

## Scientific.

## HOW COAL WAS MADE.

Geology has proved that at one period there existed an enormously abundant land vegetation, the ruins or rubbish of which, carried into seas, and there sunk to the bottom, and afterwards covered over by sand and mud beds, became the substance which we now recognize as coal. This was a natural transaction of vast consequence to us, seeing how much utility we find in coal, both for warming our dwellings and for various manufactures, as well as the production of steam, by which so great a mechanical power is generated. It may naturally excite surprise that the vegetable remains should have so completely changed their apparent character, and become black. But this can be explained by chemistry; and part of the marvel becomes clear to the simplest understanding when we recall the familiar fact, that damp hay, thrown closely into a heap, gives out heat and becomes of a dark color.

When a vegetable mass is excluded from the air and subjected to a great pressure a bituminous fermentation is produced, and the result is the mineral coal, which is of various characters, according as the mass has been originally intermingled with sand, clay, or other earthy impurities. On account of the change effected by mineralization, it is difficult to detect in coal the traces of a vegetable structure; but these can be made clear in all except the highly bituminous caking coal by cutting or polishing it down into thin transparent slices, when the microscope shows the fiber and cells very plainly.

From distinct isolated specimens, found in the sandstones amidst the coal-beds, we discovered the nature of the plants of this era. They are almost all of a simple cellular structure, and such as exist with us in small forms, (horse-tails, club mosses, and fens,) but advanced to an enormous magnitude. The species are all long since extinct. The vegetation generally is such as now exist in clusters of tropical islands; but it must have been the result of a high temperature, obtained otherwise than that of the tropical regions now is, for the coal strata are found in the temperate, and even the polar regions.

The conclusion, therefore, to which most geologists have arrived, is, that the earth, originally an incandescent or highly heated mass, was gradually cooled down, until in the Carboniferous period it fostered a growth of terrestrial vegetation all over its surface, to which the existing jungles of the tropics are mere barrenness in comparison. The high and uniform temperature, combined with greater proportion of carbonic acid gas in the manufacture, could not only sustain a gigantic and prolific vegetation, but would also create dense vapors, showers and rains; and these again gigantic rivers, periodical inundations, and deltas. Thus, all the conditions for extensive deposits of wood in estuaries would arise in this high temperature; and every circumstance connected with the coal measures points to such conditions.—*Chambers.*

## Importance of Ventilation.

Among the good signs of the times is the increased attention paid to the subject of ventilation! one of the first wants of our nature, and yet one of the least to command regard. Ten or twenty years hence people will look back with astonishment at the suicidal conduct of all classes in denying themselves the benefit of the free, pure air so bountifully provided by heaven. We find in a contemporary journal, two or three facts so strikingly illustrative of the mischief resulting to life from want of ventilation, that we quote them for our readers' consideration.

The first occurred only two years ago, on board the steamer Londonderry, bound from Sligo to Liverpool, with about one hundred and ninety steerage passengers. During the night a gale arose, the passengers were ordered below, and a tarpaulin was nailed over the companion; the inmates were soon partially suffocated, and shrieked for aid; but the howling of the storm drowned their cries, and when at length the hatches were opened there lay 72 dead bodies.

Dr. Alcott, of Boston, states that in a hospital in Dublin, between the years 1781 and 1785, no less than 2,944 children out of 7050 died within a fortnight after their birth, being a considerable over one-half. Dr. Clark, the physician, suspecting the cause to be want of ventilation, introduced a supply of fresh air, and during the three succeeding years only

165 out of 4,243 died within the first two weeks—or less than one in twenty-five.

Mr. Chadwick, in his report on the sanitary condition of the labouring classes in Great Britain, says there was attached to a factory in Glasgow a building called the barracks, occupied by 500 persons, and that fever was seldom absent from this place till at the recommendation of Mr. Flemington, tubes two inches in diameter were made to run from each room into the chimney of the factory furnace, thus producing ventilation whether the inmates would or not. The effect was, fever was scarcely known in the place during the next 8 years.

## Shell Banks in Alabama.

Shell banks, very common in the neighborhood of Mobile, are not less singular because common. On Middle river, just above the city, says the *Register*, is a huge bank of shells, some twenty-five feet in depth. As far down as eighteen feet from the surface, remnants of cooking utensils, evidently of Indian origin, have been found. In another place, close by, is a bank of shells, which runs in the form of a ridge, and covers full two acres. This, by the nearest cut, is over a quarter of a mile from any water course, and at present the shells have to be hauled at least a half a mile before reaching the barges. In Bonne Secour Bay is a huge hill of oyster-shells, over thirty feet high, and from which vast quantities of lime have been already made, yet the consumption only heretofore seemed to cut a wall-like face to the mound. But the shells found near the city are of the clam kind, varying from the largest to the smallest size. The Southern people make excellent roads with these shells.

