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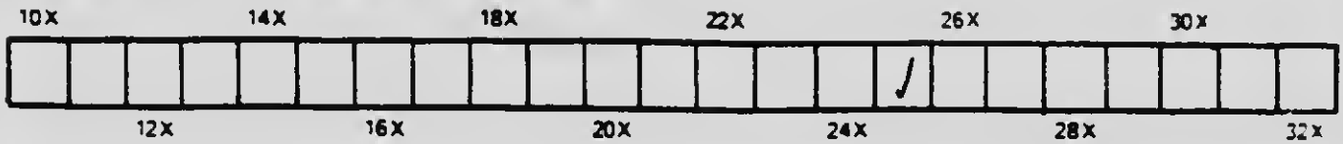

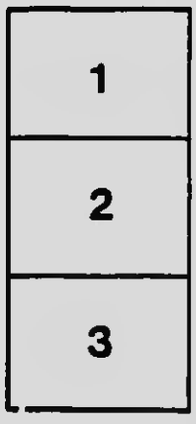

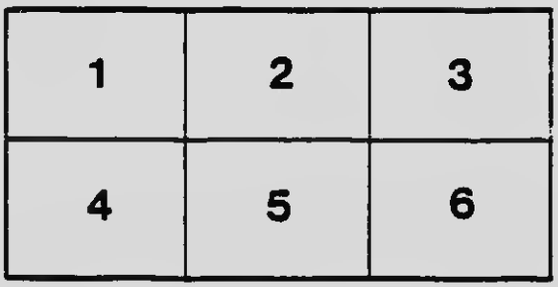

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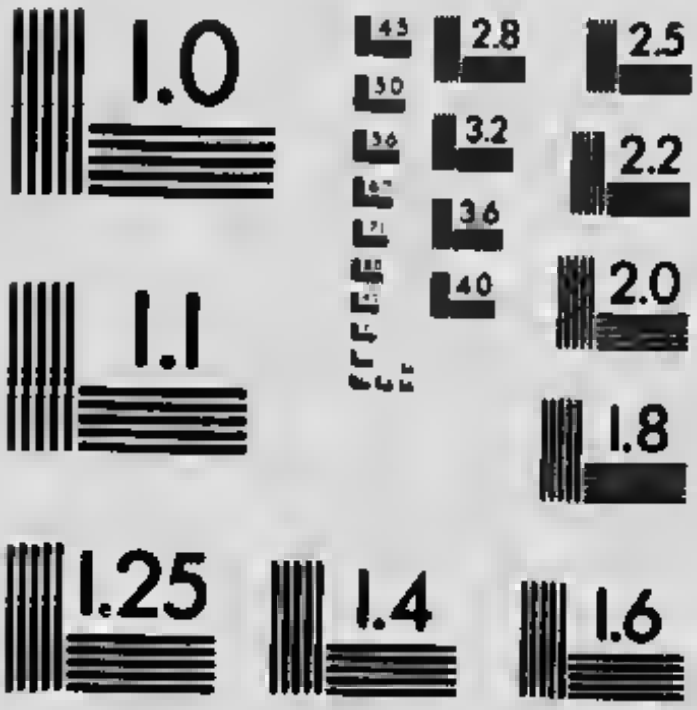

