

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF VIRGINIA

VIRGINIA AGRICULTURAL AND MECHANICAL
COLLEGE AND POLYTECHNIC INSTITUTE
AND UNITED STATES DEPARTMENT OF
AGRICULTURE, COOPERATING

EXTENSION SERVICE

Blacksburg, Virginia
August 22, 1934

To the Garden Directors
of the Emergency Relief Administration
of Virginia

At the request of Mr. M. L. Myers, Director
of Subsistence Gardens, we are sending you the enclosed
notes and sketches which will be of interest to any one
wishing to provide inexpensive storage for fruits and
vegetables. Although only one copy is being sent to you,
additional copies will be supplied on request. It is
preferred, however, that you advise the agricultural
extension division at Blacksburg, the names of those in
your county who want to construct such storages and a
copy will be sent direct to the user.

We trust this information will prove helpful.

Very truly yours,

Chas. E. Seitz

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Extension Agr'l Engineer.

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Va. A. & M. Col.
and Poly. Inst.
and U. S. Dept. of
Agriculture Coop.

EXTENSION SERVICE
COUNTY AGENT WORK

F A R M S T O R A G E
F O R
F R U I T S A N D V E G E T A B L E S
Prepared By
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and
V. R. Hillman, Agricultural Engineering Dept.

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Many farms without cellar or other suitable means for vegetable storage may secure such storage at very slight expense if one of the means suggested in these pages is followed.

Figure 1, is a building of post and slab construction. After the dirt is dug away, two rows of posts through the center form the walk-way and the front of the vegetable bins. Two other rows of posts, one on either side, form the outside walls. Slabs or boards are placed on the outside of these posts and held in place by dirt which is tamped back in place as the wall is built. If the edges of the slabs are straightened, a fairly tight wall results. They may be nailed lightly to stay better in position until the dirt is replaced. Rails or poles may be used instead of slabs or lumber if some old metal roofing or other such material is available to place on the outside of the wall to keep the dirt from sifting through. Vegetable bins 2 or 3 foot wide are built along each wall and shelves for canned fruit placed above.

LOCATION:--The most convenient location for building one of these storage houses is in the side of a hill or bank. There is no need then to provide drainage, and entrance may be gained at floor level of the storage without using steps. Figure 2 shows how the front wall will look. The front is boarded up with slabs or plank, and a heavy door provided to keep out frost in cold weather. The whole structure must be covered with from 2 to 3 foot of earth for insulation. In most localities a south or southeast exposure will be most desirable. In warmer territory it may be desirable to extend the roof a few feet to partly shade and protect the front wall in order to hold the temperature down to a desirable point.

VENTILATION:--The most important part in the construction of the storage is the provision for proper ventilation. Good ventilation must be provided. This is secured by an out-take flue 12 inches square placed in the top near the back of the storage room. Intake air is secured through flues on either side of the door. The front wall is tightly boarded on the inside of the posts, which leaves a space between this and the outside boards. One outside board on either side of the door is hinged as shown and may be opened for ventilation. If these doors are opened when the outside air is cooler than the cellar, cold air will enter, pass down the wall and into the house at the floor. Warm air will escape through the out-take flue and the house, together with its contents, can be brought down to a safe storage temperature.

During cool nights the ventilators are left open but they must be kept closed in warm weather and during warm days to prevent the circulation of warm air through the cellar. In very cold weather all openings must be kept closed to prevent freezing temperatures. The out-take flue should be stopped with papers or a burlap bag if no damper is provided in the stack.

FLOOR:--It is important to note that the floor is not solid but is made up of boards 4, 6, or 8 inches wide with $1\frac{1}{2}$ or 2 inch openings between them. This floor is laid on sills 6 or 8 inches high to allow good circulation of air under the vegetables. Notice in figure 5 that a large part of the intake air goes under the floor and filters up through the floor and storage space.

STONE CONSTRUCTION:--Figure 3 shows a similar plan but of stone construction. These stone walls should be 16 to 20 inches thick and, if care is taken to select large well shaped stones, quite a good wall will result with only clay mortar. Cement mortar will be more satisfactory, however. The intake flue on this stone building is a stone chimney built on one side of the door with a hooded opening at the top and an opening through the wall at the bottom as indicated in figure 5. Figure 4 shows an outside view of the completed structure before dirt is placed over it. This building should also have 2 to 3 feet of dirt over it for insulation.

