Farm Crop Queries

Conducted by Professor Henry G. Bell

The object of this department is to place at the service of our farm readers the advice of an acknowledged authority on all subjects pertaining to soils and crops.

Address all questions to Professor Henry G. Bell, in care of The Wilson Publishing Company, Limited, Toronto, and answers will appear in this column in the order in which they are received. When writing kindly mention this paper. As space is limited it is advisable where immediate reply is necessary that a stamped and addressed envelope be enclosed with the question, when the answer will be mailed direct.

The Business of Farming.—VI.

How to know what to use.—(Continued.)—We do not wish to prolong the discussion of the point beyond valuable information, but we have received so many enquiries bearing on the analysis of the soil within the last few months that it seems time that this point was clearly stated so that men who are anxious in improve their soils would not be working along unproductive lines. In fact, we have heard of men going into fields and claiming that they can make a ready chemical analysis of the soil and tell the farmer from the chemical analysis just what he should use. Our statement of the facts of the case show how absurd this claim is. We wish only to supplement our statement with that of certain leading soil scientists regarding this feature.

What Analyses Can and Cannot Show.

"It must not be understood that these 366 analyses will give all the information needed about Iowa soils and how to deal with them. Chemical analyses cannot do that. For instance, they cannot show just what fertilizers are necessary and in exactly what amount they should be applied. This is true mainly because chemical analyses merely show what elements the soil contains and cannot show how much of those elements is available for plant food and how much is unavailable as previously pointed out. Chemcal analyses may show that two soils contain the same amount of phosphorus, but in one enough of the phosphorus may be available to insure good crops and in the other so little as to insure crop failure, and chemical analysis will not show that difference."—W. H. Stevenson, Prof. of Soils, Iowa State College of Agriculture.

Fertilizers and Crops.

"It was formerly thought that a chemical analysis of any soil would readily furnish information regarding the amounts of nitrogen, phosphorus and potassum, which would enable one to know whether any of these constituents was lacking and to what extent, if any, one needed to add to the soil the deficient constituent or constituents in order to insure an abundant crop. It is not difficult for a trained analytical chemist to determine the amount of each plantfood constituent in a soil, showing the total amounts held as a store for the future, but such results furnish no information as to how much of these total amounts is immediately available for crops growth . . . . The actual value of soil analysis in determining positively and definitely the plantfood needs of the soil has been and is still a matter of dispute. All agree that the results of soil analysis are negatively helpful in enabling one to reach conclusions, when it is shown that the total amount of any plantfood constituent is present in very small amount or wholly absent. However, there appears to be no general agreement as to what shall be regarded as the lowest amount of any particular plantfood constituent calling for special addition to meet crop growths." Van Slyke in his book, "Fertilizers and Crops," page 408.

Dr. A. D. Hall, late Director of Rothamsted Experiment Station, England, in a report before the British Association for the Advancement of Science, 1910, page 585, in speaking of the soil survey, which he was conducting, states as follows: "Mechanical analysis is considered the most important of the various determinations made in the course of soil analysis, and it is believed that for agricultural purposes the size of the soil particles is more significant than their actual composition. This is emphasized by the controlling influence of the size of particle upon available water supply and tillage."

Now it is not our purpose to make a lot of destructive statements and leave nothing constructive, hence we ask the question again, "How shall a man know what to use?" It is now general knowledge that certain types of soil contain characteristic supplies of plantfood as noted by the tables given previously. This is true the world over. It is furthermore well known that farm crops have their own characteristic individual needs for the various constituents of plantfood. These are concisely shown in the following table:

Farm Crop Requirements.

CROP.	AVAILABLE PLANTFOOD. Nitrogen (ammonia)	Phosphoric Acid	Potash
Potatoes, mangels, carrots, sugar beets....	Good supply	Medium	Abundance
Turnips	Small supply	Abundance	Small supply
Wheat, oats, rye, barley	Fair supply	Abundance	Small supply
Corn (husking)	Small supply	Abundance	Small supply
Corn (silage)	Fair supply	Abundance	Small supply
Meadows, pastures and fodder crops	Good supply	Medium	Small supply

No matter what source this plantfood comes from, whether from the soil, from manure, or from fertilizers, the crops must have it, and that in abundant supply, if they are to make largest growth and produce fruit of best quality. With these two facts in mind then, the practical business man on the farm knows from the results which he is obtaining from his crops whether or not the plantfood of his soils is properly balanced. If not properly balanced he can by the use of manure and fertilizers regulate his practices so that the material added will make up for the deficiencies in the soil and will meet the special plantfood requirements of the crops.

