jersey the staple crops are certainly small fruits and vegetables. In other places there would appear to be peculiar advantages for rearing improved breeds of live stock. We know of soils where wheat grows well, producing heavy crops with an alternation of clover, year after year. In some places, on a smooth road, hauling hay to a market like Philadelphia, and bringing a return load of manure, would appear to be profitable and a self-sustaining system. In other sections, packing or baling hay for transportation yields more money than any other crop.

It is very important for every farmer rightly to select his main staple crop. Whichever of these several plans is adopted, it should be borne in mind that generally only *one*, or at least *two*, can be well managed on a single farm. They cannot all succeed; and to try them all is sure to result in failure. It would be a kind of

“Jack of all trades and master of none.” Military men would call it covering too much ground, and exposing too much front. Weakness or want of driving force would result—labor being divided when it ought to be concentrated.

We will suppose a dairy farm where the object is to keep, Summer and Winter, the largest number of cows. Even if grain is purchased, it will be obviously inexpedient to buy grass or hay. The grass crop, therefore, should be the chief point of attention; and such a system is best for a dairy farm as will bring about a luxuriant growth of nutritious grasses, and retain them longest without the necessity of ploughing up. Without grain, straw and corn fodder, stock could not be kept, and without these there could be no manure. So that some ploughing and some cropping are indispensable.

We would suggest the following rotation in place of the present one: 1st, corn, to which all the manure should be applied, except what is wanted for potatoes; 2d year, seed with oats and barley mixed, and clover. Oats now is a very uncertain crop, and experiments the present season on the Experimental Farm in Chester county and elsewhere, seem to show these ripen well together (say two-thirds barley and one-third oats), and are not so apt to fall down. As feed for cows, the two grains mixed have been found more valuable than either alone. 3d year, clover to be ploughed down the next Fall for wheat, which should be sown with grass seed in the usual way. This makes a four years' rotation. The advantages are, first, there would undoubtedly be on an average a much heavier corn crop; second, there would be a far more valuable crop for milch cows than an oat crop alone usually is; 3d, the value of the clover crop, which could partially be pastured. It is a great meliorator, improver and subsoiler, and if there is any one way to ensure a crop of wheat, it is to precede it with a crop of clover. All experience, everywhere, proves this. This rotation, besides being a practical one, is also based on sound theory. Corn is a gross feeder—and we have never heard of any land too rich for it. Barn-yard manure, in its only partially decomposed state in the Spring, is exactly what it requires, to warm the soil and drive the corn ahead. While the ground might be left too rich for oats the next season, it would not be for barley, or barley and oats combined. The third year, (unless the “laws of nature” are similar to what they are around Salem, New Jersey, where roots only run down five inches and then stop,) it would be found that clover would do what farmers hesitate about—it would subsoil, or extend its tap

roots down, opening the lower strata to the air, bringing up mineral plant food, and evolving chemical combinations there, besides making a mass of vegetable matter, to be turned down, exactly suitable to the growth of wheat. We present this rotation for the consideration of our farmers, and should be glad to have their views of it.—*The Practical Farmer.*

Agricultural Resources of the Cape Fear Section of North Carolina.

In a letter written to Dr. S. S. Satchwell, Professor Kerr, State Geologist of North Carolina, after an exploration of the Cape Fear region, speaks in glowing terms of the hidden wealth of that section. He says :

“ I confess my surprise, after all that has been said and written on the subject, at the discovery of both the *abundance and wide distribution* of marls in your section. But it is a matter of still greater surprise that such *mines of wealth* should be so little known and appreciated, and used by farmers. We must change all this. I count on your Farmers' Clubs and Agricultural Societies, aided by an enlightened and comprehensive railroad policy, to do much in that direction.

“ I have collected largely and over a considerable area, both of soils and marls, of which the samples are undergoing analysis as fast as possible in the State Laboratory. The results will be given to the public at the earliest practicable moment.”

“ GREAT TRUTHS ” IN AGRICULTURE.—The farmer who stints his fields, is as unwise and improvident as he who starves his working cattle—in both cases he is diminishing the ability of a faithful servant to be useful to him.

The farmer who obtains from a field not properly fertilized ten bushels of grain, when by manuring he might have obtained twenty, is selling his labor at half its value.

He who does not give back to his fields as much as he takes from them, sells their fertility in his crops—and the fertility of the soil is the farmer's capital.

The farmer who will keep these truths in view, and act in accordance with the rules they suggest, will find his compensation in the increasing products of his farm, in the augmentation of his wealth, and in the promotion of general prosperity.—*Maine Farmer.*

Attention to Cattle.

Very few will dispute that if it pays to keep live stock, the profits will be in proportion to the management of it; therefore any one would suppose, on first thinking of the subject, surely every stock-raiser will have the very best attention paid that can possibly be contrived. Is it so? Alas! no. In every herd, in every flock, there are animals of the same age which differ in a great degree in their aptitude to carry flesh and in milking properties; also in the flock, the difference in the weight and quality of the fleece, as well as the contrast in mutton qualities, will be very great, and all these characteristics require a watchful and intelligent mind to note the cause of every peculiarity, so that weeding out or judicious counteraction may be resorted to.

A man who excels in the management of cattle, has studied the disposition and habits of animals, and understands what kind of food suits them best at every stage of their existence, and how to treat them at all seasons of the year and under every circumstance, so that he has no sickness, excepting of such a kind as no human foresight could have prevented. Attention to cattle will pay, at all events, and if owner and attendant are both skilled in the science of breeding, so as to produce superiority in shape and constitution in the descendants, by the judicious mating of the parents, as well as in bringing every generation nearer perfection by forcing every good trait, success will follow to a greater extent:—*Cultivator and Country Gentleman*.

THE *Philadelphia Eagle* says a good story is told of an amateur agriculturist living not a thousand miles from Berkshire county, who was advised by one of his neighbors to plant sun-flowers with his beans, in order to obviate the task of poling. He followed the advice; in due course of time beans and sun-flowers came up and waxed strong, the beans coiling around the sun-flower stalks beautifully; and he congratulated himself on the fact that he had discovered an effectual method of raising beans without being driven to the disagreeable necessity of toting bean-poles from the forest. But alas for human expectations, his beans were raised out of the soil, roots and all, by the aid of the new-fashioned bean-poles, and there they hung withering between heaven and earth—a melancholy testimonial to the uncertain tenure of all earthly things.—*Metropolitan Record*.

Unceasing Effort to Improve our Agriculture Demanded.

We are indebted to the Lynchburg Virginian for the following extract from an address delivered by Edward Everett in 1861, before the Union Agricultural Society of Jefferson county, New York. That man of varied and wonderful intelligence, said :

“ The effort to improve our agriculture must never be lost sight of. This is the great object, gentlemen, for which your Society, in common with others of the same character, was instituted, and towards which the thoughts of the intelligent husbandman should be steadily turned. It has, I think, generally been the reproach of our farmers, that they are too much inclined to persevere in the old routine, and through jealousy of what is called book-farming, neglect to avail themselves of the light which science and skilful experiment have thrown upon the operations of husbandry. I am disposed, however, to think that this reproach, though not without foundation, has been carried too far. First experiments in all departments of industry generally fail. The mass of our farmers have no capital nor surplus labor to spare for double experiments, and it is in the nature of things that important changes, in that which has existed from time immemorial, should be gradually and cautiously made, and somewhat timidly admitted, by those who cannot afford to put much at risk. In the meantime by the agency of agricultural newspapers and larger journals through the reports of boards of agriculture and other official publications, and by the aid of meetings like the present, much practical information has been and constantly is disseminating in our farming community. I appeal to you, gentlemen, whose recollections cover a period of twenty or thirty years, that within your observation a corresponding improvement has taken place in almost every branch of husbandry, the artificial enrichment of the soil, the introduction of choicer varieties of the domestic animals ;—horses, cows, sheep, and swine ;—in many of the implements for tilling and reaping the soil, and in several agricultural operations, such as subsoil ploughing and draining. In these, and several other particulars, there is no doubt that Swift’s proverbial and often quoted test of a public benefactor, that of making two blades of grass grow where only one grew before, has been much more than realized in many departments of our modern agriculture.”

Peat Fuel.

A trial to test the comparative calorific power of peat fuel was made in the engine-room of the Tribune establishment on the night of the 11th inst. The two boilers were precisely alike and in the

trial used the same draft. Fires were started at 9 P. M., and the work continued steadily until 4 A. M.. Under one boiler ordinary fuel—Lehigh anthracite, chesnut size—was burned, and under the other the fuel prepared by a peat company—each being carefully weighed. 900 pounds of each were consumed, with the same resulting duty in both. This peat fuel is very compact, and in this instance was the non-resinous variety, yielding 10–8 per cent. of ash. The engineer expresses the opinion that, for making steam it is equal ton for ton to the coal commonly used for that purpose.—*Dutchess County Farmer.*

NOVEL MODE OF TYING HORSES.—Icelanders have a curious custom, and a most effectual one, of preventing horses from straying. Two gentlemen, for instance, are riding together without attendants, and, wishing to alight for the purpose of visiting some objects at a distance from the road, they tie the tail of one horse to the head of the other, and the head of this to the tail of the former. In this state, it is utterly impossible that they can move either backwards or forwards, one pulling one way and the other the reverse; and therefore, if disposed to move at all, it will be only in a circle, and even then there must be an agreement to have their heads in the same direction.—*Metropolitan Record.*

GREASE YOUR WHEELS.—“Some persons may not be aware,” says Hieover, in his work, *Bipeds and Quadrupeds*, “that the trifling neglect of a pair of wheels being comparatively dry or well greased, will cause twenty miles to take far more work out of a horse than forty would in the latter case; yet wheels absolutely screaming from dryness are often seen and heard attached to carts and wagons; and thus would the brute in human form let them scream till he had finished his journey’s end or his day’s work, though his horses were drawing, from such cause, at least one ton in four of resistance more than they would if the defect were attended to.”—*Forney’s Press.*

“AN Indian named Joseph Shaw-we-nos-se-qua lately carried half a bushel of potatoes twenty miles to pay in his subscription to a paper in Ludington, Minnesota. He can neither read nor write, but gets some of his better informed neighbors to read the paper for him.” Let him that readeth understand!

Hoe Out Your Row.

One day a farmer's lazy boy
 Was hoeing out the corn,
 And moodily had listened long
 To hear the dinner horn.
 That welcome blast was heard at last,
 And down he dropped his hoe ;
 But the old man shouted in his ear—
 " My boy, hoe out your row !"

Although a " hard one " was the row,
 To use a ploughman's phrase,
 The lad, as sailors have it,
 Beginning well to " haze,"
 " I can," said he, and manfully
 He seized again his hoe,
 And the old man smiled to see
 The boy hoe out his row,

The lad this text remembered,
 And proved the moral well,
 That perseverance to the end
 At last will nobly tell.
 Take courage, then ! resolve you can,
 And strike a vigorous blow ;
 In life's great field of varied toil
 Always hoe out your row.

Indian Corn and its Uses.

A bushel of Indian corn contains more nutriment than a bushel of wheat ; but corn meal should not be ground fine, or it will not keep sweet. There is no grain that can be put to so many different ways, as corn and corn meal.

First, we have the green corn, roasting ears and soup in the early, and the dried corn soup and hominy the balance of the year. These dishes every good housekeeper knows how to prepare, being among the most simple in the culinary art.

