At many of these shows, lectures are given afternoon and evening. The speakers are the best authorities available on the particular subjects which they discuss. Many of the problems which confront stockmen and farmers are threshed out, the meetings always being thrown open for questions and general discussion when the principal speaker has concluded his remarks. These meetings are a means of spreading scientific and practical agricultural knowledge, and are well worthy of the attention of the fair-goers. In this connection, however, it would be better if all winter fairs would so arrange their lectures that they are not delivered at the time judging is going on in the stock-ring. These are the two great educational features of the show, and they should be so arranged that no "clash" results between them.

All breeders and feeders should avail themselves of these excellent opportunities of exhibiting their stock, and all those who have no stock ready for the shows should make it a point to attend these fairs.

Use Only Prepotent Sires.

Prepotency, that preponderance of influence or efficiency which one parent may have over the other in transmitting characteristics to the offspring, is very important to stockmen in the selection of a sire to head their studs, herds or flocks. It is the absence of this characteristic, so vital to the improvement of type in the animals, that eliminates, or, rather, should eliminate the use of the grade animal as the header of a herd, stud or flock. A grade sire might prove to be very prepotent, but such is not likely to be the case, especially if he be mated with a female of better breeding than his own. This procedure, in place of improving the stock, would tend to lower the standard. The only animal that can be relied upon to prove his superiority of breeding ability over that of the females with which he is paired, is one with a long line of pedigreed ancestors of noted breeding, type and conformation, and all of the same strain of blood, but not necessarily closely related. Such an animal is known as "line-bred." Indeed, if line-breeding were followed too closely, it could be accurately termed in-and-in-breeding, but, as generally understood, it is, as Warfield defines it, an offshoot from the main stem of in-and-in-breeding, and the process of breeding within a few closely-related stocks or families, no animals being interbred which are not closely connected in the general lines of their blood. It is thus seen that all animals interbred are of the same "line" of descent, and can very properly be termed "line-bred" stock. "Line-breeding" differs from in-and-in breeding, then, in a degree, rather than in system. It incorporates relationships more distant than would properly come within the scope of intensive in-and-in-breeding, and in this it is not so likely to prove disastrous to the fecundity, constitution and general utility of the breeding stock as the practice of mating animals of very close blood relation. The foremost aim of breeders who follow "line-breeding" is the establishing of an entire herd, flock or stud of animals which conform to one desired and approved type. It can easily be seen that animals so bred upon the same blood lines generation after generation will tend, as years go on, to become more and more reduced to one common type. In this there is a danger of fixing faulty, as well as desirable conformation, and only the clever, watchful breeder is likely to make a success of the practice. The breeder must have a high ideal, and cling closely to it, discarding all faulty animals. In this manner a type can be fixed, and animals noted for prepotency obtained. A sire from such breeding is far more likely to imprint his good qualities upon his offspring and produce valuable stock than is a scrub grade of no particular breed, whose blood is so mixed that there is really no definite type to transmit. "Line-breeding" should not be too closely followed, but our best strains of pure-bred stock are more or less "line-bred," because, in the making of the breeds, "line-breeding" and even the most intense in-and-in-breeding was resorted to, so that the individual representatives of the present day pure breeds of stock are in a sense "line-bred," some a great deal more closely than others. It is, therefore, reasonable to expect that a pedigreed sire with a long line of pedigreed ancestors will be more prepotent than will an animal which has resulted from various violent crosses, and is in the end nothing but a scrub grade. It matters not what class of stock is being bred, there is no place for the grade sire. Secure the best individual possible, and be sure he is backed up by a pedigree showing a number of good sires and an abundance of "blue blood." His influence is exerted upon the offspring of every female with which he is mated, and his prepotency means much to the future breeding value of the stock.

THE FARM.

The Importance of Humus.

One of the serious problems which confronts the agriculturist is how to keep the land producing heavy crops, without exhausting its fertility. Every crop that grows takes a certain amount of plant food from the soil. We have every reason to believe that many of our soils contain an abundance of some of the fertilizing constituents, but that they contain them in a form which is not available to the plant. Hence we cultivate to render more of this material in a state in which it is readily absorbed by the plant. It has been proven that the loss of soil humus is one of the main reasons why cropped soil becomes less productive. The advantages of the presence of an abundance of humus in the soil are clearly set forth by O. M. Olson in Extension Bulletin No. 20, published by the University of Minnesota Department of Agriculture. In discussing the relation of humus to tillage, he points out that it plays an important part in the tillage and productivity of any soil. The loss of this humus by a continuous cropping system, or through any unwise cropping practice, is bound to make tillage more difficult and less effective.