It is often said that every farm is an individual problem. This is perfectly true, although the truth must not be misapplied. The foregoing statement does not mean that while every farm is an individual problem the principles and practices of maintaining plantfood must be worked out anew for every farm. If such were the case we would not get anywhere in the matter of soils and crop food studies. It does mean, however, that the individual history of the management of every farm must have a large place in determining fertility practices which shall be employed in order to obtain best results.

To make this plain, supposing your farm has grown a large amount of legumes and you have returned a considerable amount of livestock manure to the fields that you are preparing to grow a maximum crops of wheat. You should use a fertilizer with a medium small amount of nitrogen, a large amount of phosphoric acid and a medium amount of potash, looking at the problem from the crop standpoint and in view of the fact that the manure and legumes have made their contribution to the plantfood in the soil. Now, if the soil is a sandy soil, to begin with, necessarily you will have to increase the amount of nitrogen and potash. If on the other it is a good clay loam, both the nitrogen and potash, especially the latter, can be greatly diminished in the fertilizer that is added. No one can tell you exactly what quantity or of what analysis will be most profitable under your conditions. This is the element of individuality of the problem. The thing to do is to apply about 200 to 300 lbs. of fertilizer per acre, that comes nearest the analysis that you think will best supplement the manurial application of your soil, leaving sections of the field unfertilized. At harvest time compare the relative yields and from the comparisons you can easily adjust both the quantity and analysis of the plantfood so that it will return largest rate of interest on money you have invested in it.

Farm tests should be much more frequent than they are. The man that goes at the fertilizer problem blindly is not working in his own interests. Neither is the man who simply dismisses the whole problem by saying that he does not understand it or does not care anything about it. These are days when most productive farming is going to win out. They are days when industry and farming must work to each other's hands. The plantfood industry or the fertilizer industry aims to render a tremendous service, in fact this is the only basis under which the industry can persist. Its doctrine in the interests of farmers is that he should follow a desirable rotation of crops, keeping up the humus of the soils, he should use every bit of stock manure obtainable in the best way possible and lime his soil sufficiently often in order to keep the reaction right and should supplement the plantfood when in his soils with fertilizers suited in analysis to make up for the characteristic weakness of his soils and to meet the special needs of the crops. The most profitable fertility management of your soils is not a thing for snap judgment. Do not be misled by anyone that claims he can tell you exactly what to do. Improve by the fund of experience which has been accumulating for the last 100 years. The use of fertilizers is by no means a new practice; it has been largely instrumental in the production of food for intensely populated Europe. It has for the last 50 years been growing in its importance on the American continent as a means of operating North American farms most profitably.

(To be continued.)

Poultry

If the litter in the poultry house is damp and dirty it should be cleaned out and fresh straw replaced. This will help to keep the hens busy until the spring days when they can range outside. One of the large items in poultry work is giving the hens plenty of clean scratching material and it is one of the factors in keeping the flock healthy until better conditions on the range arrive to further invigorate them.

Hens on free range seldom eat feathers. When they form this habit in the poultry yard it means that something needed in the ration is lacking. A balanced ration will often remedy the trouble. If one hen starts feather-eating she should immediately be isolated or killed before teaching the habit to other members of the flock.

If there is little storage room for feed it sometimes pays the farmer to buy a few bags of some poultry mash which contains all of the elements needed for egg production. Such a mash will help to keep the hens healthy and maintain plenty of vigor. Many poultrymen feed the commercial mashes throughout the year and some farmers who have not tried them at all, will find that a few hundred pounds during the hardest part of winter will help out wonderfully with the poultry feeding problems. Where there is plenty of storage room for various materials the mash mixtures can be made by the farmer in a satisfactory manner. Where there is no time for mixing the materials, the commercial mashes form a good substitute and they have a good influence on egg production when fed to vigorous bred-to-lay flocks.

