Concerning Soil Moisture.

The retention of moisture in the soil is dependent on climatic changes; yet it is a matter subject to natural laws, upon which intelligent action can be brought to bear to the advantage of the tiller of the soil.

Every farmer is aware of the use of cultivation in conserving soil moisture. The reasons why cultivation does so, however, are too often forgotten. Land that has been plowed in the fall is, after the effects of winter frost and fall and spring weathering, in a state highly susceptible to the effects of capillary attraction, and if left too long without being handled by some cultivating implement, all the moisture available for plant food would evaporate, and the farmer would be at the mercy of the spring rainfall. the amount of his crop being almost wholly dependent upon what amount of early rain such a field would get. Capillary attraction is the natural law under which fluids rise in a tube to a higher level than the fluid into which the lower end of such a tube is placed. To demonstrate the law of capillary attraction, tubes of different diameter may be placed vertically with a small part of their length submerged in water, when it will be found that the water will rise in each tube considerably above the level of the surface of water in which it is placed. It will also be found that the water rises higher in the tubes of smaller diameter, and that the height to which it rises is in uniform proportion to the diameter of the tubes. The soil and also the subsoil is a series of tubes upon which capillary attraction is always acting, and the smaller the particles of soil the smaller will be the tubes into which it will form. It is also the case that in soil so pulverized that these capillary cells are very small and close together moisture is more uniformly brought from the subsoil to the surface. Evaporation is the great dissipator of moisture, and its action can be best counteracted by the presence in the soil of a large proportion of humus. Humus is the product of decaying vegetation chemically acted upon by the organisms in the soil, and by weathering. It is the soil constituent most amenable to cultivation, and the one containing most soil moisture available for crop production.

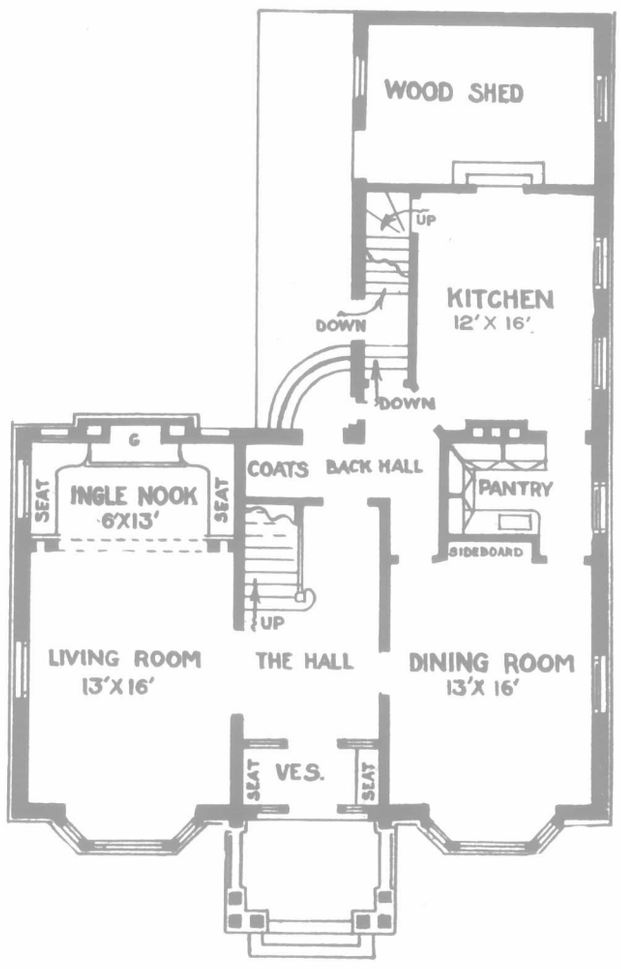
No hard-and-fast rule for moisture-conserving can be laid down to cover any extended area. Local conditions have a great deal to do in the matter. Clay and peat soils are naturally better adapted to the conserving of moisture than loam or sandy soils. Soil in which sand largely predominates is so susceptible to the effects of capillary attraction and evaporation that it would seem an impracticable matter to materially diminish the condition. Loam, however, is more retentive of moisture and the higher the percentage of humus it contains the greater in proportion will its retentive powers be. Humus is the greatest known moisture-conserving agent, and where it constitutes a high percentage in the soil, moisture is conserved without much aid from the cultivator. The reason of this is that humus, because of its peculiar sponge-like character, is enabled to hold moisture in larger quantities than any of the ordinary clays, sands or loams, and when this retentive power is assisted by the formation of a mulch or dust blanket which interrupts the rise of moisture to the surface the water content of the soil is at a maximum.

