

MODERN CONCRETE CONSTRUCTION : AN AMERICAN'S HOME IN JAMAICA



AS a sequel to the interesting and suggestive article on "Concrete in its Modern Form and Uses," printed in the September issue of *THE CRAFTSMAN*, we are able to print a very complete illustration of a successful application of the principles of reinforced concrete to the building of fireproof country residences which shall yet be architecturally beautiful and harmonious with their surroundings. This occurs in the group of buildings recently erected on the Jamaica estate of Mr. Alfred Mitchell, whose American home is in New London, Conn., and who has chosen the vicinity of Port Antonio for a winter residence. The details of the construction are taken from a technical paper by E. S. Larned, C. E., in *The Cement Age*.

The site chosen for the buildings is on a point just opposite Port Antonio, commanding an extended and beautiful view of the harbor and the Blue Mountains, but the problem of the buildings themselves was one not so easily solved. A tropical climate with its attending moisture, profuse and luxurious plant life and endless varieties of destructive insects, at once suggests the advantages, and almost the necessity, of masonry construction for reasons of sanitation, material comfort and durability. Yet the selection of building material on this island is practically confined to lumber, which must be imported, the better grades being very expensive; or brick, of inferior quality and appearance, which are made in local yards, and cost from \$28.00 to \$30.00 per thousand laid. The island being of coral formation, little rock is quarried suitable for building purposes, and even this, owing to inaccessibility and lack of means of transportation, is costly and difficult to obtain.

Under these conditions it was but natural that the owner and his architect, Mr. Horace S. Frazer of Boston, should consider and finally adopt concrete in preference to all other materials for construction purposes. That it has proven a success, at least so far as appearance goes, is shown by the illustrations. To quote direct: "In his conception and treatment of this problem, Mr. Frazer has shown a most unusual appreciation of the possibilities open to concrete construction. Much that he has accomplished may well be termed original and novel, and the results attained, both from the material and artistic standpoint, justify the confidence with which he used this material."

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THE entire group of buildings is harmonious in design, the Roman style of architecture being used throughout. In addition to the residence, the group includes a ten-room house, one story high, for the coachman and other white employees on the estate, a stable about ninety by fifty-six feet with a court yard in the center, two pavilions located at points commanding attractive views, a power house, a reservoir for domestic water supply, a bridge of thirty-foot span, and a gate lodge commanding the entrance to the private grounds. All these buildings are of concrete, reinforced, where necessary, with twisted steel rods. The main residence is about two hundred and forty-six feet over all, with a single row of rooms in the middle, and broad verandas on each side. Every room is open to the air and sun, and the windows are provided with jalousies or Venetian blinds with slats five inches wide, which serve to admit air freely and will exclude rain. The walls, floors, roofs, stairways, partitions and columns are all constructed of reinforced concrete, and the only features built of wood are the door frames, doors, windows, sashes and jalousies.

The concrete was mixed in the proportion of one cement, three sand and six stone, the stone running in size from one-and-a-half inches down. The consistency of the concrete was made quite wet, and owing to the scarcity of fresh water the contractors were obliged to use sea water. Coral sand was obtained from the beach; and this, while clean and well graduated in size, was not very sharp. Coral rock was taken from a quarry on the estate near the site of the house. The forms used were made of yellow pine or North Carolina pine from the Southern States, there being no native building lumber fit for use. On all the exterior exposed wall surfaces, the lagging was planned in order to give a smooth finish; the forces for partition walls, which were to be plastered with Portland cement, were made of rough lumber in order to leave a better key for the plaster. The lumber was coated with crude oil to prevent absorption of the water in the concrete, and to prevent warping. The wall forms were generally five-and-a-half feet in height; rods, with key nuts and washers, passing through the wall in the line of the uprights, served to hold the boards in place and to prevent spreading as the concrete was deposited, rammed and spaded. As the work advanced, the moulds were raised, the finished wall serving to keep them in line.