And then by grinding it into meal, what visions of delicious eating float before our eyes. First, we have the corn cake made of meal and water, and a little salt, if you are too poor to use eggs and milk, mixed into a dough or batter and baked on a griddle. The corn bread or pone, which can only be made properly by about one housekeeper in ten. Then mush and milk and fried mush. We have never seen the individual that did not like one or the other. Many fail in making good mush by not boiling it enough. When it

is merely scalded it has a raw taste. Then there is a very good corn meal pudding, made by stirring the meal into scalded skim milk till it is thick as gruel, and, when cool, add ginger, cinnamon, nutmeg, salt and sweetening to suit the taste, and a little fine cut suet and some raisins or dried peaches, and a fine cut apple. It should bake an hour or more, according to size. This is a good pudding. And then see into how many dishes corn becomes a palatable and favorite mixture. It is the cheapest and most wholesome food that man can live on, and should be on the table of both rich and poor more frequently than it now is, in some one of its many forms.—*Lawrence Journal*.

Harvesting Potatoes.

Perhaps the greatest want of the farmer in the line of agricultural implements which inventors and manufacturers as yet have failed to supply, is an efficient horse-power potato digger. True, there are some machines in the field that promise well, and we have great hopes of them; but none have yet proved themselves complete and reliable, though, doubtless, the coming potato harvest will give us more information, and we hope and expect more confidence, also, in their ultimate success. What we want is a machine that, drawn by two horses, will throw out four or six acres per day, in as good a shape and as clean as can be accomplished by laborers with hooks. Large vines should be no serious impediment to the working of the machine. Farmers would be satisfied with such, and it would bring a fortune to those who controlled the sale and manufacture.

In the meantime, although one of the most profitable crops which the farmer grows, and yearly increasing in importance, the potato is also one that requires great labor, which comes chiefly in harvesting. In other respects no more is required than to grow the corn crop—if as much. Every farmer must be guided partly by circumstances as to the means he can best employ to lighten and facilitate this work; the most we can do in this article is to offer a few hints which may be improved by some.

It is of considerable advantage to run a five-tooth cultivator along the rows before digging. The two rear teeth should be of the mould board form, and placed so as to haul away the dirt from the hills. This operation, which takes but little time, smooths the ground between the hills, levels the weeds and grass, and removes some of the soil from the tubers. In large fields, where many hands are employed, the labor should be systematized. On fine

days the potatoes need little airing—just enough to loosen the dirt on them—they are better if gathered without feeling much sun. The feebler hands and even children could pick them into baskets, which should be emptied and replaced by men. Some find it economical to provide a large number of baskets, which, when filled, are loaded on a wagon fitted with a suitable rack, and drawn to the market or cellar; this course saves handling, and the potatoes look better, and are, perhaps, less liable to decay. Before being closely stored for the winter, the crop should be under light cover until the sweating stage is passed. This may take place in lightly covered pits provided with ventilators, on the barn floor, or in some out-building. After this process is completed, they may be placed safely in dry, cool cellars, or covered with an air-tight layer of earth to a suitable depth; light should be excluded from them. It is also better to store potatoes low in a cellar than near the ceiling:

In digging potatoes, the best hand implement for universal use is the hook, made of the best steel. Round tines draw through the earth easier than flat ones with their broadest sides at right angles to the handle. In all cases avoid injuring the tubers with the implements.

From appearances, we judge the price of the present crop of potatoes will rule high. In the large portion of the country which has been seriously affected by dry weather, the crop will probably fall below the usual average. In other extensive potato growing districts disease prevails. The Northwestern States are great sufferers from the ravages of the Colorado bug. Taken altogether, circumstances indicate high prices for this important staple.—*Moore's Rural New Yorker.*

Sow Timothy Grass Seed.

The best time of the year to sow timothy or herdsgrass seed to be certain of a good catch, is the autumn. So if you wish to lay your field of winter grain down to grass or meadow, without running any chance of failure, sow the seed liberally as soon as possible. The cool, moist autumn weather will enable it to make root enough to endure the winter well, and the same kind of weather in the spring will place it far enough ahead to bid defiance to any summer drouth. Sow thickly, and repeat the operation with clover seed next spring. One cannot grow too much clover on a farm, and the great trouble with most farmers is to grow enough.

In sowing timothy seed with winter wheat we prefer waiting until

the grain has started some before scattering the grass seed; the latter will grow enough before winter, and will not get so rank the next season as to injure the wheat. Timothy seed sown early in the fall alone on ground well prepared, at the rate of half a bushel per acre, will furnish a very good crop of hay or good pasture the following season. Much is lost by not sowing timothy seed in the fall; sow it by all means now, unless you intend to harrow your field in the spring, and at the proper time put on the clover seed without heeding that you have sown timothy.—*Moore's Rural New Yorker.*

Application of Manures.

There has been a great dispute at the South whether farm-yard dung should be applied for wheat directly in the autumn, or whether it should be applied upon grasses. Many advocate the putting of it on the clover at mid-summer; and in almost all cases where it has been so tried it has produced a good effect. Instead of applying it for wheat, in ordinary cases, when the wheat is about to be sown, or on the clover in mid-summer, I apply it in the autumn or spring before, upon the clover. The result of pursuing that course is this: You give the clovers a thoroughly good dressing, so as to enable them to grow with much greater rapidity, and to a much greater volume; you also have a far greater amount of roots produced in the soil; and the wheat derives a greater benefit from those roots, in the shape of manure, than if you applied the manure at mid-summer, or when you plough up the land in the autumn. Wherever this plan has been tried—and it has been tried in many places—it has been found efficacious. Experiments have been made, distinctly showing that it is better to apply farm-yard dung to green than to corn crops.—*PROF. NESBIT, in Rural American.*

Stone on Land.

The *New England Farmer*, of recent date, had an article on the stone found on many sections of farming lands. The point considered was whether the small stone, dotting a field, were injurious to cropping or the reverse. This is a question we have often pondered with the general result arrived at by the N. E. F., to wit: that these small stone aided the fertility of the soil, and hence increased the quantity of its products. They are "living stones"—that is, they prevent the ground from parching while keeping it in a lively state, whereby food is supplied more readily and in greater profu-

sion to the plants seeking nourishment from the soil. Land that is to be used for meadow and the small grains, harvested by machinery, will require to be disburdened of its stone, but, in all such cases, a fertilizing power, of which the soil readily avails itself when under cultivation, departs with the stone removed. The stone, to the mower and reaper, are a nuisance, to be removed, but to the soil a friend whose retention in it would be a blessing.—*Moore's Rural New Yorker.*

Agriculture in Austria.

The plains of Austria, about Vienna, resemble our small western prairies. As far as the eye can reach the land appears to be a continuous crop of wheat and Indian corn—it being the only country I have yet seen where corn is cultivated as a staple crop. The cultivation, however, of all the land is done in strips or patches, which forms one of the most singular features of European landscapes. The subdivision of farm lands has been going on for so many generations that now the hard working peasant may possess a small farm twenty rods wide and half a mile long. Here, as in many other parts of Europe—only it seems to me a little more so—the women do nearly all the labor of the field. I have counted thirty engaged at one time in reaping down a field of wheat. I have seen no kind of agricultural machinery at work, except a rude kind of two-wheeled plough, which is no more than the Egyptians did three thousand years ago. The old fashioned grain cradle is sometimes used, but the sickle in the hands of women, like in the days of Moab and Ruth—though I suppose Moab worked—seems yet to stand its ground against all the ingenuity of McCormick, Hussy, Wood, and others. However, labor is so cheap here, and farms, as a general thing, are so small, that it would scarcely pay to employ expensive machinery, such as is necessary to the proper cultivation of the large farms in our country.—*Ed. Cor. Scientific American.*

THE *Ohio Farmer* says beans should be gathered as soon as the pods have turned yellow. It advises drawing them to a spot near the barn and spreading them on a platform made of blocks and rails or poles. In such a place they dry rapidly, getting the full benefit of the sun and air. A rain does but little damage, as the water runs off readily. It thinks the vines, if stored, make excellent sheep feed in winter.

Insects and Their Exterminators—Letter From Dr. Loring.

To the Editor of the Tribune.

SIR,—I notice in *Harper's Weekly* of March 20 an article upon some suggestions made by myself, in my opening address before the New-England Agricultural Society, in February last, with regard to the destruction of insects. The subject is one of so much interest and importance to the agricultural community that I desire to present my views more elaborately than I did in the address, and with the hope that your readers may see what a fine field for scientific inquiry is opening before us, and how much scientific men are doing to render practical aid to the business of farming.

It is well known that the destruction caused by insects injurious to vegetation, constitutes one of the greatest difficulties to which the farmer is exposed in the cultivation of every crop known to man. The army worm, the weevil, the midge, the canker-worm, the ceterpillar, the maggot, all attack the vegetation to which they are attracted, and are the terror of every man who would get his living by cultivating fruit, or grain, or root crops, or any other crop upon which the profits of the farm depend. These pests have been fought with almost every weapon which the skill of man could devise. The caterpillar has been assailed with the hand, the brush and gunpowder. The cankerworm has found his way barricaded by tar and printer's ink, and tree protectors. The maggott has not yet been defeated on the onion crop. The aid of birds has been invoked in vain. The war between man and these destroyers has been an unequal one. And in spite of all our efforts thus far our forests, our fruit, and our crops have been swept away by the myriads of insects which we could neither check nor destroy.

Of these evils I have had my share. The extensive orchards on my farm have been seriously injured by insects, and in my neighborhood they have reduced the fruit crop to such an extent as to render the question of profit from it one of great doubt. I had used all the ordinary methods of destroying the invaders on my own trees, with the usual success, and the usual discouragements. In 1865, however, another power took the matter in hand, so far as caterpillars were concerned at least, and they were entirely exterminated by some parasite which did its work so unobtrusively that I have not yet discovered what it was. I have had no caterpillars since. This and some facts in the history of the wheat-midge led me to the conclusion that man might arm himself with parasites in his war against destructive insects, and make it a war of exter-

mination. I think so still, and I doubt not that science will one day teach us that all our ordinary means of warfare are poor and feeble, when compared with those more effective weapons which nature provides for us.

I said in my address that I had called the attention of entomologists to this question: and in order that you may see what their views are, I beg leave to quote the following extract from a letter addressed to me by Prof. A. S. Packard of the Peabody Academy of Sciences, Salem, Mass., one of our ablest entomologists, with the hope that it may enlighten the explorer, and comfort the sufferer. He says:

“Your suggestions that injurious insects may be successfully combatted by rearing their insect parasites in greater numbers than naturally exists, has occurred to entomologists, but has never been practically carried out. In Europe, gardeners have for years placed ‘lady-bugs;’ and the ‘Aphis licus,’ on trees infested by plant-lice, which have very effectively stripped the plants of these pests; but I believe as you suggest, that more could be done in rearing the parasite species, i. e., the ichneumon flies, &c., which especially prey upon the injurious insects.

“Our most destructive insects are the wheat-midge and Hessian fly. Dr. Fitch, in his report on the injurious insects of New-York, 1865, states that in Europe these insects are comparatively innocuous, because they are nearly exterminated each year by their internal parasites, minute ichneumon flies, which are vastly in excess of their hosts. In this country, however, the aid rendered the farmer by these minute parasites is almost none at all. He therefore recommends the importation from Europe of these parasites, and shows how easily it could be affected by an expert in practical entomology.

“I believe that an immense saving in our crops would be made if a commission of entomological experts should act in concert in the different States, and pay attention to the rearing of these insect parasites; which is the surest way of combating these formidable pests, which annually eat millions of dollars in the United States alone. Why should not each State have one or more *insect* commissioners, as well as a *fish* commissioner, whose chief duty should be the propagation of parasite insects?

“To show the importance of this subject, I would cite an interesting fact, learned from the eminent entomologist, Dr. N. Hagen, of the Museum of Comparative Zoology at Cambridge, since receiving your letter. He writes: ‘It is an interesting fact, (stated by Dr.

