THE RAPID-FIRE GUNS OF THE "NEW ORLEANS."

In our issues of March 26 and April 9, we have described and illustrated the "New Orleans," one of the twin boats recently purchased from the Brazilian government. We are now enabled, through the courtesy of Capt. Folger, who is in command of the vessel, to present some excellent views of the main battery of rapid-fire guns. The armament is entirely of the rapid-fire type, and as we have shown in the articles referred to, the energy of the metal thrown in a given time is exceptionally great for a vessel of 3,600 tons displacement.

The main armament is made up as follows: There are three 6-inch rapid-fire, 50-caliber guns forward (see Fig. 3), one on the forecastle deck, and one sponsoned out on either beam on the gun deck; three 6-inch rapid-fire guns aft, one on the poop (see Fig. 2), and two in sponsons on the gun deck. Of these guns, three can be trained dead ahead, three dead astern, and two on either broadside. On the gun deck, in broadside between the 6-inch guns, there are also four 4·7-inch rapid-fire guns. The secondary battery consists of ten 6-pounders, of which six are on the gun deck, and four on the poop and forecastle deck. The starboard 6-pounder on the poop is shown in Fig. 2, just beyond the chase of the 6-inch gun. In the foreground of the same picture is seen one of the two field guns, which would be taken in boats by a landing party for offensive operations on shore.

Those of our readers who are familiar with the appearance of the larger rifles will notice that these guns are unusually long, the length being 50 calibers or 25 feet. It is only a few years since 35 calibers was the limit for rifled guns. The increased length is adopted to secure greater velocity. With a given charge of powder the velocity of a shell will be proportional to the time during which the gases of explosion act upon it in the bore of the gun. The longer they can exert their pressure upon the shell, the greater will be the velocity with which it will issue from the muzzle.

The action may be likened to that in throwing a baseball. If the player wishes to send the ball slowly for a short distance, the hand is only drawn back slightly behind the body; but if he wishes to throw it as swiftly as possible, the arm is drawn back to its full reach, so that the propelling power of the hand and arm may act upon it for the greatest possible length of time. So in the gun, great length means a greater time for the powder pressure to act, producing greater velocity. There is, of course, a limit to the length on account of the unwieldiness, though Canet, the French manufacturer, has built guns of 60 and 80 calibers.

The increase of energy due to increased velocity is extremely valuable in the navy, where it is desirable to save all possible weight. If by increasing its velocity we can make a 5-inch shell penetrate as far as a 6-inch shell, we can save about one-half the weight of a 6-inch battery. It is considered that, so long as the shell can be put through a ship's armor, its size is of secondary importance. If an 8-inch shell could be made to penetrate the side armor of a ship and burst in the engine or boiler room, it would be certain to disable the ship almost as surely as a 10-inch or 12-inch shell.

To show what velocity will accomplish it may be noted that a 4-inch 40-caliber gun has a muzzle energy of about 1,000 foot-tons and will penetrate 10 inches of iron at the muzzle; whereas an 80-caliber gun of the same bore has 2,055 foot-tons of energy, a muzzle velocity of 3,215 feet per second and a muzzle penetration of 18·7 inches. Again, the 6-inch 30-caliber gun, with a velocity of 2,000 feet per second, penetrates 14 inches of iron at the muzzle, as against 2,642 foot-seconds velocity and 21·2 inches penetration for the 50-caliber 6-inch gun mounted on the "New Orleans."

It was largely the 5-inch, many-calibered, rapid-fire batteries of Commodore Dewey's squadron that swept the Spanish fleet out of existence by the awful hail of shells which they poured upon it.