Where humus is scarce, cultivation has a proportionately less influence, and in light sandy soil it is almost impossible to make a mulch on the surface; hence, it is that rarely do we find a heavy crop on soil which is constituted chiefly of sand. Although such soils may contain all necessary plant food in sufficient quantity, it is only in seasons when the rainfall is sufficient to keep the soil supplied with moisture that the crop receives the full benefit of the plant food, for all plants feed through very minute root hairs, and plant food to be available for these tiny feeders must be in a state of solution.

Clay soils will absorb a great deal more moisture than sand or loam, and such soils have also a far more retentive power in regard to moisture. All soils, however, can be improved by the addition of humus for several reasons. Farmyard manure is the most general way of enriching the soil by the addition of humus. Plowing down heavy stubble is also a plan to the same end. It may be, however, a plan which will defeat its object unless the stubble be turned down and completely covered over, and packed so as to leave no subterranean apertures to foster weeds in wet weather, and add to the evils of evaporation in dry weather.

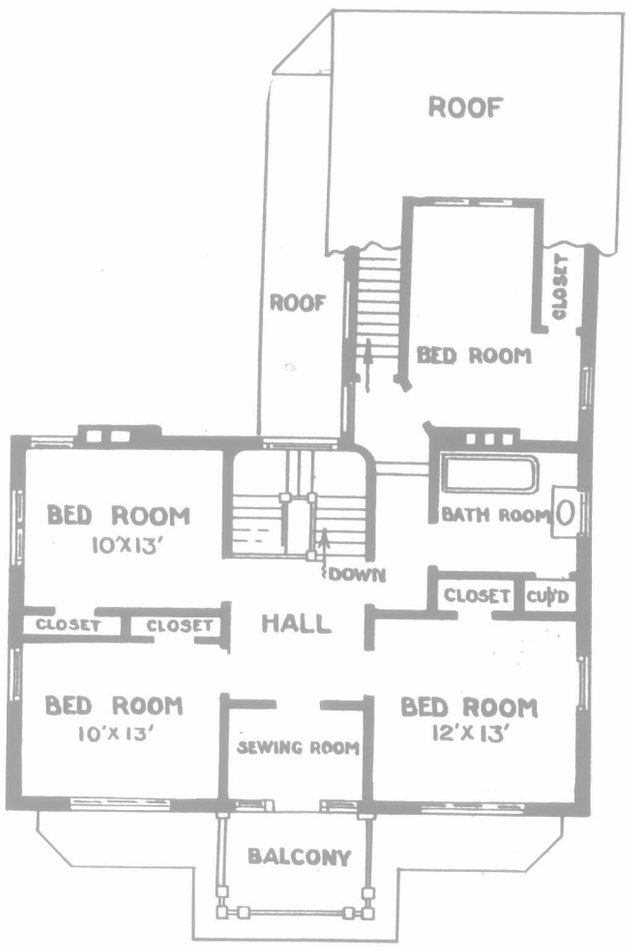
Packing the soil is a good way of preserving moisture, but on the other hand it leaves a smooth and even surface on which both capillary attraction and evaporation act with greater intensity. Some farmers counteract that effect by cultivating with a light harrow after rolling. An arrangement attached to seeders, known as a press-wheel, is one that gives very good results in dry soils. Different soils require different treatment, and the treatment must also vary with the climate, so that the matter is one for the study of every farmer, each approaching the case from the conditions prevailing in his own particular location.

Prize House Plans.



GROUND FLOOR PLAN

The accompanying plans of a farmhouse were designed by W. B. Van Egmond, Toronto, and won first prize in the Massey-Harris competition, Toronto Exhibition, 1903.



