NEY'S POCKET FIELD GLASS.

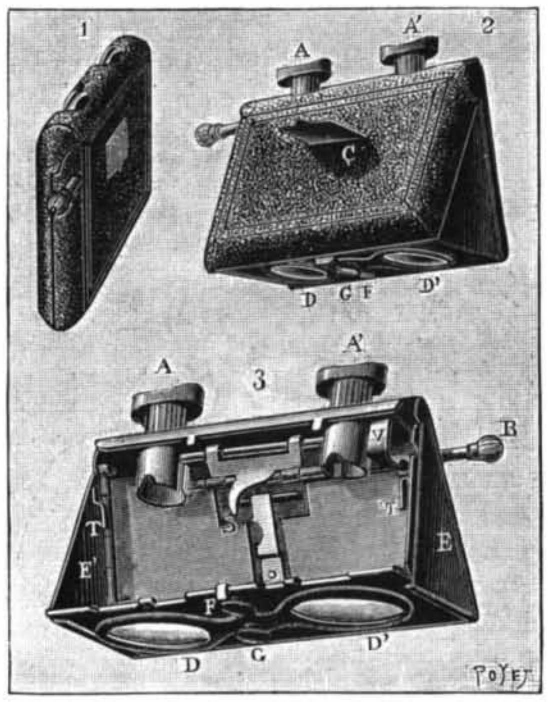
The instrument represented herewith (devised by Commandant Napoleon Ney) is not designed so much for the theater as for military maneuvers, in which the view of the officers must be applied to definite and remote points, and in which the impedimentum of the equipment cannot easily be increased by the weight of an ordinary field glass. It is especially adapted for the use of those who go touring upon the bicycle, in a horseless carriage, or even upon foot (and who always select the lightest and least cumbersome accessories that they can find), and also for use upon the race track.

The mounting of this instrument, which weighs but about eight ounces, consists almost entirely of aluminum. A few of the parts, such as the springs and those employed to give the instrument strength, are made of steel.

Fig. 1 represents the glass closed. It measures 4¾ inches in length, 3¼ in width, and ¾ inch in thickness. To the left, a button with a milled edge permits of moving the eye pieces so as to adapt the instrument to the vision of anybody. To the right there is a ring through which may be passed a chain or cord to prevent the apparatus from falling or getting lost. In the center, upon one of the flat sides, there is a metal escutcheon that may be raised at will and be grasped by the fingers in order to prevent the instrument from slipping. Finally, at the bottom, there is a push button for causing the apparatus to open instantaneously.

Fig. 2 shows the apparatus ready for use. The person employing it looks through the oculars, A and A', which are adapted to his sight through the button, B. The escutcheon, C, is here seen raised. The objectives, D and D', are in a plane exactly parallel with that of the oculars, and two lateral shutters, E and E', maintain the spacing of the two flat sides. In order to close the apparatus, it suffices to press upon the nickel plated button, F. The objective carrier will then yield to the pressure, and, at the same time that it lowers the lateral shutters, will cause the eye pieces to enter the case. A pressure upon the cover of the case will close the instrument precisely as we close a simple portemonnaie. Let us remark, besides, that if we unscrew the button, G, the two objectives will come off so that the glasses may be cleaned, or even be used for the reading of a map or document.

The details of the mechanism, shown in Fig. 3, are as ingenious as they are simple. The cover is here removed in order to show the interior. The objective carrier is held upright through two small spiral springs that rest upon the bottom of the case. If, pressing upon the button, F, we progressively lower this carrier, we shall see it reach, through its upper ive carrier and the oculars thus enter the case. At this moment, the objective carrier, which covers the whole, is caught by a spring, V, so as to permit the cover of the apparatus to close. The operator may thus avoid pinching his fingers, without having to meddle with the spiral springs that tend constantly to raise the objective carrier. But a difficulty presented



NEY'S POCKET FIELD GLASS.