## Recipes.

## Composition for Leather.

The following is by far the best composition for leather we have ever tried. It keeps it water-proof and pliable, and is susceptible of the highest degree of polish:—1 pint boiled linseed oil, 1½ pound mutton tallow, 6 ounces beeswax, 4 ounces rosin; melt and simmer together. Apply it to the leather moderately warm.

## Remedy for Asthma.

Procure common blotting paper, and thoroughly saturate it in a solution of nitre, (saltpetre,) and let it be carefully dried by the fire, or by exposure to the rays of the sun. On retiring at night, ignite it, and deposit it, burning on a plate or square of sheet zinc or iron, in your bed-room.

## A Receipt to Preserve Pork.

Take 1 lb. of black pepper, and grind it fine for one barrel, or 200 lbs. of pork, and sprinkle on each layer of pork, until it is quite brown—then put on the salt. It helps to preserve the meat, and adds greatly to the flavor and smell of it.—*Alb. Cult.*

## Wounds on Horses.

Take one quarter of a pound of saltpetre, half a pint of vinegar, half a pint of spirits of turpentine, put them together in a bottle, and shake them well before using. Apply to the wound with a feather three times a day.

## The Farm.

## EDUCATION OF FARMERS.

Extract from Mr. Bryant's Address, at the annual exhibition of the Buel Institute, held at Granville, Putnam county, New York.

As the cultivation of the soil is the most ancient of all employments, so it is the most dignified and honourable; for it was ordained by the Almighty himself. Yet an idea appears to be common in our country that it is more respectable to live by one's wits than by the labor of his hands. How many fond parents do we hear expressing the hope that their smart sons may become something more than a "plough jogger" or a mechanic! how many young men crowd the professions of law and medicine who might be more usefully employed in tilling the soil; how many every year repair to our towns and cities, anxious to exchange the manly labors of agriculture for the effeminate employment of measuring tape and calico! The idea that labour is not respectable has doubtless been handed down from the ages of feudal barbarism, when the only labourers were slaves, and labor was in consequence degraded; when the honourable men were the soldiers and priests, and the only honorable employments, those of cutting men's throats

and emptying their pockets, and it is kept alive at the present day by the depressed condition of the labouring classes in other countries, and by the institution of slavery in our own. Some people appear to think that a man of talent and education is entirely out of his element in the business of farming. The idea that such persons have of the education of a farmer, is aptly illustrated by a remark I once heard from an old backwoodsman in this State. In reply to some one who was boasting of the money he had paid for the education of his children, the old man remarked that he had four sons whose education had not cost him a dollar; "yet," said he, "they can shoot a bar and make as good a crop of corn as any boys that have been to school." A good education is as important in agricultural pursuits, as in the professions usually called learned;—as though the skill necessary for the proper management of a farm and a knowledge of the laws of vegetation—laws which God himself has established—do not better deserve the name of learning than an acquaintance with the antiquated forms of law, a hundred years behind the age; or the shuffling evasion and quibble that characterize a large portion of the law practice of our land;—as though the farmer who properly mixes a heap of compost manure does not exercise as much science and skill as the doctor who compounds his pills and his syrups; to say nothing of the superior utility of the article. An intelligent and well educated farmer is as much entitled to the appellation of learned, as the practitioner of any profession. Let the working men of our population receive the education they ought to have, and which they would have if our civil and social institutions were what they ought to be, and they will command that respect to which the dignity and importance of their employments entitle them.

But it is not alone in a professional point of view that education is important to our laboring population. In our country they are the depositories of political power; and upon their virtue and intelligence depends the prosperity of our republican institutions. Ignorance is a species of slavery, and a population wholly uneducated, though professing political rights, would be almost completely under the control of political demagogues. That our working men, generally, do not fully understand their own interest, is apparent from the political and social evils which exist in our country, and will continue to exist until the people shall demand a reform.

