Scientific American

NEW YORK, DECEMBER 14, 1850.

Production of Cotton.

There is no article of agricultural produce, which engages so much attention, at present, as cotton; and no wonder. The magnitude of the cotton trade, so far as a relationship with manufactures is concerned, dwarfs every other. The stock, and production of American cotton, for five years, from January, 1845, was 14,150,000 bales. The stock consumed in that period was 14,812,000 bales, thus showing that the consumption was greater than the supply. A recent number of the Alabama Planter contains a circular, by Mr. G. G. Henry, factor, wherein it is stated, that although the cotton crop of 1849–50 was below that of 1848, yet it sold for $30,000,000 more. Does not this show the magnitude of the cotton trade? He states that if the consumption of cotton goes on for the next five years in proportion as it has done for the past, there would be a deficit of supply amounting to 2,300,000 bales. The consumption in America will not be as great this year as last, by one-third the number of bales, at least; but, then, what signifies our consumption in comparison with that of Great Britain? We run over 2,000,000 spindles, England more than 17,000,000; and she paid $71,440,975 for the raw material, last year.

It is long since the manufacturers of Great Britain began to try and rid themselves of dependence on America for a supply of cotton; but, as yet, they have not been able to do so successfully. At present there is more excitement than there ever was before, in respect to seeking other sources of supply; and they have turned their eyes towards the West Indies. A report has been published, of a meeting held in the Jamaica Bank, Kingston, where the question of the profitable culture of Jamaica cotton was discussed, and from the tone of it, we are confident that cotton cannot be cultivated profitably in Jamaica. The planters cannot get laborers to cultivate the crop, as one reason, and another is, it requires more cultivation to keep down the weeds than it does in any of our States.

For a long time great efforts have been made by the East India Company to cultivate cotton in that fertile region. American cotton agriculturists and American machinery were taken out there at great expense, and for many years, effort after effort has been made to increase the supply and improve the quality of Indian cotton, so as to compete with that of the United States; but all has been in vain. At a recent meeting of the Manchester Chamber of Commerce, the chairman, Mr. Thomas Bazley, stated that they were paralyzed for the want of cotton—that they were dependent upon one source, America, and that they were incurring a cost of ten millions sterling more, at the present time, than they should pay for the raw material, and he advised the meeting to look to the East Indies for supplying their future wants. Before India can raise cotton to supply England, the cotton lords of Manchester and Glasgow have a work to perform almost equal to transporting the Himmalaya mountains in ship-loads to the Mersey. The whole polity of the country, in taxes, customs, building of docks, deepening rivers, making railroads, and making the natives honest traders into the bargain, have all to be accomplished before the East Indies can be rendered a cotton producing country, to compete with America; and, during the time this reform is working out, will America be standing still? No: she will be shooting still further ahead. The article on Georgia Railroads, on another page, will show what energy and enterprise is now displayed by the cotton growing States, in the way of internal improvements, the developement of their natural resources, to facilitate transit, and thereby encourage the cultivation of cotton up in the interior, where, without railroads, the culture of it would be unprofitable. It is our opinion that our cotton cultivators have but precious little to fear from the East Indies. The native dealers of cotton, in India, are such scoundrels that they cannot be trusted in the least. It is not long since that 8,500 bags were seized because adulterated with foreign matter, and the parties who were guilty, confessed that the crime, although penal, was a regular, long-continued system. The British merchants will never be able to make much out of such men until they become christianized.

The only apparently reasonable offset to decrease the consumption of cotton, is the manufacture of more linen. If flax could be cultivated, and as easily manufactured as cotton, then it would supersede it, in a great measure; but it never can be: the separation of the woody from the fibrous parts of flax will always be an expensive operation. The cotton culture has nothing to fear from the linen, nothing. The linen trade was the great trade seventy years ago; America had not then exported her first cotton bale. The increase of the cotton trade has been a natural result, it has overshadowed the linen in importance, and we cannot divine a reason why it should not, and must still continue to be the great staple production for manufacturing purposes.

Agricultural Chemistry.

