

THE PROPOSED NEW MONITORS.

Following upon the provision of the Act of Congress approved May 4 of the present year, bids were opened at the Navy Department, on the 1st of October, for the construction of four harbor-defense vessels of the monitor type. The bids accepted ranged from \$825,000 up to \$875,000 for the construction of single vessels, and the awards, accordingly, were made one each to the Newport News Shipbuilding and Dry Dock Company, of Newport News, Va., to the Bath Iron Works, of Bath, Me., to Lewis Nixon, of Elizabethport, N. J., and to the Union Iron Works, of San Francisco. Twenty-seven months was the maximum time for completion set by the bidders.

As the result, however, of Admiral Sampson's report on the naval operations in the West Indies (see current issue of the SUPPLEMENT), in which he criticises severely the monitor type, the Navy Department has decided to revoke the contracts for the construction of these vessels, and has directed the Bureau of Construction to prepare plans for an improved type of monitor in which the defects of the present designs will be remedied. We give herewith drawings and a description of the first designs, now rejected, and in due course will furnish our readers with views of the amended designs.

The "Arkansas" (the other three monitors are to be known as the "Connecticut," "Florida," and "Wyoming") has a waterline length of 225 feet. The vessels will be built upon the plans of the Navy Department, and a description of one applies equally to all the others; so, for example, we shall take the "Arkansas":

The waterline length is 225 feet, the stem being car-

main compartments of the ship proper, it is under the control of a pumping plant of large capacity. The double bottom space just about the boilers is designed to carry feed water, rather a departure from the practice heretofore insisted upon by the department, thereby leaving the room ordinarily required for tanks to be put to more advantageous ends.

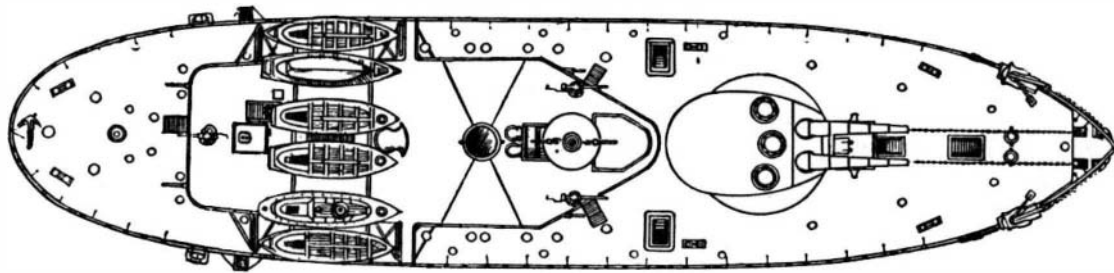
The hull is guarded by a continuous band of armor extending from the main deck line down to a maximum depth of thirty inches below the waterline amidships, but reaching only down to the water at the stern. This armor has a maximum thickness of eleven inches at the deck line throughout the region occupied by the engines, the boilers, and the magazines, tapering thence to the armor shelf well below water. For-

wards of some of the smaller pieces. On the bridge or uppermost deck are carried the chart house, the boats, and all of the 6-pounder rifles. This and the deck just below, like the main deck, being exposed to the weather, are not fireproofed; but the berth deck being under cover is covered with linoleum placed right upon the fundamental plating. Wherever possible, woodwork is omitted and supplanted by light metal bulwarks, etc., but where found needful for the sake of health and the saving of weight, the wood used is carefully fireproofed.

All hatch coamings are raised well above the main deck line, and those in the open forward are carried high enough to permit of their being left open even when the deck forward is well awash with broken seas. By this means the crew space forward on the berth deck is well lighted and comfortably ventilated when cruising in fair weather, a desideratum of prime importance when doing duty in warm Southern waters. In heavy weather these hatches would be battened down, and the fresh air supply would then be drawn down through the mast and the big ventilators, while a good deal of

