A Poisoning Case with Lessons.

An interesting poisoning case came before the Coshocton County (Ohio) Court, at the February term, in which a woman was charged with administering arsenic to her husband, who died the 13th of August, 1870, with all the symptoms of arsenical poisoning. The body was exhumed on the 26th of August, the abdominal viscera removed and submitted to Professor C. Howard, of Columbus, for analysis, who reported traces of arsenic in the stomach, intestines, and kidney, and four-fifths of a grain in the liver.

The professor was of course an important witness in the trial, and his examination elicited some facts which are not without interest to chemical students. The tests he used were Reinsch's and Marsh's. He described the manner of distinguishing the metallic spot of arsenic on porcelain from that of antimony, relying on the hypochlorite of sodium solution and the nitrate of silver tests, together with the production of the octahedral crystals which have always been considered so highly characteristic of the arsenical sublimate. The defense created a doubt in the minds of the jury as to the reliability of Professor Howard's analysis, by showing on cross examination that a work on jurisprudence considered the hypochlorite of sodium test of the arsenical spot as wholly unreliable, *as it would also dissolve the antimonial spot*, though slowly. The production of octahedral crystals was proven to be unreliable as a test for arsenic by a recent statement from Professor Wormley, that antimony sometimes will produce crystals *which cannot be distinguished in appearance from those of arsenic.* We are here taught the important lesson that some of the so-called reliable distinguishing tests for arsenic are not reliable, and the careful toxicologist should make use of more confirmatory tests. The attending physician testified that he had prescribed subnitrate of bismuth to the patient, and we have not the least doubt that the arsenic found in the viscera came from this medicine. What an important lesson to the pharmacist! Here was a woman on trial for murder; arsenic was found in her dead husband's remains, and circumstantial evidence pointed to her guilt, and yet we believe the cause of the whole proceedings was this treacherous subnitrate of bismuth. Every druggist should carefully test his preparations of bismuth and ascertain whether or not they are contaminated with arsenic. We are happy to state that the woman was acquitted.—*Phil. Hoglan in Pharmacist.*

The Action of Platinum on the Animal Organism.

The action of most of the metals on the animal organism is well known, but that of platinum has been but little studied, almost the only observations that we know being those of Höfer and Gmelin, made respectively forty and fifty years ago. This gap in our pharmacological knowledge has been, to a certain extent, filled by some researches of Dr. Fredk. Kebler, of Cincinnati, in the laboratory of Strassburg, and which have, says the *Lancet*, been recently published in the *Archiv fur Experim. Pathologie u. Pharmakologie* The observations relate to the action of platinum both on frogs and warm-blooded animals. The mode of administration was the subcutaneous injection of a solution of chloride of platinum neutralized by carbonate of soda. The chief effects on frogs were found to be—augmentation of the general sensibility; heaviness of voluntary movements; curving of the back when this or the head was stroked, sometimes with painful extension of the hind legs on cutaneous irritation; increasing paralysis of the voluntary movements; spontaneous convulsive spasms of the extremities, or individual groups of muscles; weakened muscular irritability; loss of consciousness; and death. From these effects it would seem that platinum paralyzes the voluntary muscles, but paralyzes their movements before it affects the muscles themselves, apparently in consequence of a specific action on the central nervous system. The heart appears much less affected than the voluntary muscles, being scarcely interfered with, when death occurs. In mammals, however, the action is somewhat different. The direct effect on the muscles is not perceptible. Death rapidly occurs from a paralysis of the abdominal vessels when a dose is administered such as might affect the muscles. In rabbits a copious diarrhea is produced, and in dogs there are vomiting and hemorrhagic stools. In the former, after death, the mucous membrane of the stomach and intestine is congested, and in the latter the congestion extends also to all the abdominal organs. The muscular irritability was in all cases preserved up to death. In both kinds of animals indications of general paralysis were perceptible soon after the administration of the poison. The results of the experiments seem to indicate that the action of the poison takes place upon the muscular fibers or the peripheral nerve endings of the vessels, most probably upon the latter. But the phenomena presented by frogs, and some of the characters of the weakness in mammals, suggest that probably platinum has also a specific action on the central nervous system, and the nervous symptoms are due partly to this, and partly to the local anæmia. The fatal dose of platinum appears to be, for dogs 5 to 6 milligrammes. and for rabbits about 10 milligrammes of the body-weight of the animals experimented upon.

An Extra Mule.

Dr. Yandell, in a letter to the *Louisville Medical News*, speaks of a fertile female mule, now to be seen at the Jardin d'Acclimatation, Paris. She has brought forth no fewer than six foals—some by zebras, some by an ass, and some by a stallion.

Extraction of Perfumes with Chloride of Methyl.

