

## Modern Farming Needs Business Management

Labour and Capital Must be Fully Employed—Lowest Cost of Production and Efficient Marketing Required

Farm management is the application of business principles to farming. A farm enterprise must be organized for the purpose of securing the greatest continuous profits. It is not enough to raise good crops or to secure a large animal production; these must be produced economically. This is accomplished only when capital and labour are so adjusted to existing conditions that maximum yields are obtained at the lowest cost. Every department must be well organized and must be co-ordinated with the others. Labour must be fully employed, capital must be properly utilized, both quantity and quality of products must be secured, and the products must be wisely marketed.

In the days of our fathers the farm provided almost everything needed by the family. The few things not raised on the farm were received in trade from the village store. Very little money was required or handled by the farmer. The measure of his success was his ability to produce his own food and clothing rather than his ability to organize his business and buy and sell. Since machinery has been introduced in the factory and on the farm, money has become necessary for the farmer. No longer can he raise or trade all he needs. He must sell his products and buy most of his requirements. All these changes mean that the farmer of to-day, in order to be successful, must be a business man. He not only produces, but he sells and buys. The kind of business ability needed is not alone that of the trader, but also that of the executive, who can organize the farm into a successful enterprise. An idle horse in the barn is often a greater source of loss than a bad deal in horses. Failure is caused by poor management as well as by poor crops. The successful farmer must consider and plan his work ahead of time. He must have a plan for stormy days as well as a plan for field work. He must foresee most things that are about to go wrong, and prevent them from going wrong.

We must not assume, however, that all farmers are ignorant and unbusinesslike. Some of them are the fathers and brothers of our captains of industry, and are as efficient for their conditions as the city man is for his. The farmer is, however, slower in changing his methods and in adapting himself and his farm to meet new conditions and requirements as they arise. The more the farmer thinks and the more his brain is intelligently directed by his brain, the greater will be the resultant satisfaction and success.—F. C. N.

## Will Oil Replace Coal as Fuel?

Total Available Liquid Fuel Supplies Inadequate to Make General Substitution Possible—Opportunities Exist, however, for More Extended Use

The world's production of crude petroleum in 1912 amounted to about 52,921,750 tons; the sources, respective quantities and percentages were as follows:

COUNTRY	1912 Tons (2000 lbs.)	Percentage of Total Production
United States.....	32,807,060	62.16
Russia.....	10,174,560	19.23
Mexico.....	2,910,000	5.50
Roumania.....	1,987,360	3.76
Dutch East Indies.....	1,672,000	3.16
Galicia.....	1,298,620	2.45
India.....	1,101,450	2.08
Canada.....	38,750	0.073
Other countries.....	841,250	1.59

If the whole of this crude petroleum were employed as fuel in steamraising it would not thermal, allowing for its higher thermal efficiency, much more than five and one-half per cent of the world's output of coal, whilst if used in internal combustion engines it would be equivalent, as a source of power, to about 16 per cent of the coal. Only a small proportion, however, of the crude petroleum can be regarded as available for use as a source of power, for by far the larger part is in demand as an illuminating agent and as a lubricant for machinery.

As the United States produces over 62 per cent of the world's production of petroleum, it is interesting to note that Dr. Day, of the United States Geological Survey, considers that, at the present rate of increase of the output of petroleum, the known oil-fields of the United States will, on the basis of the minimum quantity of oil obtainable, be exhausted by the year 1935, while, even if only the present output were maintained, the supply would, on the same basis, not last more than 19 years.

In many countries there are, no doubt, vast tracts of undeveloped petroliferous territory, but only drilling can determine this. Even if the available deposits were far larger than there is reason to believe them to be, the cost of doubling the present output would be great. In view of these circumstances, it is not probable that there can be any general substitution of petroleum for coal as a source of power, although there is undoubtedly opportunity for making provision for a larger use of liquid fuel for certain purposes in which its advantages are conspicuous.—W. J. D.

