

Progress in Science.

Weapons in Walking Sticks.

THOSE who look with contempt upon a cane as a useless ornament and a harmless weapon evolved from the old-time bludgeon, evidently do not know much about the condition of affairs in France, where the inoffensive-looking walking stick may conceal the most dangerous weapon. In France, the carrying of arms is prohibited. On the other hand, the respectable citizen is frequently obliged to protect himself against the "Apaches." For this reason, considerable ingenuity has been exercised in concealing within the otherwise innocent-looking walking stick a most efficient means of defence. To such an extent has this art been carried, that one need no longer look with contempt upon the well-dressed dandy twirling a light cane, for at a moment's notice he may wrench off the handle of his walking stick and blaze away at you with a six-barreled revolver. Should this fail to down the enemy, he may use the dagger projecting from the barrel of the revolver for short-range fighting. One of the accompanying illustrations

meal, and suffered no ill-effects. The menu included: Martini cocktail, oysters cocktail, chablis moutonne, clear green turtle soup, synthetic biscuits, buterine, creme glacee, coffee substitute, synthetic creme de menthe, and various chemically-prepared wines.

On a side table were test tubes, bunsen burners, retorts, bottles of various re-agents, and so forth. The cocktail with which the meal commenced was made in a few minutes. Into its composition entered spirits of wine, ice, "absinthine" while a yellow aniline dye gave the necessary colouring. The oysters that followed were natural, but the sauce was a compound of citric acid, artificial vinegar, and red aniline. The Chablis had never been near a vineyard; tartar, acetic acid, glucose, alcohol, distilled water, and napolit went to the making of it. The biscuits were built up from saccharine, bicarbonate of soda, water, and cream of tartar, heated in a retort, with the addition of caseine and glycerol-phosphate of soda, a mixture that the chemist said was "milk." Thus were the biscuits made. Perhaps the

surface thoroughly and allow to dry. Mix up a solution of 1 part water-glass (sodium silicate) 40 deg. Baume, with 4 to 6 parts water, total 5 to 7 parts, according to the density of the concrete surface treated. The denser the surface the weaker should be the solution.

Apply the water-glass solution with a brush. After four hours and within twenty-four hours, wash off the surface with clear water. Again allow the surface to dry. When dry apply another coat of the water-glass solution. After four hours and within twenty-four hours, again wash off the surface with clear water and allow to dry. Repeat this process for three or four coats, which should be sufficient to close up all the pores.

The water-glass (sodium silicate) which has penetrated the pores has come in contact with the alkalies in the cement and concrete and formed into an insoluble hard material, causing the surface to become very hard to a depth of $\frac{1}{4}$ to $\frac{1}{2}$ inch, according to the density of the concrete. The excess sodium silicate which has remained on the surface, not having come in contact with the alkalies, is soluble, therefore, easily washed off with water. The reason for washing off the surface between each coat, and allowing the surface to dry, is to obtain a more thorough penetration of the sodium silicate.

It is obvious that concrete surfaces so treated, if hard, impervious, and insoluble, have been made impervious, tasteless, odourless, and sanitary.—Albert Moyer, in an American paper.

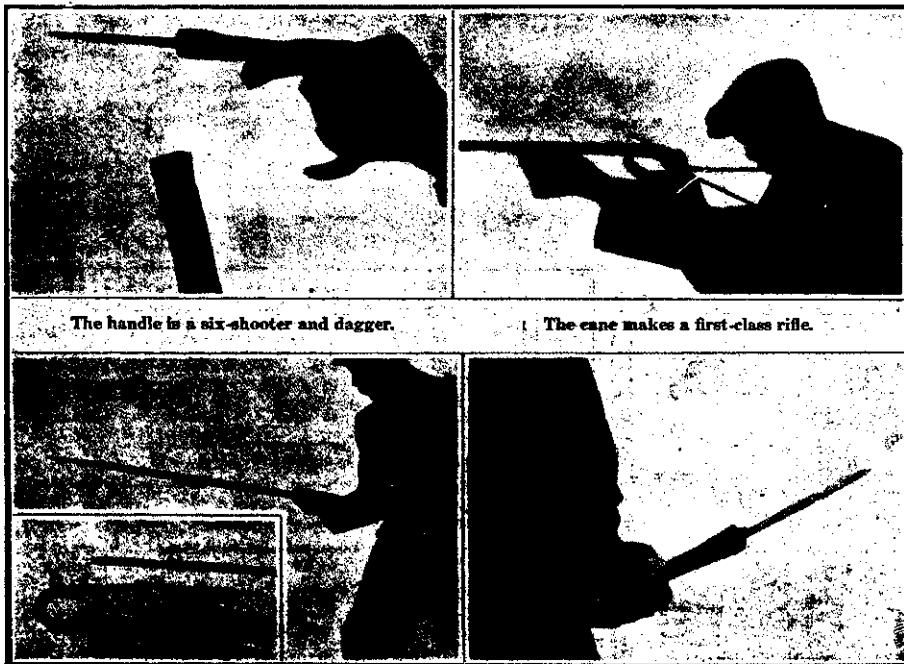
New Use for Electro-magnet.

