Treatment for Snake Bites and Hydrophobia.

At a recent meeting of the Lower Rhenish Philosophical and Medical Association, held at Bonn, Professor Binz described an interesting series of experiments carried on under his direction, with a view of testing various antidotes to the poison of serpents. He remarked that numerous specifics are heard of among the native population of India, which, as a rule, are found to be of themselves inoperative. Professor Binz stated his opinion that when a real Indian poisonous snake has bitten a person in the usual manner, spirits can only serve to prevent or to alleviate the spasms of suffocation which are induced by the action of the poison on the respiratory nerves. Atropine and other specifics against imminent results of an analogous character, caused by narcotic influences, have been found ineffective against this deadly virus. The most favorable tests made were with chloride of lime, a filtered solution of which was injected into the same place where the fatal virus had previously been introduced. In seventeen trials made in succession, the poisoned animal survived without the slightest disturbance of its healthy condition. In five succeeding experiments, when a relatively insufficient dose of the antidote was administered, or when animals suffering from disease were operated upon, the chloride of lime served only to retard the fatal effects of the poison. The suggestion was made by Professor Binz that the adoption of this treatment in cases of the bites of dogs suffering from rabies might possibly be attended with favorable results, inasmuch as chloride of lime has been shown to have much greater power than any of the caustic substances now usually applied to dog bites, which have been proved to be scarcely, if at all, effective against the consequences of snake bites.—*Lancet.*

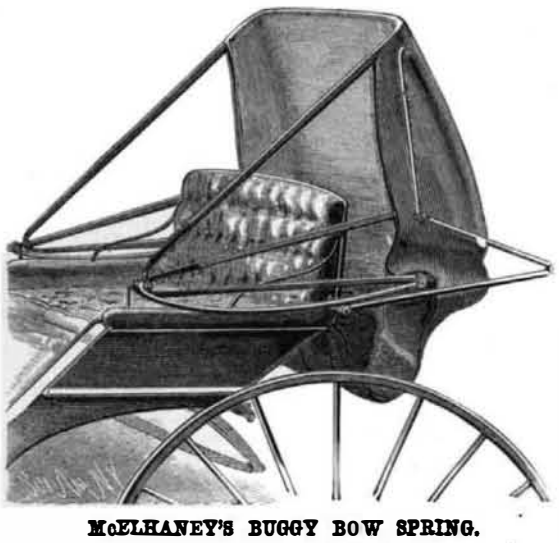
Ammoniacal Liquor as a Fertilizer.

The *Journal des Usines a Gaz*, on the subject of the use of ammoniacal liquor as a manure, states that it was so highly appreciated by the Belgian agriculturists that the entire production of the gas works at Malines was bought up in the crude state at the rate of 1 fr. 25 c. per hectoliter (say $1 per 100 gallons) on the spot. Upon newly cleared ground the liquor was used just as it left the works; but for irrigation purposes it was diluted with three or four times its bulk of water. The effect produced on the soil by the use of the liquor is stated to be exactly the same as when stable dung (which is usually considered to be the best kind of manure) is employed. The writer found that in rainy seasons the liquor might be used in an undiluted condition; and when spread over the ground in the proportion of about 1,500 gallons to the acre, a perfect dressing was obtained. In dry weather, however, the liquor had to be diluted with an equal bulk of water, and a double quantity of the mixture used, to produce similar results. But even in this condition it was found to possess the same value for agricultural purposes as stable manure.

BUGGY BOW SPRING.

The engraving shows a device to be attached to the rear bow of a buggy top for the purpose of guarding against the breaking of the bow when the top is suddenly thrown back, and to carry the weight of the top when down.

The device consists of a curved spring of steel or other suitable material, pivoted at its lower end on the bolt, which forms the pivot on which the bows are hinged, and fastened at its upper end to the rear bow by means of a clip. The spring is a curve, of which the rear bow is the chord, their only points of contact being at the ends of the spring, and the curve lies wholly on the rear side of the bow.