Ratzburg, well-known as a writer on economical entomology) that in the German forests since 1867, the ichneumon parasites (before regularly 10 per cent. of their hosts) have suddenly become no per cent.; and the number of injurious insects upon which these parasites lived has increased correspondingly from 40 to 50 per cent. Perhaps to this dearth of parasites is the enormous calamity among forest trees of the last 15 years attributable."

"With comparatively little effort, entomologists will be able successfully to breed these parasites and thus restore the balance in nature ever existing between these parasite insects and their hosts. It would seem as if the injurious insects were multiplying more rapidly of late years than ever before. The opening up to cultivation of thousands of square miles of virgin soil, in the West, has afforded the greatest facilities for the propagation of vegetable feeding insects, which have increased most unnaturally. And the only speedy means of arresting the evil is to propagate, in equal numbers, their natural enemies."

I have made this long, and to me, interesting quotation from Prof. Packard's letter, in hopes that it may suggest some careful investigation, and some experiments which will be useful to those of us who are engaged in practical agriculture, and who believe in the progress which this great industry is to make under the light of modern science.

GEO. B. LORING.

Salem, Mass., April 14, 1869.

REMEDY FOR RUST IN WHEAT.—The following, from a distinguished German Agriculturist, is taken from a Breman paper. For thirty years I have found this method successful in preventing rust in wheat: Some hours, at the longest six or eight before sowing, prepare a steep of three measures of powdered quicklime, and ten measures of cattle urine. Pour two quarts of this upon a peck of wheat, stir with a spade until every kernel is covered white with it. By using wheat so prepared, rust of every kind will be avoided. I have often noticed, while in the neighboring fields, a great part of the crop is affected by rust, in mine, lying closely by it, not a single ear so affected could be found.

The same writer says he takes the sheaves and beats off the ripest kernels, with a stick, and uses the grain thus obtained for seed.—*Exchange.*

UNDERDRAINING LAND—ITS EFFECTS.—Experiments in underdraining land were made in Scotland, for the purpose of determining the effect on the temperature of the soil, compared with that in the same vicinity which was not drained. The result was that the draining raised the temperature 1 to 5 degrees, equal to a removal of the land from one hundred to one hundred and fifty miles south. This is an important consideration connected with compact, heavy soils, whose retentiveness of water renders them cold, and comparatively inert with respect to vegetation. Draining land involves considerable expense, but its increased productiveness soon repays this, besides assuring increased profits for the future.—*Watchman and Reflector.*

HOW MUCH MANURE DO WE USE ON AN ACRE?—An acre of land contains 43,560 square feet, 4,840 square yards, or 160 square rods. By those who have used guano, it is said 300 pounds are sufficient to manure an acre; 302½ lbs. would give 1½ ounces avoirdupois to the square yard. One cubic yard would give a trifle over one cubic inch to the square foot. A cubic yard of highly concentrated manure, like night soil, would if evenly and properly spread manure an acre very well. A cubic yard of long manure weighs about 1,400 lbs.; a cubic foot not far from fifty lbs. A cord contains 128 cubic feet; 1¼ cord would give about a cubic foot to the square rod. If liquid manure be used it would take 180 bbls. to give one gill to a square foot upon an acre, which would be equal to about 50 pipes or large hogsheads. It would be quite useful if farmers would be a little more specific as to the manure applied.—*Rochester American Farmer.*

SHEEP RAISING.—Lieut. Gov. Stanton, of Ohio, says in regard to sheep raising in England: "One thing that struck me very forcibly was, that all our farmers testified that sheep raising was absolutely indispensable to successful farming; that their manure was necessary to preserve the fertility of the soil; and that without them the whole kingdom would, in a few years, be reduced to barrenness and sterility. It is in this view that I regard sheep raising in this country as more important to the ultimate and permanent prosperity of the country, than on account of their profits. Whatever else may happen, we cannot permit the virgin soil and these beautiful fields of ours to be reduced to barrenness by the time they pass into the hands of our children and grandchildren. Their fertility must be preserved at all hazards, even at the expense of present profit."—*Maine Farmer.*"



Horticultural Department.

JOHN M. ALLAN,

EDITOR.

Editorial Correspondence.

From Richmond to West Point by rail, thence via York River and Chesapeake Bay to Baltimore, thence by rail to Philadelphia, is the old tale which every traveler knows; but how much that is new, beautiful and instructive does one see, every time the route, old and familiar as it may be, is traveled. The counties along the sides of this magnificent river are admirably adapted to the production of fruit and vegetables, and with the rapidly increasing facilities for transportation, are preparing to enter earnestly into competition with those lying at the mouth of the James. Peaches, pears, apples, grapes, melons, will soon claim their place, besides oysters and crabs, as staples of the lower peninsula. But as there was no delay en route, we will make none now; please consider us in Philadelphia, enrolled as delegates to the twelfth session of the American Pomological Society. The attendance of fruit growers, both amateur and professional, was large, including the leading pomologists of all sections of the United States. Col. M. P. Wilder, although over seventy years of age, presided with an efficiency which would put to the blush many younger and more active men, and it is needless to say that all which courtesy and kindness could dictate, marked his entire action. His opening address was eloquent and instructive. Not least among the cheering features of the Convention was the large attendance of Southern delegates, and the marked care on the part of the officers and members to avoid even the slightest allusion to politics, bespoke the dawn of a brighter era of peace and good will. The discussions of the merits of the varieties of fruit, both new and old, were in the main well conducted, most of the remarks being short, practical and pointed. Little change was made in the list of fruit for Virginia. The Pilot

and Mason Pippin apples, originating in this State, were added to the list of prime winter varieties. The revised catalogue will be published shortly, from which you can gather the result of the deliberations better than I can give them. After an earnest debate of an hour, the Society determined to hold its next biennial session in the city of Richmond. This honor was hotly contested by several cities, but thanks to the effective speech of Mr. Wm. L. Hill, the tide set in too strongly for Richmond to be resisted. The Convention were the guests of the Pennsylvania Horticultural Society, who did everything in their power to insure their visitors a pleasant time. Their annual exhibition was truly magnificent; to describe it seems an overwhelming undertaking. Think of a handsome hall decorated with the rarest and most beautiful foliage plants, long tables of cut flowers and designs of the same, ranging from two to sixteen feet in height, with tables running the entire length of the hall, on which were arranged three thousand two hundred and five plates of the finest fruit, and you have some idea of the grandeur of the display. California and Kansas were largely represented, the latter State taking the gold medal awarded for the best general collection of fruit. Virginia, though not equalling her sister States in quantity, was not wanting in quality. The first premium for pears was awarded to Mr. Leighton, of Norfolk, and well did he deserve it; the Duchess and Louise Bonne pears exhibited by him were the finest I have ever seen, and what is most remarkable, were the product of trees planted only two years since. A special premium was awarded for specimens of the Joe Johnson watermelon, exhibited by Henry A. Dreer, Esq. for Messrs. Allan & Johnson, Richmond. On the evening of the 17th this Society gave a banquet in honor of the American Pomological Society, which was like everything else in connection with the exhibition, a grand success. The toasts were well conceived and drew forth happy responses, while the creature comforts embraced the entire list of luxuries. The wines were all American, and of such quality as to leave no room for regret that foreign brands had been interdicted. Time nor space will permit more. The Exhibition and Convention were both successes, and we can but hope that the same may be said two years hence, when the Society shall have convened in Richmond.

PREMIUM PEAR.—A premium of \$60 offered by the Massachusetts Horticultural Society for the best seedling pear, has been awarded to the variety known as Clapp's Favorite, after a trial of five years.

American Pomological Society.

The twelfth biennial session of this Society was held in the Foyse of the Hall of the Pennsylvania Horticultural Society, on Wednesday, September 15th. The attendance was large and the discussions interesting. We give such extracts from the proceedings as our space will permit.

The following officers were chosen for the ensuing term of two years:

President—Hon. Marshall P. Wilder, of Massachusetts.

Vice Presidents—Col. R. R. Hanley, Alabama; John H. Carleton, Arkansas; Simpson Thompson, California; Charles Pauls, Colorado; F. Trowbridge, Connecticut; Edward Tatnall, Delaware; Wm. Saunders, District of Columbia; Lucius J. Horace, Florida; C. J. Berckmans, Georgia; Arthur Bryant, Sr., Illinois; J. D. G. Nelson, Indiana; James Smith, Iowa; J. S. Downer, Kentucky; H. A. Swasey, Louisiana; C. M. Hovey, Massachusetts; W. D. Breckinridge, Maryland; Nicholas Waugh, Montana; Hugh Allen, Canada East; Silas Moore, Rhode Island; Warren Foote, Arizona; W. M. Bort, Michigan; D. A. Robertson, Minnesota; Geo. W. W. Branden, Mississippi; B. F. Edwards, Missouri; Fred. Smith, New Hampshire; Dr. Wm. N. Howsley, Kansas; Chas. Downing, New York; Wm. Parry, New Jersey; R. W. Furman, Nebraska; Dr. Ruyther, New Mexico; Wm. L. Steele, North Carolina; Dr. J. A. Warder, Ohio; Chas. Arnold, Ontario; Lucien Francis, Oregon; Robert Buist, Pennsylvania; Dr. J. P. Wylie, South Carolina; M. S. Frierson, Tennessee; W. Talbot, Texas; J. E. Johnson, Utah; L. Jacobs, West Virginia; J. C. Plumb, Wisconsin; Rich'd Bradley, Vermont; G. F. B. Leighton, Virginia.

Treasurer—Thos. P. James, Philadelphia, Pa.

Secretary—F. R. Elliott, Cleveland, Ohio.

Executive Committee—President and Vice Presidents *ex officio*; M. B. Bakeman, Painesville, Ohio; Geo. Thurber, New York; J. E. Mitchell, Philadelphia; W. C. Flagg, Alton, Ill.; J. F. C. Hyde, Boston, Mass.

Several invitations to visit the Academy of Natural Sciences, Fairmount Park, Vineland, N. J., and other places of interest, were read and accepted. The question as to where the next meeting should be held then came up. Boston, Mass., Norfolk and Richmond, Va., Newport, Geneva, N. Y., Tennessee, California, Kansas, and Rochester, N. Y., were named as suitable places.

The discussion of the merits of these various places was ani-

mated. Messrs. Tower, Hill and Allan pressed the claims of Richmond, while Messrs. Leighton and Robinson strongly urged those of Norfolk. It was at last decided to take a vote upon each place, which resulted as follows :

- For Boston, Mass., 17 votes:
- For Richmond, Va., 61 votes.
- For Geneva, N. Y., 32 votes.
- For Cincinnati, Ohio, 18 votes.
- For Nashville, Tenn., 6 votes.
- For California, 24 votes.
- For Kansas, 9 votes.
- For Rochester, N. Y., 34 votes.
- For Newport, R. I., 23 votes.

It was then unanimously decided that the next meeting (in September, 1871,) will be held in Richmond, Va.

Mr. Allan, of Richmond, then returned his thanks to the Convention for the conclusion at which they had arrived.

The various fruits were taken up for discussion in the following order: apples, pears, grapes, peaches, plums, cherries, strawberries, raspberries, blackberries, currants, gooseberries.

Mr. Meehan, of Philadelphia, at the President's request, referring to the "Mexican Everbearing Strawberry," said that it had been deemed of no account, but of late the botanists had taken hold of it, believing it to be a new species. He had seen it, and though it differed from all the other species of the Alpine strawberry, he yet believed it to belong to that family. It differed in this, that the first fruits are larger and of equal diameter from the stem to the end, and differed further in having a more grassy taste. He believed that it could be cultivated with profit. Its flavor is delicious, though rather pasty, which all of this species possess. In his opinion it is superior to all the other species.

Mr. Wier, of Illinois, doubted whether it could be cultivated with profit in ordinary seasons, reminding Mr. Meehan of the peculiarly favorable condition of the past season for the "Alpine" berry.

