It does not require a very vigorous dandelion *(Tararaxacum dens-leonis)* to throw up 10 or 20 blooms in a season, yet each head may contain 120 seeds or more, or from 1,000 to 2,000 to the plant.

A fair sample of Curled Dock *(Rumex crispus)*, had 9 stems; one stem selected as an average one, had 21 flower spikes, one average spike counted 369 blooms. A single stem had, therefore, about 7750 blooms, and the nine stems about 69,000 blooms. A larger plant in the garden had 10 stems, the largest stem had 41 seed spikes, the smallest 20 seed spikes, the largest spike had 630 whorls, the smallest 219 whorls. The computed number of seeds is therefore at least 93,390.

On July 1st a vigorous plant of Corn Cockle *(Lychnis githago)*, had 60 pods and blossoms; 2 seed pots had 49 and 62 seeds respectively; the total number of seed may therefore be computed at 3,300.

On June 25th an average flower of the Ox-eye Daisy *(Leucanthemum vulgare)* contained 802 and another flower 859 achenes to the flower. One plant had 72 and another plant had 120 blooms While often there is but one stem to a seed, yet frequently there are more, up even to 23. One stem may have 13 blooms. The number of seeds to a plant may therefore be computed at from 8,000 to 96,000.

On July 6th a fair stool of Chess or Cheat *(Bromus secalinus)* had 211 heads, and an average head had eighteen seeds; the estimated number of seeds 3,798.

A fair sample of corn Chamomile *(Anthemis arvensis)* had 151 seeds to a flower, and 48 flowers to a stalk. This plant has from 1 to 10 stalks. The seeds can, therefore, be computed at from 7,000 to 70,000 to a plant.

On July 12th a vigorous plantain *(Plantago major)* had 8 flower spikes, and one of these, not the largest, had 561 blooms.

On August 29th an average-sized plant of pigweed *(Chenopodium album)* had 28 branches. One branch bore 21 branchlets. One average branchlet bore 13 flower spikes. One average spike contained 108 seeds. The computation for the plant is, therefore, 825,552.

The seeding prolificacy of weeds is not so very surprising when we consider that in order to maintain themselves against the effort of man to destroy and to remain as weeds rather than as accidental plants, this fecundity is of the greatest consequence to the species; and that the plants we call weeds have become the select ones, those whose power of multiplication and resistance have either been originally very great, or else great by modification. Could select varieties of cultivated plants be maintained against such adverse influences as have been overcome by weeds, such a variety would become of incalculable value to the cultivator. Unfortunately, however, quality seems not correlative with resisting power of the species.

Draining.

SOILS, AND THE RELATION OF DRAINAGE TO THEM.

But very little attention has been given to land drainage in this country, until recently. A casual glance at our farms in the spring of the year, when many of them are partially submerged, and the farmer, with idle men and teams, is impatiently waiting for the slow natural drainage of flat land, and the evaporation of the rainfall by heat from the sun, before he can begin operations, will convince any observing man that the rapid removal of this surplus water would be an immense benefit to the agricultural community.

The practical feasibility of this work is at present the problem with many. The farmer asks himself and others, "can I drain my field or my farm thoroughly, and will the probable returns justify the outlay?" Valid and useful conclusions cannot be arrived at until we have availed ourselves of the experience of others, and have obtained correct ideas of the principles of drainage—what thorough drainage is, and what it will accomplish.

It may be well to mention a few of the benefits accruing from drainage which are of actual money value to the farmer. These benefits are not hidden away in the soil, but may be seen by any one who will compare a well-drained field with one which is wet and undrained.

First, there is no failure of crops on account of excessive rains. Almost every farmer may put down among his losses the partial or total failure of several acres of land to produce a crop, because, during some part of the season, the land was too wet.

Second, the soil is in condition to receive the crop at the proper season of the year, and it begins a healthy growth at once. This will add many dollars to the value of the field each year, and cost no more labor.

Third, the labor which produces a poor crop on undrained land, will produce an excellent one on the same land when properly drained. In this way crops are often doubled on what is called average farm land.

Fourth, by reason of the absence of surplus water in the soil, grain and grass are not "heaved" and frozen out in winter time.

Fifth, whatever fertilizing material is put on the land is made more available for plant food, for the reason that the soil is more porous and not surface washed, and fertilizers are at once incorporated in the soil. Undecayed matter put upon the soil decays more rapidly and becomes sooner prepared for the use of plants. Fertilizing gases held in the air are carried by the rain into the soil, making it more rich, instead of being washed away or taken with vapor into the air again.

Other advantages will be mentioned as we proceed farther, but these just named will perhaps be sufficient to show the importance of the subject. Each season as it comes turns another leaf of the book of Farm Economy, telling the same story in different ways, and emphasizing it at times in such a manner as to compel the farmer to heed its teachings.

KINDS OF LAND REQUIRING DRAINAGE,

Flat land under cultivation is usually the first land which directs the farmers attention to draining. A season which is drier than usual shows to him that such soil, when not too wet, will produce a crop equal to his best fields. On this land the natural drainage is not rapid enough in the springtime to fit it for the growth of plants. It is generally cultivated when too wet, which causes the soil to become compact, and in time of drought it shrinks and cracks, resulting in the ruin of the crop and more than loss of the labor; for the soil is in a worse condition than it was in the sprnig before the plow was started.

