art of Agriculture, and needs only a wise direction of thought, enterprise and capital, to work out still greater results, and to raise this much neglected calling, not only to a par, but above all other pursuits. But let us not cast any reflection upon or detract from the merit which so justly belongs to our noble sires who so boldly faced the forests, that for so many long years waved and held majestic sway over this continent, who with stout hearts and willing hands, converted the wilderness into beautiful fields, and who with their work well done and their lives well spent, passed away and left us to reap the benefits of their long lives of toil. And while I would speak with the greatest respect and reverence of those whose bodies have returned to dust, and their spirits to the God who gave them, yet the fact is undeniable, that this art has not progressed proportionally with the other great departments of human labour, *and why?* Let us look at the reasons: The Lawyer, the Dr., the Minister, the Mechanic, the men who occupy high positions professionally in our country, Judges, &c., have they gained their high positions by guessing, or by study and Education and the application of that Education *to their calling.* In all other trades and professions a thorough education is essential to correct practice; an apprenticeship must be served, but in farming where it is *most* necessary, it has too often been omitted or left to chance. There are established institutions for the education of men for the pulpit, the bar, the healing art, engineering, manufacturing, and the mechanical arts, but agriculture, on which depends our national prosperity, has been left like a ship at sea without rudder or compass. We have colleges to educate men for the learned professions, with the hundreds of common schools, but at present not a single institution for the professional education of our *Farmers Sons,* who with their worthy Sires constitute so large a proportion of the population of our country, and upon whom is levied so large a share of the taxes for the support of other institutions.

What the farmer needs is the scientific education which the mechanic, the manufacturer, and the artizan receives, to enable him to become master of his calling. He must understand the processes of the vegetable kingdom, by what agents they are conducted, by what laws they are regulated, and how the whole may be turned to the best account with the least labour and expense; and for this knowledge of his art he must depend on the light of science. The thrift, industry, and intelligence of other classes have been conspicuous for the last quarter of a century; yet the tillers of the soil, not a whit behind any other class in natural talent and virtue, great in everything which pertains to personal worth, are left to toil on without receiving their proper share of scientific aid, and as if the *All Wise* One, who has promised that seedtime and harvest shall not fail, had prescribed no laws for them to study, no rules to govern their practice, and as though the fulfilment of this promise did not depend upon compliance with his unchangeable laws; for if there are scientific principles upon which successful cultivation is based, then no effort can be well directed unless founded on these principles.

There is no department of human industry on which the aid of science is more absolutely necessary, but the impression has too frequently been that farming is purely *mechanical* requiring *muscular* rather than *mental* power to ensure success, and this opinion has so greatly prevailed, that if a man attempted to educate himself for the duties and responsibilities of a farmer, he has been styled a "book farmer," or "a man of zeal, without knowledge." But what is an agricultural education? It is that system of training which teaches the application of science to the art of agriculture. And what is the *science* of agriculture? It relates to the principles of successful cultivation. For instance, it teaches that "all plants live and grow by eating;"—what their proper food is, where it may be found, in what quantity, and how it shall be applied.

But how shall this be attained?—By guessing? By long and doubtful experiments?—By the clear, light of science, which can solve those problems at once! Science says to her chemist, tell me of what that plant is composed — then analyze that soil and tell me if that plant will flourish in it. If it will not, tell me what ingredients are wanting for its healthy development, tell me whether that soil is best adapted to the growth of grains, hay or vegetables. Tell me what ingredients the growth of these will abstract, and what kind and quantity of manure must be supplied to restore the productive energies of the soil.

The analysis of the chemist may settle all these points as satisfactorily as the longest and best practical experience of the farmer, and by which knowledge he may ascertain the proper food for his crops and for his stock.

Education increases power; and this is as true in agriculture as in any other pursuit or profession, and reflection will convince any one that such is the necessity for science in this vocation, that a long life of study and experience would leave the most intelligent far short of perfection. In fact there is no pursuit which requires more intelligence, simply because the principles on which it depends, are more difficult to understand than almost any other. The farmer should have a scientific knowledge of his soils, and their adaptation to the growth of his crops, the preparation and nature of the different parts of the fertilizers he applies, the influence of his crops on the soil, and if exhausting, how its reproductive energies may be restored. He should also understand the laws of the various chemical changes which take place in manures and soils, and their influence on vegetation, from the germination of the seed to the maturity of the crop, the nature and remedy of the diseases of animals and vegetables, the breeding and raising of stock, the habits of insects, and how their ravages may be prevented.

Such knowledge is absolutely necessary, but how is he to obtain it? It is but slowly and imperfectly learned by observation and experience, and we need schools in which they should be taught. But whether this knowledge shall be acquired in a college, an academy or in common schools, we will not at present stop to enquire. That it is requisite to the highest success, no enlightened cultivator of the soil will deny. Facts substantiate this reasoning. For instance, at present, the average yield of milk per day, throughout the year, is not more than four quarts. But, by the application of knowledge to the selection and improvement of the breeds of our milch cows, the quantity has been in many instances doubled without additional expense for keeping, a result which, in a stock of fifteen cows, would add a profit to their owners, at 10 cents per gallon of more than $300 per year. An old and experienced farmer gives it as the result of his experience, that cows yielding but four quarts per day will pay but little more than the expense of keeping, all above that is net profit. Hence he considers that a cow which gives eight quarts per day yields as large a net profit as four cows giving five quarts each day, making no allowance for the difference of keeping, and hence the profit on such stock depends on the milking propensities of the breed. Is it not then a question of great importance that whether such an improvement can be produced, particularly in this country which is gaining notoriety for its stock raising. Whether by any system of breeding, we can improve our milch cows, so that all shall be as valuable for dairy purposes as the best we now possess. Doubtless we can if any reliance can be placed on the laws of animal physiology, and by the laws of science. Guided by these to successful practice, it is already the boast of the herdsmen of Europe, that "they can breed stock to a pattern."

Who cannot appreciate the difference between the clean, smooth, small-boned, beautifully formed, quiet and easily fattened Chester or Berkshire pig, over the lean, pike-nosed, roach-backed porcupine