The Secretary said this berry was very productive, and the ground was literally covered with the fruit when he saw it. It is possible that a dry season would make a change, but not in the variety.

Mr. Fuller, of New Jersey, said he examined it very minutely with the others, but could see no difference. I have some on the ground over an inch in length. The roots do not enter the ground readily, and I have five runners on some plants, all in bloom.

Mr. Meehan said the only way in which he could account for the difference of opinion was that Mr. Fuller could not have got the right variety.

Mr. Chapman, of Boston, said: I saw this berry last week in Detroit, and think it is of great flavor. I saw them by the bushel, and never saw any variety in such quantity or of such quality. I think it is of great value, if only to cross with.

After the adjournment of the Convention the members were entertained by the Pennsylvania Horticultural Society, at a banquet given in their hall. Among the regular toasts of the evening was the following to Virginia:

“Virginia—She has taken our first prize for superior mammoth pears. We consider her a Pomological prize worth having in our collection.”

Responded to by Mr. John M. Allan, President of the Virginia Horticultural and Pomological Society.

Col. J. J. Werth proposed the following, which was received with applause:

The three F's of Pennsylvania—Fruits, Flowers, and the *Fair*.
The last shall be first.

Pennsylvania Horticultural Society.

Among the premiums awarded at the annual exhibition of this Society, was one to Mr. G. F. B. Leighton, President Norfolk Horticultural Society, for best specimen of pears, and one to Henry A. Dreer, of Philadelphia, for Joe Johnson watermelons, exhibited for Messrs. Allan & Johnson, of this city.

The following is the total of dishes of fruit exhibited: Apples, 1,254; pears, 1,594; grapes (native), 220; grapes (exotic), 41; plums, 51; peaches, 38; quinces, 3; nectarines, 2; figs, 2. Total, 3,205.

The President of the Horticultural and Pomological Society acknowledges the receipt of a box of seedling apples from Mr. Fitz, accompanied by the following description of them:

KESWICK DEPOT, Albemarle county, Va.

JOHN M. ALLAN, Esq.:

Dear Sir—Herewith you will please receive a box containing—
No. 1—Depratto apple—round, small, yellow, rather acid.

No. 2—Depratto apple—round, medium, yellow, mealy, and well flavored.

No. 3—Grandma's apple—medium to large, subacid, tender, crisp, white meat.

All seedlings grown on slaty land on my place. The present great drought has injured them very much, especially as to size. The first two arrive at maturity by middle of August. The Grandma apple, No. 3, is the finest cooking apple I ever saw, matures all through August, flowers large and very beautiful, tree large, free grower. The Depratto apples (so called,) are good eating apples, and suitable for all culinary purposes. I can send you scions to propagate from, if you judge these or any one of them worth your attention, and you can give them names.

With great respect,

JAMES FITZ.

August 31, 1869.

Napoleon III. Strawberry.

The Editor of the *Horticulturist* says:

“Among the new varieties of strawberries we are especially pleased with the Napoleon III. Its fruit is of a firm texture, just right for market, green color, delicious taste, stands up well from the ground, a good grower, quite productive, and uniformly large. Its season, however, is quite late, but this is a quality of much greater value than is usually supposed. Late strawberries are now paying better for market than early ones; because the rush is over, the demand is steady, with little or no change, and usually at very remunerative prices. If this variety will adapt itself to different soils, we cannot do better than indorse it as one of the very best varieties now before the public. Last year it ‘promised well;’ this year it is fulfilling its promises much beyond what was anticipated of it.”

At the late meeting of the American Pomological Society, it was pronounced a *worthless old variety*. When doctors disagree, &c., &c. Our experience of this berry is favorable, and we think it will prove to be a valuable late fruit. We are sure it is a *new variety*.

POISON OAK.—Professor G. Dowell, in the *Galveston Medical Journal*, recommends in cases of poisoning by *Rhus Toxicodendron*, and other poisonous species of the Rhus, to bathe the parts with a solution of caustic potash, sufficiently strong to render the skin soapy. This “has never failed to cure immediately,” although he has used it in hundreds of cases, including himself. The potash is used in the proportion of ten grains to the ounce of water, but may be increased in strength as needed.

RECIPE FOR POTATO BUG.—I here enclose you a recipe for the destruction of the potato bug. For an acre take 2lbs. of Paris Green; mix 16 quarts of wood ashes. Spread this on finely while the dew is on the plants. I obtained a situation here where every body ridiculed the idea of growing potatoes, on account of the great number of bugs that infested the fields. But my potatoes are as healthy and free from insects now as any of my neighbors, although they were almost covered with bugs when they first came up. I applied it to them twice. It costs 4 cents a pound, and can be had at any paint shop or drug store.—*L. A. Lee, in Gardener's Monthly.*

THE KITTATINNY BLACKBERRY AT CINCINNATI.—At a recent meeting of the Cincinnati Horticultural Society Mr. McGregor said that the Kittatinny ripened about the same time as the Lawton, but the berry was sweeter. The Early Wilson ripened eight days earlier than the Lawton, and the berry was double its size, and though it requires more sugar, he considers its quality preferable to that of the Lawton.

Cost of Grape Trellis.

T. S. Hubbard, of Fredonia, N. Y., contributes to the *Rural New-Yorker* the following items of expenses of a grape trellis per acre.

An acre of grapes, with rows eight feet apart and fifteen rods long, will contain twenty-two rows, or three hundred and thirty rods of trellis and one thousand rods of wire, using three wires to a row. The following is the estimated cost per acre, at present prices, for a trellis complete.

44 braces, hemlock at 7c.....	\$3 08
44 short stakes for foot of braces, at 3c.....	1 32
132 small pins for end posts.....	30
44 end posts, 5 inches chestnut, at 20c.....	8 80
200 smaller posts, say 3½ inch, at 10c.....	20 00
8 lbs. staples, at 12½c.....	1 00
Driving posts, three days.....	4 50
Putting up wire, braces, etc, four days.....	6 00

Total..... \$45 00

Size of wire.	No. feet per 100 lbs.	Cost per 100 lbs.	No. lbs. per acre.	Cost of Wire per acre.	Total cost per acre
No. 9	1634	\$7 78	1010	\$78 58	\$123 58
No. 10	2000	8 50	825	70 12	115 12
No. 11	2519	8 50	655	55 67	100 67
No. 12	3333	8 86	495	43 86	88 86

We use No. 12 first quality annealed wire, and consider it nearly or quite as good as a larger size. The cost of post and expenses of putting up trellis will vary in different places.

Expense of bringing an Acre of Grapes into bearing,

The same writer furnishes a few items from his own experience on this point.

Average cost of land per acre.....	\$100 00
Average cost of plants “	40 00
Repairing ground, subsoiling etc.....	10 00
Setting plants, and work, first year	25 00
Interest.....	10 00
<hr/>	
Cost at the end of first year.....	\$185 00
Work, second year.....	20 00
Interest.....	13 00
<hr/>	
Cost at the end of second year.....	\$218 00
Trellis, third year.....	90 00
Work, third year.....	50 00
Interest.....	22 00
<hr/>	
	\$380 00
Deduct one ton grapes, at 8c. net.....	160 00
<hr/>	
Cost at the end of third year.....	\$220 00

Cost after third Year, per Acre, each Year.

Tying up, seven days.....	\$10 50
Cultivating, man and horse, three days.....	9 00
Hoeing, six days.....	9 00
Pinching,, thinning, rubbing out, etc, five days.....	7 50
Picking, two tons, eight days.....	12 00
Pruning, five days.....	10 00
Twine, and willow, for tying.....	1 00
Interest on \$300.....	21 00
Repairs	5 00
<hr/>	
Total expense per year.....	\$85 00
Two tons marketable grapes, at 8c. net.....	320 00
<hr/>	
Net profit per acre	\$235 00

Many varieties will average much more than the above, but we consider eight cents net as a fair average, and as much as it is safe to calculate upon, with a mixed vineyard of common varieties. Expense of preparing land and cultivating in some sections will exceed our estimate. Many poor grapes will undoubtedly be sold at low rates; but with good care, clean culture, and a moderate

crop, so as to leave the vigor of the vine unimpaired, we think it safe to estimate the price at eight cents for several years to come.

[We clip the above from an exchange as containing useful information, and think his estimates in the main correct. Two tons of marketable grapes is above the average yield and to be safe that estimate should be reduced to 3000 lbs.]

SUGAR-BEET IN NEW JERSEY.—Experiments are now to be commenced in New Jersey, in the culture of the sugar-beet. A large farm of one hundred acres, at Atsion, N. J., has been purchased by Col. Wm. E. Patterson, and a complete set of Fowler's steam ploughs has been received to put the tract quickly under cultivation. The results of the experiments are being closely watched, especially by the Department of Agriculture at Washington. We believe that an enterprise of the same character started in Illinois, two years since, has proved the culture of the sugar-beet both feasible and profitable for manufacturing purposes, although we have heard very little of the Illinois manufactory lately.—*Horticulturist*.

FLOWERS AT MARRIAGE FEASTS.—Describing a New York wedding, a daily paper says: "A person standing on the lowest floor could see to the very roof of the house, when, to use an expression of one of the guests, you were reminded of a tropical mountain in full bloom. Of course, all these flowers were not raised in or near New York. The greenhouses of Boston, Philadelphia and Baltimore were ransacked for the occasion. One may get an idea of the exhibition when we say that it brought into use 10,000 camellias, 100,000 primroses, 25,000 white azalias, and 2,000 heads of daphnes. The collection, altogether, was probably the finest gathering of exotics brought together in one house. Forty men and boys were occupied some days in preparing the frame-work, and they were all engaged during the whole of Tuesday night in arranging the flowers."—*Gardener's Monthly*.

TOMATO SUGAR.—A correspondent asks for further information about this article, which we noticed some time ago in the "Monthly." We only gave the paragraph as a matter of information, that this use was being made of them. We do not know how it is done, as the inventor has patented it. The plan we understand is to make alcohol out of the tomato rather than sugar.—*Gardener's Monthly*.

On the Laws of Sex in Plants.

By THOMAS MEEHAN, Germantown, Penn., Agricultural Editor of Forney's Weekly Press.

[Read before the American Association for the Advancement of Science, which commenced its sessions in Salem, Mass., on the 19th of August.]

In my paper on *Adnation in Coniferæ*, read last year, I believe I established the fact that the stronger and more vigorous the axial or stem growth, the greater was the cohesion of the leaves with the stem. By following the same line of observation I have discovered some facts which seem to me to afford strong probability that similar laws of vigor or vitality govern the *production of the sexes in plants*.

If we examine Norway spruces when they are in blossom in the spring, we find the male flowers are only borne on the weakest shoots. The female flowers, which ultimately become cones, only appear on the most vigorous branches. As the tree grows, these strong shoots become weaker, by the growth of others above them making it shadier, or by the diversion of food to other channels, and thus as these shoots become weaker we find them losing the power of producing female flowers; and the law in this instance seems very clear that *with a weakened vitality comes an increased power to bear male flowers, and that only in the best conditions of vegetative vigor are female flowers produced*.

