

GYMNASTIC EXERCISES WITH THE STICK.

Among the various forms of gymnastic exercises, some of the simplest and best are those that are performed with a stiff stick about five feet in length and three-quarters of an inch in diameter. It may be turned out of strong wood, but we consider as preferable a section of a bamboo pole, for it is light, strong and smooth. It may be cut from the smaller part of an ordinary bamboo fishing pole, which, undressed, sells for a quarter of a dollar.

The stick is to be held by the hands in front of the body and the arms then lifted, and the stick thrown over the head to a position in the middle of the back. Inflate the lungs and hold the breath during the exercise. This may be repeated a number of times, and will be found excellent in developing the breast and lungs. With the stick held in the position last described the body may then be rotated, holding the knees firm and the feet with toes turned out. This helps to develop the muscles of the loins.

Then, holding the stick in a vertical position down the back, the body may be swayed back and forth sidewise, and in that way the various muscles of the back, loins and arms developed in a high degree.

We have now to call attention to a more difficult form of exercise with the stick, which is illustrated in the diagrams herewith presented. In the position seen in Fig. 1 the stick is held horizontally behind the body. Care should be taken to place the fingers and thumbs on the stick in the manner shown in the engraving. The next movement, shown in dotted lines, Fig. 1, still holding the hands upon the stick as first described, is to bring the stick over the head in front of the body, into the position shown in Fig. 2. It will be noticed that the elbows, in this case, are, by the movement described, bent outward. Take care that the stick is held in the hands as represented in Fig. 2.

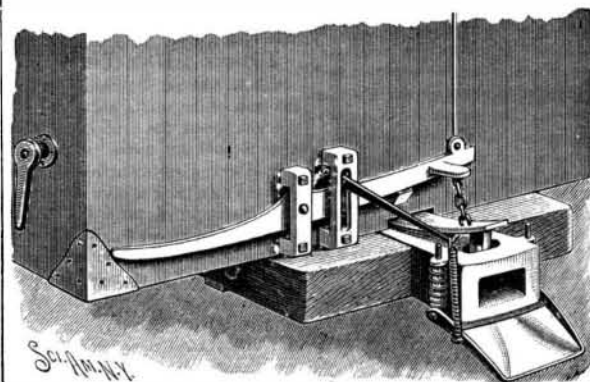
The next movement, shown in dotted lines, Fig. 2, is to lift the right leg and place it over the right arm in front between the stick and the body, as indicated in Fig. 3, and to carry down the leg to the floor as indicated in dotted lines, Fig. 3, bringing the stick outside of the leg, which necessitates the stooping posture shown in Fig. 4; then carry the stick back along exterior of the body as shown in dotted lines, Fig. 4, to position shown in Fig. 5, thence along the body to middle of back, as shown in dotted lines, Fig. 5, and bring the stick up into horizontal position between the legs, as shown in Fig. 6. The last and final movement is simply to lift the left leg back over the stick, which will then be in front of the body in the position shown in Fig. 7. The exercise may be repeated in reverse order, commencing with Fig. 7 and going back to Fig. 1. This looks like a very simple exercise, but to those who are unaccustomed to its performance it will be found at first difficult to accomplish; but do not be discouraged. With perseverance, any person, young or old, can finally succeed. Its practice will be found of very great advantage in promoting the strength and suppleness of the muscles, not only of the arms and legs, but of the hands, wrists, knees, shoulders, chest, loins, back, and other parts of the body.

Exercises such as we have described are of the high-

found to be insensible to pinching and her muscles were flaccid. Both tumors were removed without her having taken a drop of chloroform, and after the operation she declared she had not felt a particle of pain. The doctor very facetiously adds: "To the time she left the hospital she firmly believed in the potency of the anæsthetic which had been administered." ("Influence of the Mind upon the Body," Tuke.)

AN IMPROVED CAR COUPLING.

The device shown in the illustration is adapted to automatically couple cars having drawheads of different height, and may be operated from the side or roof of the car for uncoupling. It has been patented by



BENTLEY'S CAR COUPLING.