McELHANEY'S BUGGY BOW SPRING.

When the top is thrown back, instead of the bow striking the pivot of the brace, the interposed spring strikes on the pivot and receives the force of the blow. The bows are rigid, and it frequently happens that when the top is thrown back suddenly the force of the fall breaks the bow, whereas when the device shown is used, the yielding spring acts as a cushion, and breakage is impossible. When the top is down the weight is borne by the spring, which rests on the bolt, and forms a yielding support, taking off the strain caused by any sudden jar from inequalities in the roadway passed over.

This useful invention has been patented by Mr. Samuel McElhaney, of Polo, Ill.

IMPROVED HAT HOLDER.

We give an engraving of a very simple, inexpensive, and efficient holder to be applied to the backs of opera seats, church pews, seats of public halls, to the sides of railroad coaches, and to be used wherever a thing of this kind is applicable. It is formed of Bessemer steel wire bent into the form of the treble clef in music, the straight portion being secured to the back of the seat by suitable fastenings, which permit of swinging it out for use or out of the way and against the back of the seat when not in use. The upper loop of the holder is capable of springing sufficiently to receive the brim of any hat, and the lower coil will receive an umbrella or cane, as shown in the engraving. The wire is in a single piece, and where it crosses itself is left free to move, so as

LINDSEY'S HAT HOLDER FOR OPERA SEATS, ETC.

to accommodate itself to the object to be held by it. The lower end of the wire is provided with a hook which may be brought into engagement with the adjacent loop. It may be provided with a simple round knob to give it a finish, and to prevent the clothing from catching in it. These holders are nickel plated and nicely finished, and an ornament to the seat rather than otherwise. This improvement is being put in theaters of several large cities, and it is now regularly manufactured in Baltimore.

This useful invention has been patented by Mr. George W. Lindsey, of Baltimore, Md. (P. O. Box 797).

Basic Furnace Linings.

It appears, from a recent paper issued by Junghaug and Uelsmann, in *Dingler's Polytechnisches Journal*, that soda and potash carbonates are used instead of the corresponding chlorides of those metals, and that the durability of the lining is said to be increased by the addition of cryolite. The following modification of the usual method of preparing the lining has been found to answer admirably: The raw or calcined masses of lime, dolomite, or magnesite are ground and mixed with the flux; the mixture is then burnt to dust and worked up into bricks, the dust being rendered plastic with tar treated with 3 per cent of flux. When the flux is made up of alkaline carbonates, ground calcined phosphate or bone black, with the addition of a few per cent of the alkaline carbonates, are used in the preparation of basic bricks, muffles, etc. André states that the basic masses are to be burnt at a high temperature, then pounded and ground, and the powder thus obtained is formed into bricks by the addition of freshly prepared lime sulphate. Two per cent of the lime sulphate suffices to form a plastic material. Borsig proposes to mix dolomitic limestone, either in a crude, calcined, or finely divided form, with from 2 to 2·5 per cent of crude boracic acid, or 3 per cent of fused and pounded borax. The mixture is used in a dry or wet condition for lining furnaces or for the preparation of bricks.

According to the Society of Mines of Hörde, and the Rhenish Steel Works at Ruhrort, limestone, free from magnesia, containing not more than from 15 to 20 per cent of silicic acid, alumina, iron oxide, and manganese oxide may be used for the preparation of basic linings. The quantity of iron oxide present should not exceed 6 per cent. It was, further, found that phosphorus can be got away in the slag without the after blow, by the use of fluor spar equivalent to one-tenth part of the tribasic lime phosphate formed. Instead of fluor spar, alkalies, alkaline earths, or cryolite may be used. The dephosphorization is also effected by blowing air into a reverheratory furnace having a basic hearth. Immediately before the introduction of the metal into the converter lined with basic bricks, it is recommended to add lime or a mixture of eight parts of lime and one of ferric oxide. The mass is heated and air blown in for from six to ten minutes, when the converter is emptied, and the metal treated with a mixture of from two to three parts of lime and one part of ferric oxide free from silicic acid. The quantity of flux in the first blowing amounts to twice the weight of silicium and phosphorus contained in the original charge, while the quantity used in the second operation depends on the durability of the converter. The object of the addition of the second flux is to obtain a slag containing more than 36 per cent of lime and magnesia. The basic flux may be replaced partially or wholly by manganese ores, cryolite, fluor spar, and caustic or carbonated alkalies, while phosphorite or hone-black, mixed with clay or asphalt, is used as a lining. After the decarburation of the iron bath the oxidation of the remaining phosphorus is effected by the introduction of oxidizing agents, as ferric and manganic oxides, into the iron. This operation takes the place of the after blow.