## Wintering Stock.

Mr. Editor:—For some days I have been thinking, how my poor neighbours' cattle will fare this coming cold Winter! Not but that I have enough to occupy my thoughts in my own immediate affairs, but when these poor animals meet my gaze, cold and shivering as they are, in consequence of having been taken from a liberal allowance of green food and put immediately on dry, and perhaps coarse meadow-hay, or weather-beaten corn fodder, with not a spoonful of grain nor a root to lay their jaws to,—poor creatures! no wonder they dry up their milk, for they have nothing to make milk of, and no wonder they stand upon a piece of ground not larger than a half bushel, with all four feet almost together! And when Spring opens and the warm sun strikes their skin, the vermin begin to work, and cause them to feel so miserable, they would fain run away from themselves, and surely they have no difficulty in running over the hills and rocks at an alarming rate, with their tails high in the air to receive the cooling breeze, their bodies being light they are better adapted for a race than anything else! But to their relief, the grass soon springs up, and they begin to look a little more like cows than skeletons, yet the hard Winter they have passed, has nearly unfitted them for any profit to their owners during the Summer season. And as they cannot afford to buy grain to give them during the coming Winter, so both the poor cows and their owners will see hard times! Now, who is to blame? are the cows to blame? They have done as well as you could have expected under those circumstances. Surely the farmer who manages thus, must expect to see hard times, and he deserves it! He that will not plough by reason of the cold, must expect to beg in harvest!

If you have not the means to keep your stock well, reduce it; two cows well fed, are more profit to the owner than half a dozen long legged wone lo-begooking animals, that some people call cows, which look like steers wintered out in the woods upon brouse. Brother farmers, get you a good hay, straw and

cornstalk cutter; cut your feed, put in a little grain, soften the same with a little water; it will make mastication easier, and consequently will digest better and afford more nourishment to your stock; besides, your poor hay and corn fodder is turned to good account, and being sweetened by a little grain, goes off well, leaving no waste. By this mode of procedure, and measuring out to each his feed, you will be able to discover if every one has what he wants, in order that he may escape the doom of those before named, and add a little more to his or her mess if needful, taking care at the same time, that they are not robbed by their more avaricious neighbours. Green meat of some kind should be given, if you expect perfect health. Feed three times a day with chopped feed; let their stomachs have time to digest what they eat. It is a mistake that they need be eating all the while. Solid feed is unlike green grass, you must remember, some people stand in the barn floor nearly half their time, to dish up a little at a time to keep their appetites good, forgetting that if health is preserved, though they feed but three times in twenty-four hours with the proper quantity and quality, they will clean all up, and even lick the floor. Try it farmers. If I can get a handsome profit from one cow well fed, you who have half a dozen, by the rule of three, can get six times as much. *Boston Cultivator.*

## Quick Lime in Old Gardens.

A correspondent at Norwich, Ct., inquires, "whether quick lime would be useful in an old and long cultivated garden, and how it operates."

Quick lime is exceedingly useful, when applied to old garden soils. Such soils are glutted with half-decomposed vegetable matter, roots and fibres of previous crops, and insoluble and inert portions of manure, so accumulated during a long time, as to render the soil "sour," as the gardeners say. It acts by decomposing all such material, and combining with all excess of humors, and rendering the soil sweet and fit for the active growth of plants. Nothing so wonderfully restores the original fertility of an old and long cultivated garden, in which, though the soil has grown dark with repeated manuring and continual cultivation, many vegetables and fruits do not thrive as they once did, so quickly as a moderate dressing of caustic lime—applied when the ground is broken up, (at the rate of 150 bushels to the acre,) and to lie for a short time in that state—either in the fall or spring.

## To Young Farmers.

One of the most important parts of a young agriculturist's professional education, is the characteristics, marks, qualities and capabilities of all descriptions of live stock necessary for agriculture. Some knowledge of sketching or drawing the live animals would be highly conducive to the pupil ascertaining a proper idea of shape and proportion; and should there be an intelligent butcher in the neighborhood, I would recommend him to see as much of his business as he can consistently with his other occupations—to weigh the live animal, from its handling, size, and appearance in his mind; attending the slaying of such animal, examining its weight when dead, and comparing this with his own opinion of it when alive, would all lead him to form more correct and solid opinions in his future transactions with fat stock.—*Lecture on Agricultural Education.*

## Preparing Poultry for Market.

A person who has for years been engaged in furnishing the various kinds of poultry to the market dealers of our principal cities, says: "If you want to prepare your poultry in the nicest manner for the market, so that it shall invariably secure the best price, observe the following rules, viz:

"First—Fat them well and allow them to remain in the pens twenty-four hours previous to being killed. Then, when you kill them, instead of chopping their heads off, run a small pen-knife into the jugular vein by the side of the neck, just under the jowls. Then hold them while bleeding, and pick them immediately; picking off the wing feathers as well as the others, while warm. Then let the head remain on; let the crop alone, but cut a small hole just large enough to permit the removal of the intestines. Do not remove the gizzard from its place, but if the fowl be very fat, you make a larger hole, turn the leaves out, and fasten them with a small skewer. When prepared in this way, your poultry will be much nicer, and entitled to better price than when butchered in the ordinary way."