

after the heaviest thunderstorm, there was no water visible on the land, and the river began to swell by the middle of the second day.

SOILS THAT NEED DRAINAGE.

All soils that are not readily freed from excessive moisture, where the spaces between the particles of soil are full of water for any considerable length of time after rainfall, or full of spring water, need drainage. All clay soils with no underlying strata of sand or gravel sufficiently near the surface to

upon the soil being open and porous, and clay soils can be made so only by sufficient drainage, for the reason that heat cannot pass down through water. If the soil is full of water the sun cannot warm it. If the soil be drained, the heat absorbed increases the temperature from 8° to 15° . Corn will germinate at 55° , while at 45° it will rot in the ground. It is not surprising, then, that corn fails to vegetate in cold, wet springs. The increased temperature not only promotes the germination, but the growth of crops. The planting or sowing may be done ten or fifteen days earlier.



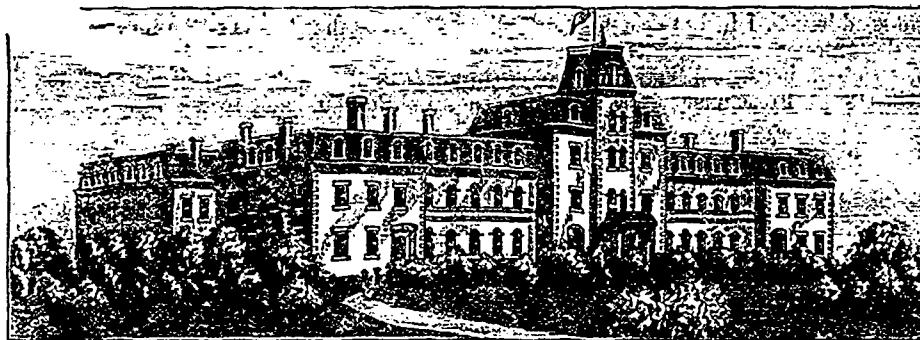
PART OF FARM, FROM SOUTH WEST.

receive down through the soil and carry away the excess of water, need drainage, whether the surface be level or rolling. Low, level lands need drainage to rid them of surplus water, and rolling lands need it to protect them against surface wash and that they may be enriched by the fertilizing elements brought to the earth by the rainfalls.

The fact is, that where the water does not readily pass down through the soil, it is proof positive that beneath at some depth is a tight bottom holding the water. We frequently have heavy rainfalls. If the soil remains saturated with water for any considerable length of time, the growing crops under water perish or the leaves become yellow, even if the plants live. By sufficient under-drainage the water passes

A drained soil becomes a great laboratory, in which is prepared the necessary supply of food for the growing crop down as deep as the tile is laid. The water passing down through the spaces between the particles of soil and through the pores of the drain below is followed by the air freighted with fertilizing elements, which are absorbed by the soil, forming other combinations with the elements of the soil, and in this way preparing an inexhaustible supply of plant-food in nature's great storehouse.

The roots of the plants find their way down through the same spaces, crevices, and pores through which the water finds its way, and take up the needed supply of food, selecting such as is suited to their growth and well being.



THE COLLEGE.

quickly down through the soil to the drains below, the soil retaining only the necessary amount of water, no more and no less. Thus one important reason why we should drain is that we may retain in the soil only the necessary moisture for plant growth.

The heat necessary to plant life is an important factor in the growth of our crops. We often speak of cold and warm soils. The soil which is saturated with water, and from the surface of which the water is being removed by evaporation, is spoken of as "a cold soil," because evaporation is a cooling process. On the other hand, if the soil be open and porous, the water passing readily down, leaving the soil free to absorb the heat of the sun, we designate it as "a warm soil."

The storing of heat necessary to plant growth depends

Winter vetches.—*Quis*, who writes from Holliston, Mass., asks the Country Gentleman for information as to the winter vetch (*vicia sativa*). Among the replies *Quis* receives is the following one: The crop is most valuable when used at the beginning of winter, and for such use should be put in from August 20th to September 1st, in the latitude of Albany.

Well! It may be so in the latitude of Albany, but in the latitude of London, on the richest soil and with the most perfect preparation, there would not be kept for a lark an acre before the subsequent May. *Winter vetches* or *tares*, so called not from their affording food for stock in winter—which they do not do—but from their standing the winter in England and producing forward green-meats in spring, are useless in this climate.