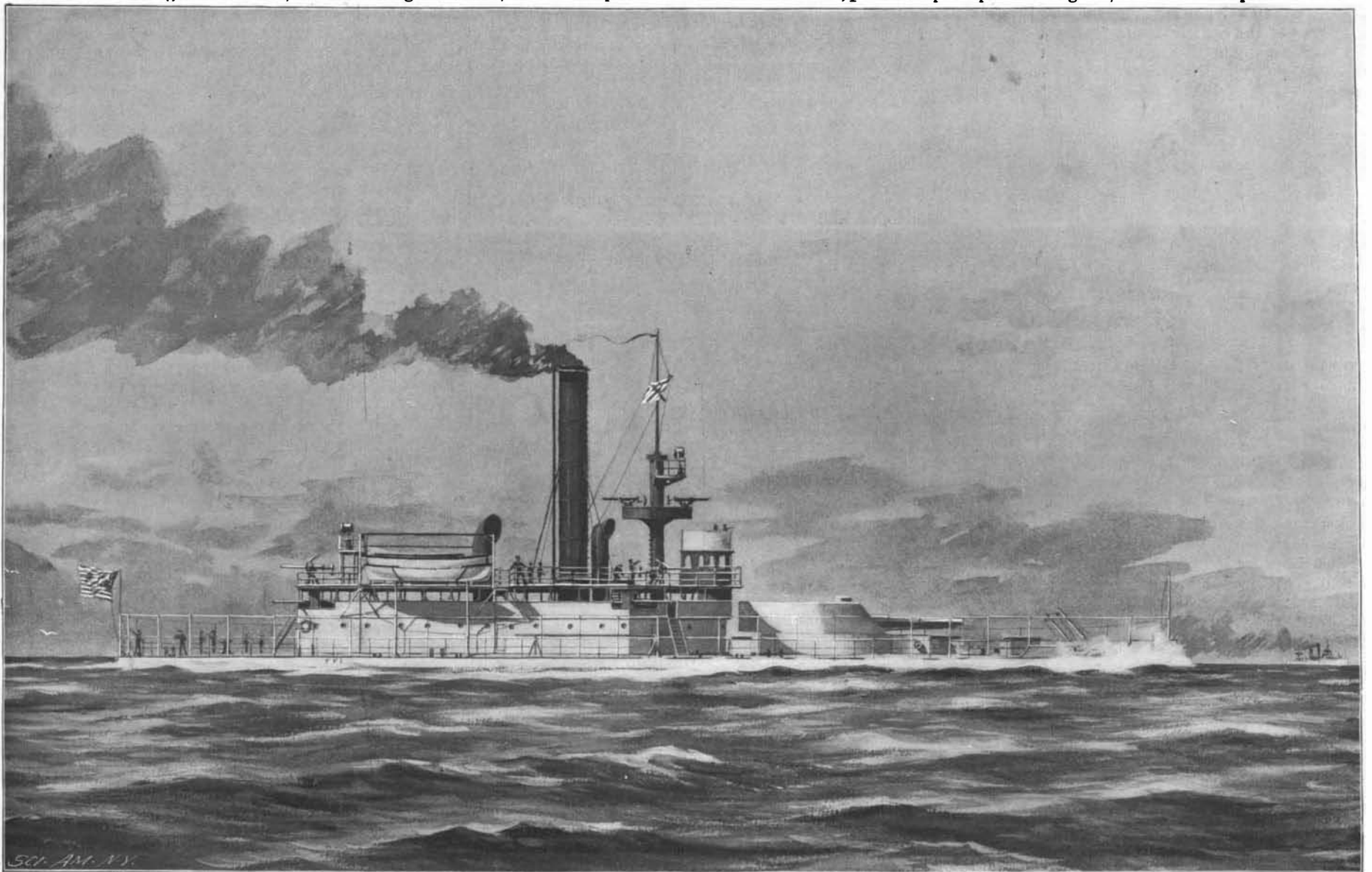
the foul air of the boiler spaces, especially, would be carried up between the double casings of the smokestack. The monitor is not naturally a cool craft when under steam, but everything has been done in the ships that could be done to make them much more comfortable than any of their predecessors. Electric fans and electrically propelled blowers furnish most of the induced ventilation.

The ship is driven by twin screws actuated by two triple expansion engines, which will be placed in one



DECK PLAN OF THE "ARKANSAS."

ward and abaft the "vital" space the armor is graduated by easy steps till it terminates at the bow and the stern in thicknesses of five inches. It was the intention of the department to have this armor treated by the Krupp hardening process, which is really the Harvey process carried farther into the plate; and if this be so, the defensive properties of the steel would be considerably increased, perhaps as much as twenty per cent. The protective deck, or more properly the main deck, will be composed of two thicknesses of $\frac{3}{4}$ inch



From a drawing by R. G. Skerrett.

PROPOSED MONITOR "ARKANSAS," ALSO "CONNECTICUT," "FLORIDA," AND "WYOMING."

