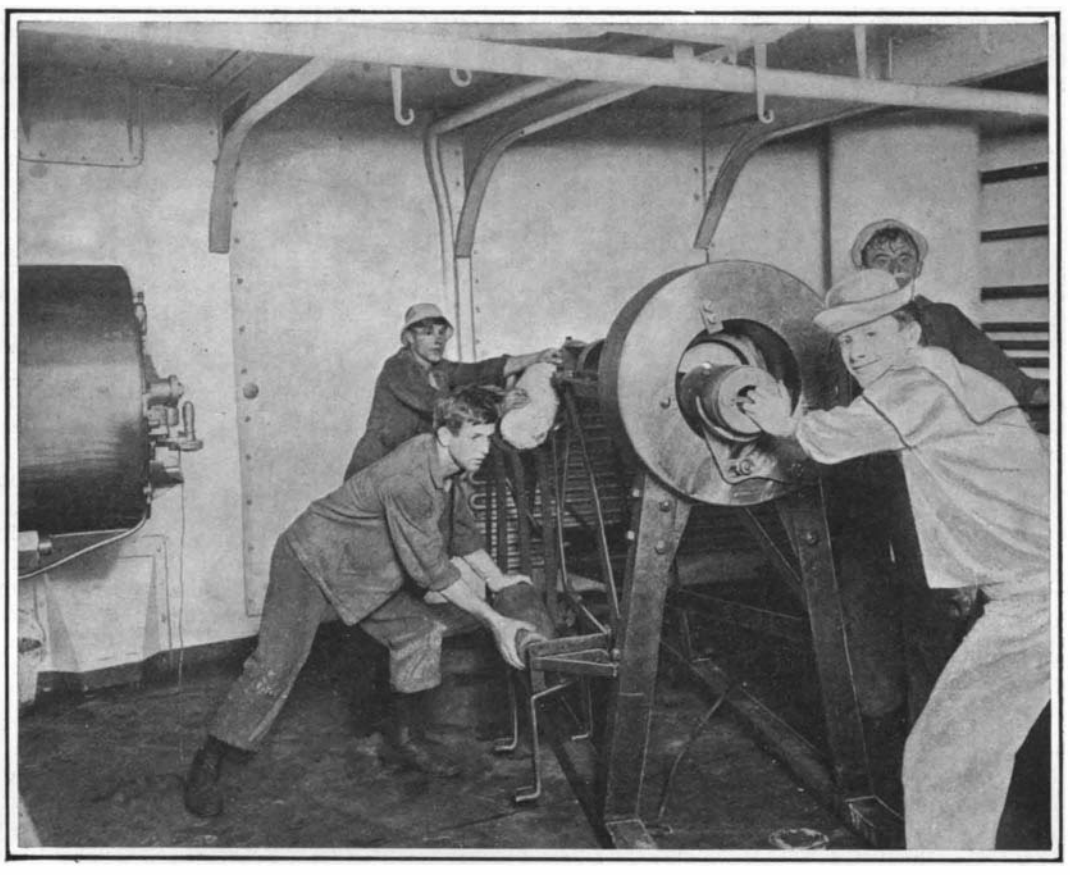
THE NAVY'S DUMMY DRILL GUN.

BY WALTER L. BEASLEY.

The recent brilliant and surprising scores made by the ships at target practice at Magdalena Bay shows a marked advance over previous years, and demonstrates that the men behind the guns have been trained up to the highest point of efficiency in the various operations connected with firing the batteries, such as quick handling of shells, ammunition, pointing and sighting, and other matters entering into the performance of successful naval gunnery. As recently announced by the Navy Department, the battleship "Maryland" of the Pacific Squadron carries off the honors, winning the trophy by the fine score of 76,470; the cruiser trophy goes to the "Albany," having a score of 76,924, while the gunboat trophy was won by the "Wilmington," whose record was 67,448. The following are classed as "star ships," having obtained at least 85 per cent of the final merit of the trophy winners of their respective classes: the "Illinois," "Kentucky," "Vermont," "Louisiana," "Alabama," "Connecticut," and "Tennessee." The new ships "Connecticut," "Louisiana," "Vermont," and "Minnesota," showed remarkable efficiency with their new 12-inch 45-caliber guns, the shooting being extremely pretty and accurate, and the ships averaging about 1.5 hits per minute. The "Louisiana" made 1.7 hits with her 12-inch rifles. The work, however, of the 7-inch rifles caused the greatest surprise. The average was about 5.5 with these guns, the "Louisiana" making 5.3, while some of the ships made 5.87, 5.8, and 5.89. The "Minnesota" on one run made nearly 100 per cent with her 7-inch gun, hitting the target 11 times out of 12 shots fired.

