The Conservation of Soil Fertility

By R. Alex. Brink,'19

"WESTWARD the course of Empire takes its way." The tide of human migration has penetrated to the last best West. When roving man crossed the virgin plains of America, climbed her western slopes and set foot upon the shores of the Pacific, he paused and realized that he had traversed the whole of the primeval earth and that beyond that mighty ocean, which bathes the shores of the New World and the Old, lay the Ancient East, from whence in the dim past, began that steady movement Westward which has crept to the farthest ends of the earth and terminated where the sun sets to rise again in the Orient. When all the land of agricultural value has been occupied, and a growing world population requires sustenance, the only possibility of increasing the total product necessary for the subsistence is by cultivating the land more intensively and preserving with all possible care, the wealth within that thin blanket of soil enveloping the earth. This wealth truly consists not in the extent of the land but in the constituents of the soil that serve for the nutrition of plants.

This speech delivered in Massey Hall, O.A.C., on March 15th, 1918, by R. Alex. Brink, '19, is one of the most comprehensive and complete discourses on the vital problem of soil fertility ever heard at this institution.—Ed.

Agriculture being an extractive industry it is the first business of every farmer to reduce the fertility of the soil by removing from it the largest crops of which the land is capable. But of equal moment is it his duty to provide for the restoration and maintenance of the soil's productiveness. We seek in tillage to extract in large measure that which life demands in a way that is compatible with permanent agriculture. We endeavor to obtain, to employ and to return again without depreciation and without waste.

Probably the greatest and most apparent need of agricultural land today is proper drainage. It has been estimated that the value of three-fourths of the total occupied land surface could be enhanced in this way. Proper drainage is the foundation of good soil management. Its necessity and value can be more easily comprehended after a summary of its effects on the factors that determine crop growth. An open, friable and granular soil structure is obtained. The withdrawal of the excess water from the interspaces permits the admission of air improving the ventilation, allowing the roots to penetrate deeper into the soil where they come in contact with a larger amount of moisture and plant food. Consequent upon drainage the soil maintains a higher average temperature and warms up earlier in the Spring. The improved aeration and higher temperature promote the activity of soil micro-organisms making available a larger amount of mineral food. The accumulation of toxic material is obviated. Other advantages that accrue are the reduction of heaving and the lessening of erosion. A large increase in yield and