itself. Upon the case being reopened by the operator, it was necessary that the shutters and objective carrier should instantaneously resume their proper place; and yet the spring, V, the use of which is indispensable, as we have just seen, kept them fixed in their downward position. Commandant Ney, the inventor, and Mr. Huet, the manufacturer, have skillfully solved this little problem, the data of which are apparently so contradictory. They have rendered the spring, V, slightly convex, so that when the objective carrier engages with it, the cover of the apparatus, while closing it, rests upon this convex part and frees the carrier, which remains fastened only during the time necessary for the closing of the case. The objective carrier is, therefore, freed from the spring which retains it, and, controlled thereafter only by the two spiral springs, awaits a pressure upon the push button to cause it to stand erect and carry the shutters along with it.

part, a small steel tappet, S, which forms part of the piece upon which the eye pieces move. This tappet, lowering under the thrust of the objective carrier, pushes the oculars backward. The carrier, continuing to lower, comes into contact, through its lateral parts, with two rods, T and T', riveted to the bottom of the shutters, and lowers them. The shutters, the object-

Let us add to the credit of this instrument that it cannot get out of center, since, in its construction, there is used no screw that permits the lenses to play and present any of those disagreeable irisations that are common to so many field glasses.—La Nature.

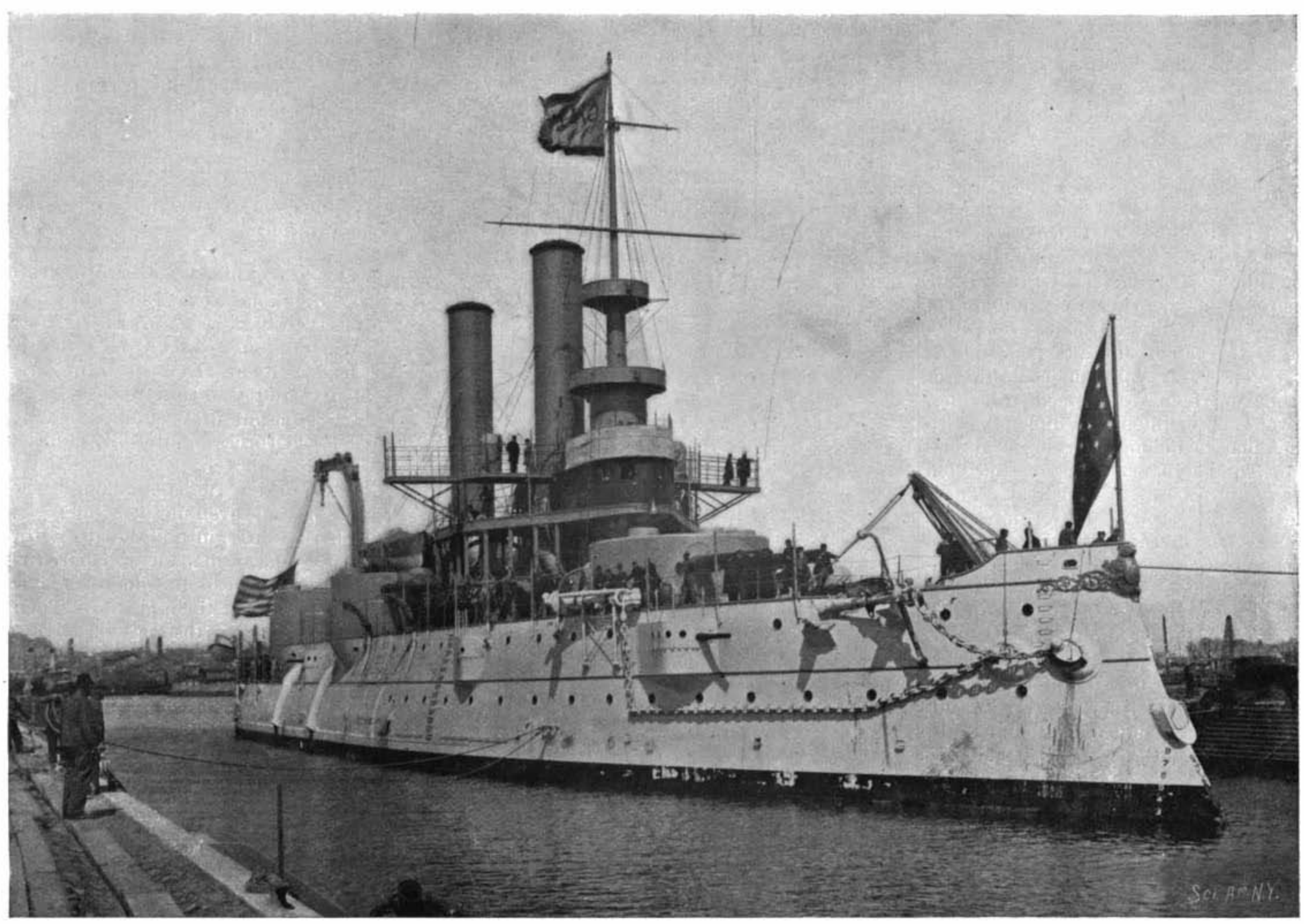
THE UNITED STATES FIRST-CLASS SEA-GOING BATTLESHIP IOWA.

