THE BANEFUL EFFECTS OF ABSINTHE.

Dr. B. W. Richardson, in an article on "Chloral and other Narcotics," in the current number of the *Contemporary Review*, touches on the subject of absinthe, and points out the deleterious effects following the habit of using it as an exhilarant—a habit which, originally confined to the French, has become more or less prevalent among other European nations, and to a certain extent among Americans. He says: Absinthe, as it is made in France, whence it is exported, is a mixture of essence of wormwood (*Absinthium*), sweet-flag, anise seed, angelica root, and alcohol. It is colored green with the leaves or the juice of the smallage, spinach, or nettles. It is commonly adulterated. M. Derheims found it adulterated with sulphate of copper (or blue vitriol), which substance is added to give it the required greenish color or tint, as well as to afford a slight causticity, which, to depraved tastes, is considered the right thing to taste and swallow.

M. Stanislas Martin stated that he found chloride of antimony, commonly called butter of antimony, as another adulteration used also to give the color. Chevalier doubts this latter adulteration, but that with sulphate of copper is not disputed. The proportion of essence of wormwood to the alcohol is 5 drachms of the essence to 100 quarts of alcohol. The action of absinthe on those who become habituated to its use is most deleterious. The bitterness increases the craving or desire, and the confirmed *habitué* is soon unable to take food until he is duly primed for it by the deadly provocative. On the nervous system the influence of the absinthium essence is different from the action of the alcohol. The absinthium acts rather after the manner of nicotine; but it is slower in taking effect than the alcohol which accompanies it into the organism. There is, therefore, felt by the drinker, first, the exciting relaxing influence of the alcohol, and afterward the constringing suppressing influence of the secondary and more slowly acting poison. The sufferer, for he must be so called, is left cold, tremulous, unsteady of movement, and nauseated. If his dose be large, these phenomena are exaggerated, and the voluntary muscles, bereft of the control of the will, are thrown into epileptiform convulsions, attended with unconsciousness and with an oblivion to all surrounding objects, which I have known to last for six or seven hours.

In the worst examples of poisoning from absinthe the person becomes a confirmed epileptic. In addition to these general indications of evil there are certain local indications not less severe, not less dangerous. The effect which the absinthe exerts in a direct way on the stomach would alone be sufficiently pernicious. It controls for mischief the natural power of the stomach to secrete healthy digestive fluid. It interferes with the solvent power of that fluid itself, so that, taken in what is considered to be a moderate quantity, one or two wine-glassfuls in the course of the day, it soon establishes in the victim subjected to it a permanent dyspepsia. The appetite is so perverted that all desire for food is quenched until the desire is feebly whipped up by another draught of the destroyer. In a word, a more consummate devil of destruction could not be concocted by the finest skill of science devoted to the worst of purposes than is concocted in this destructive agent, absinthe. It is doubly lethal, and ought to be put down peremptorily in all places where it is sold. Dr. Richardson believes that the sale of the article should be under legal control, and that no person ought to be able to get it in any form at all without signing a book and going through all the necessary formality for the purchase of a poison.

To Keep a Wet Plate without Stains during a Long Exposure.

Every photographer is familiar with the risks of stains from partial drying of the plate when a long time elapses between exciting and developing the plate. Here is a method whose extreme simplicity will entitle it at least to a trial, and one trial will prove its utility. The plan is simply to flood the plate with a few drachms of distilled water previous to exposure; the water is then poured from the plate to a developing glass, and must on no account be thrown away, for in this appears to lie the secret of success. After exposure, the plate is again flooded with the same water that was previously used, and which, after thoroughly moistening the film, is again returned to the developing glass, and mixed with the required quantity of developer, and the development proceeded with as usual. Plates so treated will give pictures as clear and free from markings as if only exposed in the camera for a few seconds. Try this before you believe it.

Silvering Mirrors.

An improvement in silvering mirrors, by which excellent results are obtained, and which at the same time spares the workmen the danger of exposure to the effect of mercurial vapors, has just been accorded a prize of 2,500 francs by the French Academy. The inventor is M. Lenoir, and his procedure is substantially as follows: The glass is first silvered by means of tartaric acid and ammoniacal nitrate of silver, and then exposed to the action of a weak solution of double cyanide of mercury and potassium. When the mercurial solution has spread uniformly over the surface, fine zinc dust is powdered over it, which promptly reduces the quicksilver, and permits it to form a white and brilliant silver amalgam, adhering strongly to the glass, and which is affirmed to be free from the yellowish tint of ordinary silvered glass, and not easily affected by sulphurous emanations.

