# HOUSES BUILT OF EARTH.

The housing question has revived many suggestions for a cheap house, and architects and builders are experimenting in many lands with numerous materials, but so far the so-called "cheap" house has not materialized.

In New Zealand there are many wool sheds and smaller sheds built of clay, or earth and straw (or hay), particularly in the Marlborough district, one can see large farm residences built of rammed earth and in some cases sods of earth have been used for this purpose.

We illustrate a large wool shed which was built in Marlborough with earth ploughed from a neighbouring field and tamped down by horses, then mixed to a thick substance with water and then used in a similar manner to concrete in layers—raising the walls each day by adding more of the substance. Hay was mixed with the mud in this case.

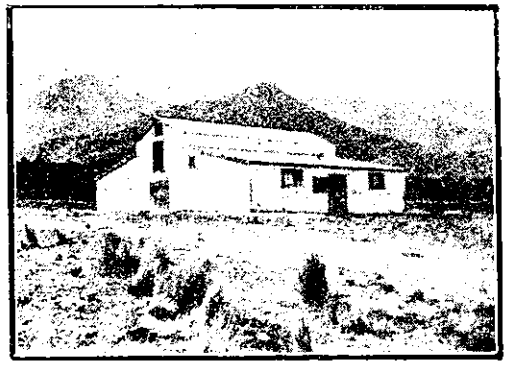
House Built of Rammed Clay and Straw.

A recent number of the London *Sphere* calls attention to an old form of masonry called "pise" or "cob," the use of which in housing projects is now being considered in England and might be equally well applied to this country as an emergency substitute. The picturesque cottage in the illustration is of this construction.

Sturgis's Dictionary of Architecture and Building describes it thus: "A cheap masonry of compressed earth. The most suitable solid for the purpose is clayey, somewhat sandy loam and vegetable earth. It is mixed with straw or hay to prevent it from cracking when it dries. The wall is built in sections by means of a movable frame about three feet high and ten feet long, the two sides of which are of boards kept apart the thickness of the wall. This frame is placed on the wall and between the sides the earth is rammed or beaten in four-inch layers. When this sort of box is full it is taken apart and set up in another place—in some parts of France houses of two or three stories are built of 'pise.'"

The *Sphere* states: "The earth hardens to an astonishing extent in the process of drying off; so much so that it is sometimes difficult to bore into it with an augur . . . The outer surface of the pise wall can be color-washed or treated in various ways. Spraying with hot liquid tar has been tried successfully. The natural wall weathers in course of time to a very attractive colour, and the outer surface itself withstands ordinary rain action and bad weather."

When properly waterproofed, there is no reason why these earthen buildings should not stand one climate as well as another. A firm of testing engineers in America is making experiments concerning the use of earth masonry of this sort, which should prove much cheaper than any other, because it can be made by common, unskilled labour, of material found in nearly every community.



Large Barn Built of Earth and Hay in Marlborough.

Earth as a building material is, of course, no novelty, as bricks are nothing but baked earth, when the earth happens to be clay. Adobe is unbaked clay, dried in the sun. Earth in the form of 'pise' or 'cob,' was used long ago in Europe, and an American architect named T. C. Young believes that it may be a factor in solving the problem of inexpensive building in America. The earth is employed just as concrete is—rammed into moulds of frame and boards, which are afterward removed, leaving a hard wall. For moist climates the walls would require waterproofing, of course. Mr. Young writes the following discussion of the housing question, as it may be affected by this use of earthen construction.

"What has blocked the progress of every housing project in this country, as well as in Europe, is the hard fact that under present prices of labour and commonly used materials, it has proved impossible to build even the smallest and most modest six-room cottage for a sum which, with the cost of the necessary land, would make the total investment for a home economically possible for the ordinary work-