We present a handsome engraving of the first modern first-class sea-going battleship built for the United States navy—the Iowa. It is reproduced from a photograph of this noble vessel which was taken immediately upon her arrival from Cramp's shipyard on the Delaware and just as she was floated into the new dry dock, No. 3, at the Brooklyn Navy Yard. Our readers will remember that we gave a full illustration and description of this dry dock in our issue of February 20, and from the record of its dimensions they will understand that it is fully equal to the task of accommodating a vessel of the size of the Iowa, in spite of the fact of her great draught and her loaded displacement of between 11,000 and 12,000 tons.

Our readers will doubtless observe that the Iowa bears a general resemblance to the Massachusetts and her class of ships, and they will ask why the Iowa should be designated as the first modern sea-going battleship of our navy. As a matter of fact, however, the Indiana, Massachusetts and Oregon are listed on the naval register as coast defense battleships, and, although they would be capable of crossing the Atlantic and giving a good account of themselves in a fight upon the high seas, they were not specifically designed for such service. Those elements of a battleship which make her a good sea boat in heavy weather have been somewhat sacrificed in these boats in favor of extremely heavy guns and massive armor plates, and it is this concentration of guns and armor which renders the Massachusetts and the vessels of her class the most powerful fighting ships in the world.

The design of the Iowa is based upon that of the Massachusetts, but with a view to giving her better sea-going qualities her freeboard has been raised about eight or nine feet, or about the height of one deck, from her bow back as far as the rear eight inch gun turrets. The forward pair of heavy guns with their turrets have been raised to the same extent, the axis of these guns being now about twenty-six feet above the water line at normal draught, and therefore well out of the reach of the heavy seas which would drown out the same pair of guns in the Massachusetts if she were steaming head to sea in heavy weather. The freeboard forward in the Iowa is about twenty feet and aft it is about twelve feet. The latter is about the greatest freeboard of the Massachusetts, which has a flush deck fore and aft for the whole length of the vessel.

The Iowa is 360 feet long, 72 feet in beam, and she has a displacement loaded of 11,410 tons. Three thousand tons of the weight is devoted to armor, which ranges in thickness from two and three-quarters inches to fifteen inches. The vitals of the ship are covered by


THE UNITED STATES FIRST-CLASS SEA-GOING BATTLESHIP IOWA IN THE NEW DRY DOCK No. 3 AT THE BROOKLYN NAVY YARD.

a flat armor deck, which is two and three-quarters inches thick and reaches from side to side of the vessel, where it connects with belts of side armor fourteen inches in thickness which protect the vessel from penetration at the water line. Forward and aft of the ends of the side armor the steel deck is curved down to a connection with the stem and stern of the vessel. The

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ends of the side armor are joined by an athwartship bulkhead which serves to protect the vitals from a raking fire.