## Necessity of Underdrainage

On Drained Lands Plants have Deeper Root Systems and Consequently More Feeding Space—Bigger, Earlier and Hardier Crops the Result

It is a matter of common observation that at a certain depth below the surface the subsoil is full of water, supplied by rain or melting snow which has soaked through from the surface. The upper limit of this saturated area is known as the "water-table." Ordinarily plants will send their roots down till they reach this water-table and no further. This is because the roots can grow and thrive in earth which is merely damp, but not in earth that is so full of water as to exclude air. This fact has an important bearing on the question of underdrainage.

In spring, after the melting of the snows of winter, the water-table, on poorly drained lands, is very near the surface, but, with the oncoming of dry weather, it is rapidly lowered, too rapidly, in fact, for the growth of roots to keep up with it. The plants sown in spring are thus apt to be left high and dry, with shallow root systems, and largely dependent on whatever rain may fall during the summer months for their supply of moisture. If, however, there be sufficient underdrainage, either natural or artificial, the water-table will be much lower in spring, while the plants are germinating, and the

roots will grow down to it, and in this way occupy a much larger feeding space. Hence the resulting crop is larger and finer and better able to resist drought.

Unless the surplus water is removed by drainage, it must be brought to the surface by capillary attraction and then evaporated. As evaporation absorbs heat, this process reduces the temperature of the soil and leaves the land cold and raw. Drained lands, therefore, are warmer than undrained, and as, moreover, they are more quickly put into workable condition in the spring, the crops on such lands are the first to ripen and the most likely to escape frost in the fall.

That underdrainage pays handsomely in earlier, bigger and more hardy crops is not only demonstrable by theory, but has been amply proven in practice. The most enthusiastic advocates of underdrainage are those who have done most of it. Full information, both as to its benefits and as to the practical operations necessary to install a drainage system, may be obtained from *Bulletins 174 and 175 of the Ontario Agricultural College*, which may be obtained gratis from the Ontario Department of Agriculture, Toronto.

## Recreation Facilities

Necessity for their Provision by Municipal Enterprises—Both the Adult and the Child Interested.

One of the most notable features in the development of municipal enterprise during the past decade has been the playground movement. Within six years of the formation of the Playground Association of America, in 1906, more than 400 American cities had entered upon the scheme of supervised recreation centres for children as a municipal undertaking. The movement has also gained rapidly increasing favour throughout the Dominion, and Montreal, Toronto, Winnipeg and other Canadian cities have undertaken the carrying on of supervised playgrounds. Its remarkable popularity and growth may be attributed to universal recognition of its value as a prime preventive measure in the interest of public health and as the sole available means of securing to the urban child one of the essentials of his existence. Play is the prerogative, as it is a necessity, of healthy, normal childhood.

It takes little persuasion, beyond the silent, convincing proof of living conditions in our industrial centres, to induce city governments to come to the aid of children whose only playground is the pavement or the alley. The standard of future citizenship depends too vitally upon their proper training to permit neglect of any means whereby that training may be made to include a full share of wholesome, character-forming games. And, in view of the failure to secure—one may almost say, the impossibility of securing—the necessary facilities through private and individual initiative, it becomes the duty of municipalities, as such, to undertake the provision of accessible, spacious, well-equipped and properly supervised play and recreation centres. It is a form of public enterprise to which no valid objection can be offered.

The question of publicly provided recreation facilities, however, is not solved merely through the action of juvenile needs. It is one of wider application, and has just as much importance, although it has received scant consideration, in regard to the adult population of great urban centres. Recreation of mind and body is as necessary to the well-rounded existence of the adult human being as is play that of the normal child. The common objection to government action of a paternal nature waives its validity in the face of economic necessity, at least in respect to children. Under certain circumstances it must do likewise where adults are concerned—where, as in the case of recreation, collective action must be invoked to provide those facilities which modern industrial organization has made it impossible for the individual himself to secure.—O. M.