Displacement, 2,700 tons. Speed, 12 knots. Coal Supply, 200 tons. Complement, 137. Armor: Belt, 11 inches to 5 inches; deck, $1\frac{1}{2}$ inches; barbette, 11 inches; turret, 11 inches; conning tower, $7\frac{1}{2}$ inches. Armament: Main battery, two 12-inch (new pattern); secondary battery, four 4-inch rapid-fire; auxiliary battery, three 6-pounders, four automatic 1-pounders. Authorized 1898.

ried well forward below the water and formed into a powerful ram; maximum beam, 50 feet; and draught upon normal displacement, 2,700 tons, $12\frac{1}{2}$ feet. This shallow draught was adopted with a view to work around the Gulf and about the West Indies and some of our other Southern ports now denied to all but the lightest of our cruisers. Upon normal displacement the ship carries, loosely stowed in the bunkers, something like two hundred tons of coal.

The hull is of steel, unsheathed, with an inner bottom reaching up to the armor shelf and ranging fore and aft throughout nearly the whole length of the ship. This intramural space is extensively subdivided into water-tight compartments, and, like the large,

plating, of which the upper course is of nickel steel. This is sufficient defense against the acute angle at which most plunging shots would have to strike. This main deck is planked, but, being exposed to the weather, will not be fireproofed.

A five-sided superstructure occupies the central portion of the main deck. In the lower half are quartered some of the officers, and there too is the galley, the armory, some wash rooms, and spare space for the housing of part of the crew if so desired. On the next deck above, i. e., the superstructure deck, is placed the major part of the rapid-fire portion of the battery. The hammock berthing is also in the superstructure on that deck, lending a very mild protection to the gun

watertight compartment. These engines will be of the vertical, inverted cylinder, direct-acting type, each with a high pressure cylinder of 17 inches, an intermediate pressure cylinder of $26\frac{1}{4}$ inches, and a low pressure cylinder of 40 inches, the stroke of all pistons being two feet. The collective indicated horse power of the propelling and the circulating pump engines will be 2,400 when the main engines are making in the neighborhood of 200 revolutions per minute. Steam is supplied, at a working pressure of 250 pounds, by four water tube boilers, having a total grate surface of quite 200 square feet and a total heating surface of 8,800 square feet, and capable of supplying all the steam on shipboard when running at full power.

The vessel is lighted by electricity, while the turret mechanisms and all the ammunition hoists will be actuated by the same energy. By the adoption of electricity so generally, the presence of long passages of heating steam pipes is obviated, and in this way alone a very considerable reduction of temperature will be effected under service conditions.

The main battery consists of two 12-inch breech-loading rifles, and the secondary battery of four 4-inch rifles, while the auxiliary battery includes three 6-pounders and four automatic 1-pounders.

The 12-inch guns are mounted in a single barbette turret of the balanced type, having an inclined face with a pitch of 42 degrees. The armor for the turret and the barbette is 11 inches thick and treated by the Krupp process. The four 4-inch guns are mounted on the four principal corners of the superstructure deck, where they will command an enviable field of fire. These guns are protected by shields. The 6-pounders are mounted on the bridge deck, while the 1-pounders are placed on the hammock berthing, amidships, and up in the single top of the military mast. The 12-inch and the 4-inch guns are to be designed for smokeless powder, and it is promised that they shall be a considerable advance upon the pieces of like caliber, of native design, now in service.

The ship will carry two search-lights, one forward on the mast and the other upon a stand at the after end of the bridge deck. Every modern facility will add to

add just that much more to her usefulness as a gun platform.