Channels or runs through cultivated land often are common where the land is rolling. Water flows down the slopes and oozes from the banks until these runs are so wet that they rarely produce a crop, and are a great inconvenience in cultivating.

SOURCES OF WATER.

Primarily the source of all water of use or injury to the agriculturist is the rain-fall. Considered, however, with reference to drainage, we speak of *surface-water*, which rests upon the surface of the soil, a part passing down to the sub-soil, a part flowing over and passing off, and the remainder raised by evaporation or used by plants; *ooze water*, which passes through the soil below its surface and finally rests in some channel or flat land, saturating it until it is unfit for cultivation; *spring water*, which has its source in some one locality of the field, or proceeds from some distant source through its own channels in the sub-soil. These must be provided for by drainage, according to the nature of the case.

[To be continued.]

Extraordinary Yields of Potatoes.

In reading the crop reports of Ontario, of 1882, we are surprised when we see the very great difference in the produce of the different sections, even of sections immediately adjoining. Even when we make all reasonable allowance for the difference that may exist in the soil, the superiority of the crops in some places must be owing to something more. Cultivation and the quality of seed may have been among the causes. In no other variety of crops is this difference so great as in the potatoes. The average yield of potatoes in one section is reported as low as eighty bushels per acre, and in the same report the yield is returned as over three times this yield. Compared with the highest of these reports of the yield of potatoes, for which prizes have been awarded, many instances may be well said to be extraordinary. As one instance, the Massachusetts Agricultural Society awarded prizes for several consecutive years to the person who would raise the greatest quantity of potatoes on an acre. The successful competitors, in every instance, raised over four hundred bushels to the acre, and in one instance the yield was over six hundred bushels. It is not at all impossible for any farmer to grow two hundred bushels an acre as an average. Poor crops, such as eighty or one hundred bushels of potatoes, are raised by the farmer at a great loss. This should not be. Better to leave the ground untilled than grow crops at a loss. Good cultivation, good seed, and a dry and fertile soil will, in an ordinary season, produce very profitable potato crops. In Great Britain a yield of 500 to 600 bushels is frequently grown, and why not a crop at least approaching to that in Canada. Though extraordinary crops of potatoes are grown in the United States under the stimulant of prizes, the general produce throughout the country is very light. The United States Agricultural Department for this year gives the average yield of potatoes to the acre, throughout the States, as eighty-one bushels.

Veterinary.

SIR,—I have lost several calves lately. When first attacked their eyes are heavy, and of a yellowish cast. They would not eat or drink, respiration heavy and quick; they would not stand up, and death occurred in a few hours. Upon making a *post mortem* examination, I found the covering of the heart and lungs and flesh on the fore-shoulders inflamed. There was pus; the flesh felt spongy.

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[The symptoms mentioned, also the *post mortem* appearances, would indicate an acute attack of pleurisy, the causes of which are sudden alterations of temperature, probably a cold rain on the animals, or a cold night after a hot day, violent exercise, such as being chased by dogs, &c., or being put into a damp underground cellar stable, after a hot day in the sun, or anything that in the human race would be called "taking a heavy cold." The treatment should consist of enveloping the breast and sides of the thorax, that is all over the ribs, in blankets wrung out in hot water, as hot as can be comfortably borne, covered with a dry rug. It will keep hot pretty nearly an hour. Keep it up 6, 8, or 12 hours, then rub in a good mustard blister from the throat to the breast, and over the sides put on a dry blanket, to prevent taking a chill. Give a saline laxative, say from 3 to 6 ounces of Epsom salts and a little ginger in a pint of water, according to the age of the calf, and after 24 hours, if the animal survives, small doses nitrate of potass, say 2 drachms a day, in water. The symptoms, also the *post mortem* appearances, may be so easily mistaken by one unaccustomed to the study of disease, that it would be advisable to call in a properly qualified veterinary surgeon, if there be a reliable one in the locality. You mention finding pus, but do not say where. I can hardly imagine a formation of pus in so short a time. Was it coajulated serum in the thorax?]

SIR,—What can be done for a cow with caked udder, and what is the cause of such trouble?

J. S., Aurora, Ont.

[Causes: Blows on gland; lying on cold or sharp stones; leaving the milk unduly long in the bag; standing in a current of cold air; exposure in cold showers or inclement weather; rich milk-making food too suddenly applied, or indeed any general derangement of the general health is liable to produce this disease in an animal in full milk. Treatment: Give the cow, according to size, about ¾ pound salts and a little ginger and baking powder. Foment the bag several times daily with hot bran and water or hot hops and water, then rub the bag well with goose grease or other oil.]

It may not be generally known that the Duke of Athole is one of the most extensive tree-planters in the world. There are already vast woods and plantations, says our contemporary *Land*, in Athole and Dunkeld, and as, of course, they exist for use as well as ornament, large numbers of trees have to be planted annually to maintain the woods. Indeed, every year the Duke plants from 600,000 to a million trees. During this season a plantation covering 2,000 acres has been completed. It may be remembered that the Duke of Athole's plantations were thinned of 80,000 trees by the gale which destroyed the Tay bridge. When the planter Duke began operations on a large scale in 1774, the Dunkeld hills were almost bare. During his life the Duke, who may be described as a true benefactor to his country, planted 27,000,000 trees, covering 15,000 acres.