The general disposition of the guns and turrets is similar to that of the Massachusetts. The main armament, which consists of four 12 inch guns, is located in two large turrets, located fore and aft on the axis of the ship, which are plated with fifteen inch Harveyized steel. Between the main turrets and well out on the sides of the ship are four smaller turrets, each of which contains two eight inch rifled guns, which discharge an armor-piercing shell weighing 250 pounds, that is capable of penetrating eight inches of steel at a distance of two miles. In addition to these guns there are six four inch rapid fire guns which discharge thirty-three pound shell with such rapidity that five of them can be kept in the air at the same time, and in addition to these the Iowa carries in her military tops and on the gun deck, and in various advantageous positions along the superstructure and upon the bridges, twenty six pounders, six one pounders, and four Gatlings, all of which are rapid fire guns, and are capable together of pouring out a perfect hail of small shot and shell upon the defenseless and lightly protected parts of an enemy.

The ship is driven by a set of twin screw, triple expansion engines of 11,000 horse power. The estimated speed of the ship is 16 knots an hour with the engines turning at a speed of 112 revolutions a minute. The normal coal supply will be 635 tons, with a total bunker capacity of 1,780 tons, and on the maximum allowance, at a 10 knot cruising speed, the Iowa could steam continuously for thirty-one days, covering a distance of 7,400 knots. The crew will consist of 444 men, and the increased size of the ship will allow of their being berthed and cared for with a degree of comfort which is not realized on the battleships with which we have compared her. A striking feature of this ship is the unusual height of the smoke stacks, which extend 100 feet above the grate bars. They were carried up to this height to secure a powerful natural draught, and reduce the forced draught air pressure in the stokehold.

The Iowa was approved by an act of Congress July 19, 1892, and the contract was awarded to William Cramp & Sons, of Philadelphia, Pa., the contract price for ship and machinery being $3,010,000. At the time that our photograph was taken this splendid ship had just come up from the shipyard of her builders, whose flag will be noticed flying at the masthead. The visit to the dry dock was made for the purpose of having her hull thoroughly scraped and painted and everything possible done to increase her speed at the official trial. Our readers will realize how thoroughly this work is done when they bear in mind that, by the terms of the contract, $25,000 is paid to her builders as a bonus for every quarter knot of speed which she realizes in excess of the contract requirements.

Exploration in Tanganyika.

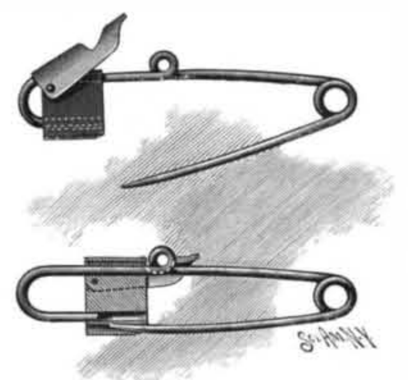
Mr. J. E. S. Moore has just reached England on his return from Central Africa, whither he went on an expedition, supported by the Royal Society, the objects of which were to investigate the fresh water fauna of Lake Tanganyika in relation to its supposed marine origin, and to find out the connection of that lake with the other great African lakes. In conversation with a representative of Reuter's Agency, says the Daily Graphic, Mr. Moore said : "Leaving England in September, 1895, I proceeded to Chindi, thence going by a British gun boat to the north of Lake Nyassa. At Karonga's I got together my caravan, consisting of about fifty men, some of whom were armed with rifles. There was, however, no likelihood of difficulty with the natives. I then marched along the Stevenson road to the south end of Tanganyika, where the Chartered Company placed at my disposal a steel boat. There was also available a number of Arab dhows and canoes which I used in my work on the lake. I commenced my researches in the beginning of April, 1896, and concluded my work on Tanganyika in September. I found the fauna of Tanganyika to be unique—unlike anything else anywhere—and as limited as peculiar. The jelly fish and shrimps were certainly of a marine type, while the geology of the district precluded the possibility of any connection with the sea in recent times. The water, which Livingstone found to be brackish, is now quite drinkable. All this seems to prove that the Tanganyika, part of the great rift valley running through this part of Africa, at one time had access to the sea, while it is perfectly clear that Lake Nyassa—some 246 miles to the southeast—apparently never had any marine connection. It is also a matter of interest that the fauna of Tanganyika is not only marine, but of a very peculiar and primitive type, and it is quite reasonable to suppose that the characteristics of the fauna are connected with the remote geological connection of the lake with the sea."