Plants contain various chemical substances. By burning a plant we find in the residue an ash, which contains a certain class of plant constituents—while another class escapes in the form of gas. The first is the mineral constituent, the second the organic; the latter contains only four substances, viz., carbon, hydrogen, nitrogen, and oxygen. The former is more extensive, containing sulphur, phosphoric acids, alum, magnesia, potash, and soda. Without these substances the plant could not flourish, and just in proportion as they are applied, so is the plant luxuriant. The inorganic constituents can have but one source, and that source the soil in which the plant grows. It is different, however, with the organic constituents, which have two sources drawn from the surrounding atmosphere. The atmosphere is the great reservoir of the organic constituents of plants. Two of them, nitrogen and oxygen, exist in large, while the others, carbon and hydrogen, exist in small proportions. It must be understood, however, that all soils also contain a certain quantity of organic matter, which contain the same constituents, and are in many instances very important sources of those substances which form the food of plants. It is not enough that these substances should be in the soil; it is necessary that they should be in a state available to the growth of the plant, viz., in a soluble condition. The necessary constituents become soluble very slowly, and just in sufficient quantity to support that degree of vegetation which the economy of nature requires. Manure should contain all the substances in the exact proportion required by the plant, so that no waste might occur. It has, as yet, been impossible to carry out, practically, what is true theoretically. Theory and experiment have shown that the whole constituents of manure are not equally important. Nitrogen has been found to be the most important constituent of manure, because it is not so plenty as the others. It is true that the atmosphere contains great quantities of nitrogen, but then the plant also requires it most. In 100 lbs. of atmosphere there are 77 lbs., of nitrogen, but not more than $\frac{1}{4}$ of ammonia—hence the great source of ammonia, the right food for the plant, is the decomposition of animal and vegetable substances. In the management of the farm-yard, there should be two objects kept in view, to wit, the produce of the greatest amount of nitrogen, and the conversion of it into ammonia. The principal source of the two important constituents of plants comes from plants themselves, and that which is obtained from animals, comes from the plants on which the animals have been fed. It is a very important matter to keep manure free from air and moisture. The manure heap of every barn-yard should be covered by a roof.

To produce ammonia quickly, the manure should be heaped up, while it is produced more slowly when the fresh manure is plowed in the soil. By a knowledge of this, farmers can make their manure act fast or slow, as they choose. Every farmer should depend on his own barn-yard for his fertilizers, and to produce these in the greatest abundance, and at the least expense, should engage his attention. The production of ammonia, as shown, is the grand obje and this is formed by heaping up and fermenting animal and vegetable substances. To preserve the manure under roof is to save what has been already formed, and it is far cheaper to do this by covering in, than using gypsum without covering in. The reason why open barn-yards are common, is owing to the expense of covering them in; and another fact, in connection with this, is the want of a true knowledge respecting the value and the nature of the manure. As nitrogen is the prime plant-constituent to be provided artificially, and as ammonia must be served up as the food of the plant, and as this is very volatile—a test for showing what farmer is more enlightened than another, is his barn-yard.

In the last number of the "Rural New Yorker" there is an article entitled "Shade as a Manure," wherein it is stated that a correspondent of the "Plow, Loom, and Anvil" has advanced a new theory, that "the excrements of animals is not manure; that the residue of putrefaction is the aliment of plants." Neither Mr. Skinner nor Mr. Moore, we believe, entertain any idea of the novelty of this doctrine. It is wrong, in one sense, and right in another, as every man who has studied agricultural chemistry knows. The great difficulty, with some, in studying cause and effect, is, they don't dig deep enough. By what we have set forth above, it will be seen that the residue of this putrefaction is ammonia. Putrefaction is only the common name for the chemical fermentation. It is all nonsense to say that shade is a fertilizer, as has been set forth. Soil may be shaded for twenty years, and not become any more fertile, if there is not some means provided for the production of ammonia, and its absorption in the soil. The summer fallowing of land tends to the production of this food for plants, by the soil absorption of nitrogen, and the decomposition of vegetable or animal products.

War about Geometry.

