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A Treatise

—ON THE—

Culture of Tobacco.

—BY—

M. SIMMONS,

Lena, Illinois.

CHAS. WAITE.
ANDREW HINDS.

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Varnishes.	Varnishes.

LENA, ILLINOIS.

A TREATISE

ON

Tobacco Culture

SHOWING ITS DEFECTS, AND CLEARLY POINT-
ING OUT THE CAUSE AND REMEDY.

ALSO

HOW A CROP MAY BE PRODUCED

TO SUIT THE DEMAND OF THE TRADE—
WHETHER IT SHOULD REQUIRE
LIGHT, DARK OR MEDIUM
COLORED GOODS.

By M. Simmons.

HINTS

ON THE DESTRUCTION OF THE TOBACCO WORM.
THE CAUSE OF WHITE VEIN
DISCOVERED.

—
PUBLISHED BY

M. Simmons,
LENA, ILLINOIS.

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PREFACE.

One day, when standing in the warehouse at the depot in Lena, I witnessed the delivery of 45,000 pounds of tobacco, all from my old neighborhood, and this only a small portion of the product. There I saw the general character of the crop, learned the price paid and the light yield per acre, and having witnessed a similar repetition on several occasions, I felt as though the producers were laboring under a misapprehension in the production and curing of their crop. Therefore I volunteered an article which was published in the *Galena Industrial Press*, February 16th, pointing out the defects of the general crop of this section, as the cause of the low prices paid. An editorial soon appeared in the *Farm and Grange* department of the *Press*, which is under the control of Mr. G. W. Curtis, of Nora, hinting to the necessity of further development. This I had not anticipated, and being requested by others to write up the tobacco question in this section, I subsequently published four more articles in the same paper in as condensed a form as I was capable, giving but little more than partial hints on the points presented. The press and producers now request their publication in a permanent form for general circulation. In compliance with their request I have revised my published articles, with some addition, and offer them to the public in the present form.

M. SIMMONS.

LENA, ILL., May. 1882.

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TOBACCO CULTURE.

The indications are that Tobacco is approaching a point where it will be regarded as one of the staple products of this section. The fact is clearly demonstrated that not only the soil of our vast prairie lands, but also that of the timbered, especially where the darker predominate, are not only well adapted to it's growth, but it also infuses in the plants those burning properties which are so essential a characteristic in a good cigar. Notwithstanding the price has ruled lower here than in other localities, it is not to be attributed to any defect in our soil or climate, but rather to the want of more skillful labor in the production and curing of the plant.

The first sale of tobacco effected in Jo Daviess county was the crop of 1869, and consisted of about twenty acres. This was raised by inexperienced persons to test the validity of our soil and climate in it's production. After the plant was matured and ready for market, samples were sent to a leaf dealer in the city of New York for inspection. Immediately upon their receipt, an agent was sent with instructions to purchase the crop, and sales were effected at about 10 cents per pound. This price satisfied the

producers and stimulated increased production the coming year, and 1870 showed the acreage to be double that of the previous year; these crops were also taken by the same parties at the same prices. The result of these experiments were so complete and satisfactory that the crop of 1871 covered nearly 400 acres, which, to the great admiration of the growers, waved with a luxuriant growth, and favorable results were anticipated. Sheds were erected for it's reception, and in due time the plant was securely housed to undergo the curing process.

While the plant was curing, the growers busied themselves in making necessary arrangements for the stripping and assorting season and discussing the prospective prices at which the crop would be moved, and judging the future by the past, the conclusion was naturally reached that at least 10 cents per pound would be paid, and perhaps a higher figure would be realized for a few of the best crops. This produced a feeling of ease and contentment on the part of the producers, firmly believing that they should realize about \$160 per acre for their crops, that being the amount realized for the crops of 1869 and 1870.

That year, buyers from Chicago, Milwaukee, St. Louis, Baltimore, Philadelphia and New York for the first time visited this section, and after a tour of inspection, expressed admiration for it's burning properties, but declared it unfit for cigar purposes on account of the prevalence of white vein, and that it must be sold at from 3 to 5 cents per pound. This was a new idea and a surprise to the growers, who supposed that their crops had matured with the greatest perfection. They had never seen or heard of white vein before, they doubted it's disastrous effect upon their crops as reported by the purchasers, and were of the opinion that this was a ruse agreed upon by the dealers to swindle them out of one-half

or more of their hard earnings and that the white vein would sweat out. Entertaining these views, the growers were loud in their denunciations of the scheme. The buyers, after purchasing a few of the best crops, and getting tired of the abuse, withdrew from the scene and sought a more congenial clime. The growers, now having the field to themselves, and unmolested, had time for mature deliberation, and soon began to realize their situation, with their crops on their hands unsold (and they needed money) and the buyers had left; in the mean time the white vein began to appear more prominent to them than before, and they finally concluded that white vein was a stern reality, and perhaps they had better concede to the views of the buyers, for half a loaf was better than no bread.

Mr. Byron Atwater, of New York, a gentleman of culture and refinement, and one who thoroughly understood his business, and had received more abuse from the growers than any other man, after being informed that the growers were ready to concede, subsequently returned and became the principal purchaser in moving the crop. I think his purchases were made at an average of about 4 cents per pound and in the aggregate about \$15,000. Here was a loss to the producer of 6 cents per pound on his entire crop or \$90.00 per acre of 1500 pounds, which was a low average, and all in consequence of the prevalent white vein. I think that gentleman subsequently informed me that his profits arising from that purchase amounted to $\frac{1}{4}$ cents per pound. In view of this fact he must be credited with paying all the market would justify.

White vein now became the all absorbing topic of conversation; great anxiety existed among the growers to know the cause of this terrible scourge which had so ruthlessly robbed them of their much

needed hard earnings. Appeals were made to the buyers for information, they promptly replied that the cause had never been ascertained; that it prevailed to a greater or less degree in all the tobacco growing districts; some years it was more prevalent than others, and if this section had matured two crops in succession without it, they had no reason to complain for it spoke well for this locality, that it might not visit this section the coming season, but it was supposed to be caused by a certain condition of the atmosphere, while the plant was undergoing the curing process. This theory still prevails in this section.

I am informed that many of the growers in Pennsylvania contracted their crops of '81, before they were cured up, at exorbitant prices, and guaranteed them to be free from white vein, but after they were cured the white vein was so prevalent that the contracts were abandoned. The *New Era* in speaking of this transaction says: "Parties who sold their crops guaranteeing them to be free from white vein begin to realize how stupid they were in accepting such condition. This was a thing they could know *nothing of* and *could not guard against*." This appears to be the prevailing opinion throughout the entire tobacco growing district.

