

alone for any injury the harrow may do the young plants. With roots and other hoe-crops conservation of moisture may be continued throughout the whole season. Theoretically, they should be scuffed or cultivated after every heavy rain. This frequent working may not be always possible, but it should be followed as closely as practicable.

In humid sections, where the autumn rain is usually sufficient to saturate the soil, after-harvest conservation of moisture is not essential, and the customary ganging serves to sprout the weed seeds and also, together with the fall plowing, to put the soil in condition to retain enough water for the ensuing crop. But in sub-humid or semi-arid regions the tillage right after harvest is essential for the purpose of conserving moisture, as well as for the reasons already given.

Before leaving the question of soil moisture, I should like to refer briefly to the work in drainage that is being done by the department of Physics. Throughout the Province there are thousands of acres non-productive, or under-productive, at least, which, if drained, would be the very best of land. People are realizing this more and more, and drainage operations are being more generally undertaken than heretofore. But in many cases men are hesitating because they are not sure as to the best methods of going about it, whether they have fall enough, the best course for the drains, etc. The department of Physics is endeavoring to help these men. Anyone having such difficulties may have the assistance of a man from our department to take the levels of his land, determine the falls, locate the drains, give him a working plan of his farm or field, and advise him generally as to the best methods of operation. The condition upon which this service is rendered is that those wishing work done pay the railway fare, etc., of the person sent by us. When the applicant lives a considerable distance from Guelph, he sometimes clubs together with one or two of his neighbors who have work to be done, each paying a share of the expenses.

We have done a great deal of this work during the past season, and the men for whom we have done it express themselves very strongly on the benefits derived. I mention it here because of its connection with the subject in hand, and also in the hope of making the scheme more widely known. For the initiation of the plan, I wish to give due credit to Professor Reynolds, my predecessor in the department.

Another important soil factor is proper temperature. There is a certain temperature at which each kind of seed germinates best. Of the more common cereals, wheat has the lowest germinating temperature at about 70°, barley, oats and peas probably in the order named, at about 80°. This may throw some light upon a result obtained by the Experimental department. By several years' tests they have shown that the order in which these grains should be sowed is, first wheat, second barley, third oats, and lastly peas. And in testing six different dates of seeding at intervals of one week, they have shown that for wheat and barley the first sowing is the best, but for oats and peas the second. Temperature is undoubtedly one of the factors producing this result. This question and that of soil moisture are very intimately related. A wet soil is a cold soil, but a dry one is a warm one. The seed bed of a