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Adobe as a Building Material for the Plains

BY

J. W. ADAMS

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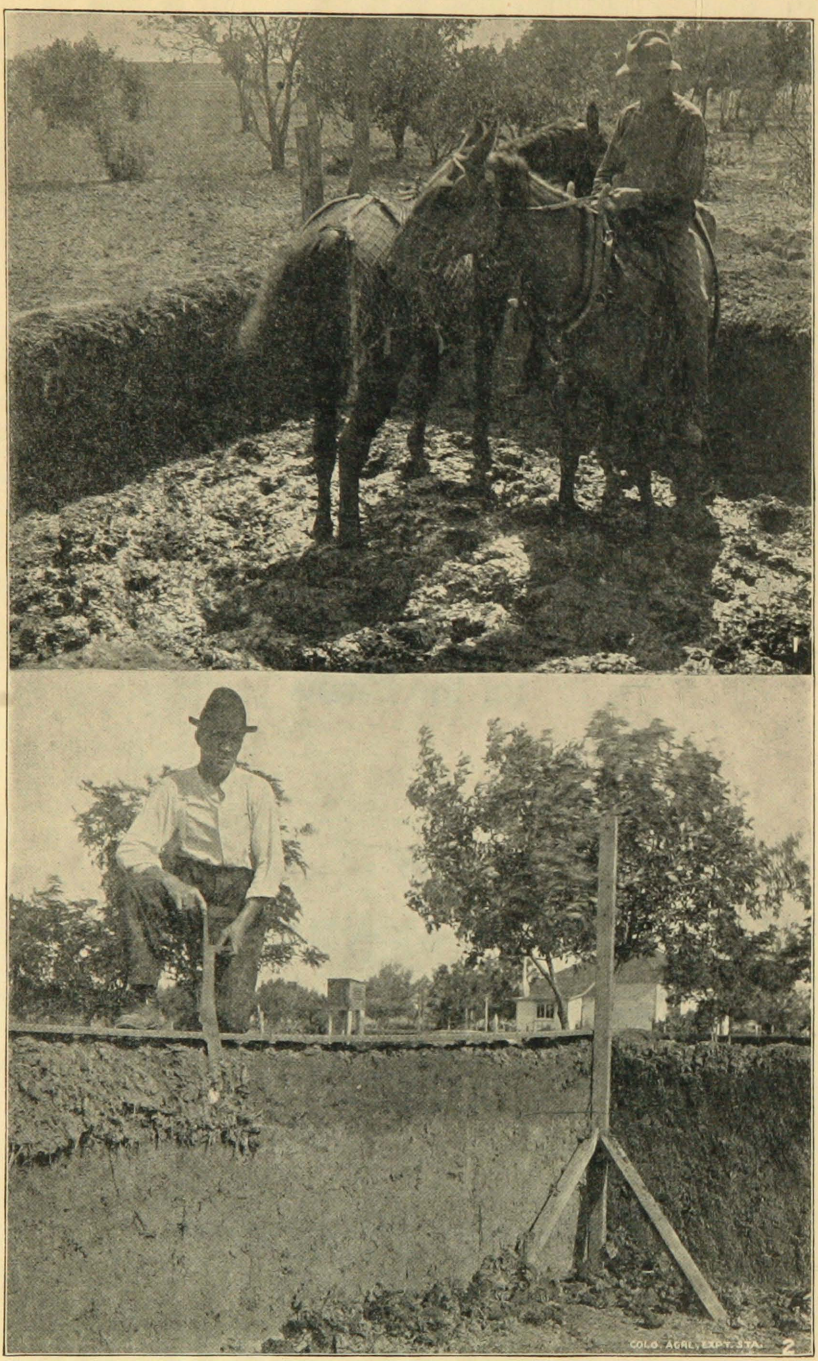

PLATE I.—1. Tramping the Abobe. 2. Trimming edge of wall with hay knife.

ADOBE AS A BUILDING MATERIAL FOR THE PLAINS.

By J. W. Adams, Superintendent of Plains Sub-Station

To the settlers of the plains, the subject of building material is of great importance. Comfort, cheapness, durability, and neatness of appearance are the elements considered in selecting building material for the homestead.

In this connection, we should like to call the attention of the settlers of the plains to the adobe buildings, or "Dobeys," as they are commonly called. These should not be confounded with the sod buildings. I do not wish to cast any reflections upon the "Soddy." It has served, and is still serving a good purpose as a cheap, comfortable house; but, at best, it is only a makeshift until the owner can build better. The "Soddy" is always settling and cracking the plaster, thus annoying the the housewife. The sod wall is an ideal harbor for mice and rats, and it is usually short-lived.