There has not been a year since 1870 but that white vein has made its appearance to a greater or less degree, in this section as well as elsewhere. Growers have been compelled to accept low prices on account of it's presence. The crop of '81 is comparatively free, yet it's work is visible upon the general crop, and but few, if any, can boast of it's entire absence, while others are forced to accept low prices on account of it's presence. One man raises a crop which is comparatively free and he says, I am lucky, and so he is; another man's crop is white vein and he

says, I am unlucky, and so he is, and both are equally ignorant of the cause which produced these different results. Indeed, it would be difficult to estimate the loss the growers have sustained during the last ten years in consequence of this terrible scourge, and being ignorant of it's cause, it was impossible for them to intelligently guard against it. Simply because the crop of '81 is comparatively free it is no evidence that the crop of '82 will also be free; the crops of '69 and '70 were both free, but in the crop of '71 it was produced to such a ruinous extent that there is not a man who raised a crop that year but what has white vein so indelibly impressed upon his mind that it will require a lifetime to eradicate it. What evidence then have we that the next crop will not be as ruinous to the grower as the crop of '71? None whatever; but if he knew the cause and it could be effectually guarded against, then with confidence and increased energy, he would double his diligence in his production, feeling assured that one great obstacle in the way of certain success had been completely removed.

Every grower knows that it is of no uncommon occurrence to see one, two, or three veins on a leaf white, and the rest not, or to see one-half of a leaf white vein and the rest not, or to see one, two or more leaves on a stalk white vein, and the balance free; and plants in this condition scattered promiscuously throughout the hanging crop, and the balance perfectly free from its appearance. How any condition of the atmosphere can produce such varied results after the plant is hung in the shed is certainly marvellous, and beyond my comprehension; but the producers, believing that such might be the case, resorted to the experiment of close hanging in tight sheds, thereby enabling them to a great extent to exclude the air from without, and measurably control

that within, hoping by these means to discover the cause and remedy for white vein; but in this they were disappointed, for it still existed in their crops, but many thought not to the same extent. A report of light yield per acre immediately followed this experiment; this, however, was attributed to the unfavorable condition of the weather while the plant was approaching maturity. The experiment, therefore was continued, still hoping for more favorable results in the future.

Now no experienced grower will deny the fact that the gummy substance of the leaf constitutes a considerable portion of its weight, and he is equally aware of another fact, and that is that during the period through which the plant passes while undergoing the curing process, it sometimes happens that the atmosphere in the shed becomes sufficiently warm and damp to dissolve this gummy substance, which enables it to readily escape by evaporation. This produces what is known as pole-burnt tobacco, and light weights are sure to be the result in the ratio of the dissolution and disappearance of this gum. That close hanging in tight sheds has a direct tendency to produce this result will not be questioned, and I have no doubt but what it is one great cause of the light weights complained of, instead of any defect in the weather while the plant was maturing. If this theory is correct, it affords at least a partial solution of the cause of the light weight of the crop of 1880, which is reported by the press as being 702 pounds per acre in Illinois, and more than 1200 in Wisconsin. No person who has ever traveled over the tobacco regions of the two sections, which are so contiguous to each other, will contend for a moment that this deficiency in Illinois is caused by any defect in her soil or climate; therefore I am inclined to the opinion that a portion of this defi-

ciency cannot be accounted for upon any other principle than the one indicated above. If the theory which I have advanced be correct, then it is evident that the experiment from which the growers hoped for such favorable results has not only proved a failure, but as disastrous in its results as the white vein, which the producer so much dreaded and sought earnestly to eradicate.

Notwithstanding the tobacco raised in this section not only possesses superior burning properties, but its aromatic richness also combines to render it attractive to the smoking fraternity, the leaf also possesses that degree of elasticity so much admired by the manufacturer as a necessary ingredient in a first-class wrapper, yet we see the price ruling much lower here than in other localities. The reason for this is of such vital importance to the grower that it demands specific attention and requires the defects, if any, to be clearly presented. That light colors in the general crop has been prevalent for a number of years no one will deny. If the trade in cigars had required light colored goods, then better prices would have been obtained; but, unfortunately for the growers, the demand was for darker goods than they produced. If a man wishes a dark suit of clothes it would be difficult to make him believe that a light one would suit his fancy quite as well; so the growers not being able to convince the buyer that light colored goods would suit the demand just as well, were compelled to accept low figures. Light colors, then, must be regarded as a defect in the crop, which has a depressing influence upon the price.

There is another point to which I wish to call especial attention, and that is, after taking two or three leaves from the tip of the stalk, then as we descend toward the butt, we find the butt or lower end of the leaf to be nearly as thin as tissue paper.

and the color in many instances as light as straw; this continues one-third or more of the distance towards the top of the leaf, when it very gradually begins to increase in thickness and the color proportionately darker, until we reach the end, where we have the desired thickness and color. My attention was readily called to this point by the use of Pennsylvania, Connecticut and Wisconsin wrappers in connection with those of Illinois, when I was engaged in the manufacturing business. I do not wish to convey the idea that the leaf of those States is as thick at one end as the other, but I do say there was more uniformity of thickness, than characterizes the leaf of this section. This thinness of the leaf must be regarded as one of the causes of the light color complained of, and another defect.

Some growers in their anxiety to produce dark colored goods, and knowing that two or three of the top leaves were of a more uniform thickness, and invariably of a much darker color than the balance, seized upon the idea, that in cutting their crops a little before they were fully matured, might produce the desired result. The experiment was tried, and the result appearing somewhat satisfactory, it was continued, but when the crops passed into the hands of the manufacturers it was discovered that the woody fiber of the leaf, which constitutes its strength, was so completely exhausted that it was unfit for wrappers, and could scarcely be used for binders. A dealer of my personal acquaintance purchased a crop of this kind, and subsequently sold it for two cents per pound less than what he paid; he said the next time he would look a little out. Buyers are not very apt to be entrapped the second time by the same parties. Many crops of the same character have been sold, and can have no other effect than to bring discredit upon this section and the parties who

sold them, and it also gave rise to the report that much of the tobacco of this section was too thin to withstand the sweat.

I will notice one more defect, and that arises from the apparent disinterested and careless manner in which many persons handle their crop. I have seen crops which were so badly handled, that its very appearance was so disgusting, that the buyer would only give it a passing look and leave without making any offer; occurrences of this kind are frequent, and also has a depressing effect upon the character of the crop of this vicinity.