It is not too late to order the incubator and brooder but the time is going fast. The early hatches pay the best and delays in transit are very discouraging to the poultryman with quality eggs to incubate and no machine in which to place them.

A few days devoted to the building of brood coops will save time next spring and insure the mother hens safe homes for their chicks. Many chicks are lost each year because rats and weasels steal them from under the hens. Place floors in all the brood coops each night. This can be done with a narrow hinged board next to ground. If the small shed-roof brood coops are used, either nail the roofs tight or use hooks on each side. This prevents the roofs from being blown off during severe spring wind storms.

The Dairy

Last fall several farmers were discussing the problem of how to feed their cows profitably with the present high prices of all mill feeds. One man suggested, in a joking way, that since we were having so many wheatless and meatless days, we could solve the feed problem by starting grainless days for the dairy cows. They were of the opinion that such a method would result in milkless days. But that is just what is happening in the herd of Mathew Michels, a dairyman of Wisconsin. Every day is a grainless day for his cows.

"Too many dairymen," said Mr. Michels, "are still of the opinion that milk cannot be produced without the use of expensive feed. To raise all the feed needed for dairying is entirely practical where alfalfa can be grown. It has a feeding value equal to wheat bran. So, in feeding, I supply the protein in the form of alfalfa hay.

"After alfalfa hay, corn silage is the next most important feed. It should be remembered that the variety of corn that gives the largest yield of shelled corn will give the best returns when fed as silage. Corn with big stalks and little grain does not make the silage wanted when feeding without concentrates. Be sure that the corn is fairly well matured before it goes into the silo."

The item of expense is not the only objection that Mr. Michels has to feeding of concentrates. He points out that many good cows are made poor or irregular breeders by the feeding of an excess of grain. Others, being overfed, contract various diseases.

It will be of interest to give his system of feeding: Alfalfa is fed the whole year. It is fed in the evening when the cows are on pasture. Then silage is fed in the morning as long as it lasts. When it is gone the alfalfa is fed twice a day at the time of milking. During the winter months 25 pounds of silage is fed in two feeds a day with all the alfalfa hay they will eat, and more, because practically all the horse hay comes from the cows' mangers. A limit is put on the amount of silage, because it was found that when more than that amount of silage was fed, the cows were not able to eat enough hay to balance the ration.

"We have had very satisfactory returns," said Mr. Michels, in speaking of his method. "For the past six years we have carried and raised all our stock without grain or other con-

MY CHILD'S GOOD LOOKS

Little People Have a Right to Beautiful Bodies.

By JEANNE MARIE DUPONT.

Every child has the right to a healthy body, a good skin and thick glossy hair and the average little one is endowed with all these blessings but because of neglect or improper treatment often loses its birthright. Many a woman with a muddy complexion or a wisp of hair that she has to supplement with switches, if more care had been taken of her childish beauty, would still have luxuriant hair until she was very old, and if her skin had been given the small amount of attention it needed when she was young, she could have had a clear complexion all her life. The same thing is true of the teeth. A famous dentist said to me not long ago:

"The reason why most people have such heavy dental bills is because in childhood their teeth were not started right."

"What on earth do you mean?" I asked him in surprise. "I, supposed all children's teeth were started in the same way."

"Not at all," he replied. "Some children are given a splendid chance for a sound, permanent set of second teeth, while others are foredoomed to spend their lives paying dentist's bills. It all depends on the habits insisted on by their parents when they are tiny tots."

"The most important one is that of keeping the teeth scrupulously clean and beginning this even before the first teeth appear. Baby's gums should be washed daily with a solution of weak boracic acid, applied on a bit of absorbent cotton or a soft piece of clean linen wrapped around the mother's little finger. This should be thrown away and a fresh piece of material used every time. When a number of teeth have been cut, a very small, soft brush should be purchased and some antiseptic tooth powder or else a tooth paste with a pleasant taste, and the teeth should be most carefully scrubbed with that, taking care not to hurt the tender gums of childhood.

"When the child is about three years old, he can be easily taught to care for his own teeth. If it is made an invariable rule that the teeth shall be brushed night and morning, this habit will continue through life to the great advantage of the appearance. It is better still to insist on their being brushed after the noonday meal as well.