Asked regarding the condition of affairs in that part of Africa, Mr. Moore said :

"The so-called Stevenson road does not exist. There is not even a track beyond a point some twenty miles north of Lake Nyassa. But the Chartered Company's officers are now doing excellent work there. The forest is being cleared and good roads are being constructed across the high plateau. Captain Livingstone, who was constructing roads and administering the company's district at Sumbu, has, I have heard, just died. Dr. Watson was representing the company at Rhodesia on Lake Nweru, and Mr. Marshall was at Abercorn. Under these officials the development of that part of the country was proceeding satisfactorily. The British Central African protectorate officials were working from their end, and shortly their roads will connect with those to the northwest. In a very short time there will be a good wide road connecting the two great African lakes."

CHILTON'S SAFETY PIN.

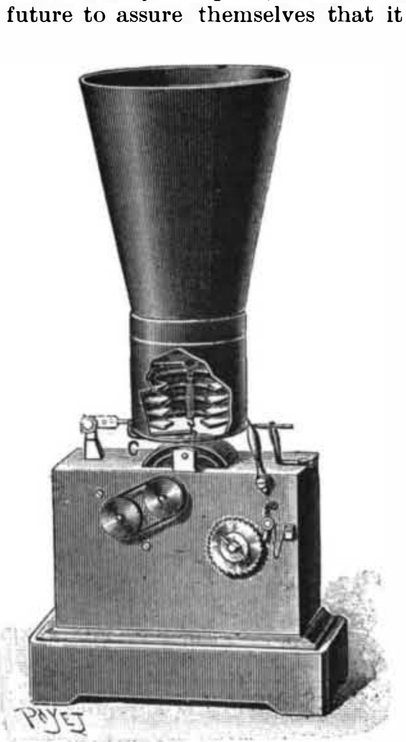
A safety pin which will not become loosened by the pressure of the fabric, and which may be readily fastened and unfastened when not within view, is shown in the accompanying engraving, and has been patented by Mrs. Annie H. Chilton, of the Colonnade Hotel, Philadelphia, Pa. One of the figures shows the pin open, with its locking slide moved back, while in the other figure the pin is closed and the locking slide is shown in section. Sliding freely on the back portion of the pin is a locking keeper or slide, which has in its lower edge a socket to receive the point of the pin, while to the upper edge of the keeper is pivoted a locking latch in which is a cut-away portion to receive a loop projection on the body of the pin. With this device the point of the pin is perfectly housed and the keeper positively locked to prevent it from being accidentally forced back.



A TOY PHONOGRAPH.

Although, in order to instruct children, it is well enough to make them read a description of great scientific inventions, such as the telegraph, telephone, phonograph, etc., it is certainly preferable to put these different instruments into their hands in order to permit them to learn how they operate.

Very simple apparatus capable of giving children general ideas as to the telegraph and telephone have been devised and sold at very low prices, but such an advantage has not hitherto existed for the phonograph. This want has, fortunately, just been supplied. Thanks to an ingenious instrument, which is very easily manipulated and of relatively low price, children will be able in the future to assure themselves that it is as



A TOY PHONOGRAPH.

easy to obtain a reproduction of the human voice with the phonograph as it is that of a piece of music by means of a mechanical piano. So this is one of the playthings that has met with the most success this year.

The principle upon which the construction of this phonograph is based is the same as that of the Edison apparatus. It is the transmission to a disk of the vibrations that correspond to certain sounds. For registering a sound in the Edison phonograph, a point connected with a plate in front of which the speaking is done traces upon a revolving cylinder moving longitudinally a series of lines, the depth and length of which depend upon the vibrations to which the plate is submitted.