Notwithstanding the crop of 1881, which is comparatively free from white vein, and is regarded as the best and most remunerative of any that has been produced since 1870, yet the defects to which I have referred, have had such a depressing influence upon its value, as to compel the growers to submit to a reduction of from 3 to 4 cents per pound below the price paid in Wisconsin for the same varieties. Many of the dealers who formerly were active in moving the crop, have arrived at the conclusion that it is not suitable to their trade, and have abandoned the field, and are operating in other localities at much higher figures, and the low prices paid by those who remain (they being honorable dealers) must be regarded as evidence that they also consider the product of this section of a low grade. The price paid for an article is an evidence of its value. I know of no locality in this northern latitude where the price of tobacco runs as low as here. The growers with an experience of ten years or more, with a soil and climate admirably adapted to the growth and perfection of the plant, have the extreme mortification of seeing their crops sold at prices far below that of any other locality. I am perfectly satisfied that these defects which have proved so fatal to the suc-

cess of the grower, are to be attributed wholly to his own misapprehension and mismanagement in the production of his crop.

Now, in conclusion, I wish to say that my experience and observation during the last twelve years has abundantly satisfied me that the crop of this section may be so changed as to suit the demand of the trade; a crop with prevailing dark colors, perfectly free from white vein, and all the defects to which I have referred in this article; a crop which will be sought by the trade, excite a lively competition among the dealers, prove more remunerative than any crop that has ever been produced in this section; a crop that will not be fluctuating in it's character from year to year any more than any other, and will be as sure in it's results as the laws of nature are to be relied upon. This result can only be secured by a radical change in the mode of production and handling the plant. The soil, climate and laws of nature are ready to join hands with the intelligent grower to produce this change; no increase of expenditure required; this is no experiment, the result is certain, the elements excepted. It now remains with the grower to decide whether he will continue in the line of defects and uncertainty as heretofore, or whether he will conform to the requirements of the laws of nature in the production of his crop.

Selection and Preparation of the Soil and Seed Bed.

The partial success attending the tobacco growers of this section the past year, I have no doubt, will have a tendency to greatly augment its production the coming season. New beginners will be in the field with a very imperfect knowledge of the business, and they will naturally be inclined to follow the example of their predecessors. Therefore I have thought that a few suggestions in relation to the selection and preparation of the soil upon which their success is so dependent, might be of interest, especially to those whose attention is directed towards the production of the plant.

Our dark upland soils produce the finest grade of tobacco. Localities should be selected where it is well protected from heavy wind, if possible, as heavy winds are frequently very injurious to the growing crop.

All lowlands and sloughs where the water is liable to remain for any length of time after a heavy rain, is not to be relied upon, although during a dry season it might produce a heavy growth, yet its burning qualities are sometimes of an undesirable character.

The successful grower calculates that his land should yield him at least 2000 pounds per acre of the seed leaf or broad leaf varieties, and at least 1500 lbs of the Spanish or sweet scented varieties; these weights have been obtained, and even more in some instances, and can be again; the greater the weight of the leaf of the varieties referred to, the more remunerative it is to the grower.

I will now proceed to give a specimen of soil which can always be relied on with the requisite care and attention of the grower, to yield the required weights, and that is what is termed the second breaking of our prairie land. This I regard as the standard up to which all soil must be elevated to produce those heavy yields. Every man who is acquainted with the soil to which I have called attention, and the condition of the soil in which he proposes to set his plants, may now reason by comparison and draw his own conclusions with reference to the amount of fertilizer required to bring his land up to this standard of production, and he may reason still further and justly conclude that in the ratio that his land shall rate below the standard that I have given, so will his crop fall short in weight; it may require 40, 60 or even 100 loads of manure to restore old land, but when once restored, 25 or 30 loads per acre yearly will put it in proper condition.

I notice a statement going the rounds of the press, that a grower in the Connecticut valley raised 5221 pounds on $2\frac{3}{4}$ acres, an average 1916 pounds per acre, which he sold for 20 cents per pound, netting him the snug little sum of \$383.20 per acre, and this was of the Spanish variety. This man receives as great a return from one acre as is usually received here from three. The reason is obvious, he applies the manure, brings his soil up to the highest point of production. I am told that whole train loads of

manure are shipped from Chicago to the Connecticut Valley and spread upon their tobacco lands. If Illinois manures, when applied to Connecticut soil produces such favorable results, I see no reason why, if properly applied, as favorable results should not be obtained upon her own soil.

The grower will find it greatly to his advantage to gather up all the manure which has accumulated during the summer and spread it upon his land in the fall, and plow it under at a depth of about four inches; it is then secure from waste. The accumulations of winter should be hauled in the spring as soon as the soil is sufficiently dry to admit the team without injury to the land, and immediately turned under at considerable depth; the fall plowing should now be plowed again at a depth of about ten inches, follow up with the harrow; this brings the lumps of the earth to the surface, then follow with the float. This is made as follows: take two 2-inch planks 12 inches wide, 10 feet long, lay them down edge to edge, bolt a strip across each end and a tongue across the center, hitch your team to the tongue as close to the plank as convenient, the end of the tongue in the neckyoke will elevate the front edge of plank sufficient to let it pass over the surface without obstruction, while the back edge lays on the ground with the driver standing upon it; as it moves it will thoroughly pulverize all lumps, it levels the ground and leaves a smooth surface; this retards evaporation which is very essential, especially in a dry season. In about ten days all the foul seed which lies within sprouting distance of the surface will begin to vegetate; now put your sulky plows to work as deeply as your team can manage them; follow with the harrow, this again throws the lump to the surface, then follow that with the float as before; repeat this every week until the time of setting the plant. This system of prepa-

ration secures three very important points: First, it destroys an untold amount of weeds which greatly reduces the expense of cultivation; Second, it thoroughly pulverizes the ground, giving the roots of the plants an unobstructed passage in their pursuit of plant-food; Third, it thoroughly incorporates the manure with the soil, thereby securing to each plant an equal chance in the race for life. Those who adhere to these suggestions will lay the foundation for a successful crop.

THE SEED BED

Should be located on a piece of ground fully protected from the north and west winds; no vegetable substance except the plants should be allowed to grow upon it or so near that the seed would be likely to reach the bed; immediately after the plants are removed, the bed should be cultivated, and this should be repeated as often as any vegetation should make its appearance during the remaining portion of the season. No fertilizers should be applied except lime and such as can be gathered about the hog pen and chicken roost, and these should be thoroughly incorporated with the soil; the bed should be sufficiently elevated to prevent its being submerged by a heavy rain, and perfectly pulverized to the depth of about six inches; this secures to the plant a much better root and it is then much more easily extracted from the bed. The surface of the bed should be made smooth and level, and all cloddy lumps and other hard substances entirely removed. Now take a fine tooth garden rake and draw it lightly over the surface and it is ready for the seed. These directions, if followed, will prove, especially after the first year, not only economical but will relieve the head from dizziness, and also save the back and limbs from many torturing pains occasioned by weeding his plant beds under the scorching rays of a

meridian sun, where he finds himself deprived of those cool and soul reviving northerly and westerly winds, he swelters in the heat and frequently calls for water to relieve his thirst and cool his parched tongue. I have often thought that the atmosphere surrounding these plant beds was seven times hotter than need be, especially for comfort.