"If the first teeth are not cared for, the permanent set will not be strong and white and the gums may not be healthy. Dental floss should be slipped between a child's teeth if they are close together to remove any particles of food that may have lodged there, for this will quickly cause decay. And any indication of tartar should be at once destroyed by dipping an orangewood stick in powdered pumice-stone and gently scrubbing the teeth with this, taking care to rinse the mouth well after the operation."

"Doesn't that hurt the enamel?"

"Not at all if it is carefully done. But if the child is very small I should advise using powdered chalk instead of pumice.

"Whenever much candy has been eaten it is a good plan to rinse the mouth with half a glass of water in which a good pinch of bicarbonate of soda has been dissolved. If these things are attended to in early youth and the habit of brushing the teeth two or three times a day is faithfully kept up, a mouthful of pearls will be the result and the owner of the teeth will spend very little on dentist's bills in after life."

The other day a middle-aged friend of mine who has the complexion of a pretty girl of eighteen was talking to me about the children of some friends of ours.

"They have three of the dearest and prettiest little girls I ever saw. But I do not think they will grow up good looking because they have a family wash rag. I don't quite mean that everybody in the house uses it but I myself saw the mother wash all the kids' faces with the same cloth. Horrid—not to say unsanitary!"

My children always have individual wash cloths. They are thoroughly boiled once a week in borax water to sterilize them and get them scientifically clean. I see to it that the children wash their faces before going to bed. It is even more important to wash a child's face at night than in the morning, for if the little one sleeps for nine or ten hours with unwashed face the dirt on the skin works its way into the tiny pores and this will coarsen the complexion even if it does not cause an eruption.

A careful diet, plenty of mild soap and warm water used once a day on the face, preferably at night, then rinsed thoroughly and cold water dashed on the cheeks will keep the skin in perfect condition.

The care of a child's hair is very important. Never under any circumstances use a fine comb for removal of dandruff or scales from a child's head as this tears the delicate skin of the scalp. Do not use a brush with very stiff bristles. Every child should have its own brush and comb for dandruff is a contagious disease and is acquired by most children by using other people's brushes and combs. Gentle massage of the scalp and a weekly shampoo with warm water and mild soap will always promote the growth of the hair provided the child's health is good.

For dandruff on a child's head I use a simple lotion made by pouring one pint of boiling water over half a teaspoonful of borax and a heaping teaspoonful of powdered sulphur. I let this cool and moisten the child's scalp with it two or three times a week.

Whether or not to cut children's hair depends greatly upon their physical condition. If the child is well and strong and the hair can be given the proper amount of attention to keep it in good condition it is foolish to cut it. If the child is delicate or the hair is thin or of poor quality it is decidedly best to keep it short until the age of seven or eight.

The best and most effective method of hair tonics is good blood circulation which brings its nourishing supply of rich, pure blood to the hair roots. This is promoted by scalp massage which stimulates the nerves of the scalp. When the hair falls out more than it should and does not appear to grow properly, certain pure lotions rubbed on the scalp are often a great help. When the hair is very dry it indicates that some sort of lubricant is needed to supply the natural oil that is lacking. Any pure oil can be used for this.

Hair that is too oily is caused by the over activity of the oil glands or the torpid condition of the muscles and glands of the scalp. Massage obviates this condition with the addition of a little pure witch hazel used on the scalp until the hair is normally dry. In children, however, most cases of oily hair are caused by insufficient shampooing. If the hair of young children is washed once a week and once every two weeks when they are of school age, there will be no trouble with oiliness.

Every child, boy as well as girl, has a right to good looks, and Mother should do everything in her power to secure them.

Horse Sense

From an economical point of view, it is best not to crowd the horses when first beginning the spring work. If they get tired out, nothing will restore them except a few days' complete rest.

Especial care must be given in starting the plowing. It worries horses, especially heavy ones, to travel over newly plowed or uneven ground. Frequent short rests relieve the worry and prevent the horses from becoming overheated.

The harness must be given careful attention to prevent the forming of galls and sores. Wherever it rubs, the horse sweats, particles of dust collect, and by pressure of the harness cut into the skin, forming sores. If not taken care of they become so serious as to necessitate laying off work. A good plan is to have clean water and a sponge handy, and to wash and dry the places before putting on the harness again. A wash of equal parts of tincture of myrrh and soft water, used two or three times a day when the sores first start, will assist a great deal.