The arborvitæ, the juniper, the pine—in fact, all the different genera of coniferæ that I have been able to examine—exhibit the same phenomena; but the larch will afford a particularly interesting illustration. When the shoots of the larch have a vigorous elongating power, the leaves cohere with the stem. Only foliaceous awns give the appearance of leaves. When they lack vigor, lose the power of axial elongation, true leaves, without awns, appear in verticils, at the base of what might have been a shoot. Every one is familiar with these clusters of true leaves on the larch. In the matter of sex, an examination of the tree will show the following grades of vigor: First, a very vigorous growth on towards maturity, or the age necessary to commence the reproductive processes. The reproductive age is less vigorous. Taking a branch about to bear flowers, we find somewhat vigorous side branches, with the usual foliaceous awns. The next year some of the buds along these side branches, but the evidently weaker buds, make only spurs with leaf verticils. As these processes go on year after year, the verticils become, of course, shaded by the new growth, and get weaker in consequence, and thus, in the third year, some of these verticils

commence to bear female flowers, or a few of the very weakest may bear male ones. But only in the fourth or fifth year, when vitality in the spurs is nearly exhausted, do male flowers appear in very great abundance. Indeed, the production of male flowers is the expiring effort of life in these larch spurs. They bear male flowers and die.

What is true of coniferæ seems also to exist in all monœcious plants. In the *amentaceæ* the male flower appears at the first expansion of the leaf-buds in spring, as if they were partly formed during the last flickerings of vegetative force the fall before, but a vigorous growth is necessary before the female flower appears. In *corylus*, *carpinus*, *quercus carya*, *juglans*, *alnus*, and, I believe, all the common forms of this tribe we find the female flowers only at or near the apex, first great wave of spring growth, as if it were the culmination of vigor which produced them, instead of the decline, as in the male. Some of these plants make several waves of growth a year, each successively declining in vigor, and thus the fruit cones do not appear on the apex of the new shoot, but on the apex of the first and strongest wave. This beautiful illustration of the connection of vigor with the sexes can be seen particularly in *Pinus pungens*, *P. inops*, *P. mitis*, *P. rigida*, and perhaps some others.

In the larch and white spruce, for instance, a second wave will often start after the cone has commenced forming, and the singular appearance is presented of a shoot growing out of the apex of the cone. These varying waves can be also seen in *cyperaceæ*, sometimes placing the male and sometimes the female at the apex of the culm, but always the female in the greatest line of vigor. I do not know of any case where the sexes are separate on the same plant, that extra vigor does not always accompany the production of the female, and an evidently weakened vitality of the male parts.

Mere vigor, however, will not always indicate the degree of vitality. The *pinus mugho* seldom extends ten feet high, and its shoots are not near as vigorous as its near relative, *pinus sylvestris*; and yet it commences its bearing age by a free and vigorous production of female flowers. But power of endurance is a high test of vitality, and an Alpine form should possess this in a high degree. In its relation to sex this form of vital force will also have an interest. The vitality of a tree is always more or less injured by transplanting. Sometimes it is so injured that it never pushes into leaf again. It always pushes out later than if it had not been moved, and in proportion to the injury to the vitality is the lateness of

pushing. Clearly, then, earliness of pushing forth leaves is a test of vigorous vitality. Now, some Norway spruces push forth earlier than others. There is as much as two weeks difference between them, and it is remarkable that those which push out the earliest—may we not say those which have the highest powers of vitality?—are most productive of female blossoms. Arboriculturists may make good use of this fact. Norway spruces, which have a drooping habit, are the heavy cone-bearing forms. No way has before been discovered to detect them until they get to a bearing age. Now it will be seen, the earliest to push forth in the spring will be cone-bearing or weeping trees.

It is not so easy to see the influence of vigor or other forms of vitality, as affecting the sexes, in hermaphrodite plants as in monœcious ones, yet here are some remarkable facts of a similar character. In some flowers the forces which govern the male and female portions respectively seem nearly equally balanced. Then we have a perfect hermaphrodite—one with the stamens and pistils perfect, and one communicating its influence to the other—a self-fertilizing flower. In many species, however, we notice a tendency to break this balance. It becomes either a pistillate or a staminate, either by the suppression of one force or the other. If the force is in the female direction it begins by requiring the pollen from some other flower to fertilize itself. If in the male direction by increasing the number of stamens, or converting the stamens into petals. The interest for us in this sexual question is to note that just in proportion as the sexes diverge in this manner, in just the same ratio do vigor and strong vitality follow the female in the one case, and weakness the male in the other.

In the male direction, for instance, when the flower becomes double by the conversion of stamens into petals, or the number of either increased, growth is never so strong, and life is more endangered. Double camelias, roses, peaches, and other things have to be grafted on single ones, in order to get more vigorous growing plants, and every florist knows how much more difficult it is to get roots from a double flowered cutting than from a single one. Sometimes the male principle, which loves to exhibit itself in the gay coloring of the petals, seems to influence the leaves also; and they also become colored or variegated; and here we see also a weakened vitality follows. Variegated box, variegated euonymus, or any of similar character, never grow so freely, or endure the winter's cold or the extremes of climate like the green-leaved forms.

On the other hand, when the balance goes over in the female

interest, we see it characterized by greater vigor than before. It has long been noted that pistillate varieties of strawberries are more prolific of fruit, but this rule is not always good, as sometimes the runners, which are parts of the feminine system—a form of viviparous flower shoots, in fact—regulate the amount of fruit. But it is a fact universal, I believe, in its application, that the production of runners and fruit combined is always accompanied by a vigorous vitality.

So in *viola* where we have female influence variously expressed, from the underground stolon or creeping runner, which re-produces without impregnation, to the apetalous flowers, which mature abundant seeds on the smallest quantity of pollen, up to the perfectly favored hermaphrodite flowers of spring—all regular grades of one identical female principle, in contrast with those species which maintain throughout a closer connection with the male principle, by maintaining pure hermaphrodite flowers through their whole stages, we find those possessed of the highest types of vitality which are evidently the most under the laws of female influence.

In a brief paper like this, it is not my purpose to introduce more of the facts I have observed than will sustain the theory I have advanced. I do not want to urge it for adoption; my object is to excite investigation on the part of other observers, who will, I think, find everywhere about them that, whenever the reproductive forces are at all in operation, it is *the highest types of vitality only which take on the female form.*

I have confined myself to sex in plants, botany being my special study. Do the same laws prevail in the animal world? I think they do. But this being out of my favorite province, I dare not discuss it, but content myself with the bare suggestion.

Harvesting Navy Beans Again.

In answering the enquiry as to “harvesting the navy bean,” it was my intention to have given a short, plain and distinct practical plan. I know it to be right. I have always been obliged to pay not less than 15 cents per bushel for picking green peas, and 20 cents per bushel for picking bush beans (green) for market. To pick or gather a patch of five acres according to the recommendation of “B.,” Exchange, Nansemond, would cost what? It would require, to ensure an excellent clean bean, not less than three pickings over the entire patch; the cost of picking—without the never-ending job—would amount to not less than (four bushels pods to

one shelled,) 80 cents; and where are the parties to pick? If you have the help convenient, *whenever you want them, they can't be had*—they have something else to do. I supposed that with others it was as with me—that is, never to ask for information unless it was wanted; and never to give except *that such* was sure to be correct.

WM. H. S.

Philadelphia, September 23, 1869.

How shall Gardening be Made Profitable?

What shall be grown to pay the best? is a live question for your State. Norfolk and the lands adjacent will be the garden spot of the United States. It has the advantage of all others, and will keep it. But to make Gardening or *growing produce pay* is a question of vital import, a question to be answered only by men of real practical experience and education. It is an easy matter to take the pen and write, "do this, do that, plant this, plant that, plough thus and so," use only such "manures," &c., but have parties who give advice thought of the real injury and loss sustained by those who follow their advice, where such advice is given without having practical experience, that is of *planting, gathering, selling and receiving and retaining a profit?* In my opinion a series of communications from the *real living, working* growers, would at this time *produce more certain, lasting and enduring benefits than at any other time.* In such communications give *true names* of seeds planted, manner of cultivating, quantity of manure to the acre, manner of gathering, packing, to whom consigned, returns from such consignments, with remarks generally on condition of shipment, when received, &c.

For one I will volunteer to give some of my experience as a grower for the New York Market for 27 years. I will write for next month's number.

WM. H. S.

HOLLYHOCKS.—*P. B. G., Baltimore, Md.*—"I have a beautiful double crimson Hollyhock, which I am very anxious to save, but am told they will not reproduce themselves truly from seed. How shall I manage it?"

[They will come generally true from seed, and we think this is your best way to raise them. Sow the seed as soon as ripe, and shade the ground a little from the hot sun until the plants get strong. Or the seed may be saved until spring and sown, but they will not then flower that year. In Europe Hollyhocks are propagated by cutting up the flower stem into eyes, before the flower opens, but in America seeds only are employed in propagation.]—*Gardener's Monthly.*

Mining Department.

Coal.

Is there any authentic history of the discovery and early use of the bituminous coal so long known to exist in this region of Virginia? Did the aborigines understand its nature and apply it to useful purposes?

A few months before the close of the late war, the writer of this purchased from a drug store in Richmond a package of medicine wrapped in coarse white paper torn from a letter book dated 1752. It proved to be a copy of a letter from a mercantile firm in Manchester to their correspondents in Philadelphia, advising them of a shipment of coal at a cost of ten cents per bushel, sent as a venture, to be offered in that market. The letter concluded by stating that the mineral existed in great abundance in Chesterfield county, and would be furnished readily at that price if there was any demand for it. The old book was searched in vain for further information, and the inference is fair that the coal ceased for many years to be an article of commerce.

In West Virginia, where nature has lavished her mineral riches, it is certain that the aborigines were either ignorant of the nature of coal, or indifferent to its uses. The numerous seams cleft by the abrasion of flowing waters must have exposed the same stratification so plainly visible at this day, and as the immense forests that covered the country were subject to conflagration, the combustion of the coal upon the surface could not escape observation. Fuel was only valued for domestic purposes, and it was only when timber became scarce that the indolent Indian, and scarcely less indolent squatter, directed his attention to coal.

It has been stated that the early salt makers on the Big Kanawha were accustomed to haul wood to their furnaces, built over coal beds, and this habit was common until the steam engine became a familiar thing. It was not merely as a consumer of fuel that the steam engine became so important; its agency in mining operations settled all difficulties in removing the mineral from the bowels of the earth, as well as in the transportation of such ponderous materials. And now that everybody reads, and everybody travels, the uses of coal are known to all. Why are such acknowledged treasures unsought in their immediate locality? The coal measures are

sufficiently developed in the Chesterfield basin to establish the fact that the coal is there in quantities sufficient to supply any demand that may exist for ages, and that the quality is unsurpassed in many respects by any bituminous coal of the country. As it is not proposed to discuss the details of this question, it may suffice to remark that the same reasons which retarded the use of coal in early times still apply here. Fuel for ordinary purposes is still obtained from the woods, and the outlay attending mining operations is yet a barrier to the full development of our coal fields. It is not so in the West. There the collier has no unforeseen difficulties to meet, and no exercise of skill beyond opening his drifts in rectilineal figures. There the stratification is regular, and the seams frequently above water level. There are few unseen dangers—few “troubles” or “faults,” “downthrows” or “upthrows”—little disturbance in the deposits, and rarely “black damp” or “fire damp.” There, too, the expenditure is easily calculated in advance, for it is a mere question of excavation and transportation. Here it would seem almost the reverse. The whole basin, so far as known, is full of dislocations and uncertainties. The deposits, sometimes prodigious, and again “cutting out” to a mere leader. Here the heart of the basin has never been reached, and along its margin are shafts several hundred feet deep; nevertheless, the day will come when the deposits will be won, and ere many years, capital and enterprise will pursue the treasures now hidden in the Chesterfield basin.

Iron Interest in Virginia.

In connection with the history of the iron interest in Virginia, I undertake to offer a few mites, by way of soliciting intelligence, rather than contributing it.