But to return: The beds ready for the seed, now mix the seed with a liberal quantity of sand or ashes, and sow lightly lengthwise then crosswise until you have sown the desired quantity, by this means you will secure an even stand; now take a spade or shovel and with the back beat the bed hard at the surface; this presses the seed in the ground and perfectly pulverizes the surface. Now take oat straw (be sure to shake out all the oats) and cover your bed with it to the depth of one-half inch or more; this serves as a mulch and prevents the sun and wind from drying the surface. Now pour on a large amount of water, throw on brush or pieces of board, or anything else that will prevent the wind from removing the straw, and you are safe. After about three weeks the seed will be sprouted and close attention is required. Do not let your plants grow up through the straw; if this is done when the straw is removed the sun will scorch the spindling plant and it is lost, but as soon as it begins to break through the earth, if the weather is dry the bed should be thoroughly watered as before, and then the straw should be removed and the surface kept sufficiently damp to prevent its cracking by the wind or the rays of the sun until the plants shade the ground; in ordinary seasons in about four weeks after the plants are up, they will be ready to transplant.

For several years I have adopted the following preparation of the seed before sowing. I take a milk pan, fill in one inch of earth, over which I lay

a woollen cloth; on this I spread my seed and cover it with another cloth; I then fill the pan nearly full of earth; now I pour on boiling water until the pan is filled and set it in a warm place; in the course of four or five days it will begin to sprout, when it should be immediately sown if the weather is warm. In four or five days the plants will be up. Dry seed should be sown as early in the spring as the weather and soil will permit. Sprouted seed may be delayed at least three weeks.

I will now proceed to discuss the cause more fully. That the prevailing light colors is objectionable to the trade will not be denied; if the trade now, as it did ten years ago, required light colors, then their crop would have been more acceptable and better prices realized; and unless these colors can be changed to suit the demand, the growers must in the future as in the past, expect to realize low figures for their product; and I know of no means by which this can be effected, except in the mode of production. That the present is conducive to light colors the experience of the past few years furnishes sufficient evidence to satisfy the most credulous observer.

My experience and observation justify the conclusion that the mode of production may be so varied as to produce a crop of the desired color to suit the demand of the trade whether it should require light, medium or dark colored goods; and this conclusion is not the result of recent experiment, but of a combination of well known existing facts which are well known to every agriculturist in the land, and to these facts I invite your attention.

That the solar ray is as essential to the color and perfection of a plant as the soil is to its growth, is clearly demonstrated by the fact that the sprout of the potatoe, and all other indigenous plants, where they are entirely secluded from the light, are white

and nearly transparent; but as they emerge from the dark recesses in which they started the journey of life and gradually approach the light we see a corresponding change in their complexion, and it is only when they are fully developed in the rays of light and heat of the sun that they are permitted to be enrobed in their mantle of green—the emblem of perfection. This clearly demonstrates the fact that the solar rays of light is indispensable in the production and perfection of those beautiful colors which adorn the vegetable kingdom during the growing season, and it is equally clear that the degree of color, whether light, medium or dark, is determined by the ratio of light that is reflected upon the plant. Then it follows that the foliage of the plant which is penetrated by the unobstructed rays of light will present those perfect colors which always characterize the topmost leaves, and the plant, which is measurably secluded, will present a corresponding lighter color, notwithstanding every leaf of the plant was once a top leaf and wore the emblem; yet by seclusion it may become so bleached that scarcely a trait of its original color will remain. Then the greater the light that flows around the plant the darker the color, and the greater the seclusion the lighter the color. If 3000 plants are all that can grow on one acre and give the required dark colors, it is reasonable to suppose that 6000 would so exclude the rays of light that a shade lighter color would be produced, and if 9000 were to grow on one acre a corresponding lighter color would be the result. That these results are reliable will not be questioned.

Now if uniformity of color is desired, it is evident that it can only be secured by giving every plant and every leaf on the plant an equal advantage with its associates, and this can only be secured by

setting plants of one uniform size, and by setting them equal distances apart in rows both ways. This affords an opportunity for equal cultivation, and an equal flow of light around the plant. I am aware that this theory antagonizes the prevailing practice of growers of this section, which has been to set their plants from 15 to 22 inches apart in the rows, which are about 3 feet, 10 inches from each other, allowing cultivation on only two sides of the plant. If this is necessary to stimulate its growth, I see no reason why a greater stimulus would not be afforded if the other were cultivated also.

Now we will suppose the length of the leaves on the plant to average two feet, the width 15 inches, and from 12 to 16 on a stalk two feet in height; it is plain to be seen that the leaves running lengthwise of the row will be sufficiently secluded from the light to produce a lighter color than those more exposed, as the color of the leaf is determined by the rays of light upon it, then those leaves upon which the full rays of light is reflected, will cure up of a uniform dark color, and the balance will be lighter in color in the ratio of their seclusion; thus we have the two extremes of light and dark colors on one plant, with every imaginable color thrown in to fill up the space between. If we exclude the top leaves, I question whether two leaves can be selected from the plant over which only one color prevails. If not, then what a mixture of shade is here presented to our view in one single plant and this a characteristic of the general crop. Here is a uniformity of color with a vengeance, confusion confounded, and the buyers confused with the confusion of colors, it is not strange that they should seek to regale themselves in other localities where confusion is not the rule. I doubt whether the growers could invent a scheme of production which would prove more destructive to their

interests than the one which they have practiced during the past ten years.

The next thing claiming our attention is the distance between plants; in determining this, two things must be taken into consideration: 1st, the character of the soil; the richer the soil the greater the distance required. 2nd, the variety to be grown, as some varieties will grow a larger leaf than others. I have seen soils sufficiently rich in productiveness as to require a distance of 4 feet for the larger, and 3 feet for the smaller varieties, but in soils less productive, the distance between the plants should be proportionately reduced. Hence the character of the soil and the variety to be grown must determine the distance.

The following table will show the number of of plants that can be grown on one acre at the distances named:

4 feet each way, 2729 will be required.