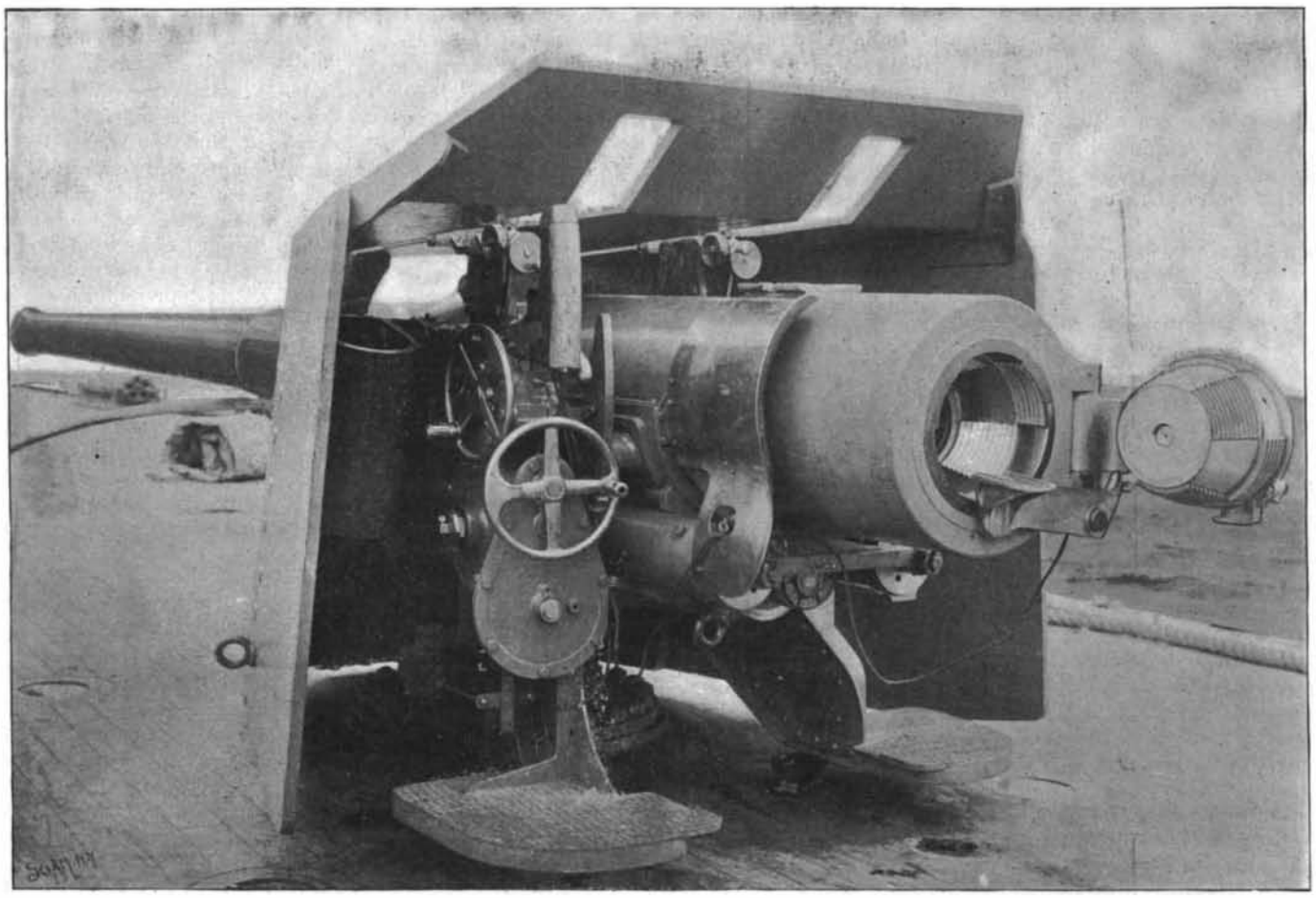

Fig. 1.—6-INCH RAPID FIRE GUN ON UNITED STATES SHIP "NEW ORLEANS"—BREECH OPEN.

The 6-inch gun of the "New Orleans" is carried in a trunnion sleeve or seating, in which it slides. It is held in the forward or loading position by coil springs, inclosed in two cylinders which form part of the seating. Attached to the gun are two pistons which travel in the cylinders, the latter being filled with glycerine. When the gun is fired, the gun slides back in the sleeve, carrying the pistons with it, and the recoil is checked by the resistance set up by the glycerine in traveling through the pistons, the passage of the fluid being throttled by a gradually closing valve. After the gun has made its full recoil it is returned to the loading position by the action of the coil springs, which are compressed during the recoil. The gun and the gun crew are completely protected on the front, sides and overhead by a Harvey steel shield, which is 4 inches in thickness in front of the gun. The shield comes down close to the deck, and, as it is bolted to the carriage and rotates with it, the crew are safe from machine gun bullets and the lighter rapid-fire shells. The sights, of which there are two separate sets, one on each side of the gun, as shown, are attached to the trunnion sleeve and are not affected by the recoil. The gun is carefully balanced upon a conical mount, which is firmly bolted down to the framing of the deck. It rotates on a race of steel balls, and the balance, when it is in the loading position, is so perfect that the whole piece, weighing over 7½ tons, can be moved with a very slight pressure. Attached to the left hand side of the carriage and swinging with the gun is a

Fig. 2.—A 6-INCH RAPID-FIRE GUN ON THE "NEW ORLEANS" AT ITS MAXIMUM ELEVATION FOR RANGE OF SIX MILES.