Not so with the adobe building. An adobe house, properly built, will cost no more than a sod house and yet be as permanent, attractive and comfortable as it is possible to build a house. They do not settle after they are dry. Mice do not work in them if they are protected at the foundation. They are superior to concrete or cement block houses in that they are non-conductors of heat and cold. They never sweat or become frosty on the inside, and rain does not wet the walls through as it does in many concrete houses. The labor required to build an adobe house is no more than that required to build a similar house of sod or concrete.

At the Plains Sub-station, at Cheyenne Wells, we built during the summer of 1910 three adobe buildings which have attracted so much attention and favorable comment that we have decided to publish this bulletin describing these buildings, giving cost of material, time required to build them, and describing the process of building so that any person desiring to build such buildings may do so.

We erected these buildings on concrete foundations eight inches high. This is not necessary, if one is always careful to keep the buildings banked up to prevent water settling around them. The concrete foundation is desirable, however, as a protection against mice and rats. These foundations were very cheap, as we used old cement blocks from a burned building to mix with the concrete. If rock of any kind is available the foundations need not cost much.

In planning a building of this kind, we should consider the kind of roof to be used and make the dimensions such that it may be covered with the least possible waste of material. The dimensions being decided upon, stake out the foundation carefully. If concrete foundation

is to be used it will be necessary to make forms for the foundation. Then set good straight posts in each corner and at intervals of 14 or 16 feet on the inside of the wall. Line and plumb these posts very carefully. If desirable, short stakes may be used instead of posts until the walls get above the stakes, then these may be replaced by posts as high as the walls are to be. Good, straight 2x4 posts are all right. The stakes being lined and plumbed carefully, you are ready to begin the wall.

Now, take your sod plow, select a patch of prairie where the grass is thick and tall—if possible, (avoid sandy soil) and plow a thin sod. You may plow enough at one time for the entire building, if desired. Select a place for mixing the adobe near your water supply, if possible. With small buildings, it may be desirable to mix the adobe in the center of the building, but it will not pay unless your building is so located that you cannot drive around it. Haul your sod and spread it in a circle not to exceed twelve to fourteen feet in diameter. Make the pile about eight inches deep. Now, throw water on this pile until you think you have enough to wet the whole pile thoroughly. Then, get on a horse and lead one or two others (see cut) and make the horses tramp around and around, turning very short. If they are allowed to go in a larger circle they will avoid stepping on the higher places. After you have tramped a few rounds, you will discover dry places in the pile. Throw more water on these places, and continue tramping and throwing on water until the whole mass is mucky. The pile will have a tendency to spread out and some places will be sloppy while others are not wet enough. Then, lead your horses out and take a manure fork (a six-tined fork is best) and throw the outer edges of the mass toward the center, taking care to throw the drier parts to the wet places and vice versa. Tramp again, adding water if needed. It is usually best to throw the edges in the second time in order to get the mass evenly mucked.

If you have been unable to get sod with plenty of grass and roots to form a fiber in the mud you should add a small amount of straw, hay or trash of some kind. Spread it over the mass after it is mixed as above described and tramp again until the straw is all tramped into the mud. When the mass is thoroughly wet and thoroughly mucked, and of such a consistency that it can be handled with a manure fork it is ready to be put into the wall. Throw this on a wagon or sled, discarding any chunks that have not been mucked, draw it alongside the wall and place it in the wall with a fork. Drop it into the wall with sufficient force to make it settle together solid, leaving no holes or spaces. Make as thick a layer as you can without its spreading out too wide. Let it spread over the edge of the wall an inch or two on each side. Be sure that the mud comes out to the edge of the wall at all

places, otherwise there will be holes, or flaws, in the wall when trimmed As soon as you have made one layer around the wall, if the weather is hot and dry, you may be able to start around again placing a layer on top of the first, being careful to make the mud fit down on the first clear out to the edge of the wall to prevent flaws. When you have a layer about 12 inches thick let it stand until it is firm but not dry. Select a board with straight edges fourteen to sixteen feet long and as wide as the thickness of the wall. If the wall is to be more than twelve inches thick, two boards of the proper width may be cleated together to make the required width. Lay the board on top of the wall with one edge against the posts, get upon the board and trim straight down each edge of the board with a hay knife (See illustration). When the walls are trimmed all around in this maner they are ready for another layer of mud. Continue until the walls are the desired height. Never allow a layer to become hard before it is trimmed or you will have a hard job.