4 " 2 inches 4350 " " "

3 " each way, 4835 " " "

2 " 9 inches 6217 " " "

2 " 6 " 7253 " " "

Having determined the distance to set the plants, the next thing in order is an implement to mark out the ground with. Now take a pine joice 2 by 6 inches, 2 feet long, hew off the edge at one end until it is in the shape of a sled runner; bolt one 2½ or 3 feet (or the distance you require your rows apart) on each side of the tongue of your float; then nail a strip of the same thickness and length on the tongue; this must be cut down sufficient to bring it on a level with those on either side, then turn your float upside down and you will have a good marker for this soil, and the distance can be easily changed at any time by moving the bolted pieces. Great care should be taken to have the rows perfectly straight and of

equal distance apart. The marks or furrows made will be of sufficient depth to carry off the water in a heavy storm and prevent the plants from being covered; provided they are set on one of the four corners at the crossing and about two inches back from either furrow or mark. Some practice making a hill in the center of the crossing about two inches high; this being patted down with the back of a hoe, it pulverizes the lumps; the plants are set in the centre, and are secure from being flooded.

THE VARIETIES

Principally grown in this section are four; the Pennsylvania Broad leaf, and the Connecticut seed leaf are the larger, and the Spanish and Sweet Scented are the smaller varieties; the two latter I regard as preferable: 1st, the leaves are farther apart on the stalk, and consequently not so liable to pole burn. 2nd, the leaf thinner, the vein smaller, and the flavor more desirable than the larger varieties; these combine to make them of more value, and from 4 to 5 cents per pound more is paid for those than for the other varieties. I am of the opinion that the smaller varieties with the distance of $2\frac{1}{2}$ ft., will yield as good weight per acre as the larger will at 3 feet, and the color equally as dark; in fact, the best weights that I have heard reported in this section of the crop of '81, is 1507 pounds per acre of the sweet scented variety, and the heaviest of the broad leaf was 1422 pounds. It will be observed that $2\frac{1}{2}$ feet give 2418 plants more per acre than 3 feet; this additional number will make up for the loss of size of leaf in the smaller varieties, but on a very rich soil the distance between rows should be increased 6 inches for the varieties named.

WHEN TO TRANSPLANT.

The *American Agriculturist* offered thirty dollars in three prizes for the best practical essay on the

culture of tobacco, to be written by experienced growers. The responses were numerous, and thirteen were published, from which I extract the following in relation to the time when to set:

Mr. Judson Poenoe, of Montgomery County, Ohio, to whom was awarded the first prize, says from the 1st of June to the 4th of July.

Mr. Oliver T. Bishop, of Hartford, Conn., says from the 15th to the 20th of June.

Mr. A. S. Thomas, of Highland county, Ohio, says from the 25 of May to the 10th of June.

Mr. Perry N. Hull, of Litchfield, Connecticut, says, from the first to the middle of June.

Mr. E. H. Dennis, of Wayne county, Indiana, says from the 20th of May to the 20th of June.

Mr. A. C. Tabhart, of Lancaster, Pennsylvania, says, commence the last of May or the first of June.

And other writers say commence setting as soon as the plants are large enough; and indeed this appears to be the idea conveyed by the above extract, and is also universally practiced by the growers in this section.

Mr. Poenoe says, planting may continue until the 8th of July.

All the rest would limit it not later than the 20th of June. The extreme limit of planting then appears to be from the 20th of May to the 4th of July, a period of 44 days; then we conclude that all planting prior to the middle of June would be considered early, and all after the 20th would be considered late. The reason assigned for this early planting is that the plant may have sufficient time to mature before jack frost should put in his appearance—a very good reason indeed, for he is a very unwelcome visitor in the tobacco field, as I have learned by experience. But as a rule we do not much expect his appearance in this section until about the 20th of

September. Now it requires from sixty to seventy days to mature a plant after it is set, therefore plants set the 1st of July may be housed by the 10th of September.

When I was engaged in the culture of tobacco, my usual crop was from 25 to 30 acres each year. I have set plants as early as the 20th of May, and as late as the 10th of July. Two things I found worthy of note: 1st, that late setting was not so liable to be destroyed by the cut worms, which begin to disappear about the 20th of June, consequently a more uniform stand and growth was secured with less expense; and 2d, the color of the leaf cured up much darker, more uniform, and yielded better weights than the earlier planting.

The question may now be asked, why is this difference in weight and color? In answering this question, I will say that light weights are the result of light colors, and a heavy leaf the result of dark colors. Then it follows that the late planting possesses more gum than the early. The reason for this is obvious, when we consider that the early planting necessitates early cutting. Plants set the first of June as a rule will be ready to cut the first of August, and during the hottest season. Now, if the atmosphere in the shed may become so warm and damp as to dissolve the gum of the leaf after it has become dried (a fact well known to all the growers), I see no reason why, while the gum is yet measurably in a liquid state on the leaf of a maturing plant, it should not be equally as liable, during a warm, damp, foggy time, to dissolve and disappear from the leaf in the field as it is in the shed. Again, that early hanging is more liable to pole-burn is evident on account of the greater heat of the season; indeed it is rare that pole burn occurs in late tobacco, but in early it is very common to have it either pole

burnt or uneven colors. Those who practice setting on or about the 4th of July will be rewarded with the darkest colors and the greatest yield per acre. White vein will show more prominent in dark colors than in the lighter. I believe I have now said sufficient on this point to enable the grower to determine for himself when to set his plants. The ground and plants being ready, the next thing in order is how to raise the

PLANTS

from the bed. Care should be taken to secure the greatest amount of root possible with the plants. Where they stand thin, I have found that a common table fork, with one hand may be stuck under the roots of the plant, and the leaves gathered up with the thumb and fingers of the other, and then with a pry and a pull at the same time the plant is quickly raised with sufficient root to warrant its growth if properly set; but where they stand too thick for that operation, I have practiced pouring on the bed a sufficient amount of water to thoroughly soak the ground so that the plant can be easily pulled up by one leaf. Now if the bed was prepared as directed in a previous article, and is sufficiently wet, the principal portion of the roots will be found with the plant when taken up. A uniform growth can only be secured by setting plants of a uniform size; and such only should be pulled for each day's setting, and some of the same size should be left standing on the bed to fill up with in the field, if any should die after setting.

HOW TO SET PLANTS

is well told by Mr. Poenoe as follows: "Put the little boys and girls to dropping one plant on the side of each hill; let those who stick take an extra plant in the hand, drawing the leaves together in the left hand, and with the fore finger of the right hand make a hole in the center of the hill deep enough to

receive the full length of the roots without the tap root bending up; insert the plant up to the collar with the left hand; stick the fore finger of the right hand one or two inches from the plant and press the dirt well up against the roots, taking care that the dirt is so pressed as to fill up the hole. Pick up the plant on the side of the hill and as you step to the next hill arrange it for sticking; in this way you always stick the plant you picked up from one hill in the next, thereby greatly facilitating the work." I would relieve the fingers by the use of a stick, but care must be taken to fill up the hole at the bottom, or the plant will die; when the ground is not sufficiently wet, or the sun so hot as to scorch the plant, a clod may be put on the heart of the plant to keep the sun off, removing it in the evening. The second day after setting, the field should be reviewed and reset, if needed, with the plants left standing in the bed for that purpose.