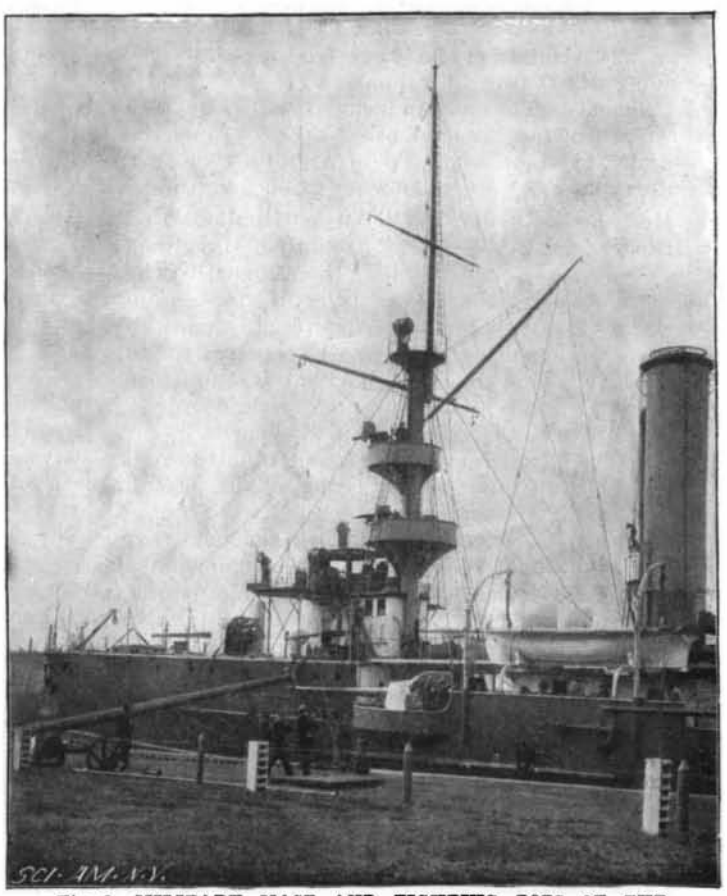

Fig. 3.—MILITARY MAST AND FIGHTING TOPS OF THE "NEW ORLEANS."

platform, upon which the gunner stands. A similar platform is hung from the right hand side of the carriage and in line with the right hand sights. Just in front of the gunner are two hand wheels, one vertical, one horizontal, for training and elevating the piece. In front of the platform is stowed away a small electric battery from which wires lead to the breech block for igniting the charge. This is done by the gunner pressing a small rubber air bulb.

It is possible that the murderous hail of bullets from an enemy's machine guns may find its way through the open slots in the shield and carry away the sights. If this should happen, the gun could be given the proper elevation by means of the graduated elevating arc, which can be seen to the right of the gunner. On the inside of the shield to his left is a table giving elevation for various distances, and from this he can read off the proper number corresponding on the arc to the distance of the enemy's ship.

We explained in our last issue that the speed of the rapid-fire gun was due to the fact that the shell and charge were put in a metallic cartridge case, and that the sights were fixed to the gun carriage and not to the gun, thus obviating the necessity for resighting after each discharge. A 6-inch gun of the kind carried by the "New Orleans" has fired 7 rounds in 61 seconds, and the 4·7-inch gun has a record of 5 rounds fired at a target in 22 seconds.

The breech block, it will be seen, is different from that shown in the Dashiell mechanism (SCIENTIFIC AMERICAN, April 30). The block, instead of being made cylindrical, is conical or tapered, to enable it to be swung open without first drawing it back clear of the breech in line with the axis of the gun. The breech is unlocked and opened with one continuous swing of the lever from left to right. The first part of the swing gives a partial turn to the threaded block, bringing the threaded portions opposite the longitudinal channel ways, which are cut across the thread in both the breech and the block. The continued motion of the lever swings the block out of the breech into the position shown in one of the figures. There are thus only two motions of the breech block instead of three. At the end of its travel, the lever moves an extractor which loosens the empty cartridge sufficiently for it to be drawn from the gun by hand.

