

THE FARMER'S ADVOCATE AND HOME MAGAZINE. THE LEADING AGRICULTURAL JOURNAL IN THE DOMINION.

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the Province at large, and accounts for over half of our expenditure for buildings, equipment, and annual maintenance.

Shall We Have a Cheap Agricultural College?—I have no objection whatever to the closest possible scrutiny of every item of our expenditure, but I cannot help thinking that many worthy and well-informed people have an entirely wrong conception of what an agricultural college should be. It is very much to be regretted that some excellent men have come to the conclusion that very large sums of money are necessary to equip colleges and universities to educate farmers' sons and others for the legal, medical, clerical, and teaching professions; but that cheap buildings, cheap appliances, and cheap teachers are all that the country needs to educate young men for life on the farm.

I maintain that we should have a more extensive equipment than the university, and quite as large an annual income, if we are to do our work properly. All that is needed to teach English, French, German, Latin, Greek, Hebrew, Italian, Spanish, history, literature, pure mathematics, metaphysics, logic, and several other branches of the university course is a professor and a classroom for each. In an agricultural college we must have this kind of equipment for English, mathematics and other branches; we need also the same laboratories as the university for physics, chemistry, geology and biology; and, in addition, we require expensive equipment for practical instruction in bacteriology, live stock, veterinary science, dairying, horticulture, poultry management and agriculture. All this and more, with equally good teachers, if we are to educate young men for the farm as well as they are educated for law, medicine, teaching and the clerical profession.

A good college of agriculture, like any other good college, is an expensive institution. The necessary expenditure for buildings, furnishings, apparatus, technical appliances, teachers, and experimenters is large, but the work has a direct bearing on the most important industry in the country, and we entertain the hope that those to whom we look for the ways and means will see the importance of providing whatever may be necessary for a first-class agricultural education and the further development of scientific agriculture in this agricultural Province. Yours truly, Agricultural College, Guelph, JAMES MILLS. April 19th, 1897.

HUGH MUNRO, Colchester Co., N. S., when renewing his subscription says:—"I am highly pleased with the ADVOCATE, and if every farmer were taking it we would have before long more good farmers."

MAJOR JOHN VARCOE, Huron Co., Ont., writes us as follows:—"I have taken the ADVOCATE ever since it started, and like it better all the time, and cannot afford to do without it, although times are hard."

Mr. Macpherson to His Critics.

THE "BUSINESS END" OF FARMING—THE FARMER A "SCIENTIST, PHILOSOPHER AND DISCOVERER"—MARKET VS. CONSTITUENT VALUE—PREJUDICE AGAINST TRUTH—A CONUNDRUM.

To the Editor FARMER'S ADVOCATE: SIR,—I have read with interest the criticism of Mr. R. C. Allan, Northumberland Co., Ont., on the statements which I sent you of the past and present results of my farm operations. As Mr. Allan asks several personal questions relating thereto, I take the liberty of devoting some space to answer them, and will at the same time ask Mr. A. one question for him to answer. In order to meet the situation and make as plain as possible some of the misunderstood problems of progressive agriculture, and the positions which I have taken to discover practically, and at the same time aiming to discover, ways and means to put into practice for the general good of farmers and the country at large, I therefore crave the privilege of taking more space than I should otherwise do to make clear some agricultural truths, laws and principles which bear mainly on the question at issue. I take strong grounds that true progressive and profitable agriculture is based on clear, well-defined business principles far more intricate and difficult to comprehend and solve than any other business or vocation in existence, the leading requirements of which are to purchase largely and cheaply, and sell largely at a (maximum) profit. A farmer buys every article he produces on his own farm as well as what he buys outside of his farm. He purchases all products produced on his farm with his own labor, his hired men's labor, and his capital—as if he purchased all similar products on his neighbor's farm or in the general market; for instance, one ton of milk costing a farmer \$16 to produce on his own farm by counting labor, expense, interest, wear and tear, and repair, is as practically purchasing the same as if he had bought one ton of milk from his neighbor costing \$16. The same in regard to a milk cow; if it costs \$30.00 to raise a milk cow on a farm, and the same class of a cow can be purchased in the market for \$25, as far as obtaining the cow is concerned it is purchased in both cases; the only difference is the question of cost and likely profit. A successful farmer therefore:

MUST BE A GOOD BUSINESS MAN.