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THE STORING OF ROOTS

By H. A. CRAIG *and*
S. G. CARLYLE

Issued Under the Direction of
HON. DUNCAN MARSHALL
MINISTER OF AGRICULTURE

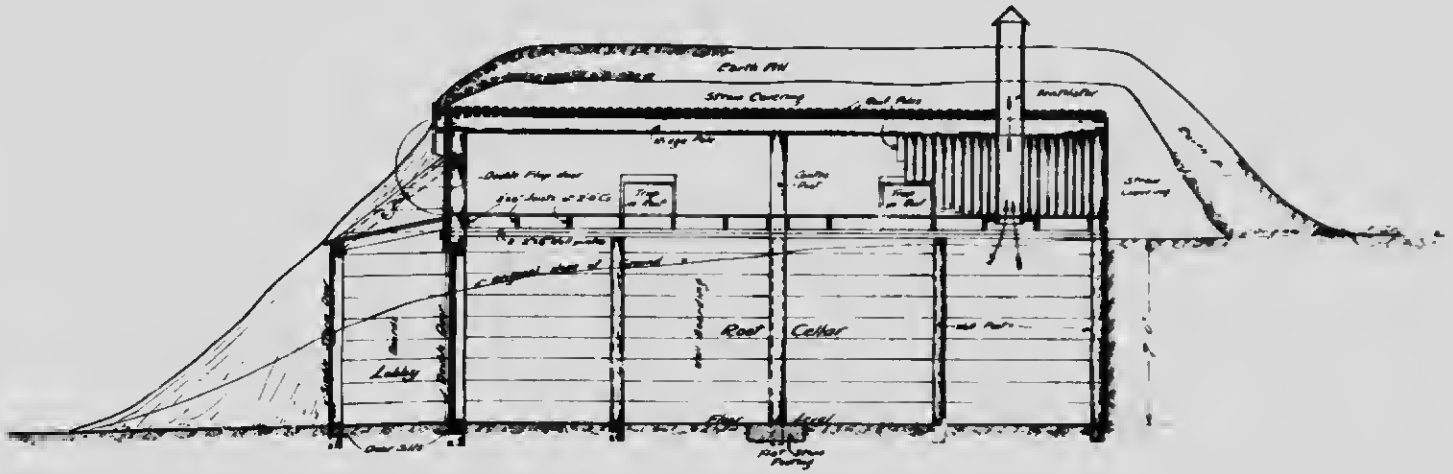
ROOTHOUSES

OWING to the perishable character of root, potato and vegetable crops, there is usually some loss connected with the keeping of them, even where considerable care is exercised. Besides being easily spoiled on account of their watery nature, the keeping quality of roots varies in different seasons, and in every season it is difficult to meet the wide variations in temperature to which the climate of Alberta is subject. Many of our settlers are inexperienced and are also unable to build expensive accommodation. Every farmer requires some accommodation for the storing of roots and vegetables in order to save what he uses and likewise take care of his surplus. The storing of the surplus, or of a considerable part of it, is a saving of time in the harvest and threshing season and usually results in profitable marketing later in the season.

Owing to the present world shortage of food, production has been greatly stimulated in regard to bread crops and equally with respect to roots and vegetables, which can be cheaply produced in large quantities and which are to some extent a local substitute for exportable foodstuffs. The information contained in this publication is intended to meet the general and special needs of farmers of both large and small means. It is based on experience and practice on the Provincial Demonstration Farms together with observation of the satisfactory care of roots among successful farmers. The method by which roots and vegetables are kept will depend to a considerable extent on local circumstances and conditions. If the cellar accommodation of the house is large and the crop is not produced on a large commercial basis, a house basement will sometimes answer all needs. Accommodation outside of the house may be of three kinds: an underground cellar, a roothouse above ground, or a pit.

Essentials of Temperature and Ventilation

In whatever way roots are stored, there are a few simple and necessary conditions that apply in all cases. The chief needs are protection against frost and the maintaining of suitable temperature and ventilation. When roots are frozen, the expansion of the water in the cells causes a disruption of the cell walls, which is followed by undesirable chemical and bacterial action, resulting



· FIG. 2. · LONGITUDINAL SECTION · THRº · CELLAR ·

in decay. On the other hand, roots require to be kept constantly cool. Under conditions of too great warmth the moisture of the roots evaporates, the cells collapse and the roots shrink. They sometimes begin to sprout, especially if exposed to sunlight, and in any case are greatly impaired for use. Where ventilation is not provided, decay immediately sets in, especially where earth surrounds the roots, and rapidly spreads in all directions. The best temperature at which to keep roots is about 2 degrees above freezing but as temperature is necessarily subject to some variation it should be kept within the limits of 32 to 40 degrees Fahrenheit.

Basement Storage

Owing to the fact that basements in houses usually contain heating plants, roots are not commonly very well kept in basements. Where the basement consists of a single large chamber the air is too dry and also too warm to keep roots hard and crisp. It is necessary to separate the storage room from the room containing the heating plant. Cement walls make the best partitions but close board walls will serve if other necessary conditions can be secured. Direct contact with outside air is desirable by tiles or window slits.