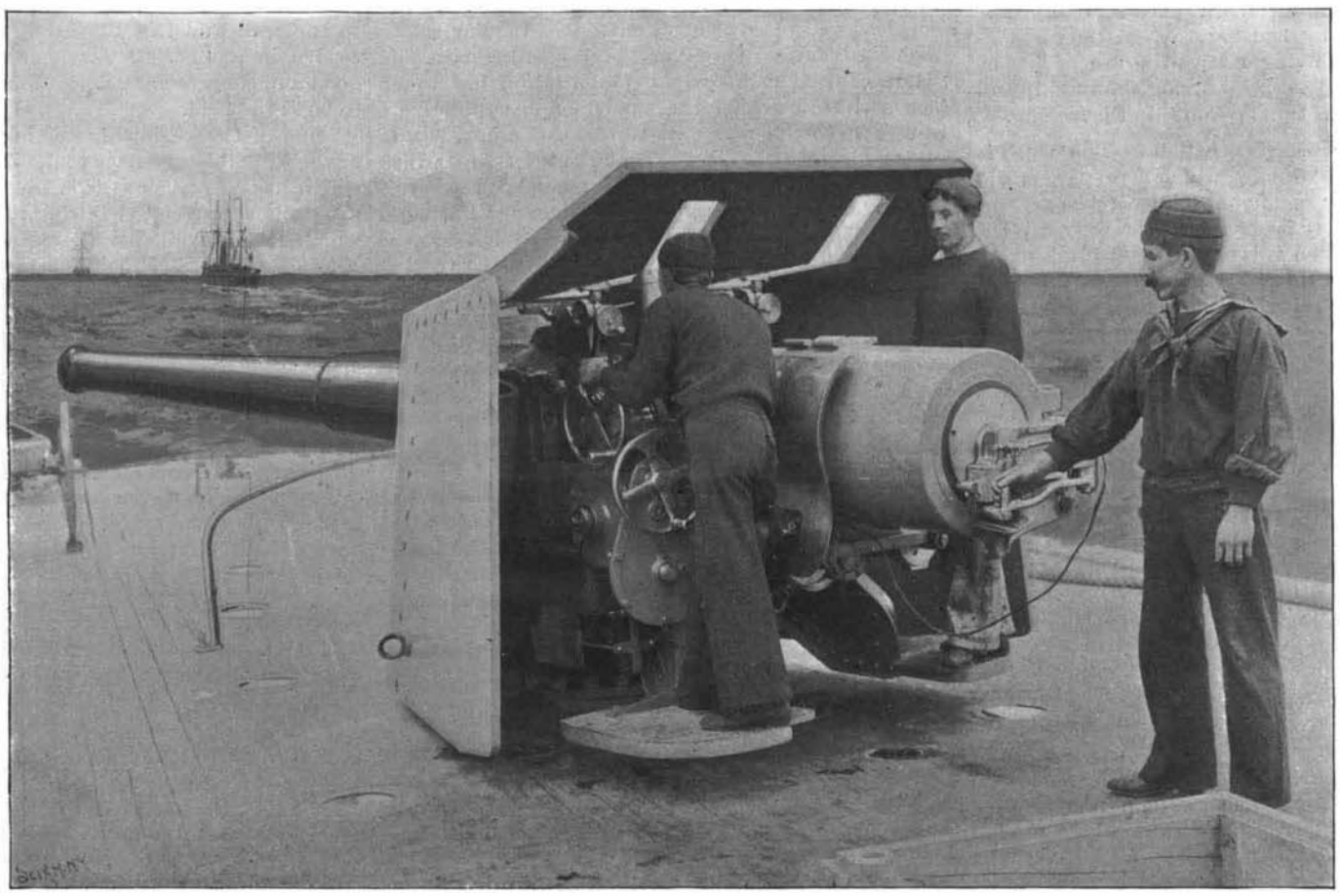

Fig. 4.—SIGHTING A 6-INCH RAPID-FIRE GUN BREECH CLOSED.

The small tray seen just in front of the open breech is a brass guide piece, which automatically rises to protect the thread from being bruised by the shell when the cartridge is thrust into the breech.

One of our views shows the gun at its maximum elevation, corresponding to a range of six miles. This is not the maximum range of the gun, for, with 45° elevation, it could throw a shell some nine or ten miles; but the stresses set up in the framing of the ship by such an elevation would be prohibitive. It is for the reason that guns cannot be given their maximum elevation on shipboard that the possibility of long range bombardment is very remote in the case of most of our fortified cities. The 11, 12 and 13½-inch guns of foreign navies are not capable of nearly as great an elevation as the gun herewith illustrated, and their bombarding range would be proportionately limited.

One of our illustrations of the "New Orleans" shows the forward military mast with its double tops. In the lower top are two 1-pounder guns, together capable of firing 50 to 60 shots a minute. Above them, in the upper top, are two Maxim machine guns, each of which could pour leaden bullets out upon the enemy like water from a hose. The combined capacity of the two is over 1,000 shots per minute. Two tops, with a similar armament, are carried on the mainmast.

DR. ALBERT C. PEALE reports to the government that there are 8,822 known mineral springs in the United States. Many more may be discovered.

The Destruction of the "Maine."

