

to a hardness of 112, which I believe is about the hardness of Cleveland water, will give depreciation in dollars per million gallons as \$11.20; this takes into account only the cost of soap used for domestic purposes and does not include the incidental losses and inconveniences attendant upon the use of hard water in households. These, if they could be expressed in terms of dollars and cents, would probably more than equal the cost of soap.

In most surface waters the physical characteristics vary greatly at different times of the year. During the spring and fall, for instance, the color and turbidity may be high on account of rains, while during the summer the water may have a bad odor due to microscopic organisms.

In Cleveland, during the spring the death rate due to typhoid fever increases rapidly. It was found upon investigation that when the ice breaks up along the lake front it carries contamination with it out to the intake pipes. So the sanitary characteristics of a water may vary at different seasons of the year.

The average man, when confronted with an adverse analysis of his water supply, is likely to be surprised, declaring that it is the best water in the country and that it has been used for years without producing sickness. Granting that he be right, immunity in the past is no guaranty for the present or the future. Some connection may have been established between the well and outhouse or the cesspool, and apparently he has not happened to harbor a typhoid-infected person on the premises. Nothing is needed but the carrier of the specific organism to begin trouble.

Rural water supply is generally obtained from springs, wells, or cisterns. From a sanitary standpoint, springs and deep wells, deep in the sense of entering below the first impervious stratum, are the most reliable sources. The usual excellence of these, and, in fact, of all good ground water, is largely due to the filtering property of the soil. Springs, especially those flowing through fissures, and deep wells, reap the benefit of prolonged filtration through the earth. Both may be subject to contamination, particularly springs, which are often open to surface wash-

ings from sewage drains and the like, located farther up the slope. Hence it is advisable to inspect the watershed above a spring; also to guard it from the surface washings by a wall or ditch.

Driven wells and dug wells reach only to ground water, differing in this respect from many springs and all deep wells. Their shallowness brings them at times into proximity to drainage from privy vaults, cesspools, or leaky drains, and anyone sinking a well near these sources of filth must rely upon the filtering action of the soil to remove pathogenic bacteria. The filtering efficiency of the soil, in serving to protect wells from contamination, depends upon such factors as the extent and the nature of the intervening soil and also upon the direction of the ground water drainage.

The distance that should exist between a well and a source of pollution is, because of these, so variable that probably no definite rule would be trustworthy in all localities, other than the greater the distance the better. The course of ground water drainage toward its natural outlet affects the liability of a well to pollution. While it usually follows the direction of the superficial slope, it may take a different route, owing to peculiar sub-soil formation. Therefore, while it is better to locate a well on higher ground than a cesspool or outhouse, it is also prudent to have some distance intervening as an additional precaution.

A well-known principle of sanitary science is that of protecting wells against chance of pollution from surface drainage or infiltration. By proper construction and location of a well there is little danger of contaminating the well unless the ground water itself be polluted by larger sources than privy or cesspool.

Finally, it may be said that the maintenance of a wholesome water supply of any kind requires constant attention. To dig a hole to water anywhere, and expect good results forever afterward is unreasonable. With the exercise of common sense, based on the knowledge of ordinary sanitary principles, a person should live in comparative security from water-borne disease.

WHY THE VICTORY LOAN IS AN EXCELLENT INVESTMENT

1. **Security of principal.**—The wealth of Canada is back of the bonds issued by the government. Since the present organization of the Dominion in 1867 no debts have ever been repudiated. The money borrowed has always been repaid.

2. **Security of income.**—The return upon the principal invested is the income or interest. The interest on these bonds is a part of the government's expense. Should the power of our government fail, not even cash would be of value, so high is Canada's standing.

3. **Fair income return.**—The income will probably be about 5½ per cent., which for such high-grade security is an excellent return. In addition the bonds are likely to bear the privilege of convertibility into a higher rate of interest if the government has to borrow more money at a higher rate.

4. **Marketability.**—The Canadian war loan bonds are active in the open market. Those offered for sale find a purchaser more quickly than any other securities. Bond houses and banks handle them as readily as cash. These bonds can be sold at any time throughout the country.

5. **Value as collateral.**—They have the greatest value as collateral of any security, because the credit of the Canadian government ranks with that of the leading nations. Banks or individuals will readily loan money on such security.

6. **Tax exemption.**—The government bonds of our Victory Loan, to be issued next month, will probably be exempt from federal income tax, as was the case with the three war loans issued previously.

7. **Freedom from care.**—Bonds can be registered in the name of the holder and the interest thereon will be sent them every six months direct from the government.

8. **Acceptable duration.**—The period of time over which a loan continues will be in the case of the Victory loan bonds of great advantage. Both long and short-term bonds are likely to be offered.

9. **Acceptable denomination.**—The bonds will be issued in denominations to meet the requirements of small and large investors.

10. **Potential appreciation.**—There is every reason to believe that Canada's Victory Loan bonds will increase in value after the war is over, to judge by the fact that in the past war bonds did increase in value at the close of the war. In the event of the war ending within a short time these bonds would increase in value because of certain tax exemptions. Therefore people of wealth will want to invest in them and small holders will probably be able to sell at a profit. In the event of the continuation of the war over a long period a higher rate of interest will have to be paid, and this maintains the value of the bond.