Mr. William Bentley, of Lethbridge, Northwest Territory, Canada. The main portion of the drawhead is held between longitudinal timbers of the car frame, where it is supported by cross bars to have a sliding movement. At the inner end of the drawhead is a guide bar sliding through an aperture in a cross timber and a block, the buffer spring mounted on the guide bar cushioning the drawhead in the usual way. Upon the drawhead body is secured the rear end of a drawbar, the forward end of which has a rearwardly curved draught pin adapted to slide in a vertical slot intersecting the throat cavity of the drawhead near its forward end. The drawbar may be in the form of a flat plate spring, as shown in the illustration, or may be a rigid plate, with the forward portion hinged to the rear portion. A rocking lever is pivotally supported in a keeper on the end of the car, the outer end of the lever extending within convenient reach from the side of the car, a short arm near the inner end of the lever being connected by a link or chain with the outer end of the drawbar. A draught rod is also connected with the end of the rocking lever and extended to the roof of the car, whereby the lever may be operated from this position.

Directly above the drawhead is a longitudinally moving latch bar, whose motion is controlled by a pin and a spiral spring, the front end of the latch bar normally projecting under the rocking lever, so that when the lever is operated to raise the draft pin it will push back the latch bar, the lever being rested on the latch bar after the coupling link has been released to retain the draw-bar in uncoupled position. A pin

which is connected to an apron, which the spring is designed to support in an inclined position to receive the free end of an approaching link, when the coupling is in the proper position, as shown in the picture. This apron is also pivotally engaged by vertically sliding, spring-pressed rods, and hangs pendent below the drawhead when unsupported. It is designed, by slight changes, to apply this improvement to the ordinary form of drawhead.

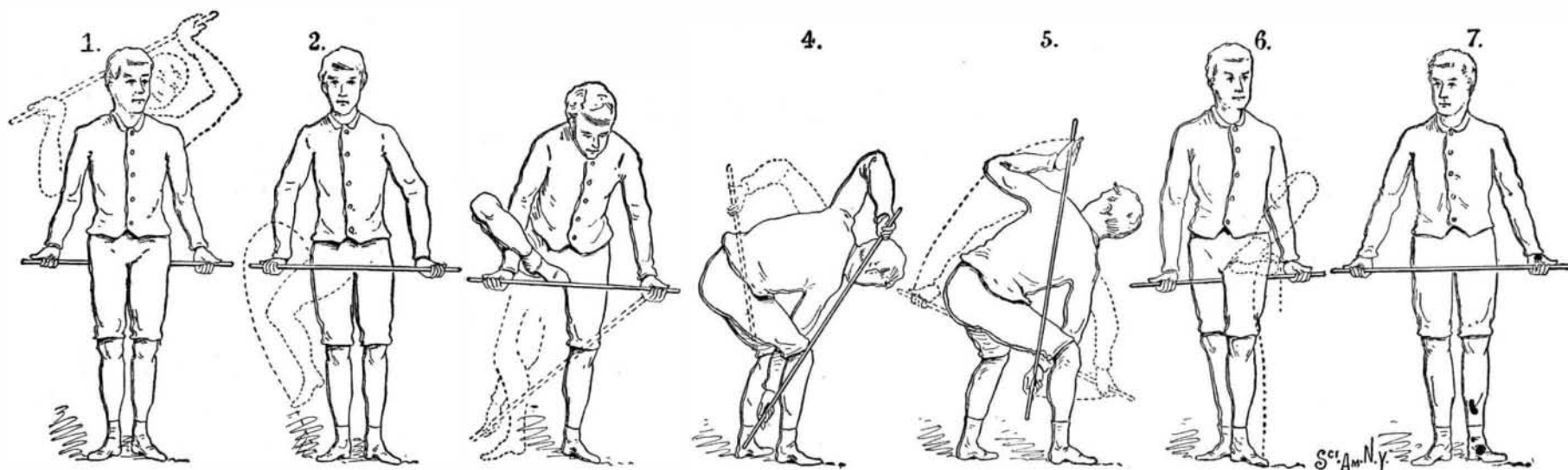
A Science Ship.