The rapidity with which this work may be pushed depends upon the weather. If the weather is hot and dry, you may be able to make an average of six inches per day from start to finish. Some days you may put a foot and then let it rest a day or two. If the weather is cool or damp the work will go correspondingly slower. In early spring or late fall, the work is very slow, and one should not attempt to build adobe in winter.

Keep watch of your walls. If they are not drying rapidly, you had better lay off a day and allow the walls to dry. It is a very good plan to build two or theree feet and then let it stand a week or so and then build two or three feet more and so on until the wall is done.

The frames for doors and windows may be put in place and the mud built to them. But, a better way is to trim the openings for doors and windows, and fit frames into the openings as soon as the walls are as high as the frames are to be. These frames should be of two-inch stuff. The top of the frame should be as wide as the thickness of the wall and should extend into the wall a little. When the frames are in place you may build over them with the adobe. The walls will shrink in drying and draw away from the frames a little, leaving a crack. These cracks may be plastered up with a trowel.

If the roof is to be of shingles or iron, it will be necessary to anchor the plates to the wall to prevent the roof blowing off. This may be done by putting fourteen-inch bolts through short pieces of two-by-four and planting them in the walls as you build so the top of the bolt will just reach through the plate. If adobe or sod roof is to be used, the weight will be sufficient to prevent blowing off. The roof should be leak-proof to prevent water running down the walls and softening them.

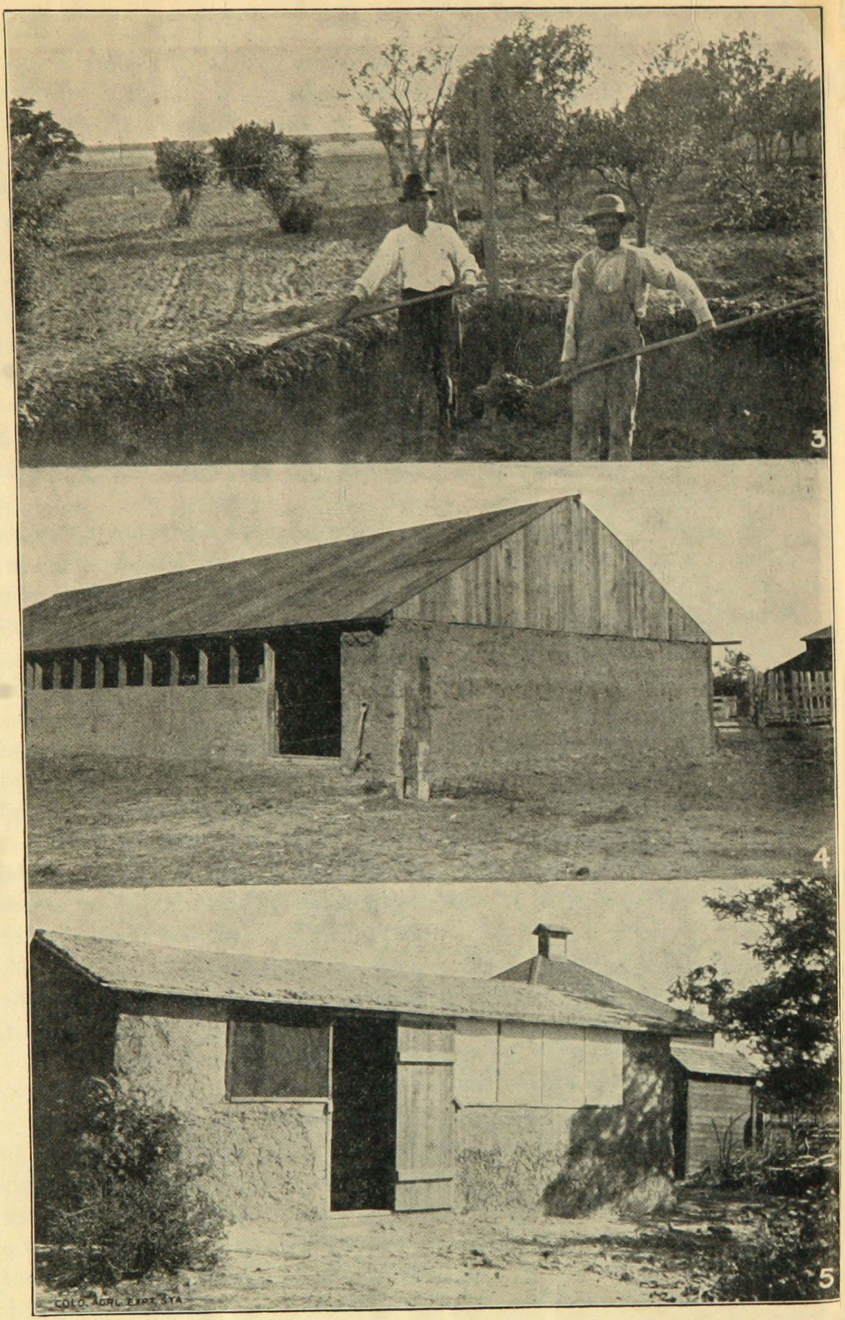

PLATE II.—3. Building the wall. 4. Cow barn 26x60 feet inside. 5. Poultry house.