The presence of humus in a soil tends to make it open and porous, and capable of a better physical condition. Soils that have a tendency to become too compact, and to puddle, are helped by the addition of vegetable matter to the furrow slice. Humus is also helpful in preventing heavy soils from baking, and in binding soils that are inclined to wash and blow. It is of material assistance in helping to control the moisture supply in the soil, for it will help a light or sandy soil to hold moisture, and it will assist the soil moisture in a heavy soil to move more freely. Its greatest importance, however, is due to the assistance it gives to the active liberation of plant food while the plants are growing. All crops need to be fed while growing, and vegetable matter offers the best means of supplying this need. Not only does its decay liberate plant food in itself, but it promotes the development of beneficial micro-organisms and their products in the soil. The humic acid produced in the decay is also an active agent in breaking down the inert plant food of the soil particles. Aside from moisture, no other material has such a direct bearing upon the producing power of a soil, and the aim should be to return all vegetable refuse to the soil, and by means of good tillage to thoroughly incorporate it with the soil.

Prince Abbekerk Mercena.

Holstein bull, whose five nearest female relations have records that average 21 pounds 11 ounces. At the head of the herd of A. E. Hulet, Norwich, Ont.

Vary the Depth of Plowing.

Plowing land continuously at the same depth has a tendency to form a hard, compact layer in the subsoil at that depth. The formation of such an undesirable layer can usually be avoided to some extent, at least, by varying the depth slightly from year to year or at each plowing. New land, when first brought under cultivation, should not be plowed too deeply. While it may be desirable, ultimately, to have a furrow six or seven inches in depth, it should be brought about gradually by plowing half an inch or so deeper every year. The roots of many plants go deep into the subsoil, and in any case it is better that there be no distinct hard, dividing layer between the surface soil and the subsoil, such as is formed if the depth of plowing is not varied. This hard layer prevents good drainage, and also excludes the air. Free air circulation in the soil is very important to plant growth. Plowing at different depths also makes it possible to obtain the plant food with greater ease. This practice insures the rooting of plants at different depths, and as the greater portion of plant food is obtained at that level which contains the largest portion of the root system of the plant, it is readily seen that plants should get their food material with greater ease, and should better utilize this material in the soil when sown on land which from year to year is loosened to a different depth. This practice makes it possible to make use of more of the plant-food material locked up in the soil, and is worthy of being adopted on all farms.

Results from Fertilizing Potatoes.

Editor "The Farmer's Advocate":

The potato crop being almost a failure this year, I believe you would be glad to be able to give your readers the results of my endeavors to overcome the unfavorable conditions of the season, also the different results from certain fertilizers for this crop.

My land is a clay loam, under buckwheat last year. As soon as the buckwheat had started, I spread a light dressing of barnyard manure (horse, cow and hog), as if I wanted a crop of buckwheat, and plowed the whole down when about 2 inches high. I divided the field into three parts: Plot No. 1, no other fertilizer; Plot No. 2, at the rate of 200 pounds sulphate of potash, 400 pounds acid phosphate and 120 pounds nitrate of soda per acre; No. 3, at the rate of 400 pounds acid phosphate and 120 pounds nitrate of soda per acre. The whole field was well harrowed, and planted to Sensation potatoes.

The first two weeks the weather was splendid, but our first rain was not until 18th July, followed by many days at 96 to 104 degrees in the shade, and from 108 to 130 degress in the sun. To prevent too great evaporation, I kept the cultivator and the hoe going nearly all the time. We got a few light rains in August—our hopes revived, things looked well—but in the night of 31st August, potatoes, tomatoes, beans, corn, etc., were killed to the ground. The potatoes were certainly not more than half-grown. However, I feel that my persistence and courage were rewarded, as the following results seem to show: The seed was planted 30th and 31st May, killed 31st August—three months, instead of four months, or more.

Plot No. 1—Light dressing of manure only; at the rate of 194 bushels.

Plot No. 2—Manure, and, in addition, 200 lbs. sulphate of potash, 400 lbs. acid phosphate, 120 lbs. nitrate of soda; 242 bushels.

Plot No. 3—Manure, and 400 lbs. acid phosphate, and 120 lbs. nitrate of soda; 204 bushels.

The latter plot gave 12 bushels more than plot No. 1, and plot No. 2 gave 48 bushels more than No. 1. This means, in the one case, an increase of value, at 75 cents per bushel (they are going up fast, and will be at least $1.00 in the spring) of $9.00; and in plot No. 2, 48 bushels, at 75 cents, gives an increase of $36.00.

Now, Mr. Editor, all up-to-date farmers will admit that the constant surface cultivation did a great deal of good, but will they give any credit to the green buckwheat plowed in? I do.

Lotbiniere Co., P. Q. WM. H. TAYLOR.

The time has now arrived when the cold weather may set in at any time. It is generally conceded that soil plowed in the autumn gives a better crop the following year than land which is left until spring to be plowed. There are several reasons for this: Plowing to a considerable depth in the fall increases the water-holding capacity of the soil. Another good effect upon the soil resulting from fall-plowing is the greater surface exposed to the action of the frost, which is so helpful to a clay soil, flocculating the particles and overcoming its extreme tenacity. Rush the plowing during the short time left.