At a recent meeting of the Royal Society of Edinburgh, the Prince of Monaco read a paper, giving a description of a new yacht which he had specially built for the study of "Oceanography," and of the methods which he had adopted for carrying out the work. The yacht has a displacement of 650 tons, and was provided with steam power in such a way as to reserve as much space as possible for the arrangements necessary for engaging in serious scientific work, having in view at the same time the wants of family life. The engine room was sufficiently large to accommodate, besides the engines, various apparatus, including a dynamo, an ammonia freezing machine, and a water still, all of which were under the charge of one engineer. Besides being lighted throughout by electricity, the vessel was provided with a search light of 10,000 c. p. for illuminating the surface of the sea during night operations. Other special fittings were a refrigerating chamber and a cold chamber, several laboratories, winches, and cables suitable for making deep sea soundings. The actual equipment of the vessel allowed soundings to be made in the ocean to a depth not exceeding 8,000 meters, and of apparatus being let down to the bottom at depths up to 6,000 meters, with the least possible difficulty. The maximum speed of the vessel was 9 knots, but during scientific operations which required a low speed the rate might be reduced to 3 knots by using only one of the two boilers with which the vessel was fitted, thus economizing the consumption of coal.

The object of the Prince's investigations has been to investigate the direction and velocity of the great surface currents on the ocean and in the mapping of these he had made considerable progress. Oceanography would shortly be enriched by a chart of surface currents which he was preparing from the data furnished by the floats, to the number of 1,700, which he had thrown overboard in three distinct regions between Europe and America. Possessing exact and authentic information as to the departure and arrival of a great number of these floats, he had been able during the past three years to follow their successive appearances, and to construct his chart under conditions of exactitude which made of it an experimental document worthy of complete confidence as regarded the general direction and the mean velocity of the currents of the North Atlantic. Very valuable observations had also been made in zoology, and numerous new species discovered in the course of the operations.

Improved Refrigerator Cars.

We had the pleasure of examining, on the tracks of the Central Railroad of New Jersey, at Communipaw,



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est benefit to young persons of both sexes, who should make a practice of going through a series of them every day. They require but little time and for home gymnastics are unequalled. They are promotive of good health, beauty, and symmetry of the human figure.

Power of Mental Impressions.

In 1862 Mr. Woodhouse Braine was called upon to give chloroform to a nervous, hysterical girl for the purpose of having two tumors removed from the scalp. In order to accustom her to breathing through the inhaler before giving her chloroform, he placed it over her face and she at once began to breathe rapidly through it. In half a minute she said, "Oh, I feel it, I feel I am going off." Immediately after she was

on the drawhead enters a groove on the under side of the latch bar, and is adapted to push the bar rearwardly, and disengage the rocking lever, as the drawhead is moved backward by the concussion of opposing cars as they come together for coupling, the draw-bar then hooking the entering coupling link. A transverse rock-shaft is also mounted near the end of the car, with a handle bar projecting from each side, and this shaft has a short cam toe engaging a pin on the latch-bar, whereby the latter may be moved rearwardly to release the rocking bar and permit the draw-bar to fall and engage its hook with an entering link. The rocking lever also passes through a second guard or keeper plate, through a vertical slot in which, above the lever, projects a pivoted rock-arm, connected at its outer end to a strong spiral spring, the lower end of

two new Eastman refrigerating and heater cars, one an automatically heated and ventilated car for winter business, with late and important improvements; the other an automatic refrigerator car, constructed upon novel principles, the circulating air currents being, it is said, automatically controlled, so that a uniform temperature of any given degree can be produced and maintained by simply placing an index pointer on the number representing the degree of temperature desired, and when that given degree is reached, the unnecessary consumption of ice ceases, and a large saving, not only in ice, but in expense and delay occasioned by re-icing *en route*, is accomplished. It is claimed this car will safely carry fruit, or any freight requiring refrigeration, from California to New York, without re-icing *en route*.