He must be able to know and practice when and where to buy cheap, and when and where to sell dear. If he knows where he can buy a feeding steer from his neighbor or in the market for \$25.00, which will cost him \$35.00 on his own farm, then he should buy; but if he can raise a steer on his own farm for \$25, which would cost \$30 in the market, then he should raise the steer; and so on. This economic principle must be followed out in order to profitable production. A farmer must not only be a good business man, but he must be a manufacturer of the most skilled kind. He must be able to manufacture a product usually containing some element different from the raw material to start with, and he must be able through the power of animal and plant life to produce a valuable and salable article at a cost much less than the market value; for instance, one ton of stable manure which with skill can be converted into a ton of milk. The manure in the first place contains water, nitrogen, potash, phosphorus, and some of the minor mineral ingredients, as well as some carbon. Milk contains a similar amount of water, nitrogen, potash, phosphoric acid, lime and some other mineral ingredients, also oil as well as carbon. The plant during growth appropriates the mineral elementary portion from the soil and the fat and carbonaceous elements from the air. The cow assimilates the plant by digestion of its food and elaborates it into milk by a distinct process effected by animal life. The element of soil which are the basis of animal and plant life, and human intelligence, the basis of all farm productions. Hence a farmer usually buys mineral matter and sells mineral and air products combined with water. His costly raw material therefore is mineral products, such as potash, phosphoric acid, lime, etc., along with one air product, nitrogen, and the obtaining of these in large amounts is a costly business. The combination of these mineral matters along with air and water produces a salable, valuable, must demand his highest calculative capacity as well as his manufacturing skill, so as to make the most valuable manufactured product at the least possible cost, which effect is to make the greatest possible profit. If he can at the same time by doing this add to his capital basis the means to enable him to increase his profit from year to year, we can consistently say that the future results obtained from his work and capital will be progressive, and we can safely and properly call this progressive farming.

To assume under these conditions that a farmer must not be a buyer, but only a seller, would be just as reasonable as that a merchant must only be a seller and not a buyer. All goods are for the reasonableness of a merchant purchasing a full stock of goods to sell to his customer, after selling his surplus stock must replenish this stock promptly by purchase; and a farmer in the same way must if he expects to stay in the business purchase to replenish his reduced stock of raw material in proportion to what he sells in his finished product. A successful merchant must be a good business man, and the better he is posted in the science of business, and applies his skill in good practice the greater, as a rule, his possible success. A good business merchant need not be necessarily a natural scientist, but a successful farmer must not only be familiar with the best science of business principles, and industriously apply them, but he must be a

SCIENTIST, PHILOSOPHER AND DISCOVERER.

A successful merchant usually sells the same product in make and form that he buys. His main function is to buy cheap and sell at a good profit; but the farmer must usually sell an entirely different article from what he buys or has given him. If he has purchased a farm, or one is given him, he transforms the expensive mineral elements of the soil in combination commodity used to produce this salable commodity in elementary form is precisely the same, only in different combination and form. Hence the business calculation of a good farmer is to discover where and how he can obtain his raw material at the least cost and produce a good salable article which will include in combination the most of air and water products (expensive and the most costly products, and thereby realize more for his work and skill.

In the production of most all farm products the expensive mineral elements are phosphates, potash, lime, etc., and our air element, which is nitrogen, and the cheap products appropriated by the plant from the air are carbon, fat and water. The base of all plant growth must first come from the mineral elements of the soil, which are held in physical combination to be easily appropriated by the plant. The expensive mineral elements of the soil are usually of a limited amount, the average component parts of these in fairly good virgin soils is only enough for 25 to 30 full crops of cereal grains. The roots of plants can only distribute themselves to partially control the whole surface of the ground, extending downwards to appropriate these elements of its food which are necessary for a full crop. It is clearly seen that a large surplus of such material must be distributed in all parts of the soil before a full crop may be grown, hence a very large supply must be left in the soil for the roots to draw from. A fair average calculation is that soil should contain the component parts of fifteen to twenty-five crops before a full crop can be produced.

The expensive nitrogen which all plants require for their growth and development can be appropriated directly from the air by only one class of plants, called legumes, and even these collect nitrogen in a very limited measure, and a farmer in order to acquire sufficient annual supply of this very expensive element for full crops must secure it from outside sources.

A very important feature of this nitrogen element is that it is soluble in water and is carried by drainage water down out of effective reach of the plant roots, hence the supply is easily exhausted and lost by spring rains and heavy floods. It can only be retained in limited quantities in all soils by the surface being kept covered by crop and vegetable roots. Clover, peas and beans have the power of appropriating nitrogen from the air in small quantities, and this is one agent used by the farmer to secure a portion of this needful element, but the largest proportion that the farmer must have to grow full crops every year he must purchase in some form or other. This can be done to a large extent in most all animal foods, such as oil cakes, cotton-seed meal, peas, beans, bran, grain of all kinds. The usual commercial values of the base of plant food is nitrogen, 15c. per pound; phosphoric acid, 6c., and potash 4c.

MARKET VALUE AND CONSTITUENT VALUE.