Mr. Seba Smith, of this city, has recently written a new work on Geometry, termed "New Elements in Geometry." The nature of what is held forth to be new is, that all measurements in geometry are made of cubes. Here is some of it:—

"She never attempts to measure *something* with *nothing*, whatever vain imaginations have been indulged hitherto by her votaries. Her magic wand, by which she performs so many wonderful works, is not an ideal line without breadth, but a *positive magnitude*; by which I mean a magnitude having extension in every direction from its centre. That magnitude is always a simple *cube*, and nothing else. The cube is her *unit*, and she uses but one unit in all her measurements. If you ask her to measure simply a line or length, say the length of your parlor, she will inquire by what standard it shall be measured, or what shall be the unit? If you tell her a *foot*, she takes her *cubic* foot in her hand, and applies its length, or linear edge, along the distance required, and tells you how many times the length of her unit must be repeated to make the length of your parlor. Again; if you ask her to measure extension in two directions, length and breadth, say the area of your parlor floor, and to return the account in feet, she takes her unit, the *cubic* foot, and applies its length and breadth, or *one face*, a sufficient number of times to cover the floor, and tells you how many square feet it contains. If you ask her how much space or extension there is in the whole room, she then applies the *whole* unit, and fills up the room with cubic feet, and tells you how many it holds. And thus she measures everything, always with that simple square block."

This book has caused a flare up among some old mathematicians, who have an idea that *something* can be measured from *nothing*, and found their premises upon geometrical nomenclature, not the true idea they have of their nature—such as "a point is said to have position without magnitude, and a line has length without breadth or thickness—or is a succession of points; but Mr. Smith is backed up by somewhat old authority, and if the subject be correctly understood, his "new element" is not altogether new. In Davison's Repository, as we learn by the London Mechanics' Magazine, Nov. 9, Question 62, Mr. Lowery observes, "that an infinitely small quantity, taken an infinite number of times, is equal to a finite quantity, and it is upon this principle that the whole science of Geometry rests; for a line is made up of an infinite number of points, infinitely small; a plane is made up an infinite number of lines, infinitely narrow, and a solid is made up of an infinite number of planes, infinitely thin—consequently, an infinite small quantity, taken an infinite number of times, is equal to a finite quantity." There now, let our fighting geometricians, sheath their swords; Mr. Smith's idea about a unit is the same as that taught by Prof. Davies, in his Logic of Mathematics.

Nature of a Patent Right.

The true nature of a patent right is best understood, and, indeed, can only be truly understood, by attentively considering the claimants of inventions which are indisputably patentable. Examine, for instance, the invention of Kneller, for an improvement in the manufacture of sugar, by introducing air-pipes into vessels containing syrup, and thus quickening the process, upon the principle that evaporation is promoted by a current of air. If we analyze this invention, of what do we find that it consists?

The process of evaporating syrup was the subject matter upon which the inventive power of Kneller was employed. The process which he undertook to improve, had long previously been the property of the public. This old process, therefore, was no part of Kneller's invention. But further, the natural law that a current of air promotes evaporation, was applied by Kneller to the process in question, by means of introducing pipes into vessels containing syrups. Suppose I should have employed some other mode of introducing aircurrents to the syrup, without effecting thereby any material improvement. In so doing I should have infringed upon Kneller's patent—for merely formal changes of an apparatus, do not constitute a distinct invention; hence, it follows, that the peculiar mode in which Kneller introduced his pipes into the syrup, was not a material part of his invention,—and in order to ascertain in what the invention of Kneller intrinsically consisted, we must exclude from consideration the feature alluded to,—that a current of air promotes evaporation was a well-known law. The question recurs, —what was the *essence*, the *spirit*, of this invention of Kneller? It was this: the application of a natural law, by practical means, to effect a certain result.

Kneller's patent protected both his own mode of applying the natural law in question, and also all merely *equivalent* means of applying such laws.

But, it may be asked "if Kneller's invention be irrespective of form, and founded on a natural law, does he not monopolise an abstract principle, which is, and forever ought to be, the property of all mankind?"

By no means; Kneller only monopolized the *application* of a natural law to the production of a certain result, by a certain class of means. In other words, his invention was *a principle embodied in practice*. And such is the distinctive character of the great mass of patent rights. WATT.

Another Steamboat Explosion.

The steamboat A. Douglass exploded her boiler, at Tate's Shoals, on the Mississippi River, on the night of the 26th ult. It is supposed that 40 or 50 persons have lost their lives, as all the passengers were asleep at the time. When will such crimes be punished, as they deserve, in our country?

Within the last ten years, says the London Chronicle, 150,000 Mormons have emigrated from Great Britain to the United States, most of them men of some means, from Wales and the Northern and Eastern parts of England.