Now it becomes all important that close attention is paid to the field of plants *to secure a uniform growth*. Without this, much trouble will be experienced before the crop is housed, and its value greatly endangered by immature plants. *Care must be taken to have a perfect stand and no plants missing if a good yield is expected*. With a perfect stand all of a uniform size, the grower may look forward with a reasonable expectation of success; *without this perfect crops are expensive and hardly attainable*.

Transplanting completed, the field reviewed, resetting finished and a perfect stand of plants secured, we consider the foundation properly laid for a successful crop of tobacco. That nature has made provision on her part to secure this result cannot be doubted, therefore, if failure should occur, it must be attributed to the negligence of the grower, (the elements excepted). How important then, that he

should be thoroughly posted in the character and management of his crop, or, to in all things conform to the requirements of the laws of nature, that success may be certain.

Now the first thing in order, is to determine the character of cultivation best adapted to the growth and perfection of the plant; that all plants do not require the same, is evident; for experience has abundantly demonstrated the fact, that in order to secure a good yield of potatoes, it is necessary that the cultivation between the rows should be deep, and the earth in proper time, taken and hilled up around the plant, where weeds should not be allowed to grow. Experience also teaches that the *surface* cultivation of the corn crop, (after the first time through) with as little hilling up as possible, is productive of the greatest yield; if so, then the character of cultivation required to perfect the corn crop, if applied to the potato crop would be ruinous, and that which is required by the potato, if applied to the corn, would be equally as ruinous. One might go on almost indefinitely, and multiply instances of a similar character with other plants; but this is sufficient to illustrate the fact that no one system of cultivation is alike adapted to every species of vegetable plant, but that it must be varied to suit the respective requirements of each, if success is anticipated; of this there can be no doubt. Now I think no one can fail to see the importance of understanding the peculiar characteristics of the tobacco plant, as compared with others, in order that he may determine the mode of culture best adapted to its growth.

There is no plant in this latitude with which I am acquainted which has so large a leaf, with so many of them on one stalk, and maturing them in so short a time as the tobacco plant. How vast and numerous then must be the roots to produce such

wonderful results. Investigation has determined that they are as numerous as the veins and fibers of the leaf, that they start out from the main or tap root in advance of the leaf, (and this advance is continued until the plant is matured) and course their way through the soil, and as near the surface as the moisture of the earth will admit, and as they advance their number rapidly increases, until they reach a distance of three feet or more from the plant; thus each plant through its extended roots is drawing food from the soil over a surface of six feet or more in diameter.

Now consider a field set with plants three feet each way, and the roots of each equally as numerous and as extensive, stretching from plant to plant penetrating every inch of soil; how necessary then that the surface be as level as possible, and every impediment or obstruction removed, that they may have free course from the time the plant is set until it approaches maturity.

No person will contend that nature has furnished the plant with more roots than is necessary to its perfection; if not, then the cultivation should be conducted on the principle not only of not cutting the roots, but of affording them every facility of spreading possible; therefore the sooner we commence after the plant is set and the closer we may run to it without disturbing the roots the better; all cultivation in advance of the roots should be deep and so thoroughly pulverizing the soil as to facilitate the unobstructed spread of the roots. The hoe should follow, destroying all weeds and putting a little dirt around the plant; if cultivation is practiced both ways, but little hoeing is required if done in proper time; deep culture should not be allowed nearer the stalk than the end of the leaf, and cannot be done without endangering the root, all culture

nearer should be confined to the surface. I have no doubt but what an implement can be constructed with an expense not to exceed ten dollars, which would pass under the leaf to the depth of an inch, more or less, as desired, which would obviate the necessity of the hoe after the first dressing, and be as expeditious as the sulky cultivator.

I am aware that the theory of culture which I have here advocated is at variance with the general practice in this section, which has been to hill up around the plant very much as they do potatoes; I have seen this done after the plant was two feet high or more. Now it requires but a moment's reflection to see that this cannot be done without the destruction of all the roots of the plant which extend between the rows, and are beyond a distance of say ten inches from the stalk; the plant now being deprived of drawing nutrition from two sides by the loss of its roots, it is confined to a narrow ridge about twenty inches in width for its support. Now I would say to the advocates of this theory of culture, that it would be quite as reasonable to contend that a horse fed on straw alone, will thrive just as well, perform just as much labor, with as much ease, and live just as long as though he was well fed on good hay and oats, as it is to say that the plant thus robbed of its roots will grow just as well, and as large a leaf as it would if the roots were not cut off.

In support of the theory which I have advocated, I will refer to Mr. Oliver T. Bishop, of Hartford, Conn., who says: "I have raised, the past season, on a little more than three-fourths of an acre, one thousand four hundred and twenty-seven pounds wrapper ***, two hundred and twenty-one pounds, second ** and one hundred and forty-six pounds filler—in all amounting to one thousand seven hundred and ninety-four pounds, worth three hundred and ninety-

seven dollars and eighty-seven cents, and the cost was at the rate of ninety dollars per acre. His rows were three feet nine inches one way and two and one half feet the other. In cultivating he says: "use a common cultivator ** *care* should be taken not to let it run *too near the plants so as to disturb the roots* or to cover the leaves with dirt. Then with a hoe level off the earth around the plants,"

I will here give an extract from the *Montour American*, a paper published at Danville, Pa., of March 16, 1882, which reads as follows: "In Lancaster County, Pa., last season, one farmer sold his two acre's yield of tobacco for \$1112; cost of labor, etc., \$212; net profit \$900. Another farmer realized \$430 an acre, from three and a half acres; and another \$550 an acre from one and a half acres. They think it pays." Mr. Tabhart, of Lancaster, Pa., in his published article on the culture of tobacco, in speaking of the distance between the plants says: "from three feet to three and a half, is the practice here."

When I consider the light yield per acre, and the low prices obtained in this section, as compared with those of Connecticut and Pennsylvania referred to above, it is really sickening, and when we consider the further fact that our soil and climate are equally as well adapted to the growth of the plant, it is a severe reflection upon the intelligence of the growers of this section, and necessitates a radical change in their mode of production.

The distance plants are set apart in Ohio, New York, Indiana and Pennsylvania is from 3 feet by $3\frac{1}{2}$; in Connecticut they vary from $2\frac{1}{2}$ by 3 feet to 3 feet 9 inches; in Missouri 3 feet by 3, in Indiana, $2\frac{1}{2}$ by 3 feet, and one writer says the distance in Ohio is $4\frac{1}{4}$ by $4\frac{1}{4}$ feet each way. There is no locality where plants are set so close as here and hilling up is practiced only here, and no section, where so light yield and

low prices are obtained. These facts should be sufficient to satisfy every grower of the necessity of a change of the mode of production, as practiced in this region.