BY PROFESSOR CAMILLE VINCENT, ECOLE DES ARTS ET METIERS.

Some months ago a manufacturing perfumer, M. Massignon, came to consult me respecting the employment of chloride of methyl (which has the property of dissolving fats, resins, and essential oils) in the extraction of the odorous principles of scent-producing plants. I expressed my belief that it might be so employed, but told him that I had no *data* in point at my command.

An experiment subsequently made with scent-woods succeeded, but the product possessed a very unpleasant odor, the commercial chloride of methyl used for industrial purposes retaining a pyrogenous product with a very persistent odor. I therefore turned my attention to the purification of the methyl, which in itself has a sweet ether-like smell; and in this I succeeded perfectly by treating ordinary methyl chloride with concentrated sulphuric acid, which completely absorbed the unpleasant odor. Chloride of methyl liquefied after the above treatment was found to leave no odorous residue on evaporation; it is perfectly suited for the extraction of perfumes, and when subsequently evaporated, leaves them with their limpidity and delicacy wholly unimpaired. My first experiment was made with orange flowers in a glass vessel; and the product thus obtained was pronounced by several experts to be superior to neroli obtained in the ordinary way by distillation with water. Encouraged by the success which had thus far attended my efforts, I had an apparatus constructed of sufficient size to test the practical value of the discovery by operating upon several kilogs. at once of different kinds of flowers. It consisted of the following parts: 1. A digester, in which the flowers to be extracted were placed; 2. A receiver for the liquefied methyl chloride previously purified with sulphuric acid; 3. An air-tight vessel to receive the methyl chloride after passing through the flowers, in which a vacuum could be produced with the aid of an air pump; 4. An air pump to exhaust the last-named vessel, and to drive the methylic vapor into a cold coil, whence it returns, in a liquefied state, into receiver 2. The air pump and coil formed part of an ice-making machine

The extraction of the perfume, as, for example, of roses, is thus performed. The digester 1 is filled with flowers. Upon these is turned, with the aid of a conical stop cock attached to receiver 2, a portion of the liquid chloride of methyl contained in the latter vessel. A couple of minutes are allowed for digestion, and then the liquid is run off into receiver 3. Another charge of methyl is given, which is filtered through the flowers into vessel 3, like the preceding, and so on until the flowers are supposed to be exhausted. The air-tight receiver 3 is now partly filled with the liquid methyl charged with the odorous principles of the flowers washed by it. Any portions of chloride remaining in the digester can be removed with the air pump and by passing steam through the residue of the flowers, receiving the watery vapor in a gasometer, the chloride in each case being returned to receiver 2 through the cold coil. The chloride of methyl charged with odorous principles in vessel 3 must now be evaporated *in vacuo*. For this purpose a current of water at 86° Fah. is passed round the vessel, while the air pump is at work. When the manometer attached indicates an internal pressure of half an atmosphere, the operation may be considered as completed. The air-tight receiver is opened, and the odorous principles are found in the residum of fatty matter and wax left by the evaporated methyl. Treated with alcohol cold, this residuum yields up the perfume of the flowers in its full potency and delicacy.

In this way may be obtained, not only the perfumes of flowers generally extracted by distillation, but also of others, as the jasmine and violet, which, on account of their easy destructibility, are prepared chiefly by *enfleurage* or maceration in fat. Specimens of the perfumes extracted with deodorized methyl chloride have been sent to the Société d'Encouragement. The results with all kinds of scent-producing plants, flowers, seeds, barks, and roots alike, show that the yield by the methylic process averages 25 per cent more than by ordinary distillation with water.

M. Massignon is erecting an apparatus on the above principle at Cannes, which will be capable of extracting 1,000 kilogs. (20 cwt.) of flowers daily, and which he hopes will be in work in the course of the present month. The refrigerator attached to the apparatus manufactures 60 kilogs. of ice per hour.—*La Nature.*

Brilliant Metallic Deposits on Glass.

The deposit of a silver mirror on the interior of glass balls and hollow vessels, by filling them with suitable silvering solutions, is an exceedingly simple operation, yielding most beautiful results. The film of silver, although very thin, is not without expense. Metals which form with sulphur precipitates having a brilliant metallic luster, may be employed in the same manner as silver, yielding varied and beautiful effects at little cost. Carl Mann, assayer in Pribram, describes the use of antimony and lead as follows:

When nitric acid is added to a concentrated aqueous solution of tartar emetic solution as long as a precipitate is produced, then filtered and the precipitate stirred into fresh water, the liquid formed is essentially a basic nitrate of antimony in suspension. On diluting a portion of this milky liquid and boiling, the precipitate dissolves in the hot and acid liquid. A little of this hot solution poured into a hollow glass vessel and cooled as rapidly as possible, by shaking or holding it under running water, the liquid becomes milky and deposits a very thin but perfectly homologous film of the antimony salt on the sides of the glass. On washing it out with cold water and passing sulphureted hydrogen gas into it, or pouring in a solution of the gas, the glass appears of a uniform faint yellow color; the sulphide of antimony formed adheres very firmly to the sides of the glass after washing and drying.