New Copying Processes.

Herewith are further details of this process, heretofore noticed by us:

Take one part by weight of gelatine (glue does just as well), let it swell in two parts of water, melt, and add four parts of (common) glycerine with a few drops of carbolic acid, and sufficient whiting or white lead to make the whole milky. Pour the mixture into a shallow tin or zinc dish; it will be ready for use in about twelve hours.

A correspondent of the *English Mechanic* says: I have not been successful with the ink prescribed—1 violet methylated aniline (Hoffman's purple ?), 7 distilled water, and 1 alcohol—so I have bought it at the most extravagant price of 1*s.* per ½ ounce bottle; but acetic rosaniline, boiled down in alcohol till it does not run in writing, forms a capital red ink. The purple ink is dosed with oil of almonds, I suppose, to mask its real composition.

To use the process, write on any kind of paper with the ink, taking care that the writing is thick enough to show a green luster on drying. When dry, place it, face downward, on the jelly, rub it gently to bring it well in contact, and leave for one or two minutes; then peel it off. It will leave a large portion of the ink neatly transferred to the jelly; then place the paper to be printed on the writing, and pass the hand over; bring it well into contact as before, peel it off, and it will bring away a perfect copy of the original. In this way sixty to eighty copies may be made; by using a thick pen and plenty of ink, one hundred good prints may be taken. If the original still shows a green luster, another transfer may be made. When exhausted, wash off the ink from the jelly with a sponge and cold water; the ink need not be entirely removed, since it does no harm if too faint to print and the composition is worn away by washing; a layer a quarter inch thick would give five thousand copies at least, if not twice that number. If the jelly is injured, it may easily be melted down over a spirit lamp or in an oven. After melting, and in the first instance after making, the surface should be washed with cold water.

Improved Tanning Process.

Dr. Chr. Heinzerling, of Frankfurt a. M., Germany, has invented and patented a new and improved tanning process, which produces better and more durable leather, and is from 20 to 25 per cent less expensive than the old methods. The greatest advantage that it possesses over the old methods is that it requires but 3 to 5 days instead of as many months.

The raw hides are unhaired and swelled in the ordinary manner, and are then placed into a solution of sour bichromate of potassa, or sour chromate of soda, or sour chromate of magnesia and alum, or sulphate of alumina and salt. They remain in this solution for a few days, according to the thickness and quality of the hides and the concentration of the solution.

Instead of placing the hides directly into one of the above solutions, they can be first submitted to the action of a solution containing about 10 per cent of alum and some small pieces of zinc. By the action of the alum and the zinc, amorphous alumina (clay) is deposited upon the fibers of the hide and prevents an injurious action of the strong solutions. If the hides have been in the above solutions of soda or alum for a certain time, a few per cent of ferrocyanide or ferricyanide of potassa are added, which will prove to be very effective for the leather to be used for the uppers of shoes.

They are then placed into a solution of chloride of barium or acetate of lead, or soap, for a few days, to fix the tanning substances. They are then dried and treated in the ordinary manner with fat, or paraffine, or naphtha dissolved in benzine and similar substances, to which a small quantity of thymol or carbolic acid should be added.—*Deutsche Industrie Zeitung.*

Lightning Rods.

In an interesting article in the *Building World*, it is stated that there is in Carinthia a church which was so often struck by lightning that at length it became the custom to close it during the summer months. This continued until, in 1778, the church was rebuilt and provided with a suitable lightning conductor, since which time the building has been struck but few times and has suffered but little damage. It was at one time held that the best way to protect a building was to repel the lightning from it, and as glass is one of the best non-conductors, a thick glass ball was placed upon the top of the spire of Christ Church, Doncaster, England, but in 1836 lightning struck the church, shattering the ball and seriously damaging the spire. The carrying out of a theory which in this case proved so disastrous has had a happier result in the Houses of Parliament, London, where Sir W. Snow Harris, who was charged with protecting the building, carried the flat copper bands which were used for lightning conductors behind the plastering of the walls; and Faraday caused a spiral channel, following the course of the stairs from top to bottom, to be cut in the granite of the lighthouse on Plymouth breakwater, in which was laid a massive copper lightning rod. One of the best instances of what may be called natural protection is afforded by the London Monument. This column, some two hundred feet high, is crowned by a bronze flame, which typifies the great fire of London; this flame is in contact with the bars of the iron cage in which it was found necessary to inclose the balcony at the top, to prevent persons from throwing themselves over, and the bars in their turn connect with the rail of the balcony and the hand-rail of the staircase which descends to the ground. It is useless to try to insulate the vane spindle or finial upon a tower or spire by using glass rings; it is better to make this rod the upper part of the lightning conductor. The earth end of a lightning conductor should be carried to continually damp earth or running water, but not to a stone-lined well or cistern.

