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Notes for Farmers.

The chemical laboratory is one of the most important departments of the Central Experimental Farm. Chemistry has become so valuable a factor in scientific agriculture of late years that knowledge has been obtained by this means scarcely available by any process. The results of investigations by chemical analysis are therefore of great interest and a knowledge of them is essential to farmers who wish to carry on their business in an up-to-date and profitable manner.

Frank T. Shutt, M.A., chemist of the Dominion Experimental farms, and the director, William Saunders, have issued a bulletin on clover as a fertilizer, which is a valuable product of chemical research and practical tests by estimating yields under the influence of the fertilizer.

Soil fertility and soil maintenance are the objects which have to be attained by farmers. The soils of a country are a natural resource of immense value which should be so treated as to increase rather than decrease in productivity. It is plain that the productivity of the soil must be permanent to sustain agriculture.

It is demonstrated by Dr. Saunders and Mr. Shutt in the bulletin just issued how soils which have had their productivity impaired by careless cultivation may be improved. This work has been in progress for many years and valuable facts have been ascertained as to the methods of restoration of soil by manure dressing and clover plowed down.

The main object in view in the preparation of the bulletin was to call the attention of Canadian farmers to the practical results which have been obtained at the Central Experimental farm by the plowing under of green clover. This practice has been found to increase the crops for several successive seasons. Similar experiments have been tried on the branch experimental farms with good results, and reports have reached us from many farmers who have followed with profit the teaching of the experimental farms in this respect. If this method of fertilizing the land were more generally adopted, a considerable increase might be had in the average production of the more important farm crops at very little cost. The experiments conducted at Ottawa have been so planned as to realize the greatest advantages from the clover without interfering with the regularity of the farmers' crops.

Experiments were begun on the Central Farm in the spring of 1894. A field was sown with a variety of two-rowed barley, and, at the same time, seeded with Mammoth Red clover at the rate of 12 pounds per acre. After the barley was harvested the clover grew rapidly and made a good stand before winter. It was allowed to grow until the following season. By the third week in May, about the time when such a crop should be plowed under for the planting of Indian corn or potatoes, a box one foot square inside and four feet deep was sunk to its full depth, and a fair section of the plants and roots were found to extend down four feet, and had been able to feed on the stores of fertility existing in the lower depths of the subsoil, beyond the reach of most other crops, and to transfer and utilize these in building up the stalks and leaves. The leaves, stems and roots were analyzed and the amounts of nitrogen taken from the soil estimated in pounds per acre. There was a total of 173 pounds, the leaves and stems containing much in excess of the roots.

While the ploughing under of clover furnishes the soil with a large amount of organic matter, it is evident that clover enriches the land by adding nitrogen. Clover has the remarkable property of being able to take a large proportion of the nitrogen it needs for growth from the air. The careful researches of many eminent scientific investigators have shown that legumes obtain nitrogen

from the air found in the interstices between the particles of soil, through the agencies of certain micro-organisms in the soil. These bacteria, whose special functions is the assimilation of free nitrogen, attach themselves to the roots of growing clover or other legumes, forming thereon small nodules.

Perhaps this most important discovery in agricultural science in the 19th century is the use made by the growing clover of the nitrogen absorbed by the microbes and converted into soluble compounds. The chief value of plowing under a crop of clover lies in the addition of humus and its associated mineral plant food and in the addition of nitrogen. By the subsequent decay in the soil of the turned under clover, these constituents are converted into available food for future use for farm crops and fruits. While the growth and harvesting of other crops leaves the soil poorer in nitrogen, the growth of clover, even when the crop has been harvested and the roots only left, leaves the soil invariably richer in this constituent.

In demonstrating the value of clover nearly all kinds of grain have been sown first with a crop of plowed down clover, then without. Banner oats gave an increased yield, 19 bushels, after a crop of Preston wheat. After Odessa barley with clover, 7 bushels; after Bolton barley with clover, 77 bushels; after Banner oats with clover, 10 bushels. Potatoes gave an increase after a crop of clover, as follows: With Preston wheat, 43 bushels; Banner oats, 24 bushels; Mensury barley, 29 bushels. Many tests of this character gave results convincingly in favor of plowing down clover.

Experiments have been carried on to ascertain whether or not clover sowed with grain lessens the yield of grain. Plots have been sown without clover and others with clover, in quantities varying from 2 to 16 pounds per acre. The yields showed no material difference when the grain from the separate plots was compared with that from the mixed plots. It is generally conceded that each ton of clover plowed under will add to the soil as much nitrogen as ten tons of average barn-yard manure. As much as 16 tons per acre of clover may be derived from plowing down. The quantity of seed per acre giving best results seems to be 10 or 12 pounds. Common red clover seed suits the purpose well, a large increase in leaves, stems and roots is noticed when the crop is allowed to grow till about May 21 the year after it is sowed.