WORMING

is the next thing that claims our attention. The egg is usually deposited on the underside of the leaf, by the moth or miller, as it is usually called. As soon as his wormship escapes from the egg he begins to eat, and the first thing you know there is one or more holes the size of a pin head, eaten through; that is the proper time to catch him, for he has not yet moved from the place of his birth; but if there is a hole as large as a pea, you may know he has sufficient strength to begin to travel; if the hole appears to be an old one, you may know he is not there, but if you see one that appears to be just made, which is indicated by the appearance of the edge around the hole, you may know he is there, or near by; if not, look further, be sure and kill him, or he will rob you. This business needs close, *very close attention*, and must be followed up until the crop is housed. The worms remaining on the leaf when hung in the shed are beyond your reach, and will mature as well as in the field. I have seen tobacco injured more by them after it was housed than while standing in the field.

Although the last and final search should be of the most thorough character, there will still be worms, and eggs yet unhatched, attached to the plants when hung in the sheds, and they will be continually dropping to the floor, of all sizes, from an half inch in length to the full grown worm; the small ones will crawl up if they can, and those fully developed will burrow in the earth, preparing for a good time the next year. I have found that a few ducks kept about the sheds would scoop up all such droppings, and they just delight in doing it. Indeed

I have seen the worms so numerous on the ground under a hanging crop, that they could be counted by the thousand, and I should not be surprised to witness at least, a partial repetition of the same thing next September, unless the growers should organize and combine, to avail themselves of every facility to destroy the moth before the eggs are deposited the coming season. They usually commence their ravages as soon, or shortly after the plant is set, and end when the plant is cured up in the shed. They are always more numerous in the latter part of the season; occasionally very early planting may be housed before the later crop of worms appear, and measurably escapes their ravages. Where they are numerous early in the fore part of the season, they are correspondingly more so in the latter; and when they are few in the early part they are correspondingly less in the latter part of the season; this fact would favor the opinion entertained by many, that the matured worms of the first crop re-appear in the production of the second or later crop, and if that is so how important to the grower, that not one worm of the first crop should be left for seed, for each moth deposits several hundred eggs.

Because the worms were few and did but little damage to the tobacco crop last year, it must not be regarded as evidence that their numbers will also be few the coming season. If the growers had all plowed their ground as soon as their crop was removed, and thus prevented the suckers from growing, the worms would not have been more numerous this season than they were last; but this they failed to do, and the suckers were allowed to grow, on which the moths deposited their eggs in great numbers. In the course of a few days the worms were hatched, and found themselves enstalled upon a luxuriant growth of plants; here they fed and fattened

unmolested; the weather being warm, the frost unusually late, they were afforded every facility for a full and perfect development, and ample time to descend into the earth (their winter quarters) before cold weather could obstruct their passage, and there they lay like an army entrenched, and will be ready when the proper time comes, to make a simultaneous demonstration all along the line a thousand fold greater than last year, and I see but one escape for the growers and that is to organize.

I have no doubt but what if the growers in every community would form an association with a fee of twenty-five cents per acre for membership, for the purpose of raising a fund sufficient to pay a bounty of five cents per moth for every one captured within their limits it would be a sufficient stimulus to interest every boy and girl in the pursuit of the moth, and then for the nickle, and be the means of saving thousands of dollars in labor and the value of their crop; but I suppose some persons, however much they might be benefited by this move, would try and dead-head it through without paying anything, expecting to be equally benefited with their neighbors.

TOPPING

Should be done as soon as the first bloom should crack through its enclosure at the tip of the stalk, and if late in the season it should be done as soon as the bud can be reached with the thumb and finger without injury to the leaves. From three to four leaves should be taken off with the top; care should be taken not to injure the top leaf on the stalk below the point of separation. The fluids of the plant instead of passing into the top, are now taken up by leaves, and their growth is greatly augmented, until the suckers start out on the upper side at the junction of the leaf with the stalk. A correspondent of the *New Era* says he had four acres of tobacco planted

with the same variety, all of which shared the same advantages in every respect until the time of suckering; "three acres of it was

SUCKERED

When the suckers were five or six inches long; the one acre was not suckered until the suckers were ten inches in length or more. Now every one without exception judged the one acre would yield from one hundred to one hundred and fifty pounds per acre more than the three acre lot, but the reverse was found to be the fact." Here, there was a loss in weight of between two and three hundred pounds per acre by letting the suckers grow to such a length, and is an evidence in favor of early suckering.

Not only this, he adds, that the three acres yielded "nearly two hundred pounds of first wrappers more per acre than the one acre." He further adds that "in the one acre there was nearly one hundred pounds of white vein, while in the three acres there was but fifteen pounds," therefore he concludes that long suckers are not only productive of light weights, but also of white vein. I think his conclusion with regard to white vein, is unwarranted from the fact there was but one hundred pounds on the whole acre. If long suckers produce it, why not the balance white vein also. The fact that it was not, is evidence that long suckers do not produce it, and he says there were fifteen pounds on the three acre lot where there were no long suckers. Will he tell us what produced it there? I think he had better reconsider his premises, review his conclusions, and look somewhere else for the cause of white vein, for in all kindness I must tell him he is mistaken.

Another writer in the same paper says that his crop received but a slight rain after it was topped until it was housed, and after it was cured up it was found all right, except five or six veins at the top of

the leaves were white; therefore, he concludes that the excessive dry hot weather while the plant is approaching maturity, is productive of white vein. If so, it would not exist where there was plenty of rain as there was in this section, where it was found to exist more or less in the general crop; therefore I conclude that he also is in error with regard to the cause of white vein.

WHEN TO CUT.