FIG 1.—PLAN OF UNDERGROUND ROOT CELLAR

The Outside Root Cellar

The best results in root storage are secured in buildings or cellars erected for the single and specific purpose of storage, and these are commonly used for the purpose of storing field roots and potatoes and also the house supplies of winter vegetables. Where the ground is suitable, the south face of a hill or ridge makes a good site for a root cellar. To construct this kind of accommodation the ground is scraped out from six to seven feet deep, twelve to fifteen feet wide, and as long as desired. Each cubic foot of space

will take care of forty pounds of roots; or, otherwise expressed, each running foot in a roothouse twelve feet wide and six feet clear in height will provide for about fifty bushels of roots. Posts six feet apart and as high as the top of the ground should be placed on all four sides to form a wall (Figs. 1 and 2). Seven and a half foot split or whole cedar fence posts are the best for the purpose, though many will find it expedient to use local but less durable wood, such as poplar. These posts may be boarded on the outside with rough lumber before being set up and raised to position in sections. The boards should keep the earth between the posts from caving in and should form a comparatively tight wall. On top of these posts plates should be laid, made up of either a couple of two-by-sixes or a piece of timber. Poles or joists should be laid across from one plate to the other, and on top of these, rough boards to form a ceiling. Large posts should be set in a row about six feet apart through the middle of the cellar. These posts should

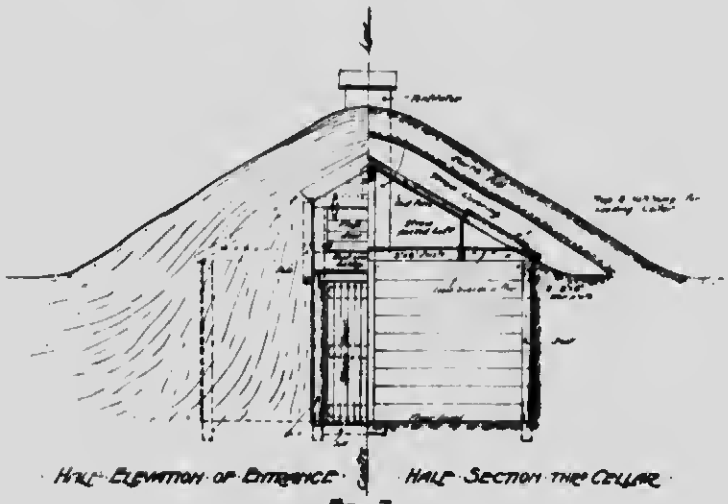


FIG. 3.

extend up through the ceiling to the peak, on which a ridge pole is placed. In a twelve foot wide cellar, the middle posts should be two and a half feet longer than the side posts, so as to make a satisfactory slope and also to make a loft which will hold considerable straw. The roof consists of posts, preferably cedar, laid close together, one end resting on the plate and the other on the ridge-pole. On top of these posts should be spread dry straw four feet deep and on top of the straw, earth to a depth of ten to twelve inches should be placed evenly and firmly to run the water off. The gable end in the bank should be boarded and well banked with straw and earth. In the other gable end a small door should be made through which straw can be put and well

packed in the space between the roof and the ceiling, the old straw being removed each year. This straw serves to absorb moisture and also keeps out frost.

If the bank or ridge of ground in which this root cellar is built is steep enough, a door may be made in the end to walk in from the level ground (Figs. 3 and 4), or it may be necessary to dig out this end of the cellar, in which case steps will have to be provided for entering. In either case an entrance or porch should be made over the main door to the cellar, tightly built and fitted with a tight door. With the approach of cold weather this porch should be filled and tramped with straw or coarse manure to keep the frost from entering at the main door. The roof during cold weather should also be covered with coarse manure which should be taken away in the spring.