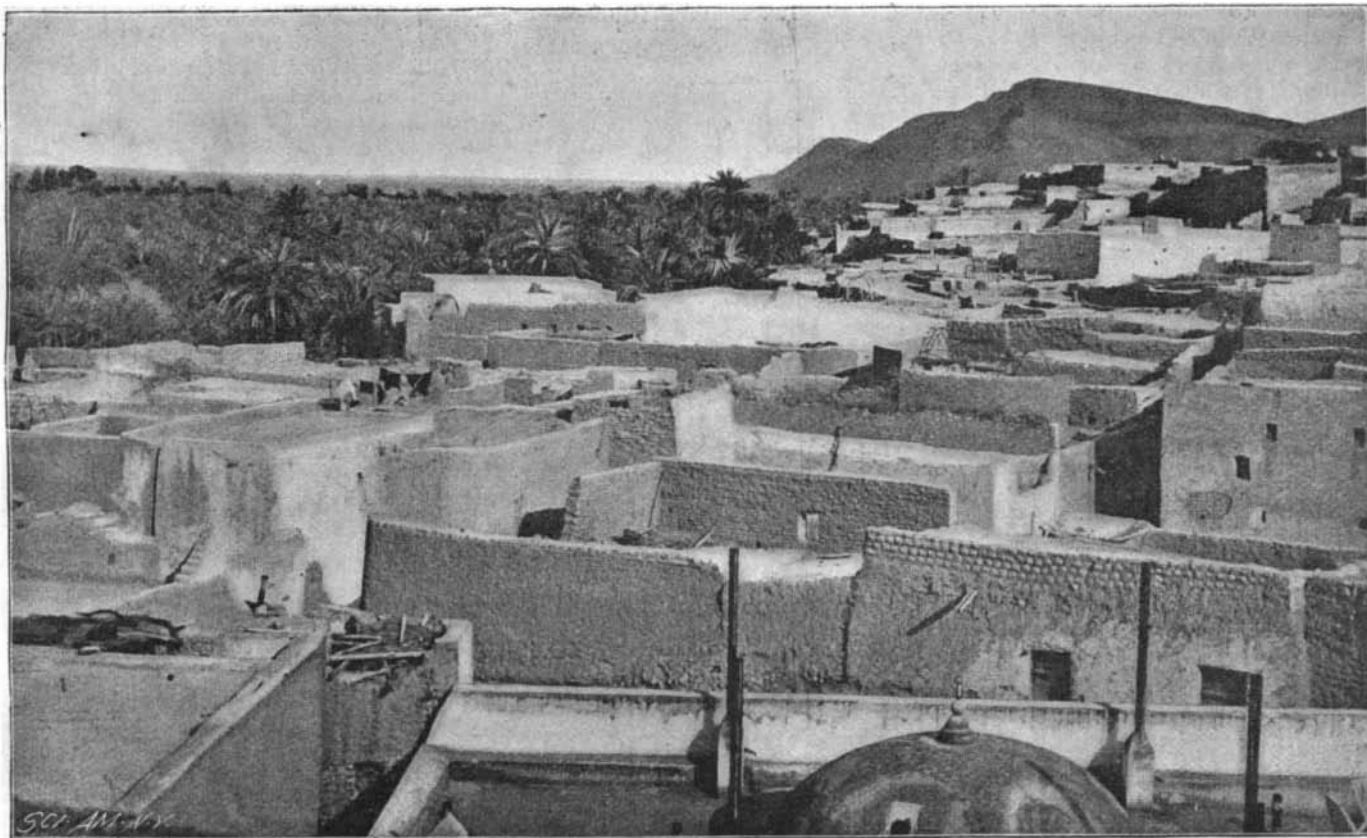
These four vessels have been designed to a large extent to meet the growing need of proper schools of instruction for the increasing ranks of the naval

duced merely by similarity of conditions under which they developed. This peculiarity of primitive art has been discussed by the Director of the Bureau of Ethnology, J. W. Powell, under the title "Activital Similarities," and has attracted much attention from other anthropologists; but while many instances of imported arts are on record, evidence on the other side of the case is rare and difficult to procure.

Of all the arts of a primitive people, there is perhaps none which has the same value to the student as their architecture, for the reason that in their houses we find a record of their lives, of their manners and customs, of the conditions under which they lived, and, to a certain extent, even of their beliefs and hopes. Moreover, the record was made unconsciously, and generally with but little thought of the future, although often with a curi-

ous adherence to the ideas of the past. Thus, there is hardly a system of architecture, be it that of a primitive or of a civilized people, which does not carry within it evidence of the conditions under which it developed, and nothing is more common than architectural forms, originally derived from wooden construction, for example, afterward perpetuated in stone—a material to which they are not at all suited.

Much has been written about the houses of the Pueblo Indians of Arizona and New Mexico, the highest type of the house-building art found within the limits of the United States, and heretofore that system of architecture has been regarded as unique and the pro-



