BUILDING A HOME IN THE ROCKIES FOR ONE HUNDRED DOLLARS: BY MRS. TAD POWELL

A HOUSE for a hundred dollars? It cannot be done under ordinary circumstances, but in the mountains, where factory filigree counts for little, a young writer has built himself a real home at a cost of less than one hundred dollars. He was architect and laborer, possessing good taste and good craftsmanship. The result is a house that is roomy, comfortable, pleasing to the eye.

Having more time than money at his command, this amateur architect used the clay and rocks and timber that lay at hand, in a manner so ingenious as to achieve a home of quite unusual beauty and habitability. A house of corresponding size and design—there are four ample rooms—must have cost him some thousands of dollars, if erected in a city by builder and workmen. In the Pecos forest in the upper mountains of New Mexico, a country that invites the out-of-door life, such a house is not deemed small.

Built of adobe blocks, upon a foundation of naked rock, with fireplace and chimney of boulders from the hillside, and finished with timbers from the surrounding forest, it certainly belongs to its environment. In a district where the ancient Spanish and Indian ruins are still the most substantial structures extant, this strong, well-built cabin, fortresslike in the solidity of its walls, and finished inside with woods weathered by a generation of New Mexican sunshine and rains, stands as an example of an ideal wilderness home.

The "cabin," for the builder insists upon a modest name for his mountain home, sits low upon the hillside, just beyond a brook and against a background of plummy pines and lordly spruces. It is good to look at. Rich, red-brown adobe bricks, above the brown stone foundation, blend harmoniously with the red-bed clay, stretching away to the distant mountain peaks, and warming, in almost invisible patches, the green of the forest trees.

The irregular precision of the mud blocks; the long, low walls, bisected almost continuously by windows sliding horizontally; the huge rock chimney, protruding above the black hipped roof and bespeaking an ample fireplace within, all bear evidence of an intelligent, if not an experienced, handicraft. Of sturdy architecture and thoroughly in accord with the surrounding wilderness, the type of the house is yet of a kind that would bear transplanting,—like a definite personality at home anywhere.

The lone builder admits that he has conceded to his main purpose everything with reason. To build a house that would be a delight to the eye, and so sympathetic with its setting as to seem to have grown out of it, was his intent. Keeping within the ideal, he hewed to simple lines. For the structural shell he used the materials
THE LONE WORKMAN PUSHED AND ROLLED HUGE ROCKS FROM THE HILLSIDE TO FORM A CAVERNIOUS SIX-FOOT FIREPLACE.

that lay literally beneath his hands,—the earth of the red beds. The clay was at hand for the walls. The woods for the interior, nature-weathered, were there for the taking: He found the warm gray of discarded fence boards softer and richer than factory moldings. The rough, tan building paper on the walls, paneled with strips of somber gray; the inviting easy chairs, home-made and home-stained with earth-browns shoveled from before the door; long, low window-seats; mission-style table of pine, gray weathered,—all echo a restful color scheme. For the outer lines of the mud cabin are correct in their prophecy of an equal simplicity of line and decoration within.

The young amateur saved paint bills and achieved results at once cheap and artistic by mixing to his taste the yellows and browns dug from the red clay beds.

His statement that the "cabin," from ridgepole to cellar, cost less than one hundred dollars, including tools and furniture, goes far to prove that the amateur builder has hewn close to the mark, even in the simplicity of those materials he was forced to purchase.

The homeseeker, casting about for a spot in keeping with his ideal, thought himself of Uncle Sam's big, tree-clothed holdings, and the standing offer made by the Government to lease a sum ranging from $5 to $25 a year, the minimum price permitting the use of one acre. He appreciated the advantage of the assurance given by the Government that his home, built in a forest of the national reserves, never would be without a certain isolation and never would lack its setting of magnificent trees. He chose the Pecos forest because it lies in a kindly climate, high up in the southwestern Rockies and close to a railway. He selected his acre of land, for which he pays $5 a year, within easy walking distance of station and post office, and yet well within the protected district. The cries of night prowlers, the midnight scream of the mountain lion and the yelps of frolicking coyotes give assurance that the builder has not sacrificed the
wildness he desired in a compromise with some of the comforts of civilization. An atmosphere and coloring of age, so thoroughly in accord with the heavy material of which the house is made, has been carefully preserved. Three bricks taken, with inward apology, from the old estuña of the Pecos Indians, a few miles distant, have been built into a wall of the house, mute evidence, in their flinty hardness after three hundred years, of the durability of adobe blocks.