It is urged by some that the burying of such a large amount of rich food as is contained in a crop of clover is wasteful. This would undoubtedly be true if the farmer had the stock to consume it, for by feeding the clover a part of it would be converted into high-priced animal products, and the manure produced and returned to the soil would give back about 75 per cent. of the fertilizing elements contained in the crop. On most farms, however, there is not sufficient stock for such purpose, and in such cases is recommended the growing and plowing under of clover for recovering, maintaining and increasing the fertility of soils, as no other material of equal fertilizing value can be so cheaply obtained. By sowing 10 or 12 lbs. of common red clover seed per acre, costing about \$1.00 to \$1.25, there would be a gain of at least 100 lbs. of nitrogen, the lowest price for which in artificial fertilizers is 10 cents per lb. Further, the added store of humus with its associated mineral elements is also of much value. Even when it is found desirable to harvest the crop and sell it off, the land will be considerably enriched, since nearly one-half of the fertilizing constituents of the clover is to be found in the roots.

It should be understood, that in advocating green manuring with clover, this crop is not brought forward as a material to replace barn-yard manure, but rather to supplement it and to make its application more effective. Barn-yard manure of good average quality contains about

the following proportions of the chief fertilizing constituents: Nitrogen, 10 lbs. per ton; phosphoric acid, 5 lbs. per ton; potash, 9 lbs. per ton.

An application of ten tons per acre will, therefore, enrich the soil approximately by the following amounts: Nitrogen, 100 lbs. per acre; phosphoric acid, 50 lbs. per acre; potash, 90 lbs. per acre.

Chemical investigations have shown that a vigorous crop of clover will contain, at a moderate estimate, in its foliage and roots: Nitrogen, from 100 to 150 lbs. per acre; phosphoric acid, from 30 to 45 lbs. per acre; potash, from 85 to 115 lbs. per acre.

The Milk of Human Kindness.

(Continued from Page Eleven.)

taining my character of Mr. Brown, and though his honest nature caused him to demur at first, he finally consented. I called often after that; went bicycle riding with the ladies and attended parties. The two weeks that I intended to spend, and then two others passed, and still I had not departed. One day I had made up my mind to reveal my identity to Miss Fox, but a chance conversation deterred me. We were speaking of Pete, who was convalescing, and of his ill starred romance.

"I also have a romance, Mr. Brown," she said.

I said I was very anxious to hear it; and then she told me of the provisions of her uncle's will.

"No matter whether I cared anything for this Mr. Campbell or not," she said, "I could never marry him. I would rather lose any amount of money than be pointed out as a fortune hunter."

"Just my sentiments," I ejaculated; and then I suddenly remembered that I was Mr. Brown, and that I should have no sentiments in the matter.

At last one day when the trees had lost their gorgeous raiment, and the pumpkins gleamed in the fields like spheres of burnished gold, I asked Alice to marry me. She did not say no, so I slipped a ring on her hand—and well, anyhow she said it was the wrong hand afterwards, and placed it on the proper finger.

My uncle was delighted and gave a dinner in honor of our engagement that brought him happiness and a week's relapse of rheumatism. A few evenings before the dinner Alice showed me a letter which she had just written. It ran as follows:

Dear Sir,—In regard to the provisions made for me in my uncle's will I desire to say that I intend breaking its conditions by marrying Mr. Brown, a milkman.

Respectfully,

ALICE FOX.

I laughed so heartily after reading it that it is a wonder she did not suspect something. To make sure that it would be sent I dropped it in the mail box myself. My uncle introduced me by my proper name at the dinner which he gave; and, although she pretended to be angry at first, she ended by laughing at the strange train of events that had brought about the deception.

The wedding took place from Mrs. Dean's on Thanksgiving Day. It was a very quiet affair, for neither of us had parents or near relatives to invite. During our wedding trip we called on Mr. Bush at his office in New York. The old gentleman greeted me warmly, and I introduced him to my wife adding that she was formerly Miss Fox, one of his clients. A puzzled look stole over his face and he polished his glasses, as if they would help him see through the

matter more clearly. Then he adjusted them on his sharp little nose and said: "But a letter which I received from Miss Fox—"

"Pardon me," I said with a smile, "but have you transferred Miss Fox's inheritance to the Ellis Asylum yet?"

"No," said he. "I must first have a copy of the marriage certificate."

"Well," I said, as I threw down our marriage certificate, "this will satisfy you that we are legally married. Now," I continued after he had examined the document, "here is a properly witnessed document transferring my inheritance of \$5,000 to the Ellis Orphan Asylum. I do not wish anybody to regret our marriage."

This astonished the old lawyer still more, and he glanced at me curiously as though he doubted my veracity. At last he said:

"But the letter stated that Miss Fox was to marry a milkman; you are not a milkman."