We built at the Station this year a cow barn, a hen-house and a smoke house, or store room. The cow barn is 26 feet wide and 60 feet long, inside. The walls are twelve inches thick and seven feet high, with concrete foundation eight inches high. On the south side, the walls were built only four feet with adobe. The remaining three feet is framed with two-by-six lumber and enclosed with muslin curtains (See illustration. The picture was taken before the curtains and doors were on.) These curtains furnish light and ventilation without draft. The roof is of corrugated iron. The rafters are 2x4x16 placed two feet apart, with cripples at the splice in the iron and one in the middle of the iron to prevent sagging. The iron is nailed to iron at edges, lapping two inches. The rafters are supported by two rows of 4x4 posts—four feet on each side of the center of the building. At the top of these posts, a 2x6 is spiked for the rafters to rest upon.

The iron was painted on the under side and in the splices before it was laid. The upper side was painted after it was laid. The gable ends are boarded up with shiplap. Eighteen feet of the west end is partitioned off for feed, and a large door is left in the gable end through which to throw feed. On the south, there are two doors. One is three feet wide, hung on hinges, and the other six feet wide, hung on tubular track.

We have two rows of swinging steel stanchions supported by the same posts which support the roof, leaving a nice feed alley between the mangers. Twenty-eight feet of the barn has concrete floor with gutters and troughs of concrete.

The cost of the building in cash and labor is shown below:

Cement in foundation, $6.60, floor $23.40		$ 30.00
Lumber for entire building		232.74
Total		$ 262.74
Man labor	601 hours	
Team labor	142 hours	

POULTRY HOUSE.

The poultry house is 14x20 feet, inside. The end walls are 12 inches thick and the side walls are 10 inches thick. The walls are six feet six inches high at the eves, and nine feet high at the gable. The south wall is only three feet six inches of adobe, the other three feet being framed and curtained in winter, and screened in summer.

The roof is made by laying joists, of 2x6 lengthwise about three feet apart. The ends are toenailed to blocks laid in the adobe. The middles are spliced and rest on posts. Shiplap is laid on the joists, and a kind of tar paper or rubberoid is laid on the shiplap. This is

covered with adobe such as is used in the wall. The adobe protects the paper and adds weight and warmth to the roof.

The house is plastered on the inside with a mortar made of sand and common soil. We used as much sand as could be put in without making the plaster crumble. It has not cracked at all and is as hard and smooth as lime plaster, but it will not stand wetting. This makes as good a poultry house as it is possible to make. It is neat, warm and light. The muslin front furnishes light and ventilation without draft.

The cost of building is shown be'ow:

Cement $1.80, lumber, nails, etc. $29.44		$ 31.24
Man labor	114 hours	
Team labor	42 hours	

STORE ROOM, OR SMOKE HOUSE.

The smoke house is 14x14 inside. The side walls are 10 inches thick and the end walls 12 inches thick. The height is seven feet at the eaves and nine feet at the gabels. It is built on the same plan as the poultry house, except that we have two four-light single-sash windows instead of curtains. It is plastered with cement instead of earth. We have four 2x4 pieces crosswise just beneath the plates. Boards can be laid on these to form a small attic in which to store things.

The cost is as follows:

Cement $3.00, lumber, nails and paper $21.87		$ 24.87
Man labor	131 hours	
Team labor	42 hours	

The question will probably be asked why it took so much longer to lay up the walls of the smoke house than to lay the walls of the poultry house when there is really a little more wall in the latter. This can be easily explained. The men who laid the poultry house walls had continuous work and the advantage of experience and knew just how to go at it. But, the smoke house was built at odd times, and by severel different men, each having to learn his trade

THINGS TO BE EMPHASIZED.

1. Line your posts and plumb them carefully, and your walls are bound to be straight and plumb.
2. Be sure to make good joints between layers.
3. Never allow adobe to get hard before trimming.
4. Never allow dry or untramped chunks of sod to enter the wall.
5. Never allow water to settle against the walls.

Cement and block off on the outside and you have a very attractive and durable house.