DIMENSIONS AND CAPACITY:--The minimum size for these storage cellars is $6\frac{1}{2}$ or 7 feet wide by 8 feet long and 7 feet high in the center. If the bins are made $2\frac{1}{2}$ feet deep and $2\frac{1}{2}$ feet wide the full length of the cellar, they will hold approximately 40 bushels of vegetables. Two 18 inch shelves above these bins will give shelf space for about 200 half gallon cans of fruit or vegetables. These figures given are inside dimensions and may be increased by any amount desired if more storage is required. The side wall should in no case, however, be built more than 7 feet high if this type of construction is used, as in heights greater than this the walls will need more reinforcing to support the pressure of the earth.

PRODUCTS THAT MAY BE STORED:--Vegetables which may be stored in this cellar are Irish potatoes, beets, carrots, turnips, rutabagas, parsnips, salsify, cabbage and celery. Rotting or diseased vegetables should not be stored as they not only spoil, but will damage other vegetables in storage. Sweet potatoes will not keep in this kind of storage. They require a warm, dry place. If apples are to be stored, a two compartment cellar should be provided, as apples absorb tastes and odors readily.

These plans are suggested as a means of securing the cheapest possible storage structure, coupled with convenience and proper ventilation. If more permanence, cleanliness, rodent control, etc., are desired, this same type of structure may be built of reinforced concrete in any size required.

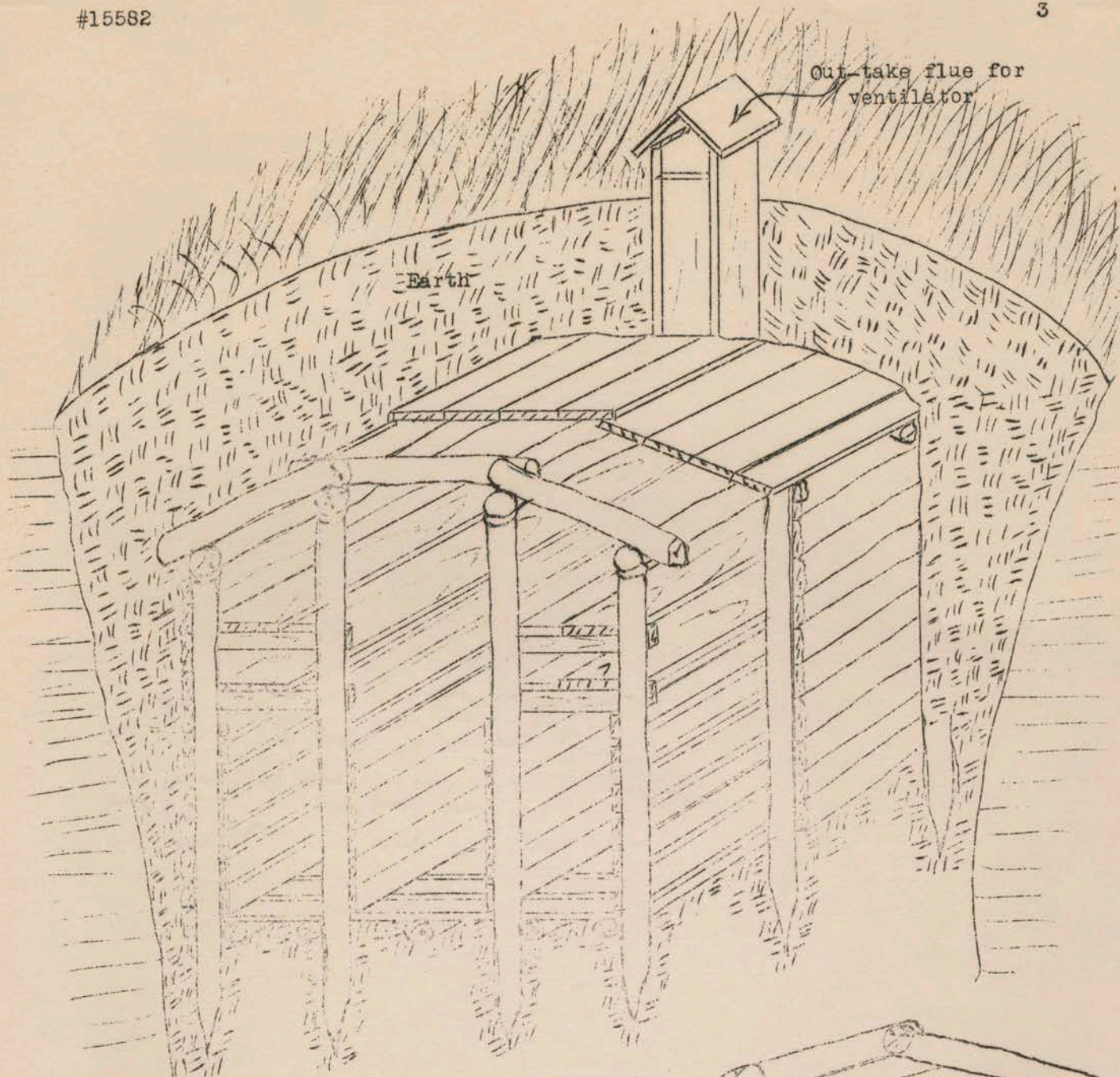
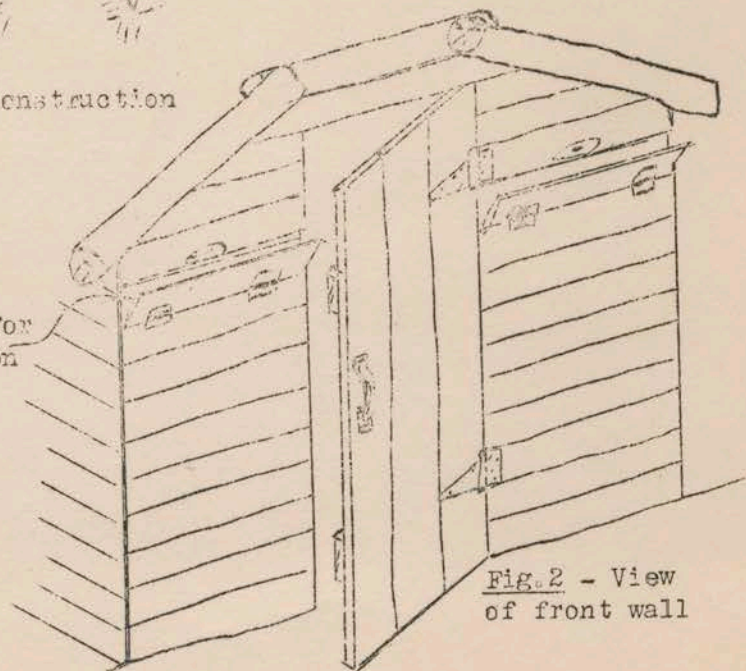