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ALL the exterior columns were cast in place, the moulds being made in Boston. The interior columns were cast in Boston, using coral rock sent from Jamaica. The latter columns were made one inch greater in diameter than the dimension called for, and were turned in a lathe and then rubbed down to the exact size, producing a finish resembling terrazzo, in appearance somewhat like Sienna marble. The coral rock is of a light yellow color, with occasional pink spots through it. With the materials used the opportunity of getting a warm and pleasing color effect was early recognized and the results obtained serve as another illustration of the possibilities open to concrete construction. A brilliant crimson colored clay overlaid the coral rock in the quarry, and a small amount of this material was mixed with the coral as it passed through the crusher, producing in the concrete a warm flesh tint. The exposed exterior wall surfaces were chipped or dressed with pneumatic tools, or washed with dilute acid, to remove all board marks, and the effect is as handsome as can be produced with almost any building stone.

Not only is this building fireproof, but an earthquake which occurred in January without disturbing it proved it to be equally well adapted for the tropics in another respect. Reinforced concrete residences in countries where seismic disturbances are in the regular order of things would evidently prove good substitutes for the earthquake and fireproof "godowns" in which the Japanese store all their treasures, knowing that their light and inflammable houses are subject to destruction from one cause or the other every few years at the outside. Making the whole house a godown is more in accordance with Western ideas, and the concrete house seems to satisfy every requirement. This has already been recognized in Cuba, Porto Rico and Hawaii, where numerous residences, club houses and warehouses are being built of this material, and its general use on the Pacific Coast would seem to be only a matter of a comparatively short time. It is a material that lends itself readily to the form of architecture best adapted to tropical and semi-tropical countries, and from the signs of the times, both architecture and material are beginning to find favor in the colder and less equable climate of the Northern and Eastern American States.



MR. ALFRED MITCHELL'S CONCRETE VILLA NEAR PORT ANTONIO



AN AMERICAN'S WINTER HOME IN JAMAICA



ENTRANCE TO THE GROUNDS



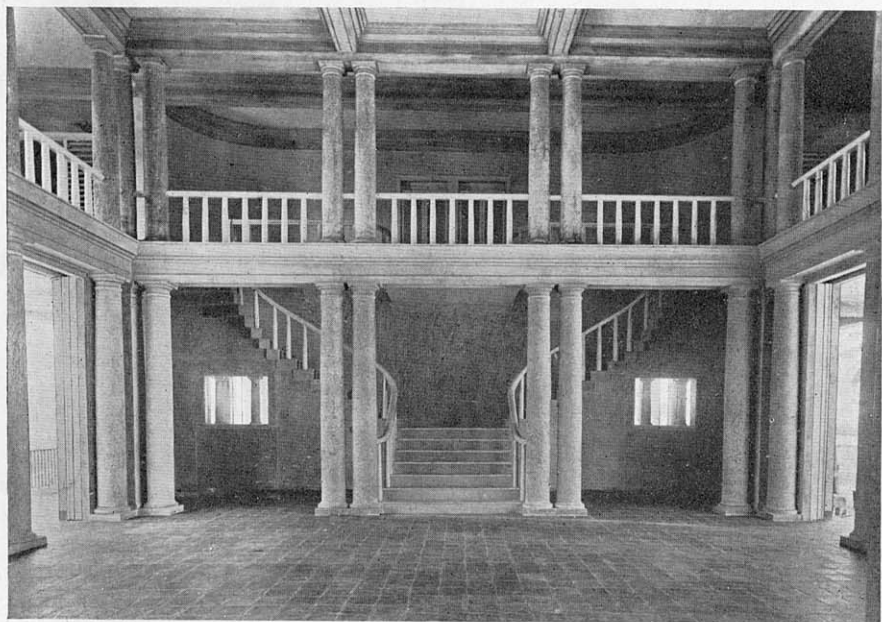
A SEAT SHADED FROM THE TROPIC SUN



A SUMMER HOUSE ON THE HILL



THE BRIDGE AND PAVILION



HALL AND STAIRCASE OF CONCRETE IN MR. MITCHELL'S VILLA