The following letter was published in the latest issue of the English journal Industries and Iron, and it possesses so much interest and is from the pen of so high an authority that we publish it in full:

SIR: I have been much interested in the article on the "Maine" disaster which appeared in your issue of the 22d inst. I am an old and experienced engineer. I am also an expert in explosives. I have witnessed experiments in which many tons of high explosives have been used, and I give it as my opinion that the "Maine" must have been blown up by an extremely large submarine torpedo exploded from the outside of the ship.

I am aware of the fact that a good many so-called engineers pretend to be of the opinion that the explosion was from the inside of the ship, but I would like to ask how it could be possible for an internal explosion to blow the keel upward; if the explosion had been from the inside, it would certainly have blown the keel downward and outward. There cannot be the least question about this.

It will be remembered that some years ago extensive experiments took place at Portsmouth, when torpedoes were exploded against and under the "Resistance." It was found on that occasion that the destructive effects of the ordinary Whitehead torpedo were nothing like what had been expected; that very little damage was done, and that it was a most difficult matter to sink the old ship with the torpedoes used at that time, which, I believe, carried about sixty pounds of guncotton. The "Maine" is a stronger and heavier ship, and was blown completely to pieces by the explosion, the keel and bottom plating being actually blown up through all the decks, so that some parts of the bottom plating are now above water. This would show that an extremely large charge of high explosives was employed—certainly five hundred pounds. Would it have been an easy matter for any private individuals, no matter how evil-minded they may have been, to obtain in Havana five hundred pounds of high explosives, to have packed them in a torpedo and to have placed them under the "Maine" and exploded the charge? I think not.

Some of the French and Spanish engineers combat the torpedo theory by asking why no dead fish were found. In reply to this I would say that, if the torpedo was placed in close proximity or in actual contact with the ship, the explosion would have relieved itself by discharging the gases through the ship, instead of producing the violent concussion of the water which is necessary to kill fish. It has also been said that little or no water was blown into the air. Very true. There was no water above the torpedo, the torpedo was probably in direct contact with the bottom of the ship, and when exploded it found vent through the ship, as being the direction of least resistance, it being remembered that, when these high explosives are employed, the inertia of the mass counts for much more than the strength of the materials.

I have read with the greatest care the reports from all parties relating to this disaster, and as an engineer I defy anyone to show how the ship could have been distorted in the manner shown except from an explosion outside of the ship. At any rate, I feel sure that every American believes most implicitly that the ship was blown up by a Spanish government torpedo. And it is no use disguising the fact that the Americans have gone to war with Spain, not on account of the Cubans, but on account of the destruction of an American battleship and some two hundred and fifty American seamen. No beating round the bush will change this fact. I inclose my card.

I am, yours, etc.,
AN OLD CIVIL ENGINEER

London, April 28, 1898.

The "Windward" Arrives.

The "Windward," the Arctic exploring ship which was presented to Lieut. R. E. Peary, U.S.N., the Arctic explorer, by Mr. Albert Charles Harmsworth, owner of The London Daily Mail, arrived at New York, May 11, after a rough passage of fifty-two days. The "Windward" came over under sail, using her steam in the English Channel and during the closing hours of her trip only. She took a southerly course to avoid bad weather, and after she reached the latitude of the Bermudas, on April 26, she met a succession of heavy northwest gales.

The vessel is at present off Tompkinsville, S. I., as the navy yard at Brooklyn is too crowded with vessels to permit of her reception there. The "Windward" was brought over by Capt. Reid, of the Royal Naval Reserves, and a crew of twenty-seven men. The "Windward" is one of the stanchest Arctic vessels ever built. She was specially constructed for ice work and is fitted with all of the most modern improvements and conveniences.

Mr. Harmsworth had the vessel completely overhauled after she returned from the Jackson-Harmsworth expedition in Franz-Josef Land, and had new engines put in her, but it is said the engines are not as satisfactory as had been hoped for. She is brig rigged and is arranged so as to make the handling of the ship as easy as possible and give the crew little work above deck. On the maintop is a barrel lookout for the ice master. The displacement of the "Windward" is 246 tons, her length is 118 feet, beam 28 feet, draught 16 feet; her hull is built of three thicknesses of oak, 3 feet thick amidships and thicker at the bow and stern. The ram bow is made of solid oak, 13 feet thick, protected by steel. We have already given accounts of this magnificent gift of Mr. Harmsworth and also of the expedition to Franz-Josef Land. The "Windward" is notable as being the vessel which took Nansen and Johansen from Franz-Josef Land to Norway. Lieut. Peary's plan has also been outlined. He will leave in July for the North, and as the expedition may be gone several years, the "Windward" will carry stores from New York at intervals of a year or two.

New Mines in the South African Republic.