At the line of separation of the counties of King George and Westmoreland, on the Rappahannock river, there is a spot—a very sequestered and interesting one—inclosed by high bluffs, between which a little stream passes to the river—wild as the colonists found it—so abrupt and rugged as not to permit transit through the ravine—to which the only access is the river, or banks so steep as to seem perilous to the passenger on foot, and certainly very wearisome to ascend. This spot is known as the Bristol Mines. The neighboring hills are full of bog iron ore, which seems to have been obtained here. I do not know whether there was a furnace to reduce it, or whether the ore was shipped, as it was very convenient to do, to some other place. Tradition says, that my grandfather,

John Tayloe, of Mount Airy, (who died at an advanced age in 1779), was the agent of a company supposed to be of Bristol, in England, which worked these mines. He was himself the owner of iron works at Neabsco, in Prince William county, at the head of Neabsco creek, which enters the Potomac river just above Freestone Point. Besides the ore obtained for these Neabsco works on the contiguous hills, it was brought in vessels from the Patapsco, from the ore banks which the old travelers remember to have seen strewn over the once wild region between the present junction and the city of Baltimore. These have all been filled up and levelled, and compose the beautiful, highly improved farm of Mr. Winans. The Rappahannock ore was carried, probably, in like manner, to Neabsco. Possibly some may have been carried to Col. Spotswood's furnace, or to England's, up the river, near Fredericksburg. Is this the furnace known of late years as Wellford's, near the Chancellorsville battle ground? Col. Byrd's Westover manuscripts being mislaid or stolen, I cannot refer to them. Where in King George was Mr. Washington's blast furnace? In those days, this county extended to Deep Run, I believe. This is now the eastern boundary of Fauquier.

My father owned and worked a valuable furnace at Cloverdale, in Botetourt county. After exhausting all the wood which could be obtained at remunerative prices, this furnace was discontinued near forty years ago. The ore is thought to be the finest in Virginia for producing tough iron, and was bought for the construction of guns for the United States Government, by Col. Clarke, who cast them on the lower James, some miles above Richmond. This ore has been used in later years by the Messrs. Anderson, and reduced at a furnace near Buchanan.

I hope that these memoranda may induce more valuable reminiscences.

ED. T. TAYLOE.

September 24, 1869.

THE WORLD'S MINERALS.—The *Scientific American* says that there are produced annually throughout the world 3,214,000,000 cwt. of coal, 191,800,000 of iron, 1,581,000 of copper, 4,926,300 of lead, 2,350,000 of zinc, besides 459,883 pounds of gold, and 2,863,000 pounds of silver.

Mechanic Arts.

New Inventions.

MURFEE'S SUBSOIL PLOUGH.—This implement is exceedingly simple in its construction, and of extraordinary power and effectiveness in breaking the subsoil thoroughly to the depth of nine inches and width of six to nine inches on each side of the stroke, according to the size used, whether a one or two horse plough. But, valuable as it is for this special purpose, it is equally effective for stirring and pulverizing the surface in cultivating most of the crops of the vegetable garden, and such field crops as cotton, corn, tobacco, &c., and is, moreover, of very light draft. The patentee has made arrangements with Messrs. Palmer & Turpin, of this city, for the manufacture and sale of this plough, who will, no doubt, offer it for examination and premium at the State Agricultural Society's Fair in November next. Meanwhile, by way of attracting attention to this new invention, which, from the unanimous testimony in its favor, is worthy of special notice for the benefit of the public, we give the certificate of the gentlemen who witnessed its operation near the city a short while ago, as follows:

“The undersigned having this day witnessed the trial of the pulverizing and deep tillage implement lately patented by Jas. W. Murfee, of Havana, Alabama, make the following statement: Two of these implements were exhibited, one for two horses, the other for one. They were worked on a field of very hard, flat, clay land, which a four horse plough was laboriously breaking up to the depth of seven or eight inches. The two horse implement broke the soil to the depth of about nine inches, and cracked it thoroughly for about nine inches on each side of the stroke. The one horse implement broke the land to the same depth, and cracked it thoroughly six inches on each side. The work resembled coultering, and was better done, both in style and extent of cracking the soil, than we ever saw it done by any other implement of its class.

The single horse instrument was then taken to a well ploughed cabbage patch and worked one foot deep, and one foot wide, and with ease to the horse and great excellence of execution.

Where subsoiling is desired, we think this the best and easiest working implement of that sort we have ever tested.

From this statement of what was accomplished, every one can judge for himself to what uses he would apply such an implement. For all work that it ought to do, we think it a valuable implement.

JAMES B. JONES,
J. A. CONNOR, Ga.,
R. A. WILLIS,
JOHN W. JONES,
W. R. RUFFIN,
S. BASSETT FRENCH,
FRANK G. RUFFIN.

Chesterfield, September 1st."

ROUTT'S HORSE HAY RAKE AND SEED SOWER is another new (Virginia) invention patented as late as the seventeenth of August, 1869—the birthday of the inventor—long life to him. This novel implement is represented to be very simple in construction and very effective in its operation. The seed box is put in front of the axle, and is bolted to the shafts underneath, and so arranged that it can be thrown in and out of gear, at the pleasure of the operator. It is not at all in the way while out of gear, when the instrument is employed in raking hay or wheat. The seed attachment can be applied to any horse rake in use. It will be submitted to the judges on agricultural machinery, &c., at our November Fair, as a competitor for the premium.

THIRTY EIGHTH INDUSTRIAL EXHIBITION OF THE AMERICAN INSTITUTE.—A novelty in clocks is presented by the U. S. Clock Co., 18 Cortlandt street, New York city. Upon one side there is a large dial showing New York time, and opposite to it on the other side is a similar dial showing Greenwich time. Surrounding each of these dials are eleven smaller ones, showing the time in Washington, St. Louis, Salt Lake City, Chicago, New Orleans, San Francisco, Cape Horn, Rio Janeiro, Lima, Honolulu, Montreal, Paris, Vienna, Constantinople, St. Petersburg, Calcutta, Peking, Yeddo, Sydney, Cape Town, Rome, and Stockholm. A collection of town clocks of various sizes is exhibited by A. S. Hotchkiss, of No. 3 Cortlandt street, New York. The workmanship is good.

STRAW PAPER, a substitute for wood, exhibited by Mallory & Butterfield, No. 92 William street, New York, is intended to be used for all inside work of dwellings, railroad cars, steamboats, ships, or in any place where wood is used, being far superior to it for its lightness and strength, it not having knots, grain, or sap; consequently, does not expand or contract, but remains as put up, unchangeably. It can be moulded into any form by pressure, thereby saving the great expense of working out elaborate patterns. It is made fire and water proof by asbestos, and, in case of a smash-up in railroad cars, no person will be injured by splinters or fire. For ornamentation, it can be made to represent the most expensive woods, marbles, frescoes, bronzes, etc., etc., at a small expense, and can be taken down and put up in other places if desired.—*American Artisan.*

THE SOUTHERN PLANTER AND FARMER.

RICHMOND, VIRGINIA, OCTOBER, 1869.

TERMS OF SUBSCRIPTION AND ADVERTISING.

SUBSCRIPTION One Year,.....\$2.00

ADVERTISING.

1 square, 10 lines or less, one insertion,.....\$ 1 00	¼ page, six months,..... 35 00
1 square of 10 lines for six months, 6 00	½ page, one year,..... 60 00
1 square of 10 lines for one year,..... 10 00	1 page, single insertion,..... 15 00
¼ page, six months,..... 20 00	1 page six months,..... 60 00
½ page, one year,.....\$ 35 00	1 page, one year.....100 00

PAYMENTS.

Subscriptions—in advance. Advertising—annual—quarterly in advance. All others in advance

Editorial Department.

The Virginia State Agricultural Society.

It affords us unalloyed pleasure to be able to assure our readers that, beyond controversy, we are destined to have at the State Fair in November a grand display of the material resources of Virginia—agricultural, horticultural, mineral, mechanical, manufacturing and domestic—and that, from present indications, we shall witness, as of old, a vast assemblage of her incomparable sons and daughters, who will unitedly reflect her glory, and illustrate the elevated type of her civilization, by their high-toned moral sentiments, refined and elegant social characteristics, and enlarged and varied intellectual accomplishments. Virginia—long-suffering, persecuted, reviled, down-trodden Virginia, is about to emerge from the fiery furnace of affliction and sorrow, but without the smell of fire on her garments, or a stain upon her honor, and to take a new departure in a career of prosperity, wealth, and power, such as has never been witnessed in this hemisphere; while her malignant and despicable enemies will utterly perish, by their own hands, through the avenging recoil of their infamous machinations against her, upon their own heads.

But to return to the subject of the Fair. The Executive Committee have found it necessary to issue a supplement to the schedule of premiums published in August, by a considerable enlargement of the thirteenth class, and by the introduction of another class, with special reference to the FINE ARTS. In this department we expect to see a highly creditable display of the works of our native artists. The reader, to understand the connection of this supplement with the August schedule, will strike out class XIII as it there stands, and insert classes XIII, XIV and XV, in the order in which they appear in the following specifications:

In addition to the list already published in pamphlet form, the Executive Committee have offered the following premiums in Mineralogy and the Fine Arts, to be awarded at the Virginia State Agricultural Fair, to be held in Richmond, commencing 2d November, viz:

CLASS XIII.—MINERAL DEPARTMENT.

Colonel J. J. WERTH, Superintendent. Professor O. J. HEINRICH, Assistant.

Section I.

514. Best essay upon the Natural History, Geology, Botany, and Natural Products of Virginia, Dipl. ma.

Section II.

515. Best description of useful Minerals found in Virginia, Certificate.

Section III.

516. Best collection of specimens illustrating the Mineralogy of Virginia, \$75.00

Section IV.

517. Best collection of specimens of Marl, Green Sand, Gypsum, Hydraulic Limestone, Marble, Calcareous Tufa, found in Virginia, 50 00

Section V.

518. Best collection of specimens of Gold, Copper, and other associated Minerals, found in Virginia, 50.00

Section VI.

519. Best specimens of such Minerals as are useful in pigments, 25.00

Section VII.

520. Best specimens of Pig Iron, converted from Virginia ore, 10.00

Section VIII.

521. Best specimen of Pig Iron converted from Virginia ore, with coke from Virginia coal as a fuel, 10 00

Section IX.

522. Best specimen of Bituminous Coal found in Virginia, 100 lbs. or more, 10.00

Section X.

523. Best specimen of natural Coke, 10.00

Section XI.

524. Best specimen of Anthracite Coal found in Virginia, 100 lbs. or more, 10.00

Section XII.

525. Best specimen of Granite found in Virginia, 10.00

Section XIII.

526. Best specimen of Slate, 10.00

Section XIV.

527. Best specimen of Sandstone found in Virginia, 10 00

Section XV.

528. Best specimen of Manganese found in Virginia, 5.00

529. Best specimen of Barytes found in Virginia, 5 00

530. Best specimen of Kaolin found in Virginia, 5.00

531. Best specimen of Plumbago found in Virginia, 5.00

532. Best specimen of Soapstone found in Virginia, 5.00

533. Best specimen of Mica found in Virginia, 5.00

JUDGES.

Professor Mallet, University of Virginia.

Colonel William Gilham, Richmond.

Professor J. L. Campbell, Lexington.

Professor R. M. Smith, Randolph Macon.

Professor B. Puryear, Richmond College.

A. D. Townes, Esq., and J. C. Deaton, Richmond, Va.

CLASS XIV—FINE ARTS DEPARTMENT.

Colonel W. H. CASKIE.

This department will embrace Statuary, in marble, bronze and plaster, including alto relievos, basso relievos, and busts.

Oil and Water color Pictures, Drawings, Engravings, Photographs, Wax and Flower Work, Frames. Artists' Materials and Musical Instruments, including Pianos, Organs, etc., etc., etc.

Section I—Statuary, &c.