The interior of the mountain home has even more distinction than the outside. The adobe walls are covered with a rough, pale brown building paper, which leaves uncovered the projecting dado and frieze and window borders of heavier bricks. The paper is put on in panels, joined by strips of genuinely and beautifully weathered wood taken from the broken-down fence of a bygone homesteader. Sun and rain have brought out some surprising browns and yellows and warm grays that would make bolder the brush of the shop artisan, were he to see what Nature can do in the weathering line, particularly with a palette full of New Mexican sunshine and sudden, drenching rains. There is a long library table made of the old fence boards and a square dining table and sideboard at the other end of the room. For the bookshelves, a dictionary stand and in many other inconspicuous ways, the weathered pine has also been used.

The only novelty in architecture is in the shape of the living room, six-sided instead of the usual four. The great, rough, 6-foot fireplace stands directly opposite the wild clematis-covered doorway. On either side are the bookshelves. Long, horizontal windows at the ends and on either side of the doorway provide ample light to brighten the 36-foot room; 17 feet wide in the center, a sloping wall at either side funnels the heat of the fireplace to the remote corners of the 12-foot end walls.

The great fireplace was a result of some thought and planning during the earliest stages of the house.

Deep brown adobe brick form the frieze of the wall and border the windows massively.
construction. The builder began it as soon as he had completed his foundation, using much the same sort of stones, though selecting with more care the flat rocks for hearthstone and mantel. Set in the center of the three-sided wall, the wide, open fireplace is the dominant feature of the room.

Each decorative feature in this room contributes its note of harmony to a rich and pleasing whole. Several pictures have been framed in the old woods. One in particular,—a landscape etched by a distinguished artist,—is simply framed in fence boarding that precisely matches its deeper shadows, a bit of wood that had been slowly acquiring the right gray-brown through thirty years of changing weather.

The weather as artist works slowly, like the early Navajo blanket-weavers, but it works surely, and all that remains for the connoisseur is to be at hand the moment Nature has finished her product, and before it is carried beyond the point of beauty to that of decay.

In each of the diagonal walls of the living room is a doorway, one leading into a sleeping room and the other into a kitchen. Behind the fireplace is a fourth room containing a bath.

Wishing to have doors that would be heavy and substantial, in keeping with the house, the artisan has made them of diagonal flooring. Strong iron latches secure them as they swing shut on four strap hinges of barn-door dimensions.

Chairs, doors and cupboards are colored very nearly like the adobe, though in a lighter shade. The floors have a deeper earth pigment mixed with a stain.

The bookshelves are of an original design. They are placed at an angle that presents the book titles toward the searching eye.

The great room looks more like an ancient manorial hall than the living room of a mountaineer. In a droller country and without the bright Navajo rugs on floor and lounges, the ensemble might be deemed too somber, but, with the long, lateral windows which make the living room a playground of streaming sunshine, and which frame within their casements ever changing pictures of purple mountains and azure skies, the soft red-browns are restful and appropriate.

The building of the charming home required an entire New Mexican summer. Equipped with stout biceps, the young writer decided to make his own adobes, albeit he was warned it was hand-soiling work. He watched the Mexicans at their task and saw how they mixed and managed their clay, but elected to make his bricks somewhat smaller and to use a mold in which he could make two bricks at a time. This method he persisted in, with the exception of a border of larger bricks around the doorways, window casings and at top and base of the walls. The effect of the heavier bricks used in this way has been to give the building a massive and stable appearance. The ground at any convenient spot was his mortar box, and there he mixed the mud with a spade and with water from the brook a few feet away. Lacking straw for mortar or bricks, he made use of the Mexican broom straw growing luxuriantly among the arroyos. The only help the amateur permitted himself was assistance in getting out rock for the foundation.

Wherever the ready-made article could be dispensed with, the material was made. This required much time, but saved money and gave to the home the valued touch of the intelligent handicraftsman.