Rich deposits of coal have been discovered at about fifteen miles from Johannesburg and eleven miles from Krugersdorp. The coal-bearing layer is sixty-five yards deep. The new mine supplies much better coal, and is much nearer the gold fields, than the mines which have supplied the coal hitherto. Diamonds have been found at Rietfontein, near Pretoria, and it is estimated that the new mine will be twice as rich as the celebrated Kimberley fields. Mr. Kehler and others have found very valuable gold reefs between Johannesburg and Krugersdorp, at a depth of 2,400 feet.—Cosmos.

A MOUNTAIN experimental observatory has been established on the summit of Mount Kosciusko, 7,328 feet above sea level, and the highest point in all Australia; also a sea level station on the southeast coast adjacent at Merimbula, where simultaneous observations are taken. Simultaneous readings are also taken at a new station in Sydney, at Sale, in Victoria, and at Hobart, and on Mount Wellington, Tasmania.

Miscellaneous Notes and Receipts.

A New Gold Field.—From Godemesterháza, a town situated at the foot of the Görgény snow mountains, the former favorite hunting grounds of the departed Austrian Crown Prince Rudolf, sensational news reaches us. In the wilderness of the virgin forests, an immense gold field has been discovered. In different places diggings have already been instituted, with the result that in nine cases rich veins of gold were found at a depth of 10 to 12 meters.—Edelmetall-Industrie.

Adulteration of Linseed Oil with Cod Liver Oil.—According to the Pharm. Ztg., this adulteration occurs very frequently, of late. For the detection of this sophistication mix 10 parts (weight) of the oil with 3 parts (weight) of commercial nitric acid in a glass cylinder by stirring with a glass rod; place aside until the oil layer and the acid layer have separated. If the linseed oil contains cod liver oil, the oil layer takes on a dark brown to blackish color and the acid becomes orange-yellow to yellow-brown, while pure oil, after being treated as aforesaid, first shows a water green, later a dirty yellow-green color, the acid taking on a light yellow.

To Mount Photographs on Glass.—According to the Werkstatt, clean the inner hollow side of the pane thoroughly, pour on gelatine dissolved in boiling water, lay the picture on and pour on gelatine again, so that everything swims. Then neatly remove what is superfluous, so that no blisters result, and allow to dry. The following recipe is said to be still better: Gelatine, 16 parts (weight); glycerine, 1 part (weight); water, 32 parts (weight); methylic alcohol, 12 parts (weight). The mixture is prepared by causing the gelatine to swell up in water, then dissolving it with the use of moderate heat, adding the glycerine, stirring thoroughly and pouring the whole in a thin stream into the alcohol.

Chinese Varnish for Wooden Articles.—The wood is coated with a puttylike mass, which is prepared from gypsum, potter's clay, common earthy feldspar and glue. When this putty is dry, it is carefully rubbed off with sandstone; then it is coated with black paint dissolved in lac varnish, and when this is dry a lac varnish is applied, derived from a tree called tsie chou in China, a variety of sumac, whose sap exudes in the form of a gum. In the liquid state this lacquer is so poisonous that it causes painful swellings on the faces and on the hands of those working with it. The varnish must dry in the air, whereupon the decorations are engraved with a graving tool and the pieces of mother-of-pearl are pressed in. The color or gold which one desires to apply is mixed with oil varnish and the whole is lacquered. According to Macaire Princep, the varnish consists of benzoic acid, yellow resin and colorless volatile oil. It has a brown color and a peculiar aromatic odor and a taste similar to that of copaiva balsam. On wood the varnish gives a glossy coating which dries readily. According to the Zeitschrift für Drechsler, it can be dissolved in cold alcohol and still quicker in boiling alcohol, likewise in oil of turpentine.