Another thing that worries the horses is to have them hitched uncomfortably to farm machinery. The traces should always be fastened at equal distances, thus bringing the single-trees and double-trees at a right angle to the way in which the team is going.

It is not permissible to photograph women in China.

The Home Medicine Chest

There are many accidents, ailments, etc., which any housewife herself can successfully treat. She will not only save herself the doctor's fee, but she will also release him for more serious work where his care and services are absolutely necessary.

While visiting a family living six miles from town, one of the children had his arm scalded. The mother called the family physician on the telephone, and as the child was not seriously hurt, he told her how to treat the injury herself. As she had nothing in the house that he suggested using, he was forced to make the trip, charging her a good fee for mileage, for the drugs and bandages, and for his services. He told her then that he would give her a list of articles to be kept in her home medicine chest.

"An emergency medicine closet is as necessary in the home as are the clothes closets," said the physician when she called at his office for the information he had promised her. "Place your cabinet in the bathroom, the kitchen, or any easily accessible room. Have it high, out of reach of the children. Keep it locked, with the key close at hand." These are the staples that common sense advises every home to have on hand:

Charcoal or pepsin tablets for indigestion; quinine, a good liniment, a good cough medicine, sulphur. There should be various kinds of physic; many people can not take salts, others find it difficult to swallow pills; castor-oil is best for children. Ground mustard is good for foot baths and plasters, carbolic acid for antiseptics, oil of cloves for toothache. This should be used only to stop pain until one can get to the dentist. Equal parts of limewater and linseed oil, well mixed, is a good remedy for burns.

Other necessary articles are vaseline, turpentine to be used for cuts, bites of insects or animals; peroxide of hydrogen, flaxseed for poultices, laudanum and sweet oil, equal parts, for earache; iodine, aromatic spirits of ammonia, spirits of camphor, essence of peppermint and bicarbonate of soda, the ordinary cooking kind; a roll of absorbent cotton, one or two packages of gauze, adhesive tape.

An emergency linen drawer is another precaution, and every housewife should provide for one. The chest or drawer should be dust proof, the contents to be used only in times of illness and might contain the following list of articles: Two nightshirts for men, two nightdresses for women and two in children's sizes; half a dozen towels, a soft, warm blanket, half a dozen wash cloths, bedroom slippers, a kimono or bathrobe, strips of cloth torn into several widths and rolled into bandages; several pieces of old flannel and a roll of clean old muslin for poultices and dressings. There are several little conveniences which are not necessary but are very handy to have, such as an ear syringe, eye-cup, atomizer, measuring glass and hot water bag.

Your physician will be pleased to give you a list of remedies and how to use them, the size of doses and any and all pertinent information you may want. Have this list typewritten and paste it on the inside of the door of your cabinet. A list of antidotes for the various poisons should also find a place there.

THE TIME-KEEPING CRICKET

Makes a Certain Number of Chirps in a Minute, Says Naturalist.

Many insects have an instinct for cadence. They sing their high-pitched little songs in unison with a marvelous rhythm. In the case of the field cricket the temperature of the air plays an important part in determining the tempo of its song.

An individual cricket, says a writer in the American Naturalist, chirps with no great regularity when he is by himself, and his chirping is intermittent, especially in the daytime. At night, however, when great numbers of crickets are chirping, the regularity is astonishing; you hear all the crickets in a field chirping synchronously, keeping time as if led by the wand of a conductor. The resting spell of individual crickets you cannot, of course, distinguish; but when they begin again they not only follow the same tempo but also come in exactly the same beat as the other crickets in the field. The crickets in the adjoining field make the same number of chirps in a minute, but always following a different beat—as you may easily perceive by listening.

The frequency of the chirping seems to be entirely determined by the temperature, in fact, it is possible to compute the temperature by counting the number of chirps per minute. At sixty degrees Fahrenheit the rate is eighty a minute. At seventy, the rate is one hundred and twenty—a change of four chirps a minute for each change of one degree. When the temperature falls below fifty degrees the cricket has no energy to waste in music, and chirps only forty times a minute.

In the West Indies the large palm-tree caterpillar is considered a great food luxury.