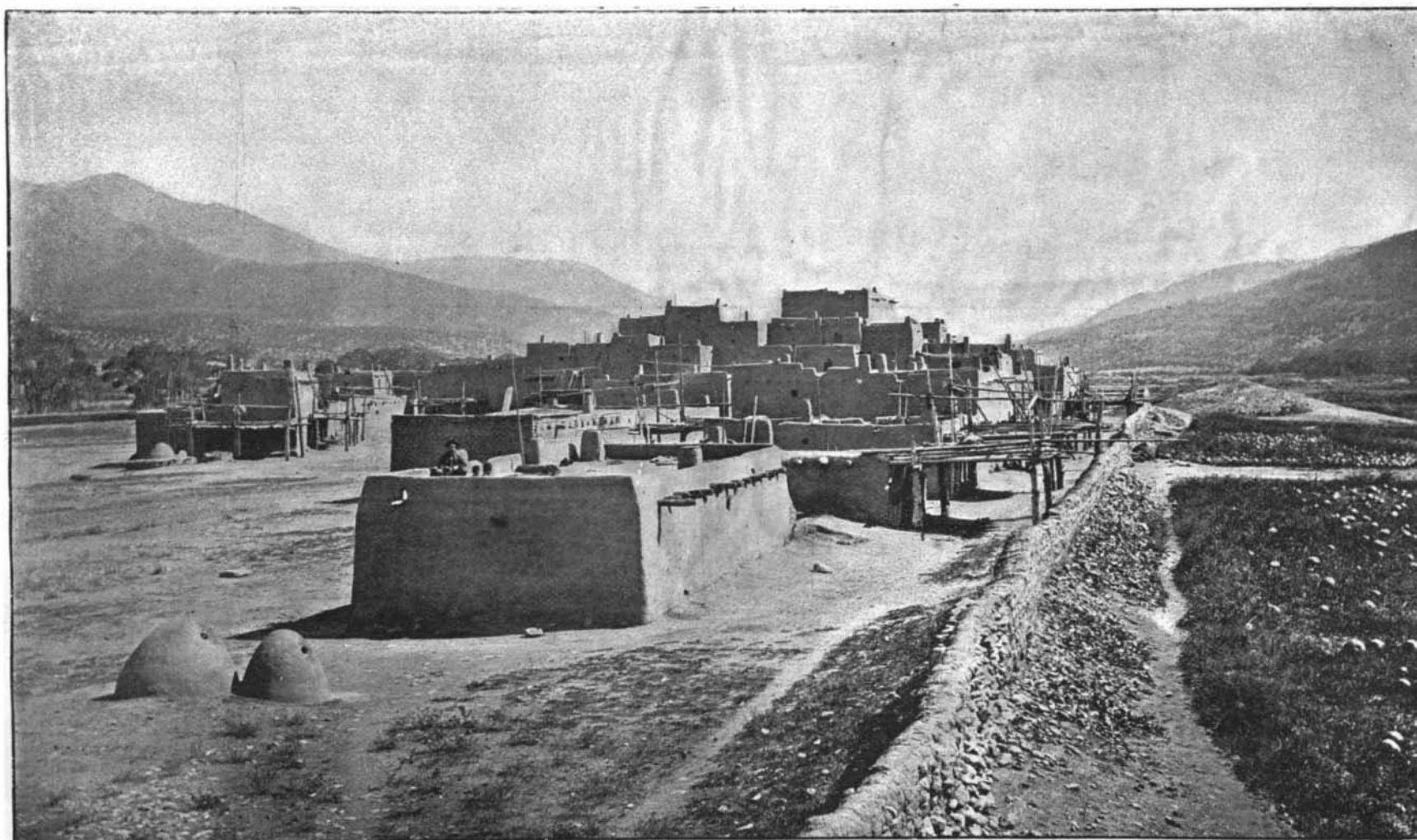
THE OASIS OF BOU-SAADA, PEARL OF THE ALGERIAN DESERT.

militia; and it is easy to see how successfully they meet the demand by covering every practical branch of naval warfare with the single exception of torpedo duty.

NATIVE ARCHITECTURE IN AFRICA AND NEW MEXICO.

BY COSMOS MINDELEFF.

Perhaps the most difficult problems with which the ethnologist, and, to a less extent, the archæologist, has to deal are those concerning the origin of the art products and of the ideas which are the subject of his study. The first question is, Was this art imported or



TIWA PUEBLO OF TAOS, NEW MEXICO, SHOWING RESEMBLANCE TO ARCHITECTURE OF ALGERIA.

the equipment and finish of the vessel, and ample quarters and bathing facilities will make life reasonably comfortable for the complement of a captain, six other officers, and 130 enlisted men.

Docking keels are to be placed on the ship, and, acting somewhat in the capacity of bilge keels, will materially affect the steadiness of the craft in a seaway and

is it indigenous to the tribe or people who practice it? The similarity of art products is often so close that an incautious student will at once pronounce them the same, that one tribe has taken the art direct from the other, but, on the other hand, it has been well established that arts so closely resembling each other as to be hardly distinguishable can and have been pro-

duct of peculiar local conditions. There is no reason to doubt that it is indigenous to the country where it is found, but that similar conditions working upon a people who live much the same kind of life as that of the Pueblo Indians is shown by the illustrations and description of an Algerian village published in *Le Monde Illustré* by Eugène Gallois, a member of the