It results inversely that when the cylinder is displaced the point with which it is in contact transmits to the plate, and then to the ears of the auditors, the sounds due to the vibrations to which the plate has previously been submitted. In order that such apparatus may be placed in the hands of children, it is necessary to take care not to have them of too fragile construction. The principal difficulty resides in the selection for the cylinders of some other material than wax, the wear of which is too rapid. Celluloid has been found good for this purpose.

These cylinders have an orifice in the center into which passes the rod that holds them in place, and a rotary motion is given them by a clockwork movement that is wound up with a key.—L'Illustration.

New Methods of Distinguishing Real from Apparent Death.

Two new methods of distinguishing real from apparent death are described and advocated by Dr. Séberin Icard in a book, just published in Paris, entitled "La Mort Réelle et la Mort Apparente." They are thus described in a brief review in the British Medical Journal, January 9 :

"One method consists in the hypodermic or intravenous injection of certain substances, and subsequently ascertaining whether these substances have been dispersed throughout the system. If they have, then the circulation persists and life continues, although the beating of the heart may not be detected by auscultation. Among the substances recommended for injection are fluorescein, sodium iodid, lithium iodid, and potassium ferrocyanid. Preference is given to fluorescein, 1 gramme [15½ grains] of which is dissolved with an equal weight of sodium carbonate in 8 cubic centimeters [½ cubic inch] of water, and the whole quantity is then injected subcutaneously. If the circulation is persisting, the skin and mucous membranes after a very few minutes assume a yellowish-green color ; about twenty minutes after injection the portion of the eye within the iris assumes a green color, from penetration of the fluorescein into the vitreous and aqueous humors, and in the blood the fluorescein may be detected by the following method : One or two threads of cotton are passed under the skin in a similar manner to a seton, and, when saturated with blood, are transferred to a test tube and boiled with a little water. As the liquid clears, the green color of the fluorescein becomes evident, if that body had been absorbed into the blood. It is stated that the injection of this quantity of fluorescein is unattended with danger, supposing the person to be alive.

"The second method for the distinction of real from apparent death consists in picking up a fold of the skin, and powerfully compressing it with a pair of artery forceps. If the skin does not completely settle down, and if the fine furrows produced by the teeth of the forceps continue indefinitely, then death has occurred ; whereas, if the circulation is continuing, the fold and the marks of the teeth of the forceps disappear. Moreover, if death has occurred, the portion of skin compressed by the forceps assumes a parchment-like appearance."

The New York-Washington Train Record Broken.

The special Royal Blue train on which Vice President elect Hobart rode on March 2, from Jersey City to Washington, proved to be a record breaker. Leaving Jersey City at 11:15, the train arrived at the Twenty-fourth and Chestnut Streets station, Philadelphia, at 12:56, one minute behind schedule time, having been delayed three minutes at Trenton Junction to take aboard Gov. Griggs and party. Another delay was occasioned at Philadelphia, and the train pulled out of the station seven minutes late.

Six minutes, in addition to a three minute stop for water, had been made up before the train pulled out of the belt tunnel in Baltimore and it started for Washington one minute behind time. The run into the capital city station, a distance of forty miles, was made in thirty-six minutes, the fastest ever made over the division. The train arrived in Washington at 3:23, seven minutes ahead of time.

The total running time between Jersey City and Washington was four hours and eight minutes. Deducting nineteen minutes for stops and unavoidable delays, the actual running time for the 230 miles was 229 minutes.

There were several spurts made during the trip. The first fifty-seven miles out of Philadelphia were made in 56 minutes. From Aberdeen to Bay View, 22·7 miles, the run was made in 22 minutes. The average running time between Baltimore and Washington, allowing for slackened speed while within the limits of the two cities, is figured at 67 miles an hour. Eight and one-tenth miles of this distance was run in six minutes, an average of 81 miles an hour. Between Laurel and Washington, 18·7 miles, an average of 75 miles was sustained, the time occupied in covering the distance being fifteen minutes. The previous record from New York to Washington was 4 hours and 17 minutes.

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