The process of making adobe bricks was a laborious one, particularly in an unusually rainy summer when many of the bricks had to be made a second time after a brisk shower had washed them into the stream or squashed them into mud pies. Rain does not injure the dry adobes, but plays havoc with those still wet. Many times the patient builder was tempted to complete his house in the simpler fashion of modern Mexicans who make stockade walls of cedar posts plastered thickly with mud. But he thought of the house he had planned, and persevered. When there was no prospect of drying weather for some time, he worked in his garden, or with saw and plane.

A patent roofing was used, as being cheap and easy to apply single-handed, though in time it may be replaced with something more in keeping with the whole.

In his six-sided study the forest dweller has a few hundred books, a typewriter, a few etchings and water colors and some forest pictures of his own photographing and enlarging. At one end of the room he dines and at the other he reads or writes. There are seats beside the inglenook and cavernous chairs, burlap-cushioned. The sleeping room is equipped with a "disap-
pearing" wall bed and there are snug lockers about the walls and a three-cornered press. A roomy cupboard conceals cooking utensils in the kitchen and gives to the room the compactness of a ship's galley. The table where the mountaineer stirs his biscuits swings downward when not in use, and the one at which he washes his dishes folds back when a prop is turned aside. For economy of space, the kitchen, and indeed the entire house, is a marvel of ingenuity.

The wildness of the region is surprising, considering its accessibility, for it lies at the gateway of a forest of priceless blue spruces of great height and vigor. The mountaineer's only companions are the ever-curious range cattle, a few flashing-eyed range horses and a greater variety of song birds than a city dweller would think possible. For additional music he has a small waterfall within earshot. At night, he hears the long, sharp note of the coyote, followed by its challenging laughter. An owlhoots and there is the wail of the winds that are never still on Old Baldy, Glorieta's guardian mountain.

The click of a typewriter sounded alien in the wild surroundings, but its khaki cover showed that it, too, like house and owner, was dressed for mountain exigencies.

OPPORTUNITIES OF DRAINAGE ENGINEERING AS APPLIED TO THE VAST SWAMP LANDS OF THIS COUNTRY: BY GEORGE ETHELBERT WALSH

No two generations offer the same opportunities: changing conditions and environments demand of each a new viewpoint and a new treatment concerning problems of development and exploitation. Each nation and generation must face its obligations and responsibilities and achieve success through independent and original works. Examples and principles help greatly, but are not alone sufficient.

The colossal fortunes made in oil, coal, iron and steel may not again be duplicated; but it would be a sad commentary on our national life if all great opportunities in this country were closed to us. National resources lie at our feet in a dormant and undeveloped state. Until we recognize them we can hardly turn them into profitable use. The possibilities of new industries are enormous and while one man waits and considers what to do, another with skill and boldness comes along and exploits them to the profit of himself and his country.

When we regard the possibilities of service awaiting the drainage engineer—opportunities that almost dazzle the mind—we wonder why the vast unlocked wealth stored up in swamps, marshy lands and wet meadows has remained so long untouched. Some day in the near future new captains of industry will reclaim these lands, opening wide to the people new sources of wealth. Then will come another period of prosperity and it will stimulate numberless industries.

Many are alive to the possibilities of drainage engineering, and they are attacking the problem in either a small or a large way with every prospect of success. Fortunately the opportunities in this line are almost coextensive with the size of the country. They will appeal to capitalists who can invest huge fortunes no less than to small land-owners with only a few hundred acres of swamp or wet land.

To get a comprehensive idea of the magnitude of this problem pressing for solution, we must resort briefly to statistics. In the various States of the Union there are, according to official reports of the Government, approximately 82,000,000 acres of swamp and wet land that have never been reclaimed. The present value of the land is practically nothing, but if properly drained and used for agriculture it would be worth at a minimum estimate approximately $8,000,000,000. There would be enough good, fertile land created to provide over 2,000,000 families with farms of 40 acres.

This unreclaimed land is furthermore the richest in existence. Through the countless ages Nature has piled on it layer after layer of fertility by the slow process of growth and decay. The rich soil extends to a depth of from 6 to 10 feet, and its fertility would never diminish.

These enormous deposits of rich soil are not limited to any portion of the country. They are distributed so generally that more than 37 different States can claim a share of the future prosperity following wet-land reclamation. Some States are so rich in unreclaimed swamps that their resources will be doubled and trebled in