As the successful achievements of these creditable and record-breaking performances are due almost entirely to a particular method of training, it will be of timely interest to picture and describe the dummy drill gun. By the use of this device the men become experts in lifting and loading the heavy shells, and develop into human automatic machines, handling the weighty projectiles and shoving them into the breech with great rapidity and skill. The main object of the "dummy loader" is to give the shell men an opportunity to acquire speed and proficiency in the handling of the shells without wearing out the breechblocks of the guns. Of late much attention is being paid by all the ships in the navy to these drills, for in actual service much depends upon the promptness and accuracy of the shell man. Should he "muff" a shell at the critical moment, or let it roll away from him, should he drop it—in short, should he fail to send it home safe and true when the breechblock of the big gun is swung open for him—the consequences might be serious.



THE 7-INCH DUMMY DRILL GUN OF THE BATTLESHIP "NEW HAMPSHIRE."

Our high-speed target records are due to practice with the dummy.

The "dummy loader" is the latest invention of the Ordnance Department, and is a *facsimile* of the breech and powder chamber of a big gun up to the point where the rifling begins. Loading it requires the identical motions that are employed in the loading and firing of the real weapon. One man opens and closes the breech; the shell man grasps the projectile and quickly rams it inside, followed by the dummy charge of powder in a bag; the shell comes down the return chute on the left side of the apparatus; the "take-off" man catches the shell as it falls out at the end, and shoves it again to the loader at the front. The dummy powder charge is handled in the same way, and the whole makes a continuous operation for the loader. By the time he has put in the last shell and the breech is closed and locked, it is ready to be swung open again by the plug man, and an additional shell shoved in. A marked economic improvement in the saving of the life of guns is thus obtained. The breechblock of these costly weapons would soon be worn by the constant slamming and the denting of quickly-thrown shells.

The new device is manufactured entirely in the Brooklyn navy yard, N. Y., in the ordnance machine shop. It is made mostly of steel; although there are a few parts of brass and cast iron, the supporting framework and return chute are entirely of steel. The one shown in the accompanying illustration is the latest 7-inch model, and is on board the battleship "New Hampshire." It is 7 feet 4 inches long, 4 feet 4 inches high, and weighs about 1,800 pounds, costing the government $375 to manufacture.

Before reaching the target grounds, the gun crews are kept at systematic and continuous drills with the dummy loading machine, consequently the men have acquired the top-notch point in speed, coupled with a mathematical precision in the handling of the projectiles, powder charges, etc. When the vessel reaches the range, and as, at the speed assigned, a very short time interval is allowed for the run, it is important to begin firing at once with the rapidity consistent with "getting on" the target. The size of the target varies according to caliber and practice, but the target screens for the great guns are about 21 feet in length and 17 feet in width, and are distant from the range about 1,600 yards. The Navy Department provides four trophies for excellence in gunnery—one each for battleships, cruisers, gunboats, and torpedo craft. In addition, money rewards are distributed according to gun rank or rating among the successful crews.

A Gold-Brick Town.

There are many remarkable towns in Mexico, but none more interesting than Guanajuato, "The Hill of the Frog." It might more properly be called the "gold-brick town," for the houses have been found to contain much gold. This is a curious situation, but it came about naturally. Guanajuato—pronounced Wahnah-wahto—is one of the oldest mining towns in Mexico; but the value of the place as a town was discovered when a railroad company decided to build a station there. It was found necessary to tear down about three hundred adobe buildings, which were made of the refuse of various mines after the ore was extracted.

When it became known that the old adobe buildings would be torn down, pieces taken at random were assayed. It was found that because of the old process, which lost much gold and silver, they assayed from $3 to $24 a ton. The mean value was estimated to run about $8 gold per ton. The old buildings have brought about $30,000 Mexican in gold, and persons who have built since the new machinery has been installed in the mines are bemoaning the fact that the new houses do not contain as much gold as the old.