Fig. 1 - Post and timber construction

Air intake for ventilation



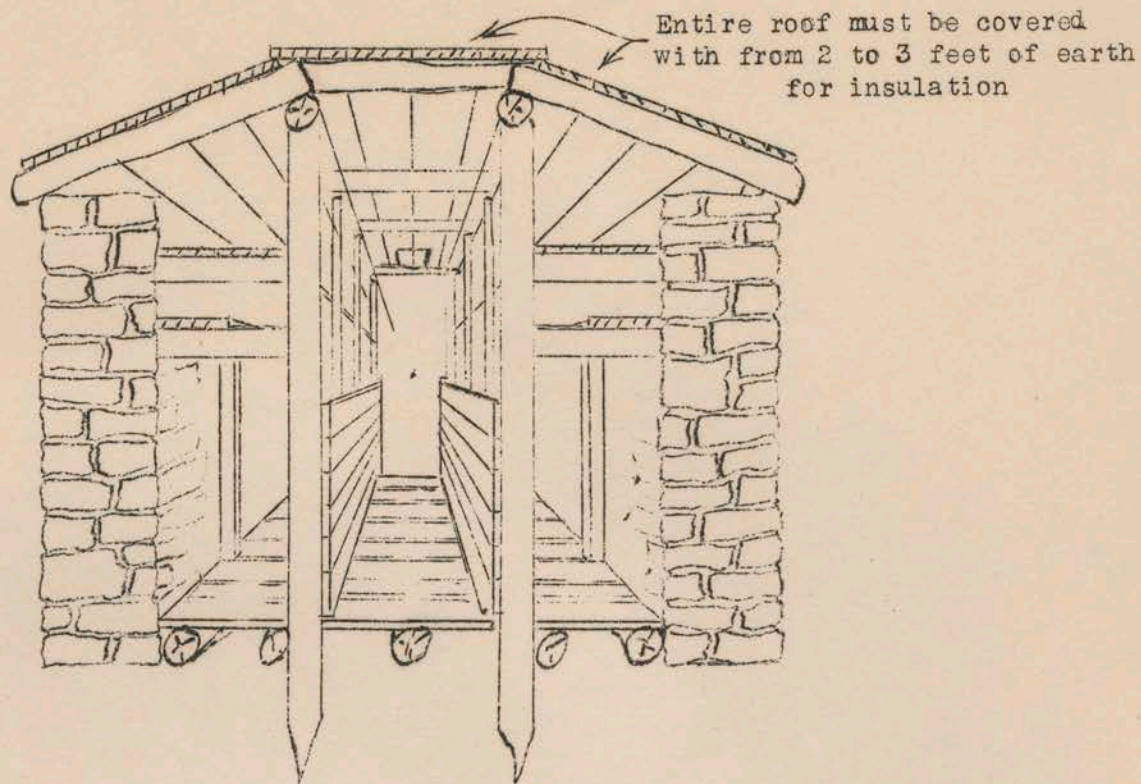


Fig.3 - Showing stone wall with bin and shelf construction

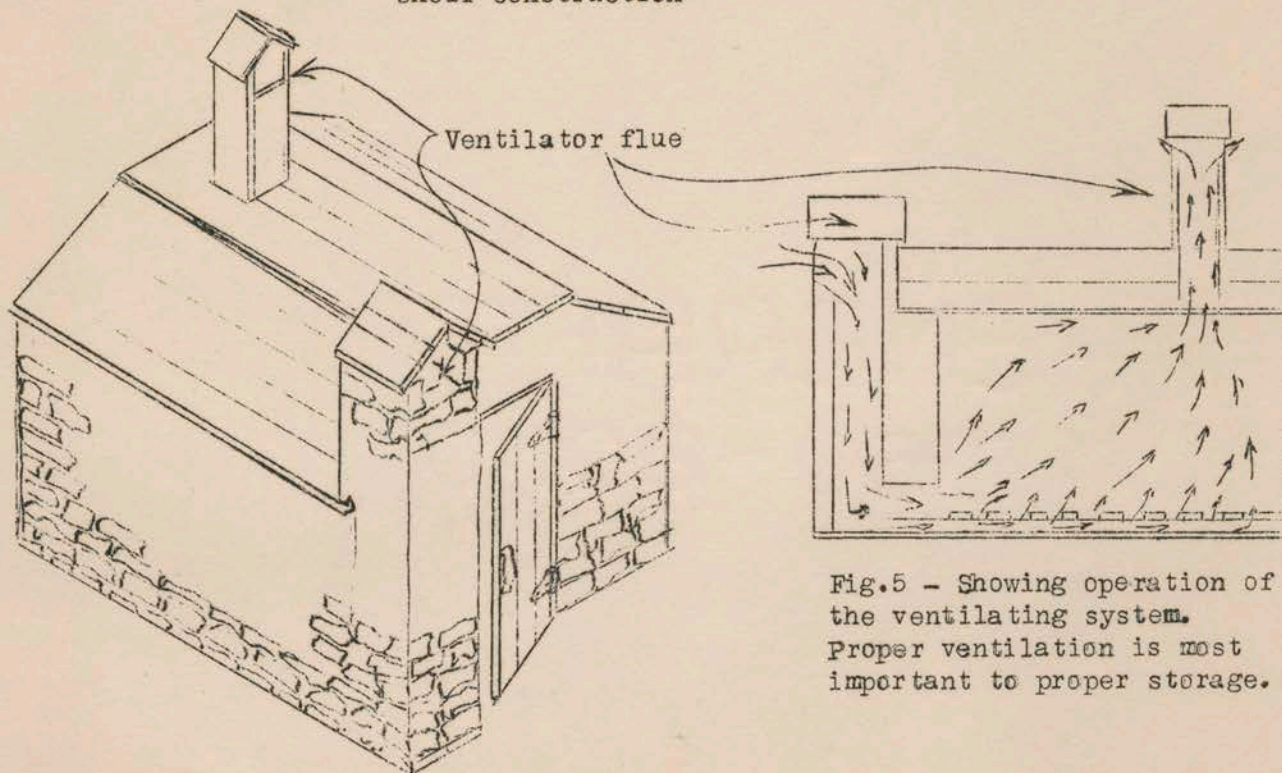


Fig.5 - Showing operation of the ventilating system. Proper ventilation is most important to proper storage.

Fig.4 - Outside view of stone building
Note stone chimney on front for air intake