course? If not what is the use of spending two or three years time in the study of scientific farming?" Now, the making of money is not the only aim in farming, but it may be safely said that it is the most important one, and unless a farmer sees that his son is going to be benefitted in this particular, he hesitates to send him. But the assertion can be freely ventured, that at the present time a student who has a knowledge of the most scientific methods of cultivating his land has two chances to one to make more money than one who has no such knowledge, and the former will take more pleasure in his work owing to the fact that he is not working in the dark.

With these facts in view, to whom are we to look for the upholding of the name of the Agricultural College and increasing of the number of students in attendance? It is mainly to her ex-students. Lecturing on the subject at Farmers' Institutes, issuing of small bulletins to farmers, who visit here from time to time, giving them an idea of the work done here, and advertising in various other ways all have their influence. But unless our ex-students can show by their practical work that they have been greatly benefitted by their course here, we cannot expect the attendance to increase very rapidly. Great responsibility, therefore, rests upon every ex-student. He owes a great deal to his Alma Mater. Let him, therefore, not dishonor her. It is to ex-students mainly that we owe our present attendance, and it is to them that the institution looks forward for an increased attendance in the future. Take a pride in proclaiming to others that you are a graduate of the O. A. C., and show by your work that you are superior to those who have not been so fortunate. In this way the future farmer will be compelled to have a scientific knowledge of farming operations in order to keep up in the race. This institution, therefore, hangs out the following signal to her ex-students, "The O. A. C. expects each and every one of her graduates to do his duty."

A Few Notes on the Conduction of Water in the Soil.

With Apologies to Dr. E. Wollny.

If we imagine the soil to be made up of very small particles the interstices may be regarded in their continuity as tubes which, if sufficiently small, possess the power of capillarity. These tubes play a most important part in the movements of water in the soil. In sands where the particles and spaces are comparatively large, the power to raise a column of water is diminished, and hence water is raised but a short distance. In clays, on the contrary, in consequence of the fineness of interstitial spaces capillarity acts to greatest advantage, and a column of water may be raised four or five times as high as in sand. But though the distance through which water may be elevated increases as the capillary tubes become finer, the rapidity with which it travels diminishes for the same reason. Water is impeded also by the presence of colloid materials more or less present in clay soils, hence though water may be raised to a considerably greater height in clay than in sand, the movement is relatively slower.

Similar behavior is observed in the conduction of water supplied from the atmosphere. In percolating downward the water meets with resistance partly due to capillarity and partly to the friction and surface adhesion of soil particles, all of which increases with the fineness of the particles and the quantity of colloid substances present. The presence of large spaces in tilled soil accelerates the downward movement of water while it impedes the upward movement of capillarity. The presence of stones and other concretions impedes both capillarity and percolation. If a crumbly soil be rolled capillarity is promoted, but the downward movement of surface water is retarded. "Hence the depth and velocity of percolation are inversely proportional to the size of the grains, and the richness of the soil in colloid substances."

In soils made up of layers differing in physical character, capillarity is checked to greatest extent in layers farthest removed from each other in physical resemblance. For example, a layer of fine clay overlying a bed of coarse sand is a greater barrier to the movements of water than if these soils more nearly resembled each other in size of grain structure. Moreover water rises or sinks from a coarse or fine layer much more readily than the reverse.

Capillarity is also regulated by the amount of water in a soil, ceasing altogether when the water content sinks below thirty or fifty per cent., according to the fineness of soil particles, of the water required for supersaturation. When the water content falls below the above limit, movement is carried on by a much slower process, from the surface of one particle to that of another, due to surface attraction. Even before the water content of a soil falls below the limit, when capillarity ceases the surface tension retards both capillarity and percolation, diminishing, of course, as the soil approaches the saturation point.

Other things being equal the amount of water stored up in soil, after all movement ceases, is greater the finer the soil particles and the greater the amount of colloid substances present. On examining a column of such a soil the quantity of water present is found to be greater as the depth increases, and above a certain height the quantity of water present remains constant. The reason is that above this limit water is held by surface attraction of the particles of soil and the capillarity of the very fine interstices, while the water flows out of the coarser spaces. Below this limit the quantity of water increases with the depth until the point of saturation is reached. For this reason a distinction is made between the minimum water capacity, representing the quantity of water held by the adhesion and capillarity of finer interstices, and maximum water capacity, representing the amount of water present when all the intergranular spaces are filled.

While in most soils the maximum water capacity remains almost constant, except in extremely coarse samples, the minimum water capacity varies greatly, and it is on this account that the minimum water capacity is of greater interest in forming a judgment of a soil. The breaking up of large particles with the roller and the removal of stones and other concretions increases the minimum water capacity; but a rise in temperature, which decreases the viscosity of water, and the mechanical changes caused by freezing and thawing lowers this capacity of soils for holding a minimum water supply.

Permiability of a soil may be defined as that property which prevents supersaturation. Experiments have shown that this property