Mr. Bishop, the writer whom I have previously quoted, says: "Any one used to the cultivation of the crop knows when it is ripe, the veins of the leaves are swollen; the leaves begin to look spotted, and feel thick and gummy. The ends of the leaves will crack on being doubled up." This is the opinion not only of Mr. Bishop, but of a dozen others whose writings are before me touching the same point. Notwithstanding these gentlemen are all practical growers of the weed, and residing in many different States, yet it must be confessed that the cracking of the leaf when doubled up depends much upon the state of the atmosphere when the trial is made; for a leaf within a week of maturity, if the end is doubled up between the thumb and finger, and pressed together early in the morning, or late in the evening of a cool day, it will crack; and a ripe leaf, if doubled up in the same manner, in the heat of a warm, dry day will not crack, therefore I conclude that the cracking business is no evidence that the plant is ripe and ready to cut, and cannot be relied upon by the inexperienced grower. Instead of the

SPOTTED

appearance of the leaf being an evidence that the leaf is ripe, I regard it as an evidence that it has passed its meridian (when it should have been cut in order to secure the darkest color) and is on the decline, and its tendency is to a yellowish and undesir-

able color. Now it becomes necessary that we should know the exact time to cut, and this can only be determined by the growth of the plant. No person need to expect a perfect crop by cutting one plant before, and another after it is ripe; perfection comes in between the two. Now all plants topped and suckered at the time I have indicated in these pages, should be cut as soon as the second suckers shall make their appearance by the side of where the top suckers have been previously broken off, and *they* should not be allowed to grow more than one-half inch before the plant is cut; and none should be cut before, if uniformity of color and perfection of crop is desired; this will show the necessity, as I have urged before, of setting plants all of one uniform size, that all may ripen up and be cut at the same time. A failure in this is the signal for an imperfect crop or the necessity of carrying out those that first mature and leaving the balance to ripen up, and then to be carried out also. And this is to be practiced until the last plant is cut. Perfect crops are not attainable by cutting immature plants, or by letting them stand until they are over-ripe, therefore, ripe plants should only be cut if uniformity of color is expected.

CUTTING AND HOUSING

The crop is so well understood in this section that it needs no comment from me, only don't let it sunburn, and let it be well wilted after cutting before taking it up, and handle it with great care, so as not to break the leaves, for the value of the crop depends greatly upon the amount of whole leaves there is in it.

PLANTS HUNG IN THE SHED

Should never be so close as to touch each other after they are thoroughly wilted; this will give a chance for a free circulation of air among them, the leaf will cure up more uniform in color, and it is not so likely to poleburn. If the leaf dries faster than it cures, the

shed may be closed during the day and opened during the night; and if it cures faster than it dries, you may know that shed rot is approaching, and that a dry atmosphere is needed, and the shed should be opened when dry and closed when damp. This shows the necessity of tight sheds to cure tobacco in, and

SHEDS

Should be built with the boards running lengthwise of the building instead of up and down as the custom is here, and the doors should run lengthwise and open between the tiers of tobacco all around the building; they should be hung with hinges at the upper edge; these opened when desired, with plenty of ventilation at the peak will give a rapid circulation of air at once all through the building, and the body of your plants are safe from being damaged by the storms of wind or rain, and these, when closed, exclude the damp atmosphere to such an extent perhaps as to save your crop from danger.

Now, in conclusion I will say, that in my first article I have endeavored to point out in a clear light, the defects of the tobacco crop in its general character in this section, and at that time I had no idea of writing another word on the subject, but friends interposed and urged that inasmuch as I had pointed out the defects, that it was but just that I should also show the cause, and as clearly point out the remedies, and present them with the necessary change in the present mode of production to render the crop a success. It must be born in mind that close and early planting are productive of light weights, light colors, and an article not suited to the demand, and that late planting at the distances named, are productive of the darkest colors attainable, the heaviest yield, and an article suited to the trade, and which commands the highest price in market; but it must be remembered that dark colors reveal

the presence of white vein more readily than the lighter.

I fully believe that the person who consults the contents of the foregoing pages of this pamphlet will be amply qualified to produce a crop of tobacco which will suit the requirements of the trade in every particular (but one) and if the suggestions are faithfully carried out, his crop will be less expensive, a greater yield per acre secured, and a much higher price obtained than has ever been paid in this locality. There is but one thing yet for him to learn, and that is, how to effectually guard against white vein; without this the crop in the future is as liable to be shrunk in value as that of the past, which in '71 was about 60 per cent. The cause of white vein no longer remains undiscovered. I have no hesitancy in saying that its cause can be effectually guarded against, and those who know the cause, in addition to what I have communicated in this treatise, will be masters of the situation, and be prepared to produce a crop which will be as certain in its return as any other agricultural product, as he will be prepared to avoid all the depressing defects which has heretofore born so heavily upon his crop as to almost discourage its future growth. I am fully aware that the interests of the growers throughout the entire tobacco growing districts demand that I should publish it broadcast, but I have an *interest* in this matter also, which the law of the land does not protect, therefore I must protect it myself. The truth is, the vast amount of revenue the government derives from this industry, it could well afford to offer a liberal reward for the discovery of the cause and effectual remedy for white vein in tobacco. If the government will do this the facts will be made public at once. Now let the growers petition Congress for this public benefit instead of the writer of these

pages, if they wish to receive without cost to themselves, and the sooner they commence operations the sooner it will be made public.

If this thing was patentable I should know at once what to do, but it is not, therefore I shall make it known only to those who apply and are willing to pay a small compensation to enable them to effectually guard against it. As an evidence that I mean business I will say that I ask no pay until the crop is cured up, and then, if my directions are followed and white vein appears in the crop the contract is void, and I will say further that no additional expenditure is required in the production of the crop in guarding against white vein.

If I possess a knowledge which, if communicated to another, would enable him without any additional cost to increase the market value of his product 25 or 40 or even 100 per cent, is that any reason why I should donate him that benefit? It would be just as reasonable to conclude that if I had a farm and my neighbor had none, that I should give him mine. Fair dealing requires an equivalent for value received. I ask but a small compensation, and those who refuse may go on their way rejoicing. I will see them another year and then we will talk the matter over.

The following appeared in the *Farm and Grange* department of the *Press* after the publication of my first article:

TOBACCO CULTURE.

Elsewhere in this paper will be found an article under the above heading to which we commend the attention of the growers of this important crop in this locality. The author who signs his name to a previous article which appeared in the *Press*, gave the reason why the price of tobacco had ruled so low averagely for ten years past, and asserted that this result was caused by the misapprehension and hence by the mismanagement of the growers. If Mr. Simmons has developed a theory of production by which the value of the crop may be enhanced large without an increase of cost, the thanks of the growers would be returned him if he will give it to the public; in fact, the growers could readily afford to pay him a handsome bonus if they could be assured that the defects he refers to can be prevented in the future. Mr. S. is an old settler and a pioneer in this growing of tobacco, has given the matter his personal attention, and has expended much labor and thought to systematize, simplify and cheapen the cost of production, spending perhaps the best ten years of his business life in this direction, and would not impose upon the grower in this matter, so we feel assured.

Were we a grower of the product we should avail ourselves of the experience of any man who had given this business the time Mr. Simmons has expended in this direction.

We ask every grower who reads the *Press* (and most of them do in this locality) to carefully read these articles upon this subject, from the pen of Mr. Simmons, satisfied as we are that they will find them profitable.

The following note appeared in the *Press* of April 27, 1882:

"The tobacco articles of Mr. Simmons, published by us recently are being copied extensively, and highly approved. We should be glad to see them published in a permanent form for general distribution, as they are decidedly the best ever written on the subject."

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