

paper; place one slip on one of the pieces of platinum foil, and the other on the second piece. Next lay the first slip on its foil on the board, with the metal touching the copper wire before mentioned. Lay the second slip with its platinum upwards, so that the coffee and sugar come into even contact with slight pressure, and immediately connect this upper slip, through a bit of copper wire, insulated from the touch, with the other terminal of the galvanometer. Deflection occurs instantaneously, and may be increased to considerable vibration by breaking and making circuit at the right swing of the needle. After a few distinct vibrations, it is well to turn over the whole pile of slips just as they are, and connect opposite ends with the galvanometer, so as to reverse the current. This is desirable for the sake of confirming your previous observation, and of correcting any slight disturbing cause arising from the wire and mercury connectors, temperature of the hand, etc. It will be found that coffee and sugar have the same electrical relation to each other as zinc and platinum. Coffee, in fact, is the positive, sugar the negative element. I subjoin a table of the results of numerous experiments, conducted in the manner above described:

ELECTRO-INSITIVE.	ELECTRO-NEGATIVE
Coffee.....	Sugar (loaf).
Tea (black).....	"
Cocoa.....	"
Nutmeg.....	"
Cloves.....	"
Cinnamon.....	"
Mace.....	"
Vanilla.....	"
Almonds.....	"
Rhubarb (tincture)...	"
Starch.....	"
Starch caramel.....	"
Gum caramel.....	"
Cane sugar caramel...	"
Milk sugar.....	"
Gum.....	"
Almonds.....	Raisins
Horseradish.....	Beetroot
Onion.....	"
Horseradish.....	Table salt
Mustard.....	"
Pepper (white).....	"
Mustard.....	Tartaric Acid.
Ginger.....	"
Cayenne pepper.....	"
Pepper (white).....	"
Tea (black).....	"
Tobacco.....	"
Quinine (Howard's) ..	"
Gentian root.....	"
Lemon juice.....	"
Horehound.....	"
Lavender water.....	"
Quassia.....	"
Peppermint.....	"
Raw potato.....	Lemon juice
Rind of Lemon.....	"
Peruvian bark.....	"
Camphor (tincture)...	"
Laudanum.....	"
Arnica (tincture).....	Dilute sulphuric acid
Peruvian bark.....	"
Quinine (Howard's)...	"
Iodine (tincture).....	Turpentine.
Caustic potash.....	"
Starch.....	"
Starch.....	Iodine (tincture)
Caustic potash.....	Neat's-foot-oil.

It is somewhat difficult to eliminate from these experiments all error arising from dif-

ference of temperature, if the galvanometer is tolerably sensitive. Care must be taken to bring the pair of solutions operated upon to the same temperature before testing them; otherwise a thermo-electric current from the hotter to the colder liquid may effect the needle, and mask the true electrical relation between the two, so far as it depends upon their chemical nature.

Adulteration of Sulphuric Acid.

(*Rev. Heb. de Chim.*)—It appears that some Continental makers of this acid are in the habit of adding to ordinary chamber acid a sufficient quantity of some cheap acid sulphate, so as to bring the sulphuric acid, as far as hydrometrical tests are concerned, up to the desired degree of density: M. Fleischer, having cause to complain about the bad quality of indigo-carmino prepared with a certain sample of sulphuric acid, was induced to evaporate some of the acid, and on doing so discovered the formation of crystals of sulphate of soda. This kind of adulteration, however readily detected, might cause in many dye and madder and garanceine works very serious loss and great inconvenience, and is a gross fraud; the inducement is the saving of the cost of evaporation and apparatus connected therewith.—*Ch. News.*

Note on Virginia Opium.

About the middle of February, a note from Mr. William A. Strother, of Lynchburg, Virginia, informed us that he had sent by express a vial of Tincture of Opium, made from Opium raised in that vicinity in 1864, and further that he had no more of the opium left, the residue having been given to Mr. Gellatly, of New York, in June, 1866.

The "Laudanum," made before that time consisted of half an ounce av. of the opium to eight fluid ounces of diluted alcohol. Of this about five fluid ounces were sent, each fluid ounce representing 27.39 grains of the opium.

