

Correspondence.

Alcohol vs. Snake Poison.

To the Editor of the Scientific American:

The extract quoted in your issue of November 10, from the paper of Dr. Hudson on this subject, is liable to mislead those who may be called on to treat snake bite; and as the SCIENTIFIC AMERICAN falls into the hands of thousands of people, any statement in it is apt to be of more interest to them than if it were noted in a medical journal, whose readers are mainly professional, and who are not so easily misled as the general public by erroneous reasoning. An experience with twenty-three cases of snake bite in rattlesnake (*Crotalus horridus*) and eight of water moccasin (*Toxicophis piscivorus*), with the study of many instances reported to me by capable physicians, leads me to believe that alcohol is the antidote to snake venom, and the only reliable one. Laboratory experiments upon the lower animals are of no real value in therapeutics as applicable to man, and those referred to by Dr. Hudson were fallacious in themselves. The admixture of a few drops of alcohol or any other supposed antidote with snake virus is misleading, for the quantity of the antidote is infinitesimal as compared with the concentrated and deadly animal poison. To illustrate, a private in the Second U. S. infantry was bitten by a cotton mouth (moccasin), and within less than four hours he swallowed under my direction three quarts and a little over of good apple jack without any symptoms of intoxication until after the last three ounces, and then only slightly. His pulse and respiration failed promptly unless he was thus stimulated for nearly the whole time. Now, knowing that the snake venom is a powerful cardiac and nervous depressant, is it not reasonable to say that the enormous stimulation was borne only because of the persistent reduction of vitality by the virus injected by the reptile? Where would a few drops of alcohol be in such a case? I have seen and examined the body of a child killed in fifteen minutes by a rattlesnake where the temporal vein received the poison. She had no treatment. Ammonia is too fugacious, bromine and permanganate are useless locally or internally, so also is the reputed cure-all wild violet (*V. sagittata*). The majority of presumed deadly bites are given by non-venomous reptiles, and the escape of the snake or the loss of presence of mind on the part of the person bitten leads to mistakes; but in *bona-fide* venomous bites, alcohol in some form is an absolute antidote when promptly and freely used. The failure of the pulse is the guide, and as the poison is rapidly absorbed, all ligatures, excisions, and cauterizations are simply useless and aggravating. Intoxication is not desirable, but stimulation should be evident to avert sudden heart failure, and I may say in this connection that in two instances the subcutaneous injection of atropia was markedly serviceable in maintaining respiration.

My cases occurred during my army life, between 1861 and 1872, and in the States of Alabama, Georgia, Tennessee, and Virginia, two during the war and the rest after that eventful period.

W. R. D. BLACKWOOD, M.D.

Philadelphia, Pa.

Capacity of Cylindrical Cisterns.

The *Sanitary News* gives the following table showing the capacity in gallons for each foot in depth of cylindrical cisterns of any diameter:

Diameter.	Gallons.	Diameter.	Gallons.
25 feet.	3,059	7 feet.	239
20 "	1,958	6 1/2 "	206
15 "	1,101	6 "	176
14 "	959	5 "	122
13 "	827	4 1/2 "	99
12 "	705	4 "	78
11 "	592	3 "	44
10 "	489	2 1/2 "	30
9 "	396	2 "	19
8 "	313		

A Test for Saccharine.

In a recent number of the *Chemical News*, Mr. D. Lindo described the following test for saccharine. After placing the saccharine with concentrated nitric acid in a small porcelain dish, evaporate to dryness on the water bath, or by moving the flame of a spirit lamp to and fro under the dish; blowing on the surface occasionally to facilitate evaporation, and taking care that the heat does not rise too high. If the dish is not allowed to cool, and a few drops of strong solution of potash in 50 per cent alcohol are added to the residue, a faint yellow color only will be developed. Spread the liquor over the surface of the dish; and before it has settled to the bottom apply heat with the lamp, as above, quickly all over the under surface of the dish. If the vapor of alcohol happens to ignite, it must be at once extinguished. A great variety of colors will be developed in this way. As the dish cools and moisture is absorbed, the colors fade. By heating they can be reproduced, though not in the same perfection as at first.