FIRST FLOOR PLAN

Rattle of the Harvester.

Those who are curious enough to verify the statement of fact in this article can easily do so if they have access to a good compendium of the world's products, or a cyclopedia. By doing so they will learn that this old world of ours is engaged in one continuous wheat harvest. If one could sit in some central station, with telephone connections with every section of the world, there would be a strenuous and continuous rattle of the harvester from January 1st to December 31st, during every hour of the twenty-four of each day. This is not only novel, but, from many standpoints, important. For instance, with the present facilities for communicating with every harvest belt in the world, it would require but a few weeks at the farthest to load wheat right from the thresher any month of the year and get it to any possible famine center that might develop in any part of the world. So it is clearly apparent that with the proper impulse of charity there need never be a famine in any part of the world, of any great duration, at least. Incidentally, also, wheat-growers may learn from these facts the magnitude of the wheat belt.—Iowa Homestead.

Temperature of the Soil.

The variation in temperature in soils of different texture is very noticeable in most soils. It often happens in our prairie soil that for the first three inches during the first two weeks of seeding the soil is below that temperature at which plants can grow, and anything which can be done by the farmer during that period to increase the warmth of the soil has a distinct advantage in hastening plant growth during the early spring. The consensus of opinion of practical men in this country is that the early crops are the safest and bring the best results. The warmth of the soil bears a close relationship to seed germination and plant growth. The experiments which have been carefully conducted at experimental stations in the United States go to show that while wheat, rye and oats germinated most quickly at a temperature of 77 degrees to 87 degrees F., corn required about 98 degrees—of such is the difference in the amount of heat required by different plants. For most plants 41 degrees is the lowest temperature at which the development of tissue will proceed, and 80 degrees the most favorable. It will hence be seen that the earlier in spring that the soil can be stirred and the temperature raised the sooner will plant growth begin, and the earlier will harvest-time appear.

Free Rural Mail Delivery Wanted.

To the Editor "Farmer's Advocate":

Sir,—I have been thinking for some time of writing you a short letter on "Rural free mail delivery." The "Advocate" has done good service in this, as well as in other matters pertaining to the farm, but it is, probably, time to stir the matter up again.

I was sorry to see some time ago a report in a newspaper that the Postmaster-General did not think the country ready for rural free delivery. Now, I would not presume to set my judgment up against that of so able an administrator as Sir William Mulock, but if he meant that the farmers did not want it he was mistaken; if he meant that the Government was not prepared to meet the expense, he may have been right. Some time ago the Postmaster-General got the postage reduced from three cents to two on letters of a certain weight, and we were told that the Post-office Department paid better than it did before this reduction; then later he got the postage on letters between Canada and Great Britain reduced from five to two cents, and the Department paid better than ever.

It looks as though the rule of "Small profits and quick returns" worked well in this case, and if the Post-office Department wished to make money, all they would need to do would be to reduce the postage still further. Now, I do not think the farmers of this country want the postage reduced; what they do want is a more efficient service.

I am glad to know that farmers are looking after their rights more now than they have done in the past. I think it is hardly fair that the citizens of London, for example, with six post-offices within the city limits, yet have their mail delivered twice daily, and people within two miles of the city limits have their mail delivered three times a week at a country post-office, and then have to travel two or three miles to get it. It is time for a change in this matter. Possibly we, as farmers, have been a little to blame ourselves in not having this remedied sooner. Governments have enough to do attending to those who are making urgent demands upon them without running round hunting trouble.

I would suggest that at every Farmers' Institute meeting this matter be brought up and resolutions passed (and forwarded to the Postmaster-General) in its favor, as was done at Dorchester on January 13th, at a meeting of the East Middlesex Institute.

In all probability we will have a Dominion election during the present year, and I would advise farmers all over the country to attend their party conventions and talk this matter up; impress the fact upon the candidates that if they don't push this thing we will get others who will, and as soon as the Government finds that farmers are aroused on this question I think they will find a way to overcome the financial difficulty.

There is no doubt in my mind but that the large increase in the amount of mail handled would very soon meet the added expense. Newspapers all over the Dominion should press this matter on the attention of their readers, as it would benefit the newspaper almost as much as