

THE FARMER'S ADVOCATE AND HOME MAGAZINE.

THE LEADING AGRICULTURAL JOURNAL
IN THE DOMINION.

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JOHN WELD, MANAGER.

Agents for "The Farmer's Advocate and Home Journal,"
Winnipeg, Man.

1. THE FARMER'S ADVOCATE AND HOME MAGAZINE is published every Thursday. It is impartial and independent of all cliques or parties, handsomely illustrated with original engravings, and furnishes the most practical, reliable and profitable information for farmers, dairymen, gardeners, stockmen and home-makers, of any publication in Canada.
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12. WE INVITE FARMERS to write us on any agricultural topic. We are always pleased to receive practical articles. For such as we consider valuable we will pay ten cents per inch printed matter. Criticisms of Articles, Suggestions How to Improve "The Farmer's Advocate and Home Magazine," Descriptions of New Grains, Roots or Vegetables not generally known, Particulars of Experiments Tried, or Improved Methods of Cultivation, are each and all welcome. Contributions sent us must not be furnished other papers until after they have appeared in our columns. Rejected matter will be returned on receipt of postage.
13. ALL COMMUNICATIONS in reference to any matter connected with this paper should be addressed as below, and not to any individual connected with the paper.

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knowledge concerning his cost of production and marketing. Actual knowledge is superior to the judgment of the shrewdest manager, as the most level-headed among them clearly recognize. Wise is the one who, by means of accumulating data, studiously examined, makes each year's results a basis for improvement. By such means failures are turned to good account, and all the experience of the past is used as a broad foundation for future success. Incredible opportunities open out in this direction, even in those businesses where it was supposed competition had shaved things down to the finest point.

In few businesses are margins much narrower than in farming, and there is none, to our knowledge, more emphatically in need of the information which time records supply. Many of the commonest farm operations, such, for instance, as the cost of making a ton of hay or producing a silo full of corn, are matters of wide divergence of opinion. How can a man decide whether a certain practice pays him, unless he knows how much time it takes? No matter whether he hires the labor or performs it himself, he should see that the employment is profitable; otherwise, he will almost surely come out at the small end of the horn.

With a view to enabling ourselves, and incidentally other farmers, to arrive at just such information, we have devised a simple system of time cards and a time-book, by means of which all such questions can be pretty closely answered. It is entirely "homemade," is very satisfactory, and we heartily commend it to every reader, even though he employs no labor but his own.

In thinking over and comparing the results obtained from the different crops the past season, do not compare them by measure. The bushel measure is very misleading. A bushel of oats and a bushel of corn or wheat is a vastly different quantity by weight, and when it is multiplied thirty, forty, fifty or more times, as is the case when yield per acre is concerned, the folly of comparing an equal measure of these grains is evident.

Rural Well Water.

MANY UNSAFE WELLS.

During the last few years we have examined a large number of samples of rural well waters, and a very large percentage of them have been found to carry such large quantities of impurities that they must be considered unsafe for domestic purposes. A study of the surroundings of many of these wells shows that the water could not very well be other than impure. An ordinary well is but a hole in the ground, and, naturally, it collects the seepage water from the surrounding soil.

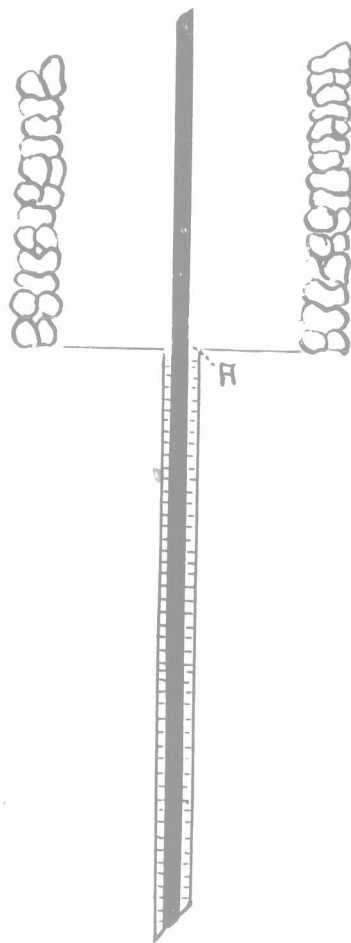


Diagram illustrating how impure water may pass down to source of supply got by drilling. May be overcome by stopping passage of water at A; or, better, by drilling at another point outside of the well.