PHOTOGRAPHIC NOTES.

Mounting and Finishing Silver Prints.—Probably the best means of insuring the minimum of cockling with a prevention of the expansion (more in one direction than in another) of the print which occurs when it is mounted wet, is to give the backs of the prints a good coating of starch while wet; then allow them to become dry, and, after a final trimming, lay them down upon the mounts, which have been previously moistened by passing a wet sponge over them, and then running each in succession through a rolling press, by which the adhesion is made perfect.

The burnishing of prints seems a *bete noir* to some, but it is a very simple operation. The print, after being quite dry, is rubbed over with a lubricant composed of three grains of Castile soap dissolved in an ounce of alcohol. This is applied by a pad of cotton wool or by flannel. The best results are obtained by allowing an interval of some hours to intervene between the lubricating and the burnishing. A high polish will not be obtained unless the burnisher has been well heated, for it is the heat and friction combined that cause the polish. The photograph must be passed quite through without any stoppage, even of the most temporary nature, which would insure a mark. To secure the best effect, the print must be passed over the burnisher several times.

Since the introduction of burnishing, the application of encaustic paste to prints, especially those of small dimensions, has fallen much into disuse. But there is no doubt that such paste confers greater brilliance upon prints, more especially on such as are made on somewhat lightly albumenized paper, rendering visible some details which otherwise would not be seen. The practice of waxing the surface of prints is one of a respectable antiquity; we know, at any rate, that for several years anterior to a quarter of a century ago it was adopted regularly in some establishments, *e. g.*, in that of Thurston Thompson, the photographer to South Kensington Museum, not one print in which collection but what underwent the treatment with encaustic paste. The mode of proceeding was as follows: Equal parts, say one ounce each, of white wax and spirits of turpentine were mixed by heat in an earthenware vessel. A portion of this was applied by a clean rag to the surface of the print, which was then subjected to friction by a brush similar to that employed for brushing clothes, until the surface was quite uniform. In the practice of others subsequently the turpentine was displaced in favor of other solvents, such as oil of lavender. The fine surface finish of the portraits of the late Adam Salomon, of Paris, was due to the application of encaustic paste.

A surface finish of a different nature is imparted by the adoption of enameling, so called. By this means the very highest degree of finish capable of being attained is placed within easy access of every photographer. The operation is easy in the extreme. The first thing to do is to select one or more smooth plates of glass without surface defects. No pains must be spared in making one surface of this quite clean. It is then to be dusted over with powdered French chalk, which must be well rubbed over every portion and all superfluous particles wiped or brushed off. It is now coated with plain collodion containing a modicum of castor oil to impart toughness. Enameling collodion, as it is designated, is an article of commerce, and can be purchased cheaper than it can be made. Plates thus prepared may be stored away until wanted for use.

An ounce of gelatine having been dissolved in eight ounces of water, the prints are immersed in this for about a minute and then transferred to the collodionized glass, which has previously been made slightly warm. Examine the print by looking through the glass, and ascertain that there are no air bubbles. Allow the whole to become dry, which takes about a day, then run the point of a small knife around the margin, raise up one corner, and strip the print from the glass.

Almost every operator has his own special way of carrying out details. For example, some apply a layer of gelatine to the collodionized glass, and, allowing it to set until it becomes tacky, they then immerse the prints in plain water, and while wet lay them down upon the gelatinized glass. Others coat both glass and print with gelatine, and superpose one on the other just before the surface is set. If air bubbles are observed, they are rubbed out by pressure with the finger; but if the print is removed from the water in a dripping state, and placed upon the glass first at one end and gently laid down in a curve, none will be produced.

The mounting of *glace* or enameled prints is, in our estimation, most conveniently effected in this way: After the print has been on the glass for half an hour, take two thin Bristol boards, and having previously soaked them in the gelatine, place them, one at a time, down upon the print, and allow to dry for twenty-four hours before stripping. If the ordinary card mounts are to be employed, they must be well sponged with the gelatine before application to the print, and pressure applied to the back to insure contact until the ad-

hesion is perfect. It is, of course, well understood that the prints must in this latter case have been properly trimmed previous to the application of the mounts.