Mr. Strother desired to know how it compared with laudanum from Turkey opium, as persons in Virginia were inclined to give attention to opium culture, believing the culture and soil well suited.

In a second note on the subject, Mr. Strother enclosed a letter received from Mr. Powhatan Robertson, who had raised the poppies and prepared the opium from which the laudanum sent was made.

By a comparison of names, dates, etc., it was at once seen that this gentleman, Mr. Robertson, was the same noticed in Prof. I. J. Grahame's article on American Opium, in the Proceedings of the Association for 1866, and consequently that the opium of the tincture sent to me by Mr. Strother, was from the same source with that examined by Prof. Grahame. The process adopted by Prof. Grahame in the assay (The U. S. Pharm. process for morphia) not being suited to this purpose so well as Mohr's, it was determined to make a new assay.

Two fluid-ounces of the laudanum, representing 54.75 grains, was evaporated to free it from alcohol, diluted to three fluid-ounces, strained and boiled with milk of lime from an equal weight of lime for fifteen minutes, filtered, lixiviated with hot water, acidulated with hydrochloric acid, evaporated to half a fluid-ounce, neutralized with ammonia, filtered,

and an excess of ammonia added and allowed to stand thirty-six hours. The crystalline precipitate, which was impure and much colored, was washed with diluted alcohol, and afterwards with ether. The residue weighing 5 grains, was morphia, still considerably colored, giving well-marked reactions with nitric acid and sesquichloride of iron. The yield was equivalent to 9.15 per cent. From the manner in which this opium had been made, being all inspissated juice, it was believed that its actual strength should be greater than was indicated in the process tried by Prof. Grahame; and assuming the sample of laudanum to have been made according to the proportions given by Mr. Strother, it will appear that this opium is equal to fair Turkey Opium in strength.—*American Journal Pharm.*

Cinchonine.

The alkaloid belonging to and derived from the Cinchona-trees, known as chinidine, 2 chinidine, 2 chinine, B chinine, cinchotine, crystallised chinoidine, and pitoyline, has been christened by Hesse cinchonine, because it resembles chinine as well as cinchonin. In order to prepare this cinchonine, which occurs to upwards of 1.6 per cent. in pitoya bark, the commercial chinoidine is the best source, since therein the cinchonine is largely found. The chinoidine is repeatedly treated with eight times its weight of ether; this solution is filtered, and the ether removed by distillation; the residue is dissolved in dilute sulphuric acid, and afterwards carefully neutralized with ammonia. The solution is next treated with Seignette salt, whereby the tartrates of quinine and cinchonine are precipitated, while the tartrates of cinchonine and cinchonine remain in solution. After having treated the previously filtered solution with animal charcoal, iodide of potassium is added to the warm solution, whereby hydriodide of cinchonin is precipitated as crystalline powder; this salt is decomposed by ammonia, re-dissolved in acetic acid, re-purified with animal charcoal, and, lastly, treated with hot alcohol, from which it separates in crystalline form. The cinchonine so obtained is soluble in 2,000 parts of water at 15°, in from 35 to 22 parts of ether, according to temperature, and in 26 parts of 80 per cent. alcohol; the substance melts at 168° C., without charring. The substance, which is capable of forming several hydrates, has for its formula— $C_{40}H_{24}N_2O_4 + 5Aq$. It forms, with acids, salts.—*Journ. f. Prax. Chem. v. Erdmann, 1868.*

Kalsomining Walls.

Kalsomining is a species of whitewashing, but differs from it in that, instead of lime, Paris white is used. This paint is a sulphate of baryta, and may be procured at any drug or hardware store. In order to prepare kalsomine, soak one fourth of a pound of glue over night in tepid water. The next day put it into a tin vessel, with a quart of water, set the pail in a kettle of water over the fire and keep it there until it boils, and then stir constantly till the glue is dissolved. Next, take from six to eight pounds of Paris white, in another vessel, pour on hot water and stir until it has the appearance of lime-milk. Add the sizing, stir well, and apply it to the wall with an ordinary white-wash brush while yet warm.