For ventilation it is usually sufficient to provide openings in the roof to permit the escape of moisture and warm air, especially during the early part of the storage period. For this purpose,

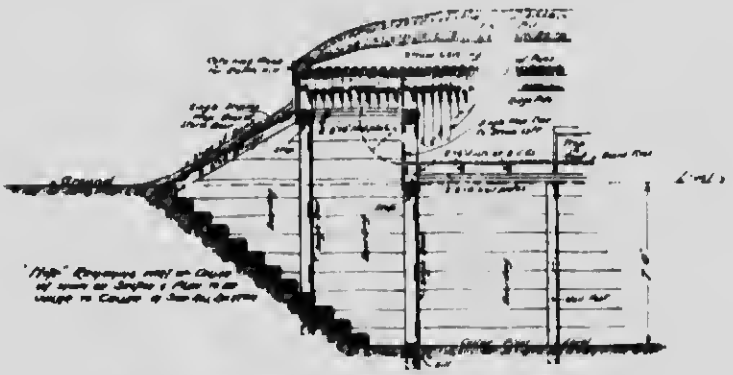


FIG. 4. SECTION SHOWING STAIRWAY ENTRANCE TO CELLAR & STRAW-PACKED LOFT

an eight-inch-square shaft for every twelve feet in length of cellar will be sufficient. Shutes for filling should be made about twenty inches square. One of these should be at the farther end of the cellar and others on the sides, but not directly opposite each other. They should have tight-fitting doors and be well packed with straw and also covered with manure in winter time. Ventilators and filling shutes should be left open during the first week, or longer if necessary, to allow the roots to cool and moisture to evaporate, and later in the season when doors and filling-shutes are closed, it will still be necessary to leave the ventilating shafts open or to have them stuffed with rags to meet the variations in temperature outside.

Surface Roothouse

The surface roothouse (Figs. 5, 6 and 7) is much harder to keep warm in winter and is much more expensive than the cellar. The earth cellar is recommended, except where poor drainage makes an excavation impossible. The outdoor roothouse is

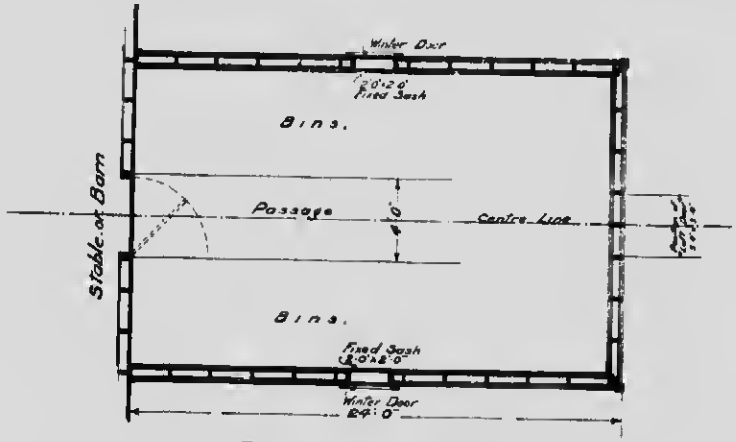


FIG. 5, PLAN SHOWING CONSTRUCTION OF FRAME ROOT-HOUSE ABOVE GROUND.

commonly made by double boarding, with paper between, on both the outside and inside of 2 x 6 studding. The double course of boards, both inside and out, should be separated by perpendicular inch strips so as to make three dead-air spaces in the walls. The

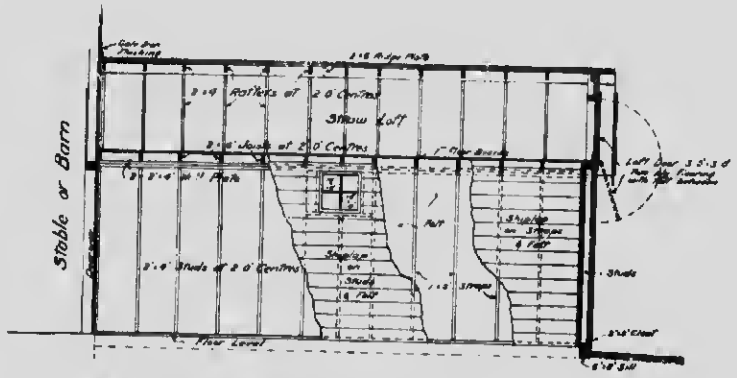


FIG. 6, LONGITUDINAL SECTION OF ABOVE-GROUND ROOT-HOUSE.

sides may be eight feet high. The roof should be ceiled on the inside. The same provision for filling is made as in the case of the cellar, but the openings for receiving the roots should be made in the sides and well up towards the roof. In the case of both the

root cellar and surface roothouse it is necessary to have a dry floor This construction takes account of roothouses constructed by themselves. It is wholly desirable, if conditions make it possible, to have the roothouse accommodation joined to the stable. Where large and improved stables are built, this arrangement is to be assumed. The construction set out above is such as may be within reach of anyone, and involves a minimum of labour and expense consistent with securing the result desired.