All farm crop products have two values, one a market value for animal and human foods, the other the constituent value for plant foods; for instance, the constituent plant food value of seven bushels of oats is about \$1, and the market value at present would be about \$1.40. The same \$1 worth of constituent would be found in 1,000 pounds of milk, having a market value of about \$18. The same \$1 worth will be found in 200 pounds of fattened beef, worth \$8. The same amount will be found in 300 pounds of fattened pork, worth \$12. One ton of bran, having a market value of \$5 or \$9, has the same constituent value (at 30c. per 100 pounds) of \$100 worth of milk. One ton of gluten germ meal, costing \$10 per ton, has the same constituent value of 18,000 pounds of milk, having a market value of \$144. Many other similar examples could be shown to illustrate the possibility of buying cheap material in the cheapest market and selling a dear material where skill and capital are employed with good business capacity. It is not possible for a farmer to obtain his raw material which he needs to produce full crops, such as the phosphates, potash, lime and other mineral ingredients, without cost, and therefore to do so he must purchase same wherever he can. And it is his duty to purchase such in the cheapest and best market, whether it shall be fertilizers, cattle foods, or cattle themselves, or even human foods. Self-contained farming is not self-sustaining, and therefore untenable, and its continuation is impossible. To continue to exhaust soil is to produce a condition which makes a downward course of increased unprofitable farming, a system that should not be commended. It is a law of nature that power is reduced by use, and can only be maintained by supply in proportion to what is used. So it is a law of agriculture that fertility of the soil is exhausted by growing crops, and can only be maintained by a return of what is sold in crop products, and as a portion of this return of fertility which is exhausted by crop products must be purchased, then it is the duty of the farmer to use what agricultural scientific truths that is possible to obtain within his reach, along with the use of agricultural business science, so as to enable him to secure the greatest amount of such at the least cost.

The criticism of Mr. D. P. Cameron does not call for a detailed reply from me, only to call his attention to a gross error of his figuring and figures.

Mr. McCulloch's criticism does not also need a reply further than what has been previously explained, but I regret to observe his apparent

PREJUDICE TO TRUTH, LAW AND PRINCIPLE

relating to their use in advanced agriculture, and also a lack of knowledge of business principles relating to progressive farming, which has evidently warped his judgment and misdirected his conclusions. The criticism of "A. O. F." Ontario Co., seems to me to be rather curious, and his taking other persons' figures and applying them to my work carries condemnation within itself, and needs no refutation. I only wish to observe that I do not consider that there is anything of much importance in either estimated or actual crop product or value; whether it be forty or ten tons of corn per acre, or whether it be \$1 or \$3 per ton estimate value, or whether cows give only \$20 in the season, it may be of some interest and curiosity and some value as a guide to the possibilities in maximum average and minimum of crop products and estimated crop value or cow product, but the main importance is to produce the greatest salable cash product at the least cost per acre, giving in the aggregate of all crops grown on a farm the greatest average cash and capital profit per acre for the whole of a farm, and at the same time leaving a condition each successive year which will add to capital value as well as cash dividend, making progressive cash dividends from year to year as well as progressive capital value. The above problem is the one to be solved by practical farmers before the farm can be made to pay, and is the main problem that I have been studying and trying to solve during the last thirty years, and I have striven to give to the farmers and public of Canada the results obtained on my farm so far up to the present time, given in a fair and truthful manner as I am able to do. I do not expect to master all the details of discovery relating to agricultural business science and their application to private and public wants. I do assert that I have made some advance and have discovered some truth or its publication. The more it is criticized and investigated the more brilliant and apparent it becomes; hence, I court fair, unprejudiced criticism and careful investigation. The more that is effected of such, the more I learn myself and am able to extend further discovery and research. The field for discovery in agricultural business science is rich, ripe and opportune, and I hope in the near future to publicly lay bare other truths which may be of public interest and value.

A CONUNDRUM.

I now take the liberty of asking Mr. Allan a true solution of the following problem, asking for the why and wherefore and a full analysis of the cause and effect of the different results obtained from the two practical examples given. One is self-contained system of farming (and what Mr. Allan and others advise the farmers of Ontario to adopt), and the other is progressive farming based on agricultural business science.

1st. It takes on the average ten acres of self-contained farming land to feed five fattening steers raised on the farm for 180 days, to put them into first-class finished condition, divided as follows: one acre of ensilage corn producing 25 tons, one acre of mixed grain, oats, barley and peas—9,500 lbs. The cost of producing and feeding the corn \$ 20 00 The cost of producing and feeding the hay 5 00 The cost of producing and grinding the grain 80 00 Additional expense, interest, insurance, wear and tear. 10 00 Total. \$ 115 00 Total increase gain in value of steers while feeding over cost of production, \$120 00. Net cash profit 5 00

The cost of producing a 1,000-pound steer in store condition up to the age of 2 1/2 years is actually \$30.00. Net loss of fertility to farm from product sold (five finishing steers) 5 00 Net loss from the transaction, \$20.00.

2nd. It takes two acres of land of progressive farming to feed five steers (purchased in the open market), and \$40 worth of feed, also purchased in the open market, such as bran, shorts and germ meal—sufficient to feed such steers 180 days a well-balanced ration to put them in first-class finished condition, the cost of which is as follows:

One acre of corn to produce and feed \$ 20 00 One acre of clover hay to produce and feed 5 00 Purchased feed (in cheapest market) cost and feed 40 00 Extra expenses 10 00 Total cost \$ 75 00

Total income Net Gross profit In market land as the hay, and a steers, we Five acres Purchases Additional Total net purchase Net

It is the able to obtain food in the grain which It is the parative results are out under proposed FARMER'S

Notes

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