for the kitchen and bathroom. It is frequently heated in both manners in order to have the supply in summer as well as winter.

Piping and Fixtures.

There is nothing required in this line that varies in price at the present time more than piping. It has increased considerably since the beginning of the war and is still fluctuating. When estimating the cost of a system in the home it would be wise to consult the local plumber, for in the majority of cases he is called in to install the equipment and could quote a price that would apply at the time the work was being done. The same is true of bathroom fixtures. There is a wide range in prices, according to the quality of the article desired. Universally, one pays for quality, and this is true regarding the necessary bathroom fixtures. Cheap ones are worth no more than they cost.

A running water system requires some provision to take care of the sewage and drainings from the sink. The septic tank, easily constructed, and which has been several times described in these columns, is the most desirable equipment for this purpose.

The Elevated Tank.

The elevated tank as a means of supplying the dwelling and stables with water is not yet to be despised. This system has lightened the burdens of many a man and woman in the country, and has given them conveniences comparable with those found in city homes.

The tank may be elevated to the loft of the barn, in the house, or outdoors, and the water can be forced to it with the hand pump, windmill, gasoline engine or electric motor. The first method is now somewhat antiquated and the latter is not possible, in the majority of cases, owing to the lack of electric service. It would be a fairly easy matter to install a tank in the attic of the house and serve the dwelling from it. The size of such tank will depend upon the requirements. When supplied by a windmill it is well to have the tank plenty large so a calm spell will not leave the home without water.

Data Re Water and Tanks.

We have stated previously that 50 gallons per day will serve the average country home. A tank to hold one week's supply should contain approximately 56 cubic feet, which will be equal to about 350 gallons. The length of a square or rectangular container, multiplied by the depth, and the product multiplied by the width will give the number of cubic feet, provided the figures used are feet. One cubic foot of water equals about 6.23 gallons. For example, a tank is 8 feet long, 4 feet wide and 4 feet high. The cubical contents will be 128 cubic feet. This figure (128) multiplied by 6.23 equals 797.44 gallons of water, or the capacity of the tank. For smaller vessels, measureable in inches, multiply the three dimensions in inches, as was done in feet, and divide the product by 277.274, which will give the number of gallons contained therein. The gallon measure used in Canada contains 277.274 cubic inches. The United States gallon is smaller. For practical purposes of calculating, a cubic foot of water weighs 62½ pounds, so a vat with a capacity of 128 cubic feet would contain 8,000 pounds of water or 4 tons. One gallon of water weighs about 10 pounds.

It hardly requires a tank 8 x 4 x 4 feet in the average dwelling to supply hard water only. In some instances a tank of this size is installed and divided in the centre, one-half being used for hard and the other half for soft water. A portion of the roof water can run directly into the attic soft-water tank, and the remainder to a cistern in the cellar or in the ground outside. From the cistern it can be pumped to the tank as required.

There are many systems in use throughout the country similar to the one just described, and the windmill is frequently the power used in pumping. The gasoline engine will prove quite as efficient and probably more reliable. When a large tank is installed in the attic extra supports are necessary, and they should be included in the framework of a new house if the intentions are to use this system.

A tank in the loft of the barn needs no additional explanation. It should be large enough to supply both house and stable with water, if it is to be the only one, and it should be higher than the greatest elevation in the dwelling to which water must be raised.

It is not uncommon nowadays to erect large cisterns or reservoirs outdoors, and sufficiently high to serve the stable and first floor and basement of the house. A concrete structure is best in such a case, and in a good-sized tank freezing does not interfere with the efficacy of the system.

The pressure from an elevated tank does not compare with the pressure provided by the pneumatic tank. Owing to the friction in the pipe, elbows and bends the drop of one foot will only provide about one-half pound of pressure. Or, again, a fall of water through 10 feet of space will register only about 5 feet of pressure.

The Hydraulic Ram.

Many streams and springs throughout the country go unused when they might as well provide the home and buildings with an adequate supply of water. These can often be harnessed with a hydraulic ram at little cost. The water ram is not generally understood, so a brief explanation here should not be out of place. The work accomplished by the common ram will depend upon the fall of water in the stream, the amount of water falling, and the height to which the water must be lifted. To determine the quantity of water supplied to the ram select an average spot in the stream. Then multiply the depth of the water in feet by the width in feet, and this product by the velocity of the stream in feet per minute. To ascertain the latter, throw a light shaving or chip on the water and measure the distance it travels in one minute. The same quantity per minute will flow past every point in the stream in the same length of time. Space will not permit us to fully explain here the methods by which the water raised may be determined, but the efficiency of the ram decreases greatly with the lift. A ram provided with 25 gallons per minute from a fall of 10 feet will elevate only about 5 gallons of the amount 40 feet high. The remaining 20 gallons are utilized in operating the ram. There is a certain relationship between the lift and the fall of the water in the stream, which must be consulted in determining what percentage of water will be raised. A hydraulic ram could be used in many instances to force water to an elevated tank to supply the country home. We have seen these in operation and giving satisfaction.