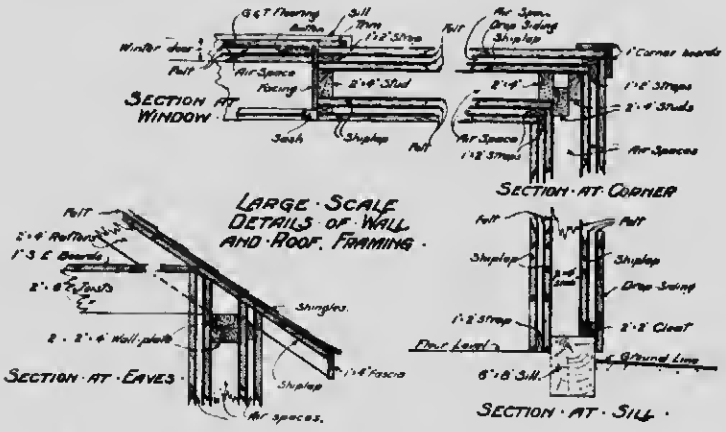


FIG. 7. DETAILS OF ABOVE-GROUND ROOT CELLAR.

Root Pits

It occasionally becomes necessary to supplement the roothouse accommodation by using pits. These, if properly made, will keep roots even fresher than a roothouse which is being opened and shut from using the roots daily. Owing to occasional low dips of temperature in Alberta, pits are commonly laid deeper than they are farther south. To construct a safe pit, a hole is scraped out about six feet deep, and as long and wide as is necessary to hold the quantity of roots or potatoes to be stored (Fig. 8). The pit is filled to within about two feet of the top of the ground. Poles are then laid across the pit, not more than a foot apart, similar to joists across a ceiling. On these poles is then piled four or five feet of dry straw, the straw extending several feet on the ground out over the sides of the pit to prevent the frost from penetrating from the sides. On top of the straw is then placed about a foot of earth. The earth should not be laid on immediately after the pit is filled. The roots should be allowed to dry and cool for some time before the pit is finished for winter protection. A ventilator about a foot square should he placed in the centre of the pit, extending up through the straw and ground. If the pit is large, two ventilators should he made. These can be left open until

the weather is cold, then they should be stuffed with old bags or straw. The large amount of straw placed on the pit not only serves to keep out frost but also absorbs the moisture thrown off from the potatoes.

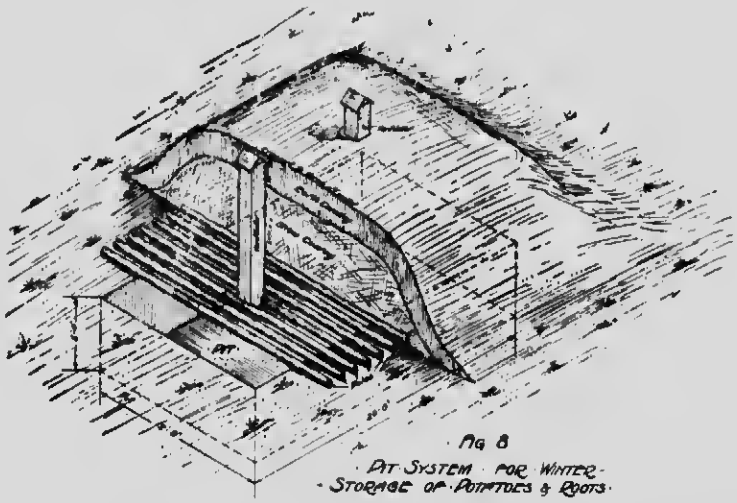


FIG 8
PIT SYSTEM FOR WINTER STORAGE OF POTATOES & ROOTS

The chief objection to the pit system is that the potatoes cannot be got at during the cold weather. Pits are therefore only used by farmers who intend to carry over a certain part of their crop until the next spring.

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