Waterproof Wax Polish on Oak.—Oak furniture is known to be provided externally with a wax polish. The wax coating enters the cavities of the coarsely porous wood and fills them, imparting a handsome dull gloss to the wooden surface. Complaints were heard everywhere that wood surfaces thus treated were found to be extremely sensitive to water. Every drop of water which touches the polish produces an ineradicable ugly white spot. Wax is a firm substance which cannot be so readily distributed over the wood surface. It must, therefore, be previously transformed into a dissolved state, which is frequently done by dissolving the wax in turpentine. After the application the solvent evaporates and the wax remains finely and uniformly distributed. Another process consists in boiling the wax in water containing soda. A soaplike mass results, consisting of fine wax drops, which are suspended in the liquid similar to the fat globules in milk. This mode of preparation is more recommendable, because it is cheaper than the turpentine solution and also because it can be diluted to any proportion with water. More suitable than soda, however, is potash for preparing the stain. If potash is employed, the liquid attains greater softness and suppleness, enters the wood better and is easier distributed. In case one desires to alter the tone of the wood somewhat, the stain is tinted by the admixture of a pulverized dyestuff or by dissolving a soluble color. In the latter case care is recommended, as the organic coloring matters bleach very much, when exposed to the light. With mineral dyestuff powders this need not be apprehended. Frequently Vandyke brown is added to the stain, as the oak wood receives a dark, pleasant shade from it. A wax polish obtained by applying the aforementioned stain is just as sensitive to water as any other wax coating, but it can be protected from the access of water and the action of same by providing it with a thin coat of rubbing varnish. Such a varnish is obtained by dissolving 6 parts (weight) Zanzibar copal in 5 parts (weight) boiled linseed oil and diluting the mixture with 10 parts (weight) turpentine. This coating dries in one day at most and leaves a dense, firm covering of resinized oil and copal. It is perfectly impervious to water, so that the wax layer under it cannot suffer from any drops of water falling on it. The drop of water may even slowly evaporate on the spot where it has fallen and dry up, without leaving anything else behind than perhaps the lime contained in the water. The latter can be easily wiped off. The proportions of copal, linseed oil and turpentine as enumerated give a good varnish.—D. Allg. Gewerbezeitung.

OUR TROOPS AT CHICKAMAUGA PARK.

Our acquaintance with large bodies of troops is chiefly limited to gala day parades, owing to the fact that the United States has such a small standing army, so that the mobilization of a large body of men, which is so frequent in Europe, has not been seen in this country in this generation. Not only have the troops of the regular army been called to active duty from the humdrum existence of army stations or from the Western plains, but the National Guard of every State is mustering into service up to the limit allowed by the War Department; and over 600,000 men have volunteered their services in the present war, although this is more than four times as many men as are required. The subject of the mobilization of a vast army is so interesting that we take pleasure in presenting views of some of the stirring scenes which have been recently enacted at Chickamauga Park, which is, or rather was, up to a few days ago, the great center of activity.

Chickamauga Park, near Chattanooga, Tenn., is really over the border line and is in Georgia. It has been the point of concentration for the regular troops which are being gathered for the war with Spain, and it is the initial camp where mobilization has taken place and from which the soldiers and supplies are dispatched to the sea coast towns, as Tampa, within striking distance of Cuba. Of the 25,000 troops which make up the standing army of the United States, nearly 20,000 have been in camp at Chickamauga Park and at Port Tampa, Fla., but they have now left for the South, and it is probable by the time this paper reaches our readers 30,000 volunteers will have taken their place. The gathering at Chickamauga Park was the largest concentration of the regular troops which has taken place in this country since 1865, and special interest attaches to it from the fact that the mobilization took place in the South, and the united forces from the North, South, East and West occupied the historic field of Chickamauga, where one of the bloodiest and most desperate battles of the civil war was fought. Almost twice as many laid down their lives in that engagement as were represented in the entire army recently encamped there. The thick woods, open meadows, brooks, hills, everything, in fact, is topographically the same to-day as then.

The regular army, which has been for the most part relegated to Indian fighting in the far West, is now brought together, so that thousands of our people have, for the first time, seen an imposing army, and the troops have created much enthusiasm in the smaller towns and cities through which they have passed. Even before the ultimatum was sent to Spain, the regular army was moving toward Chickamauga, the first troops arriving April 20.

Our large engraving shows the Ninth United States Infantry en route to the South, the photograph being taken from Maryland Avenue, Washington, D. C., and the Capitol of the United States may be seen in the distance. Every incoming train at Chattanooga is met by a throng of people who cheer the soldiers as the train rolls into the station.

It is a busy scene, as the troops load their baggage into the long line of blue wagons with white covers, bearing the brand of the United States, which recalls vividly to the veteran the days when this section of the country was alive with those who followed Grant, Sherman, Thomas and Rosecrans.

The following are some notes on the scenes at Chickamauga Park during the occupancy of the regulars:

While the infantry comes in for a share of enthusiasm, the cavalry is naturally the favorite. When the stock cars reach the platform, each horse knows his master and greets him with some expression of pleasure familiar to himself. The horses first, and all the time, is the motto of the Western cavalryman. As soon as the horses have been saddled, the order, "Mount!" peals out from the cavalry bugle, and the troops are off and down the dusty road leading toward Chickamauga, and when the last of the lumbering wagons following the troops turn out of sight, the crowd again directs its attention to similar scenes, which occur almost hourly.

