of books, and bring to bear on his art the experience of workers in other countries. Such preliminary education indeed furnishes the only means to promote improvement, to elevate the arts of life from mere mechanical drudgery to the rank of important professions, and to give intelligence and mental energy to those who conduct such arts. Thus while it is true that mere school education cannot teach how to cultivate the soil without practice, it is equally true that without training in scientific principles the art of cultivating the soil cannot attain to its full perfection or productiveness.

No arts have in our time derived greater benefits from science than those of the farmer and gardener. The chemical composition of plants and their minute structures have been studied by the chemist and microscopist. All the conditions of their growth and the sources of their food have been investigated. Soils have been analyzed, and the causes of their fertility or barrenness have been ascertained, as well as the reasons why they become run out, and the best means of restoring their fertility. The nature, advantages and best modifications of the rotation of crops have been worked out. All the enemies and parasites, whether vegetable or animal, of our cultivated crops have been studied with reference to the best means of avoiding or destroying them. The young farmer or gardener who has been thoroughly instructed in these results of science is prepared to avail himself of all the newest and best improvements in his art, and to overcome its most dangerous enemies and hindrances. In addition to this, he has received a large amount of general culture, fitting him to think intelligently on all subjects, and causing him to take a higher interest in his profession.

No practical folly can be greater on the part of any people than to allow the future cultivators of the soil to grow up without education, and without some appreciation of the modes in which education may be applied to the production of food from the earth. The communication of such instruction is not so difficult as may be supposed. Good and cheap text-books exist. There are teachers who have been trained at our normal schools in vegetable physiology, chemistry and scientific agriculture. The senior pupils in any good school should be prepared to master all that is required. It is not necessary that the teacher shall be a practical farmer or gardener, any more than that a teacher of writing or arithmetic should be a practical merchant or banker. The scientific princi