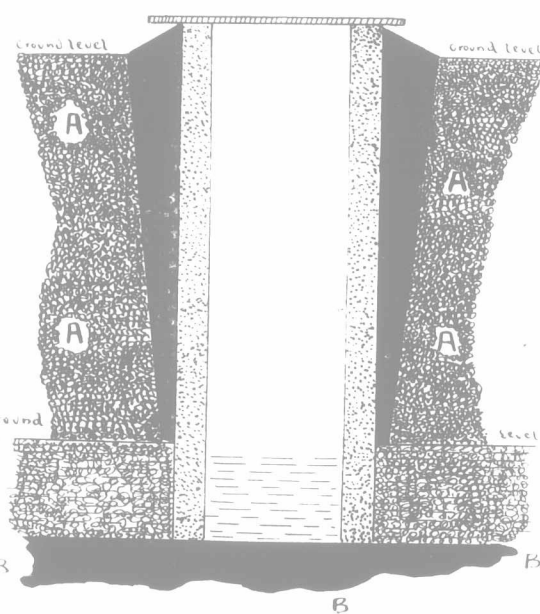


Diagram of well, showing a backing of puddled clay, or other impermeable materials between the cement work and the porous strata through which the well is dug.

A.—Porous strata, such as sand, gravel, loam, etc.
B.—Imperious stratum, such as clay, rock without flaws, etc.

From McGill, in transactions of the Ottawa Literary and Scientific Society.

Consequently, if this soil is saturated with foul and polluted matter, the water that passes through it will be contaminated.

For the sake of convenience, most of the wells on the farms in this country have been dug close either to the house or to the barn. At the time of digging, it is probable that the water got from these wells was as pure as could be procured from wells placed in any other positions about the homestead. It did not matter whether a spring was struck or whether the well simply served to

collect seepage water, the water was likely to be safe for domestic use. However, as time passed, the product of the decay of the waste materials from house and barn have thoroughly saturated the soil, and the water that naturally drains into these wells became less and less pure, until to-day, many wells that once supplied good water have become so contaminated that the water is now so impure that it is unsafe for domestic purposes.

The soil is naturally a good filter, and will, for a time, remove undesirable matters from the water that passes into the well, but there is a limit to its powers of purification, and if the source or sources of contamination are too close, the water must become polluted. Thus, waste materials may be thrown on the ground near the well, where it decays and passes downward into the soil with the percolation of water, and naturally passes to the well. For a time the organic materials in this drainage water are retained by the soil, but when it becomes saturated, or when it passes through only a shallow layer of soil, all the undesirable materials pass on with the water and pollute the original pure supply. Another source of contamination may be due to the fact that the top of the well is not raised sufficiently from the level of the surrounding ground to prevent heavy rains from washing impure matters from the surface into the well. Or, what is even worse, the covering of the well may not be tight, and the water splashed from the pump, or from rains, washes the dirt carried by chickens, or on the feet of those using the pump, into the well. Such pollutions are not filtered through the soil, and may be loaded with all manner of disease germs.

The organic matter in a water is derived from two sources. It may have originated from the normal decay of vegetable matter, and may be harmless from the point of view of health, even though far from appetizing when we remember its origin. Or it may have come from the decay of small animals that have got into the well, owing to an imperfect cover, or from leachings from outhouses, barns, etc. It may be actively poisonous. This is especially so if the contamination is of human origin, for it then may contain the living germs of specific diseases, such as the various kinds of fevers, cholera, etc.

DRAINAGE IMPROVES NATURAL SOIL FILTER.

As stated above, percolation of these waste materials through the soil tends to purify it, but, to be effective, the soil must be well aerated; i. e., the interspaces of the soil must be kept well drained, in order that air may abound. Under good conditions, the organic matter is changed to harmless compounds, and the disease germs are destroyed. That this action may be complete, the water must filter through several feet of soil, and, although it is impossible to fix a definite minimum limit to the depth of such a natural filter, it is safe to say one should insist on eight or ten feet, at least, and prefer as much more as we can get. To secure this, it is necessary that the upper ten feet of the wall of the well should be made quite impervious to water. The accompanying diagram will help to illustrate my point. The wall may be made of concrete carefully cemented over, brick and cement, or, if the well is in a clay soil, it may be stoned up, and the clay thoroughly puddled behind the wall. The idea is to so construct the well that no water can find entrance to it without filtration through a depth of soil at least equal to the vertical distance between the ground level and the lowest level of ground water.

LEAKY WELL COVERS.

It is, however, evident that no amount of care bestowed upon the construction of the walls of the well will insure good water if the top is left unprotected. Possibly the best way to make a safe top is to have the mouth of the well raised a foot or more above the surface of the surrounding soil, and to have the wall lining the well backed up by a layer of puddled clay a foot or more in thickness, extended continuously from the level of the ground water quite up to the mouth of the well. Then, the whole should be covered with a good cement cover, or, at least, with a double flooring, so that there will be no cracks.

To procure a greater supply of water, and also to get away from surface-seepage water, many wells have been drilled to great depths in the rock. The water got from this source will, naturally, be harder and purer. But, unfortunately, in many instances the mistake has been made of drilling in the bottom of the old well, and, while the pipe may be brought to the surface, thus bringing the pump in direct contact with the new supply of water, no care has been taken to prevent the water from the old well, which may carry its full charge of seepage materials, from making its way down the outside of the pipe to the new supply below. It is always better to make a fresh opening, and to puddle the clay or to cement around the pipe for some distance down, preferably to the same depth recommended for the dug