534. Best original full length, life-size, Alto Relievo in marble, bronze or plaster, designed in Virginia, 50.00
 535. Best original Alto Relief in marble, bronze or plaster, or other material, designed in Virginia, 15.00
 536. Best original Basso Relievo in marble, bronze or plaster, designed in Virginia, 15.00
 537. Best Statuette (original), designed in Virginia, 10.00
 538. Best original Bust, designed in Virginia, 10.00
 539. Best specimen Ornamental Design, in plaster or other material, made in Virginia, 5.00

Section II—Oil Paintings.

540. Best original Figure Picture in oil, designed in Virginia, 50.00
 541. Best Animal Picture, original, designed in Virginia, 25.00
 542. Best Head, life size, designed in Virginia, 10.00
 543. Best Head, cabinet size, designed in Virginia, 5.00
 544. Best Landscape, including marine and waterscape, original, designed in Virginia, 15.00
 545. Best Still Life, designed in Virginia, 5.00

Works by foreign artists, or by native artists, but not originals, of sufficient merit, will receive honorable mention.

Section III—Water Colors.

Water Colors will be placed on same footing with Oil Paintings. Numbered from 546 to 551, inclusive.

Section IV—Drawings, Engravings, &c.

552. Best original Drawing in sepia, india ink, pen or pencil, designed in Virginia, 20.00
 553. Second best original Drawing in sepia, India ink, pen or pencil, designed in Virginia, 15.00
 554. Best Engraving designed in Virginia, Certificate.
 555. Best Lithograph, Certificate.
 556. Best Photograph, by a resident of Virginia, Certificate.

Section V—Picture Frames, Artists' Materials, &c.

557. Best Picture Frames, made in Virginia, Certificate.
 558. Second best Picture Frames, made in Virginia, Certificate.
 559. Best collection of Artists' Materials, made in Virginia, Certificate.
 560. Second best collection of Artists' Material, made in Virginia, Certificate.

Section VI.

561. Organs. 562. Pianos. 563. Violins. 564. Melodeons. 565. Harps. 566. Guitars. 567. Band Instruments. Best of each, Certificate.

JUDGES.

Mr. W. H. Haxall, Thos. H. Wynne, Capt. Chas. Dimmock,
 Thos. R. Price, Jr., Charles Wallace.

CLASS XV—MISCELLANEOUS DEPARTMENT.

Captain C. C. McPHAIL.

To this department are referred all articles and animals recommended for Discretionary Premiums.

JUDGES.

Hon James A. Seddon, Goochland county, Va.
 Chas. B. Williams, Richmond.
 Wood Bouldin, Charlotte county, Va.
 Dr Philip F. Southall, Amelia.
 Dr. Wm. D. Haskins, Mecklenburg.
 Colonel Albert Ordway, Richmond.

Liberal Arrangements of the Railroads Respecting the State Agricultural Fair.

At a meeting of the Superintendents of the railroads terminating at Richmond, held on the 16th day of September, 1869, for the purpose of considering the application of the officers of the State Agricultural Society, in regard to freights and fares on the roads under their charge, the following regulations were adopted:

1. Persons traveling over either of the railroads in charge of the undersigned, after the 28th day of October, 1869, *for the purpose of attending the State Fair of the Agricultural Society*, can, upon application to the agent or conductors of the railroads to which they pay their full fare, obtain a certificate showing that they did so—and upon presenting the same, *stamped by the Secretary of the Agricultural Society, as evidence of their having attended the Fair*, to the conductor of the train on which they return from Richmond, *on or before the 12th day of November following*, they will be returned to the station whence they came free of charge.

2. Persons exhibiting, with these certificates, the proper evidence of their being life members of that Society, upon application at the office of the railroad in Richmond over which they came to Richmond, before their return, will be entitled to have the fare paid on this road by them going to the Fair refunded to them.

3. Articles sent at the usual tolls over the railroads for exhibition at the Fair will be returned free of charge to the same station on the railroad whence they were sent, provided they shall be still the property of the same owner; and if the person having charge of the same shall exhibit to the agent at Richmond, before shipping them, a certificate from the Agricultural Society that they were exhibited, and return the receipt for freight paid on them coming to Richmond, the toll on them in coming will be refunded by the freight agents of the same railroad at Richmond, Va.

4. Persons having charge of stallions and other animals requiring attendance, will be included in the conditions of the third section, subject to the discretion of the railroad agents.

5. That copies of these regulations be sent to all railroad companies connected with the roads here represented, with a request that they adopt similar liberal arrangements, and have the same published.

[Signed,]

THOMAS DODAMEAD,
General Superintendent R. and D., and P., and Y. R. R.

SAMUEL RUTH,
Superintendent R. F. and P. R. R.

H. D. WHITCOMB,
General Superintendent C. and O. R. R.

THOS. H. WYNNE,
Superintendent R. and P. R. R.

Richmond, Va., September 16, 1869.

I am authorized by General William Mahone, President of the line of railroads from Norfolk to Bristol, and Mr. John S. Barbour, President of the Orange and Alexandria railroad, to state that they will afford the same accommodation and arrangements for persons and articles attending the State Fair as are embraced in the foregoing regulations.

I have no doubt all the other lines of railroads in the State will adopt them as soon as applied to.

The Virginia State Agricultural Society desire and expect a very large attendance of Northern men, especially at their Fair and Exhibition, and hope that the Northern and Western railroads will extend such inducements as our own have offered to all persons visiting Richmond on this occasion. It is expected to be a complete exposition of the resources of Virginia.

Arrangements are in contemplation, whereby the hotel facilities of the city will be supplemented by the owners of private houses. A cheap excursion train running daily between this city and Petersburg will add the accommodations of that city to those of Richmond.

The Secretary of the Society will be in attendance daily at the Fair Grounds, to stamp certificates furnished by the railroad companies.

WILLIAM T. SUTHERLIN,
President Virginia State Agricultural Society.

Minerals for Exhibition at the State Fair.

The following letter from General J. D. Imboden will apprise the reader that he will undertake to receive and arrange the specimens of Virginia minerals which may be addressed to his care :

TO THE OWNERS OF MINERAL LANDS.

The State Agricultural Society has very wisely determined to enrich its exhibition at the Annual Fair in November with specimens of the minerals of Virginia.

I have agreed, in connection with Captain C. C. McPhail, to solicit contributions to this department of the exhibition so far as to collect and arrange the specimens.

There will, doubtless, be a great many strangers here at that time to look into our natural resources. It is, therefore, of great importance that we should be able to show them every mineral of value that we possess in the State. Let the owners of mines and deposits, therefore, select good, fair specimens, put them up securely, and address the packages to me, "for the State Fair." Write a letter at the same time describing the property, its location, &c. From these letters will be compiled a catalogue of all the minerals shown.

It is especially desirable to obtain good specimens from every locality containing iron, copper, lead, zinc, gold, and silver ores, of every variety; barytes, manganese, plumbago, nickle, gypsum, marl, silica, marble, granite, slate, soapstone, brownstone, mica, kaolin, fire clay, hydraulic lime, asbestos, ochre, rock salt, coal, peat, and the purest qualities of carbonate of lime.

A full collection of these minerals, with honest, reliable information about them, may lead to the most important results. If owners will take the little trouble of sending the specimens, we will do whatever else is necessary to bring them prominently before the thousands who will be here.

J. D. IMBODEN, Richmond, Va.

[The following glowing and hopeful delineation of the glorious future of the Old Dominion—"the blessed mother of us all"—is from the gifted pen of the editor of "The Richmond Enquirer and Examiner." It breathes the true

spirit of loyalty and filial love, such as becomes a son nurtured on her bosom, and is heartily commended to all those who are like-minded, and who are ready to "sink or swim" with old Virginia:

AGRICULTURE OUR HOPE.

It is delightful to observe the many evidences that Virginia has emerged from the region of dreams and speculation, to expand her grand and majestic form in the field of practical improvement. Convinced of the importance of a truth, as embodied in the words of a departed sage, that "in every community the *first* creditor is the *Plough*; whose original and indefeasible claim should supersede all other demands," she has given up Politics as her Muse, and is bending all her glorious powers to the thorough awakening and advancement of her Agriculture.

Especially to be commended are the *District Fairs*, which have become regular and fixed institutions. The grand State Fair, as a matter of course, must enlist the sympathies and activities of the whole people, but as tributary to this, and as the surest guaranty of its complete success, each great department of the State has wisely determined to go through a rehearsal, as it were, so that after a judicious culling and selection in October, the best specimens may be sent to the State Fair in November, in order (as Orator Phillips would say,) that Richmond, as the capital of the State, may be able to exhibit, in one glow of associated beauty, the pride of every section, and the perfection of every department. It is but the reproduction in miniature, nay, rather let us say it is the solid basis of those World-Fairs which form an epoch, and have ushered in a new era in the conditions and prospects of nations and of mankind. If Prince Albert be entitled (as his august and adoring relict claims,) to the honor of originating this magnificent scheme, she need not have wasted her time and feelings on that grand, yet gloomy, Mausoleum at Frogmore to his memory. It will be a higher honor, a more glorious fame, to be remembered as the originator of a vast plan, whereby each State, having studied its peculiar strength, having gathered together the richest fruits of its industry, its art, and its natural wealth, should come in joyous rivalry to some appropriate centre like New York, or Paris, or London, as on a huge dial plate to register the wealth of the world, to demonstrate the inter-dependency of all its parts, the speed, the power, and the progress of its improvement.

Thus the world is all astir. Nation after nation and State after State takes the noble contagion, and in the peace, prosperity and power which will surely ensue, will be found the best safeguard or the speediest corrective of the follies and crimes of neglectful or inimical governments. The great English historian tells us that "the misgovernment of Charles and James, gross as it had been, did not prevent the common business of life from going steadily and prosperously on. While the honor and independence of the State were sold to a foreign power, *while chartered rights were invaded, while fundamental laws were violated*, hundreds of thousands of quiet, honest, and industrious families labored and traded, ate their meals, and lay down to rest, in comfort and security. Whether Whigs or Tories, Protestants or Jesuits were uppermost, the grazier drove his bullocks to market; the grocer weighed out his currants; the draper measured out his broadcloth; the hum of buyers and sellers was as loud as ever in the towns; the harvest home was celebrated as joyously as ever in the hamlets; the cream overflowed the pails of Cheshire; the apple-

juice foamed in the presses of Herefordshire; the piles of crockery glowed in the furnaces of Trent; and the barrows of coal rolled fast along the timber railways of the Tyne." As we look at this changeful and cheering picture, we feel that it would be criminal not to believe, that if we be but true to ourselves, the parallel will be completed in our case. The conflicts, the turmoils, the agonies of England, were as great as ours—as Macaulay says that the time was (in the period to which we have referred.) when her liberty and her independence seemed to be no more—to the dangers of war were added the dangers of a terrible financial and commercial crisis—but at length the danger was over.

May we not then go to work "treading the fields of earth with gratitude and hope?"—trusting that ere long the country will be delivered of its phrenzy—and that policy, if no higher principle, will demonstrate the necessity of considering, reconciling, and uniting all the interests of our country; that the follies and their authors will "go to their place," whilst the ancient constitution, relieved of the incubus of stupidity and hate which now oppresses it, will adapt itself by a natural, a gradual, a peaceful development to the new order of things, that public credit will be re-established, that an unsuspecting confidence, like some powerful amalgam, will bind together the different portions of our country; that a sense of relief will be shed abroad in the land, and in all our hearts; that diversified labor will develop all our powers and all our wealth; and that the time is not far distant when Virginia, too, shall need no "oracle to tell the nations she is beautiful," and, pointing to her fertile fields, her countless mines, her waving harvests, her mighty herds, and listening to the mingled hum of manifold industry which shall rise from thrifty villages, prosperous towns, and stately cities, shall declare with authority and truth the commencement of a happier and a better age. Those of her children who now come to her assistance when she sits friendless and forlorn, will have rich recompense when, under a kind Providence, they have caused her once more to smile with prosperity and to laugh with abundance; never doubting that amid it all she will sustain her self-respect, and that the increase of her material wealth will be but the index of her moral power.