"Well, as to that," I replied, as I looked at Alice, "my wife on a very momentous occasion informed me that I had a large stock of the milk of human kindness, and I hope that the Ellis Orphans will agree with her."—John A. Foote, in the Rosary Magazine.

Household Notes.

CARE OF CHILDREN.—Experiments, ordered by the Government, have been made in Sweden—that land of healthy women—and a report had been forwarded to the Minister of Education regarding the hours of sleep needed by children of various ages in order that they may study properly. Children of four years should sleep twelve hours of the twenty-four; children who are seven years old, eleven hours; children who are nine years old, ten hours; children from twelve to fourteen years old, should sleep from nine to ten hours, and those who are from fourteen to twenty-one years old, from eight to nine hours. It further points out that anaemia and weakness in children are frequently due to lack of sleep.

In the neighborhood where I live, say a contributor of the "Catholic Union and Times," there is a colony of rich women's children, and every child is fed at half-past five and is in bed an hour later. Nobody sees or hears one of those children after that time. It is a matter of course for them to be called in and put to bed. And every one of them is healthy and robust. There are also a number of children in the vicinity belonging to coachmen and other working people, and those children are on the street until nine o'clock and later. They haven't the sanitary surroundings of the richer children, and they have much more license as to sleep and food; and their physical condition shows it. They are feeble in comparison with the other, more strictly reared children, and have more sickness and less endurance. So early to bed, boys and girls.

It is said that children grow only during sleep. If they are kept from obtaining a sufficient amount of sleep, they will be stunted. I have heard from a physician that during the time when a child is growing fast, the brain is inactive, and that it is a positive wrong to force children to study at a time when nature is engaged in increasing the body. Many a child is called dull and is punished for idleness who is physically incapable of doing anything but grow. Give the children time and they will come out all right.

Happiness is a great power of holiness. Thus kind words, by their power of producing happiness, have also a power of producing holiness, and so of winning men to God.

HOW TO BREATHE.—Every man or woman in America, instead of breathing a pint of air or less at every breath, can just as easily have a quart.

The price is the same, there is plenty of it, of excellent quality. If each were paid a cent for each such breath, they would soon find them; that it is not only easy to do, but that a new buoyancy and a sense of strength, and a consciousness of not tiring half as easily as formerly have come and seem to stay.

That fuller breathing is purifying the blood, making the heart do better work, indeed, is helping every organ in all that it has to do.

The simplest preparatory exercise is long, full breathing.

While standing or sitting in any proper attitude, with the chest free, take in a long breath until the lungs seem full, taking care, at the same time, not to harshly strain the lungs or muscles.

Hold the breath thus taken for a few seconds, and then allow it to slowly leave the lungs.

By consciously breathing in this manner, the lungs will be enlarged and strengthened, and the breathing will become slower.

Normal breathing, when the body is at rest, should not include more than ten breaths in a minute.

At the outset long breaths will be a conscious exercise.

Take long breaths as often as you think of it.

You may not think of it more than once or twice a day, at the beginning.

Then you will find it easy to remember every hour or so, and then twice or three times an hour, until finally the habit is formed, and the old, short, scant breath—a mere gasp in many people—is entirely abandoned.

Breathing in this way, with the body held erect, with the head on top of the spine instead of two or three inches forward, makes deep, thorough breathing easier yet.

To pray, to give, to suffer—these are the resolutions of my retreat, wrote and old man; see how I can still be of a little use.

Many owe more to their bitter enemies than to the friends that seem sweet; for the former often tell them the truth, the latter never.

AUCTIONS SALES.—There is a

serious disposition on the part of many sensible people, including medical men, to make a public war on the rummage sale. It is claimed that it is a menace to health and a conveyor of contagious diseases. Last winter several of these sales were held in large cities, and were followed by a number of cases of contagious disease among children. Some of these, it is said, were traced to their source, and were found to have been transmitted directly from garments purchased at a sale. The truth is that a more unsanitary device was never imagined. The stuff sent to the average rummage sale is usually rubbish, much of it having been resurrected from trash heaps or unused closets, and is of no real use to any one. The danger of lurking germs is very real, and it seems almost criminally reckless to expose children to it.

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SUPERIOR COURT.

PROVINCE OF QUEBEC, District of Montreal, No. 3007. Dame Elisa Sigouin, wife common as to property of Philip Saulniers, shoemaker, of the City and District of Montreal, duly authorized to "ester en justice," plaintiff, vs. the said Philip Saulniers, defendant. An action for separation as to property has been instituted in this case on the twelfth day of September, nineteen hundred and two. Montreal, 12th September, 1902. Beaudin, Cardinal, Loranger & St. Germain, attorneys, for plaintiff.

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