The Acme of Simplicity.

While a farmer can spend considerable money in equipping his home or stables with water, he can also secure a reasonable amount of service at very little expense. In order that the women might have water on tap for work in the kitchen only, some arrangement could be put together on the second floor that would be both useful and inexpensive. The most simple and least costly container would be an oil barrel with the oil burned out. A battery of two or more of these could be installed and connected near the bottom with short pieces of piping. A small force pump costing 8 or 10 dollars would elevate the water to the barrels, and a float in the top of one, attached to a string coming down through the ceiling with a weight on the end, would indicate when the vessels were full or near empty. The price of the barrels, the piping, one tap and a few connections would be the entire outlay over and above the cost of the pump.

Some Noxious Weeds and How to Combat Them.

Every tiller of the soil is forced to wage continuous warfare against persistent weeds, which never cease in their efforts to gain a foothold in the soil. Some weeds are peculiarly adapted to growing, maturing and reproducing in the grain field, others in the pasture, hay crop, garden or orchard. There are a vast number of weeds that grow up, produce seed and die in one season. Practically all that come in this class are controlled or eradicated in a similar way. It takes two years for certain plants to reach maturity, consequently they are more difficult to control than those previously mentioned. However, there is a third class which have a long lease of life, and some members of this family tax the ingenuity of man to contrive methods of eradicating them from the fields. The loss caused by noxious weeds amounts to an enormous sum every year. Not only is the soil robbed of moisture and plant food by these worthless plants, but they crowd out useful plants, increase the cost of preparing the seed-bed and harvesting the crop, interfere with the regular crop rotation, lower the cash value of the farm, not only by their unsightliness but by decreasing the crop yield, and certain weeds are frequently credited with causing the loss of stock. These intruders have silently found their way to the farms of this country, from far lands, through the natural agencies of wind, water, birds and animals. Man has himself to blame in many cases because he has not been careful enough of the seed he sows, of the feeds he purchases, nor of the cleanliness of the machine that does his threshing. Nature has furnished many seeds with means of transportation. Thus the sow-thistle seed is attached to a tuft of hairs which act as a balloon, and the wind may carry it many miles. Curled dock is fitted with life preservers, and it is carried down stream with the flood. Some seeds stick to anything they come in contact with and are carried long distances from the parent plant. A cultivated plant in one part of the world may be a pest under different climatic and soil conditions. While some of the weeds are natives of this country, many of the most troublesome were imported in one way or another from foreign countries. One or two specimens of a plant, that produces numerous seeds, will soon infest a whole field if neglected. With the many agencies of distributing the seed it does not take long for a whole community to become infested. While some weeds flourish on one kind of soil and some on another, there appears to be a troublesome, persistent weed for every variety of soil and for every crop.

If the first plants seen in the field had not been permitted to produce seed much difficulty would have been avoided, but, owing to a limited knowledge of weeds, very few recognize those that are dangerous until it is too late, and one seeding oftentimes makes several years weeding. Many noxious weeds that propagate by both root and seed are not yet known in some sections, and by united effort on the part of all landowners in the district these weeds could be kept out. New weeds are frequently making their appearance, and some of the recent additions to the list are proving very stubborn plants to combat. A strange seed in the bag or bin, or a new plant in the crop should be viewed with suspicion. Some of the worst weeds are attractive plants but they usually produce an enormous number of seeds which quickly disseminate themselves about the place. From one farm they spread to the next, and if allowed to go unchecked the land in the whole community soon becomes seeded. While the individual can guard against sowing bad seeds it requires the co-operation of the entire district in keeping under control such weeds as have the ripened seed spread by the wind. It is almost impossible to keep a farm free from perennial sow thistle if the weed is allowed to grow and seed on a farm within half a mile or more.

Preventing Weeds Getting a Start.

Sowing of grains, grasses and clovers that are free from impurities is the first principle to follow in endeavoring to keep the farm clean. True, no farmer will knowingly sow weed seeds, but some of these seeds are very minute or are similar in shape and color to seeds of the cultivated crop being sown, and thus escape notice. It is difficult to secure clover or grass seed absolutely free from weed seeds, and so it is little wonder that many farms are producing more weeds each year. Through being familiar with the seeds of the various weeds the purchaser of clovers and grasses could discriminate against samples that contained noxious seeds, and so prevent new plants being introduced to the farm. With grain, the smaller seeds can be screened out, but one must

Wild Oat—(Annual).

Perennial Sow Thistle.