By repeating this procedure several times the film can be increased very considerably within certain limits. Such glasses appear of a beautiful golden color with a green reflection. The effect is very fine and pleasing.

If sulphureted hydrogen gas be passed into an aqueous solution of oxide of lead in excess of metaphosphoric acid, a portion of the sulphide of lead will, under the proper conditions, adhere firmly to the sides of the vessel in which it is precipitated. The vessel will then have different metallic colors by reflected light according to the thickness of the film, darker when thicker. By transmitted light such a glass has a yellowish brown color.

The lead solution may be prepared by dissolving 1 part phosphoric acid in 4 parts water, also a second solution of 1 part sugar of lead in 20 parts water, and a third of a strong decoction of saponaria or an aqueous emulsion of an ethereal oil such as turpentine or *oleum serpylli*. To cover a glass ball with this lead film, three volumes of the phosphoric acid solution is poured into the ball, then four or five of the lead solution, and as much of the saponine solution. The total quantity of the liquid must be sufficient to easily cover the interior on tipping it slightly. If a thin film of the antimony be deposited first the lead film adheres better. The sulphureted hydrogen gas is passed in and the vessel kept moving to bring it in contact with every part of the glass. It is afterwards washed and dried. P. N.

AGRICULTURAL INVENTIONS.

Mr. Raphael T. Semmes, of Atlanta, Ga., has patented certain improvements in plows, and more particularly in that class of plows in which the standard is made reversible and adapted to receive mould boards and turning plows or scrapers on one side, and bull-tongues, sweeps, or shovel plows on the other.

Mr. Ferdinando Poole, of Emporia, Kan., has patented an improved hedge fence layer, which is so constructed as to lay the plants at any desired compactness and at any desired closeness to the ground.

An improved grain thrasher and separator has been patented by Mr. Martin Williams, of St. Johnsville, N. Y. The object of this invention is to furnish combined grain thrashers and separators so constructed as to separate the thrashed grain from the straw more thoroughly than machines constructed in the ordinary manner.

A Ship Canal through Denmark.

A concession has been granted to Herr Dahlström for a ship canal from the Baltic to the North Sea, between the Bay of Kiel and Brunsbuttel, in the estuary of the Elb. Its depth throughout is to be 20 feet 9 inches, its width at the surface of the water 160 feet, and at the bottom, 64 feet, the banks consequently having a very gentle slope. Provision will, moreover, be made, by the adoption of a peculiar system of locks and reservoirs, for increasing the depth of the water to 25 or 26 feet whenever it may be desirable to do so, and this depth will allow of the passage through the canal of the heaviest German ironclad afloat—the König Wilhelm, a vessel of 9,603 tons displacement and the largest ship in the German Navy, drawing only 26 feet. The canal can, it is calculated, be completed in six years, and will, it is estimated, cost $3,750,000, or about $2,250,000 less than the estimates made a few years ago of the cost of constructing a canal 31 feet deep and 224 feet wide at the surface of the water. In size, it may be added, the proposed Baltic and North Sea Canal does not compare unfavorably with the Suez Canal, the width of this at the surface of the water being 172½ feet, the width at the bottom 70 feet, and the depth about 26 feet 3 inches.

A New Gatling Gun.

An improved Gatling gun has lately been exhibited by the inventor in England. It is capable of firing 1,000 shots per minute, and killing a man or a horse at a mile range. The gun has a compact appearance, can be taken to pieces, and easily carried about, can be applied to military or naval use, and the mechanism of it is simplicity itself. The revolving barrel has ten compartments, into which, as they whirl round, metal cartridges drop from a tall oblong case fixed over the center of the barrel. At each turn of the handle ten shots are fired, and their dispersion is accomplished by a sliding apparatus. The size of shot in different caliber guns of this class ranges from musket-balls to half-pounders. By the use of this implement three men can do the work of 300 riflemen.

A Fast Locomotive.

A passenger engine built chiefly for speed has just been finished at the Baldwin Locomotive Works, for use on the Bound Brook route between New York and Philadelphia. It is intended to make the distance, 90 miles, in 90 minutes. Its driving wheels are 6½ feet in diameter, and there is but one pair. The weight of the engine is 84,000; and its water tank holds 4,000 gallons. The dimensions of ordinary passenger engines are: driving wheels 5 to 5½ feet; weighs 70,000 to 75,000 lb.; capacity of water tank 2,000 to 2,500 gallons.