Effects of Pressure on Various Substances.

It is stated that a member of the Belgian Academy of Science, Mr. Spring, has made some experiments on the effect of pressure on powdered substances. He is said to have subjected, amongst other things, a quantity of powdered poplar wood to a pressure of twenty thousand atmospheres (about 280 tons per square inch). The result was a block having greater hardness than the natural poplar wood, and having a specific gravity of 1·328, while the natural wood has a specific gravity of only 0·389.

There must be an error here in the statement of the pressure. Twenty thousand atmospheres would be 300,000 lb., or only 150 tons per square inch.

We understand that Mr. Edison has lately made some interesting experiments with high pressures. Among other things we are told that he has subjected alumina (clay) to a pressure of 80,000 lb. per square inch (40 tons), the result being the production of a substance so hard and sharp that it cuts glass.

The Fires of St. Elmo.

An interesting example of the fires of St. Elmo was seen recently in the Jura above St. Cergues. The sky was dark and stormy. The air was thick with clouds, out of which darted at intervals bright flashes of lightning. At length one of these clouds, seeming to break loose from the mountains between Nyon and the Dole, advanced in the direction of a storm which had, meanwhile, broken out over Morges. The sun was hidden and the country covered with thick darkness. At this moment the pine forest round St. Cergues was suddenly illuminated, and shone with a light bearing a striking resemblance to the phosphorescence of the sea as seen in the tropics. The light disappeared with every clap of thunder, but only to reappear with increased intensity until the subsidence of the tempest. M. Raoul Pictet, who was one of the witnesses of the phenomenon, thus explains it in the last number of the *Archives des Sciences Physiques et Naturelles:* Before the appearance of this fire of St. Elmo, which covered the whole of the forest, it had rained several minutes during the first part of the storm. The rain had converted the trees into conductors of electricity. Then, when the cloud, strongly charged with the electric fluid, passed over this multitude of points, the discharges were sufficiently vivid to give rise to the luminous appearance. The effect was produced by the action of the electricity of the atmosphere on the electricity of the earth, an effect which, on the occasion in question, was considerably increased by the height of the locality, the proximity of a storm cloud, and the action of the rain, which turned all the trees of the forest into conductors.

The Power of Guns.

Herr Krupp contends that if we wish to know the real power of a gun we must observe how much power we get for a given weight in the gun itself. Thus, he has issued a table showing that for every kilogramme of weight in his great breechloader, weighing a total of 72,000 kilogrammes, or nearly 71 tons, there is a power put forth equal to very nearly 140 meter kilogrammes—that is to say, the force displayed by the projectile would lift the entire gun 140 meters high, seeing that every kilogramme of weight would be raised to that height. In fact, we may say that the real measure of the power of a gun is the height to which the gun itself would be raised by the power which is imparted to the projectile when the gun is fired. Krupp, with his great breechloader, gives to a projectile of 777 kilogrammes a velocity of 502 meters per second. This force would lift more than 10,000 tons a meter high, which is the same as raising the gun itself to a height of 140 meters, or 458 feet. The same test may be applied to other guns. Thus we find, according to the results given by Herr Krupp, that the energy of the shot fired by the Fraser 80 ton gun would raise the gun itself to the height of 121 meters, or 397 feet. So also the Armstrong gun of 100 tons develops an energy sufficient to raise that gun to an elevation of 125 meters, or 415 feet. The power of modern artillery is well illustrated by the fact that the shot flies on its way with a force sufficient to raise the gun itself to an altitude equal to that of the gilt cross on the top of St. Paul's Cathedral. Krupp himself lays claim to a power sufficient to make his steel breechloader of 70 tons soar at least 50 feet above the topmost point.

American Cottons for India.

During the first half of September, one of the largest firms of agents in Lancashire, England, took more orders for American cotton cloth for India than they received during the same period for all the English firms which they represent. This significant statement, by the Blackburn correspondent of the London *Standard*, indicates that there is a basis of truth in the assertions of English cotton millers, who have closed or who threaten to close their mills, when they say that they can buy cotton cloths cheaper than they can make them.