Permanence of Iron Gall Inks.

Various iron gall inks which, when freshly made, had been analyzed by the Prussian government testing bureau and had been ranked in the first class, were allowed to stand three years and again examined. It was found that the quantity of iron in solution remained unchanged, but that the tannic and gallic acids were greatly diminished, in some cases by more than one half, so that many of the inks no longer satisfied the conditions established for inks of the first class. The sediment deposited in the bottles contained only traces of iron and consequently could not consist of tannate or gallate of iron, as has hitherto been assumed. It was probably composed of products of the decomposition of tannic and gallic acids. If this decomposition is favored by exposure to light, as is not unlikely, ink should keep better in earthen jugs than in transparent glass bottles.

THE ICE OF THE ARCTIC WATERS.

BY DAY ALLEN WILLEY.

It is an interesting fact that the actual iceberg always comes from near the ends of the earth. Becoming detached from the immense ice masses of the north or the south polar regions, the huge pinnacles and mounds and other formations too often in the path of vessels crossing the Grand Banks of Newfoundland have made a long journey before reaching this locality, for they have come the length of that interesting river in the ocean, the Labrador current, besides floating hundreds of miles in the waters about Greenland.

The distance covered by an iceberg of the North Atlantic from the time it is formed until it reaches the Banks is fully 2,500 miles. It may have been afloat for a year exposed to wide changes of temperature, battered by ice floes, possibly other bergs, and ceaselessly washed by the waves. Yet some of those seen 2,000 miles south of their starting point are nearly 300 feet in height and truly of majestic proportions, often a thousand or more feet in length, while it is an established scientific fact that so much more of the bulk is under water than is visible, that the largest ones may extend into the ocean to a depth of over half a mile.

Their enormous size when they become detached from the glaciers is proved by the observations of explorers along the Greenland coast. A few years ago one was measured as nearly as possible around the edges. This distance was about five miles. It had several peaks estimated to range from 300 to 500 feet high. Judging from its appearance it was a solid mass that had separated in its entirety from the glacial edge of Greenland. As Arctic navigators who venture far north often see a score or more of great bergs in a day, the tremendous glacial activity in this region can be appreciated. The majority of these that drift to the Grand Banks come from Melville Bay. Some of the distinct glaciers that terminate the Greenland ice cap on this coast extend along it a distance of fully 25 miles. Their thickness or height can only be estimated but in places near the open sea it is believed to be several hundred feet.

Recent examinations of this coast show that during the short summer the formation of bergs in the bay is almost continuous. The glacial movement keeps pressing the ice forward until a thick stratum often projects many feet beyond that beneath. After a time the great weight overcomes the tensile strength of a mass and it falls into the sea and a berg is created. The warmer temperature of summer may also widen crevasses on the fringe of the glacier and wave action loosens another mass. The explorers in this sheet of water say that enormous force is displayed by these ice falls and that the sound of the great body striking the water is so deep and loud that it resembles heavy thunder. The many reports that may be heard in a day indicate the rapidity with which the glaciers disintegrate in summer.

Probably the natives of Newfoundland and Labrador are more expert in the knowledge of marine ice and ice forms than any others. This might be expected since the shores of the island and the long, bare peninsula are incased in ice in some form so many months in the year while the berg-laden current flows past them on its southerly course. The seal hunter or fisherman of this region can tell the character of a piece of floating ice or an ice pack merely at a glance. When searching for seal on the ice fields in winter, if he becomes thirsty he looks for ice having a bluish or grayish tint—not the white or transparent variety. He knocks off a lump of the darker hue and tests it with his tongue. But the field may consist of a pack of pan or floe ice which, though dazzling in its whiteness and clearness, is unfit to quench the thirst owing to its salt. So it is that much suffering is endured by these fur hunters unless they chance upon a fragment of a berg which may have gone to pieces and been wedged in the pack.

Usually the iceberg is of such large proportions that it can be distinguished from the floe and pan ice, but occasionally a berg splits apart because the superstructure becomes too great for that supporting it. Again, a storm may send two crashing against each other,