The following arrangements have been adopted respecting the times and places for holding the Fairs by the District and County Societies of Virginia named below:

The Augusta County Fair, on the 12th, 13th and 14th of October.

The Wytheville Society, on the 20th, 21st and 22d of October.

The Lynchburg Society, on the 26th, 27th, 28th and 29th of October.

The Loudoun Society, on the 26th, 27th and 28th of October.

The Border Society at Danville, on the 14th, 15th and 16th of October.

The Central Agricultural Society of Granville, Warren and Franklin will hold a Fair at Henderson, N. C., on the 12th, 13th, 14th and 15th of October.

PEARS, PEACHES AND GRAPES.—We have received from Mr. Henry J. Smith a basket of luscious pears of five several varieties, some very fine grapes, and also a few good peaches. Mr. S. has long been distinguished for his fine fruits and vegetables.

Historical Sketch of the Iron Interest of Virginia.

ERRORS (TYPOGRAPHIC) IN GENERAL C. P. STONE'S ARTICLE CORRECTED.

Editors of the Southern Planter and Farmer:

SIR,—Your printer has made a few changes in my communication of August 28th ult., on the history of iron production in Virginia, which do not improve it.

I would suggest that wherever in that article the words “*Western manuscripts*” appear in the print, I wrote “*Westover*.”

In line 20, page 558, the printer says “ores;” I think that I wrote “forests.” In line 22 the printer says “formidable;” I wrote, or intended to write, “favorable.” In line 30 of same page, the printer says “ores;” I wrote “forests.”

In your kindly editorial remarks, you state that “there is authority for a much earlier period which dates the establishment of the first furnace in Virginia.” In reference to this, I would suggest the inquiry as to whether the “iron work” established by Colonel Cary was a blast furnace or a bloomery? We know that bloomeries for the production of “wrought” iron directly from the ore were established in America long anterior to 1715—not only in Virginia, but also in Pennsylvania and New England.

My statement was that the first “blast furnace” established in America was that of Colonel Spottswood; and I think that investigation will make it clear.

Very respectfully yours,

CHAS. P. STONE.

Dover Mines, Goochland co., Va., Sept. 20, 1869.

“Faithful are the Wounds of a Fr.end.”

We publish below the kind and friendly strictures of the “*Evening News*,” in relation to several important typographic errors which escaped detection in the September number of this journal.

The letter of Gen. Stone, which precedes this note, obviates the necessity of a tabulated statement of “*errata*;” but it is necessary to correct the misprint in regard to the edition of Beverley which was quoted in our editorial, to which reference is made; it was written, and should have been printed, “1722.” We hope that similar annoyances to ourselves and friends may never occur again.

We invite particular attention to the suggestions of the “*News*,” and would feel ourselves under special obligations to the two gentlemen referred to by name, if they would favor us with sketches of what they know respecting the iron interest of Virginia, especially in the “*mountain counties*.” We also tender our thanks to the two gentlemen whose valuable communications occupy the space allotted to the “*mining department*” of the present number of the “*Planter and Farmer*,” and extend a cordial invitation to all other gentlemen throughout the State “*who possess the opportunities to obtain the details of these operations*,” to aid us in gathering up and embodying in our pages, a mass of interesting matter illustrative of the history of this very important element of our material wealth:

“The ‘*Southern Planter and Farmer*’ for September has been on our table for some time, but a notice of it has been crowded out by other matter. The

whole table of contents presents an interesting array, but we are particularly interested in the 'Historical Sketch of the Iron Interests of Virginia, by Gen. C. P. Stone.' All who know this gentleman and how much he is interested in this branch of industry, will not wonder at his writing about it. He gives all that he has learned on the subject, and invites others to give their history of the manufacture of iron in the different counties in the State. If this is done, and we see no reason why it should not be, we would have a valuable addition to the uncertain history of our State. General Stone quotes from Colonel Byrd for the history of it in Spottsylvania, Beverly tells of it in Chesterfield in 1705, Mr. Jefferson mentions in 1782, 'the mines of iron worked' three on south side of James river, one in Albemarle, one in Augusta and one in Frederick, 'a forge at Mr. Hunter's, at Fredericksburg,' and adds, 'the toughness of the cast iron of Ross' and Zanes' furnaces is very remarkable. Pots and other utensils, cast thinner than usual of this iron, may be safely thrown into or out of the wagons, in which they are transported.' Surely, if those who possess the opportunities to obtain the details of these operations would take the trouble to do so, and communicate them to the "Planter and Farmer," it would furnish a very important and interesting history of this subject. We hope the example set by Gen. Stone will be followed, and the subject thoroughly written up. If such gentlemen as Mr. S. C. Robinson and Dr. Graham, of Rockbridge county, could be induced to put on paper their knowledge of its history in the mountain counties, they would make valuable additions to what little is now known. We cannot refrain from regretting that a paper published in this city by gentlemen either to the 'manner' or 'manor' born, should have allowed the well known 'Westover' MSS. to be called in two places the 'Western,' and that the editor, in noticing the contribution of Gen. Stone, should have quoted from an edition of Beverly of '1772.' Besides these and a few other inexcusable typographical blunders, the articles are well gotten up, and we most heartily recommend the paper to the farming and mechanical portions of our population."

Book Notices, &c.

PEAR CULTURE FOR PROFIT, by P. T. Quinn, practical Horticulturist; pp. 136—a valuable manual issued by the Tribune Association. New York: 1869.

A Philosophy [so called] of Heaven, Earth, and the Millenium, by a member of the Missouri bar. W. J. Gilbert, publisher; pp. 310. 1869.

We have received the following Catalogues and Pamphlets:

Ellwanger & Burry's No. 1 Fruits, No. 2 Ornamental Trees, Roses and Flowering Plants, and No. 3 Wholesale Catalogue of Mount Hope Nurseries, Rochester, New York.

H. K. Bliss & Sons' Autumn Catalogue and Floral Guide, embellished with a variety of beautiful illustrations; price 10 cents. We in this section give such things away.

Norwood School Catalogue for session of 1868-69. Wm. D. Cabell, Principal, with an able corps of assistants. This is a first class seminary, and numbered 72 scholars in the classes of the last session.

THE RURAL CAROLINIAN.—We welcome with kindly salutations and good wishes the above new Agricultural journal, and take pleasure in adding it to our list of (less than ten thousand) exchanges.

It is gotten up in excellent style, handsomely illustrated, and well filled with

selected and original matter in the various departments of agriculture, horticulture, stock and natural history, labor and immigration, mining and mechanic arts, &c., &c. Born to the inheritance of a circulation of "ten thousand," with every prospect of large and continuous additions to that number, no other periodical affords equal opportunities for thoroughly advertising all things of interest to an agricultural people. Let all the world and the rest of mankind take note of and remember this!! Price \$2 a year, payable in advance. 64 pages large octavo. Walker, Evans & Cogswell, Charleston, S. C.

The Prospectus of the Arkansas Agricultural and Mechanical Journal, to be issued at Little Rock, Arkansas, during this month, has been received. The price will be \$2 50 a year.

Descriptive Catalogue of Fruit Trees, Vines and Plants cultivated at the Richmond Nurseries, by Franklin Davis & Co.

Catalogue of Fruit and Ornamental Trees, Plants, &c., grown and for sale by the Virginia Nursery and Wine Company; Allan & Johnson, General Agents.

Both of these Catalogues are gotten up very tastefully, are handsomely illustrated, and contain practical and useful instruction on planting, cultivation, &c. Both of these very reliable establishments offer an unusually large collection of well grown stock, and will furnish their catalogues gratuitously when applied for.

Messrs. Allison & Addison have favored us with a copy of their Guano Circular—Fall, 1869.

They are dealers in Soluble Pacific Guano, Flour of Raw Bone, and other Fertilizers; also, Seeds and Agricultural Implements. Nos. 1318 and 1320 Cary street, Richmond, Va. We have frequently had occasion to recommend them to the confidence of the public.

Haw's Pecker Saw Mill.

The venerable John Haw, so long and favorably known in this community for his integrity and uprightness as a man and mechanic, has survived the wreck and ruin of the late war, and is now prepared to resume his business of manufacturing his portable Pecker Saw Mill, which was held in high estimation, and was extensively used by our farmers before our civil commotions commenced. See his advertisement.

Wheat Drill.

We offer the following suggestions from "The Roanoke Valley" to the consideration of our farmers who have not yet decided upon their mode of seeding wheat this Fall:

USE A DRILL IN SOWING WHEAT.—It is the universal testimony of all farmers who have tried it, that the use of a drill saves time, labor, seed, and money, does the work better, makes the grain less apt to fall, more apt to ripen regularly, heavier, and produce more to the acre. We have no doubt that if one was introduced here it would be extensively patronized. We learn that Col. Dechart, in Halifax county, has two wheat drills which he hires out, and they are engaged for the whole season. Money is scarce, but if ten or twelve or

fifteen of our farmers would club funds and purchase one, each man would get the value of his investment back in one year. We will give any information on the subject, or you can send to H. M. Smith & Co., Richmond, Va., and get their catalogue free, which will tell you all about them.

Baltimore and the Virginia State Agricultural Society.

A week spent in Baltimore in behalf of our old war-worn State Agricultural Society yielded but little fruit. We did not approach the good people of Baltimore as suppliants, but desired that, by becoming life members of the Society, they should give expression of their interest in *us*, and their appreciation of our efforts in behalf of *them*, as well as the *non-producers* of our own State.

We had the pleasure of enrolling the following well known names among our membership, and take pleasure in honoring those who have honored us:

LIFE MEMBERS.—Wm. Devries, Esq., President Maryland State Agricultural Society; Colonel James R. Herbert, of the firm of Herbert & Hairstone; O. F. Bresee, Esq., of the Mutual Life Insurance Company; Wm. Knabe, Esq., of the firm of Knabe & Co.; Wm. L. Buckingham, Esq., Agent of the Bickford & Huffman Drill; Gustavus Ober, Esq., manufacturer of Fertilizers; annual member John Merryman, Esq., one of the most extensive stock breeders in Maryland.

We hope this list may yet be materially increased, as we cannot but think that there are many public spirited Baltimoreans who will add their names to those already enrolled.

We are gratified to learn that the contributions from citizens of Baltimore to the Lynchburg Fair reach \$1700. This is in striking contrast with six life and one annual membership to the Virginia State Agricultural Society.

During a recent visit to Philadelphia as an attendant upon the session of the American Pomological Society, we were struck with the spirit of urbanity and kindness towards Southerners that was everywhere displayed. In every department of business there seemed to be signs of approaching activity—merchants were opening stocks, and the retailers were all busy displaying their most beautiful styles to the throng of strangers in the city. We were most favorably impressed with the establishment of Mr. John Wanamaker, 818 and 820 Chesnut street, one of the largest clothing houses in the country. Although ours was more a visit of pleasure (for we love to look at good clothes,) and curiosity than business, we were not only treated with politeness, but kindness, and were shown over the entire establishment, which was filled with every article that could be desired in this line. Our friends who visit Philadelphia should call and see Wanamaker.

A REQUEST.—I hope the preachers and all others who feel an interest in the publication of "Memorials of Methodism in Virginia," will give their aid in securing subscribers to the work. If the enterprise were brought to the notice of our congregations, a large number of subscribers might be secured. As some inducement to canvass for the book, I offer a copy gratis to any one who will send a list of fifteen responsible names. It is very desirable to secure a list sufficiently large to justify me in putting the work to press at an early day.

W. W. BENNETT.