These remarks would scarcely be complete were we to omit mention of the mounting of prints in optical contact with glass, notwithstanding that we have so often written about it.

The glass ought to be of as colorless a sample as possible, and made scrupulously clean. The print is first soaked in plain cold water and then blotted off. In a flat dish have a solution in the proportion of two ounces of Nelson's No. 2 soluble, or any other good soluble gelatine, to the pint of water, and soak the print in this. Then, having first placed the glass in warm water—say 115° Fahr.—lift up the print by both ends and lay it down with a slight curl upon the glass. Some place the glass in the bottom of the tray containing the gelatine, and thus insure contact without the possibility of any air bubbles forming. We have seen quite successful results obtained even more simply—a pool of gelatine being poured on the center of the plate and a wet print laid down upon it, so as to force the superfluous gelatine to flow to the margins.

Photography on Wood.—The *Revue Photographique* gives the following directions for photographing upon wood. Measure out:

Gelatine.....	8 grammes.
White soap.....	8 "
Water.....	500 c. c.

The gelatine is allowed to swell, is dissolved in the water bath, and the soap is added to it gradually, stirring all the time. The mixture is then filtered through muslin. A little zinc white is added to it, and it is then rubbed well into the wood to be used, and then left to dry. The film should be as thin and equal as possible. A coating of the following solution is then applied to the wood by means of a broad brush:

Albumen.....	30 grammes.
Chloride of ammonia.....	12 "
Citric acid.....	0.2 "
Water.....	24 c. c.

Whip the albumen to a froth, let it settle, and then add (in order) the water, the chloride of ammonia, and the citric acid. When dry, this film is sensitized by pouring on it a little of the following solution, and spreading it with a glass rod:

Nitrate of silver.....	32 grammes.
Water.....	31 c. c.

Pour off any excess of the sensitizer and allow it to dry again. Print as usual. It is not necessary to overprint. When sufficiently exposed, hold the printed surface of the wooden block for three minutes in a weak solution of salt; in this the print will become slightly paler. Wash under the water tap, and fix for four or five minutes in a concentrated solution of hyposulphite of soda. Wash again for ten minutes under the water tap and dry.—*Br. Jour. of Photo.*

A Novel Scheme for Harbor Defense.

According to a recent report in some of the Philadelphia newspapers, a large company, backed by millions of dollars, has proposed to the Secretary of the Navy a striking and possibly effective scheme for the defense of that harbor and the harbors of other cities from the attacks of an enemy's fleet by shooting ignited petroleum at the unfriendly ships from the bottom of the river and burning them up. The Rear-Admiral has been directed to study closely the harbor of Philadelphia and its approaches. The petroleum defense scheme, the originators of which have induced the government to make this preliminary examination of the Philadelphia harbor, is a brilliant one in more respects than one. A company has been organized at Washington to develop the plan and to show its practicability.

It is proposed to sink perforated iron pipes in the river bed and the approaches to the harbor, through which petroleum can be forced to the surface of the river by machinery and at a high pressure. In this way a fierce stream of blazing oil can be sent down on the enemy's fleet to destroy it or drive it away. It is claimed by the projectors that a flame can be produced in this way as high as a ship's mast, and sent with terrific force on the attacking vessels many miles from the point where the oil is supplied to the system of submerged pipes. Iron vessels could not pass through this lake of fire, because it could be made to extend many miles along the river. An experiment in connection with the scheme will be made at Fort Mifflin in a few weeks. The necessary apparatus is almost ready at the present moment, and great things are expected from this test.

The first of a fleet of electrical power boats, destined for public use on the River Thames, London, was launched from a yard at Chiswick a few days since. The boat is intended to carry eighty passengers; her length is 65 1/2 feet, beam 10 feet, displacement 12 1/2 tons, and speed, with the conservancy regulation, six miles an hour. The machinery and storage cells are placed below deck. The boat carries 200 E. P. S. accumulators, and two 7 1/2 horse power motors drive twin three-bladed propellers.