Purifying Carbon Disulphide.

Palmieri recommends the following practical method of purifying carbon disulphide on a large scale. After removing the water that usually covers the commercial article, 2 or 3 per cent of dehydrated copper sulphate are added and then shaken. After the blackened sulphate settles and no more odor of sulphydric acid is observed, it is filtered or decanted.

To get it absolutely pure the carbon disulphide is rectified over anhydrous copper sulphate, when it loses all unpleasant odor. To preserve it odorless it must be left in contact with copper sulphate, which can be regenerated by igniting, treating with sulphuric acid, and igniting it again.—*J. Prac. Chem.*

THE NORDENFELT GUN.

The gun has been adopted by the British Admiralty. The report of trials proved that the hardened steel bullet of 7¼ ounces weight, at a range of 300 yards, penetrated, at an angle of 45 deg., the side and boiler of a torpedo boat, as represented by a $\frac{1}{16}$ inch steel plate 18 inches in front of a second steel plate ½ inch thick. When firing directly end on at a torpedo boat, the bullet penetrated the steel bow plate $\frac{1}{16}$ inch thick, at an angle of 10 deg., and four bulkheads at right angles; striking the boiler, the bullet then indented the half inch steel plate representing it, to a depth of half an inch. At a subsequent trial at Portsmouth, under similar conditions, the plate was perforated altogether.

The accuracy was found most satisfactory, the mean deviation at 300 yards, of 10 rounds fired slowly, being 5·6 inches, while the mean deviation of 24 rounds fired in rapid volleys was 18·3 inches.

The rapidity of fire ashore at one trial was 168 shots in thirty seconds. During another the gun was fired at sea from H. M. S. Medway when running at a speed of 9 knots. In this case the target was the bow of a model torpedo boat; during a run of 1 min. 45 sec. and over a range of from 500 yards to 100 yards, 115 hits were made out of 135 shots fired, equal to 65 hits per minute. In a subsequent trial at Spithead in July, 1880, the gun was placed on board H. M. S. Iris. On this occasion two runs were made at a speed of 17·2 knots, directly against the bow of a torpedo boat model. Firing from 700 yards distance until close up, both runs occupying 2 min. 19 secs., 110 shots hit the target out of 213 rounds fired, so that even at this high speed 48 hits per minute were recorded. Running past the torpedo boat at 200 yards range and at a speed of 17 knots, 58 rounds were fired in 22 seconds, and of these, 38 shots hit the torpedo boat, being at the rate of 103 hits per minute.

The four barrel gun is illustrated by the perspective view.

THE NORDENFELT GUN.

The gun consists of a rectangular framework of wrought iron, the sides of which are connected by three plates or transoms. The four barrels are placed side by side in the frame, their muzzle ends passing through the front cross piece, while the breech ends are screwed into the middle transom.

In rear of the middle cross piece is the action block, which is capable of movement backward and forward. In front of this action block are four breech plugs, corresponding to the barrels. These are of steel pierced with a channel, in which a firing pin or striker moves freely, and they are furnished with an extractor on the right side. Behind each plunger is a hammer, with a projecting tenon, and behind the hammer a strong spiral spring.