Some time ago a successful experiment was made of a novel method of raising kegs of nails from a sunken vessel in the Mississippi River by the use of electro-magnets. This method suggested to the U.S.A. Navy Department that torpedoes which have gone to the bottom because of some defect can be raised in a similar manner. Hereafter, in practice firing, when a torpedo is lost, the approximate point at which it sank will be marked with a buoy, so that the region may be explored with an electro-magnet, and the torpedo be thus recovered. The lifting power of the magnets will not have to be very great, owing to the buoyancy of the torpedo in the water.



Baseball Mathematics.

Baseballs have been caught when dropped from the top of the Washington Monument, by at least two well-known league players, says an American journal. The distance dropped is 542ft, and by the time the ball reached the catcher's hands its velocity was calculated to have been about 180ft per second, or over 120 miles an hour. Suppose that the pitcher was to throw a 9oz ball to the top of the Washington Monument. How much energy would he require for that purpose? The "American Machinist" answers that question in a recent issue. According to that journal, if the pitcher could throw such a ball with such strength that it would reach the top of the monument, assuming that his hand is propelling the ball through a distance of 5ft before letting go, he would have to exert a constant pressure of about 60lb upon the ball until it left his hand. If the catcher in receiving the dropped ball, allowed his hand to move down a distance of 2ft, the average stopping force which he exerted must have been nearly 150 pounds. The probabilities are that his hands stung somewhat after the performance.



The handle is a six-shooter and dagger.

The cane makes a first-class rifle.

The cane may contain a sword or a blackjack.

A twist of the stick projects a bayonet from the handle.

WEAPONS CONCEALED IN FRENCH WALKING-STICKS.

shows a rifle that has been concealed in a walking stick. The rifle is provided with a shoulder rest, which may quickly be unfolded and applied. Another illustration shows a sword that has been drawn out of a cane, while still another illustrates a cane so constructed that a simple movement of the stick will bring out a bayonet from the upper end. There is one form of weapon that might be of service to the gentleman, but we are inclined to think that it would be of more value to a footpad. The stick contains an ugly black-jack consisting of a rubber whip loaded with a heavy metal end.

"plat de resistance" was the creme glacee. Cottonseed-oil mixed with water was whirled round in a machine at 3,000 revolutions a minute. The cream thus obtained was cooled by one of the methods known to chemists, and the addition of nitro-benzol gave it the desired flavouring. The meal terminated with a chemical liqueur, creme de menthe, which was, perhaps, quite as good as some of the liqueurs sold as natural.



Glass for Concrete Vats.

Impervious, odourless, tasteless, and sanitary vats and tanks for buttermilk, wine, oil, pickles, sauerkraut, etc., can be constructed of reinforced concrete, the reinforcing to be designed by a competent engineer, provided the interior surfaces are treated as follows:

After the forms are removed, grind off with a carborundum stone any projections due to the concrete seeping through the joints between the boards. Keep the surface damp for two weeks from the placing of the concrete. Wash the

Conductivity of Copper and Aluminium.

It is interesting to study the rivalry between copper and aluminium as conductors of electric current. The conductivity of aluminium is but three-fifths of that of copper. On the other hand, it is so much lighter that, pound for pound, aluminium is a better conductor than copper. The cost of aluminium is slightly greater than that of copper, but not sufficiently greater to prevent its being used; but when we come to insulated wire, copper has an advantage over aluminium, because in wires of the same conductivity the cross section of the copper would be less than the cross section of the aluminium conductor, and hence would require less insulation, due to its smaller diameter. This, however, holds only below certain sizes, for the conductivity depends upon the cross-sectional area, and the latter varies as the square of the diameter, so that in the end aluminium wins the race for the large insulated conductors.

WOULD LIE AWAKE ALL NIGHT WITH ITCHING ECZEMA

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A number of physicians were called, but it seemed beyond their medical power and knowledge to cure me. Having tried numerous treatments without deriving any benefit from them, I had given myself up to the mercy of my dreadful malady, but I thought I would take the Cuticura treatment as a last resort. Words cannot express my gratitude to the one who created "The Cuticura Miracles," as I have named them, for thank heaven there was such a miracle as the Cuticura Remedies sent to the suffering world, and now I feel as if I never suffered from even a pimple. My disease was routed by Cuticura Soap and Ointment, and I shall Cuticura Remedies in the world wherever they contain. I will never be without them. In fact, I can almost dare any skin disease to attack me so long as I have Cuticura Remedies in the house. I hope that this letter will give other sufferers an idea of how I suffered (Signed) C. L. Green, 229 Chestnut St., Philadelphia, Pa., Dec. 29, 1910.

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Chemical Dinner.

The "Figaro" gives details of an extraordinary meal recently given in America—of course—by Dr. Stillman, head of the laboratory at the Stevens Institute of Technology, New York. Before the eyes of his guests the doctor made by chemical processes all the dishes save the oysters, the meat, and the salad. What is more, they heartily enjoyed the