When the cavalrymen reach the camp ground, a long rope is stretched on the ground and a picket line made, to which the horses are tethered. The affection displayed by the trooper for his horse is reciprocated by the intelligent animals, and it is largely due to this fact that accidents to man and beast are few and far between. The cavalryman always provides for his mount, and it is amusing to watch the mounted artillerymen taking their horses out to good grazing spots the moment the escort dismounts.

"Camp George H. Thomas," as the rendezvous has been named in memory of the hero of Chickamauga, is a bustling scene of military activity. The rattle of the artillery is often heard, and the historic battle ground is now covered to a great extent with the tents of the soldiers, and parties of cavalrymen may constantly be seen driving their horses to water at Chickamauga Creek. The establishment of the community at Camp Thomas is much like the establishment of a colony in an unsettled land, in so far as domestic conveniences are concerned, for everything has to be taken there, and each regiment is a small canvas town in itself, and has to depend entirely upon its own resources. Dotted here and there throughout the entire expanse of fifteen miles of reservation these cities of tents are seen.

The description of the quarters of one officer will serve for all. An "A" or wall tent is 10 × 12 feet and some of them a size smaller. On one side is a folded camp cot with a thin yet comfortable mattress and an abundance of heavy woolen army blankets. A table about 20 inches square, with legs that fold up into the smallest possible space, stands near the door or opening at the foot of the cot. A folding chair or two for his visitors, a large valise or very small trunk, a bit of looking glass hanging from a tent pole, and a tubular lantern or candle attached to a stick stuck in the ground finish the equipment of the tent. Commanding officers at regimental headquarters have an extra roof or "tent fly," as the awning in front of their quarters is called, but otherwise they live as other officers do. The enlisted men, quartered in conical wall tents now adopted by the army, bunk with heads to the wall and feet toward the center, from nine to twelve in a tent. Their bedding and blankets are good and they are as comfortable as soldiers can hope to be in the field.

Some of the regiments coming from the Northwest have the Sibley conical tent, which has no wall, but which has a small sheet iron stove. These have been more than appreciated during the cold, rainy weather which has prevailed until recently at Camp Thomas. The mess tents and cook houses are nearly alike in all arms of the service. The "cuddy-bunk" oven, made of sheet iron, bakes well and looks like two iron pans fastened together, one upon the top of the other. The men are detailed as cooks and waiters and attend to the preparation and serving of the meals. The soldiers live very well indeed. Field rations are used when in transit from point to point, but when in camp the companies or troop mess purchase fresh meats, vegetables, eggs, fruits, etc. Wells are being driven all through the camp to furnish an abundant supply of pure water. While the soldiers do not have many of the luxuries of life, still they have some of them, as represented in one of our engravings, which shows a camp barber shop, where one of the soldiers is being shaved. The camp barber shop is a primitive affair, of which it has been humorously said that it "consists of a cracker box and a towel." Trades are made between the men and the barber, or sometimes a cash consideration is promised; but "You cut my hair and I will clean your horse" is the average exchange.

The regulations of the camp are as follows: Reveille, 6 A. M.; breakfast, 6:15; sick call, 7; drill by companies, 9; recall drill, 10; recall fatigue, 12 M.; first sergeants' call, 12; dinner, 12:15 P. M.; fatigue, 1; drill by battalions, 4:15; guard mount, 5; parade, 5:30; supper, 6; tattoo, 9; call to quarters, 9:10; taps, 9:15.

The soldiers manage to amuse themselves in many ways. The colored troops are well supplied with guitars and mandolins, and the vocalists of the regiments give very acceptable concerts, which would do credit to the best negro minstrels. As the prospect of being sent to the frontier came nearer there was less and less time for amusement, but the historic associations around them, the prospect for the longed-for fighting, the new scenes and martial spirit of mobilization made it interesting enough for the troops, who are tired of the humdrum life of their reservations; and when the volunteer troops shall have occupied the camp, it is likely that their attention will be largely devoted to the necessary drills, for there is plenty of hard work at Camp Thomas, and drills are the order of the day, morning, noon and night. There are company and regimental drills, and field maneuvers are to be held in which the combined forces will participate. In these the actual conditions of war will obtain, with the exception of ball cartridges, and the soldiers will get a taste of real service on a large scale as far as fighting under the new tactics goes. One of the prettiest sights is the cavalry drill, and some of the many commands are at it nearly all the time, and one of our engravings shows the second division cavalry en route for the drill field. This cavalry drill is one of the features of interest to visitors, and they stand for hours watching the evolutions of the men and horses as they break into squadrons, wheel, charge, re-form, with perfect alignment and go thundering away with flashing sabers and piercing yells.

There are many indications that Camp Thomas is more than a temporary camp, and the chances are it will be maintained as a military training ground as long as occasion shall require. It was at first intended to