invalidate its logical accuracy to a certain extent, if we operated on the *free acid* itself, but it will be remembered that we recommend the mixture suspected to contain nitric acid to be neutralised with potassa, and then decomposed by dilute sulphuric acid, in contact with a particle of morphine. In this case the action on the morphine is entirely different from that which takes place when the *free* iodic, chloric, or bromic acid, acts upon that substance. Thus if we add sulphuric acid to the iodate of potassa, iodine is disengaged, and will colour blue a drop of a solution of starch. If the salt be the chlorate of potash, euchlorine is expelled without colouring the morphine at all. If the salt, lastly, be the bromate of potassa, bromine is set free, which is of a brownish colour, but totally different from the brilliant vermilion struck with morphine by nitric acid, and moreover it may be entirely volatilised by the heat of the hand.

These observations will prevent any difficulty, in a medico-legal point of view, as to the colours produced with morphine, by the nitric, chloric, bromic, or iodic acids.

ON THE ADULTERATIONS OF STRYCHNINE.

By M. ROBIQUET.

The difficulty connected with the preparation of strychnine, and the minute quantity contained in the substances from which it is prepared, have necessarily kept it at a very high price; but the great consumption of the article of late in India, where it is used for the destruction of wild beasts, has induced some druggists to seek for means of diminishing its value, and they have had recourse to their favourite method of increasing the weight by the admixture of various adulterations, and they have carried this species of industry so far as to add 40 or 50 per cent. of foreign matter, especially magnesia, to the strychnine. This fraud is easily detected by the calcination of the suspected sample. Another mode of adulteration consists in mixing the impure strychnine with bone black, which always contains some phosphate of lime, and then acting on the mixture by a diluted acid, which at the same time dissolves the strychnine and the earthy salt; the solution is then filtered and precipitated by ammonia, by which means the vegetable alkali is mixed with a considerable quantity of the phosphate. This mixture may be detected in the same manner as that with magnesia. The purchasers of the French vegetable

alkalies should attend to this circumstance, for the same frauds are doubtless practised with morphine and its preparations.—*Journal de Pharmacie*.

COLOMBINE—NEW CRYSTALLINE SUBSTANCE OBTAINED FROM COLOMBA ROOT.

By M. WITTSTOCK.

By treating colomba root with alcohol, sp. gr. 835, and distilling off two-thirds, after the residuum has been allowed to stand for some days, a crystalline deposition takes place of beautiful transparent quadrilateral prisms, with rhomboidal bases. A still better way, and one by which the colombine may be obtained quite pure and in a very short time, is by acting on the root with ether, sp. gr. 0.725, and allowing the tincture thus prepared to evaporate spontaneously; only two drachms of the root are required for the success of this process. Colombine is inodorous and excessively bitter; it does not change the colour of test paper; it is freely soluble in boiling alcohol and ether, and remarkably so in warm acetic acid, from which the excess separates on cooling in the crystalline form. Concentrated sulphuric acid causes its solutions to assume a deep-red colour. From some experiments on rabbits, it appears that colombine is capable of acting as an energetic narcotic in small doses.—*Journal de Pharmacie*.

OBSERVATIONS ON THE SOLIDIFICATION OF TURPENTINE BY CALCINED MAGNESIA.

By J. FAURE, Sen., Bourdeaux.

The essence of turpentine has been successfully employed for many years in different affections, remarkably so as a vermifuge, and very recently as a remedy in neuralgic diseases. Having witnessed the difficulty frequently experienced in its administration from the invincible dislike many patients conceive for its acrid and caustic flavour, I have undertaken a series of experiments, for the purpose of fixing or enveloping the turpentine, so as to destroy this unpleasant property. The successful results of these researches are as follows:—

1. Venice turpentine, and that obtained from the *terebinthina pinea*, was treated with calcined magnesia in different proportions. These mixtures became solid in the space of a few days, varying according to the quantity of magnesia employed.

2. The same turpentines were mixed with one-third of their quantity of the essential oil. These mixtures, in some instances, acquired a sufficient degree of consistence, in others became altogether solidified.

3. The solid masses were divided and boiled in alcohol, which dissolved away the

turpentine, leaving the magnesia entirely unaltered in its chemical relations.

Magnesia is also capable of forming a modified combination with copaiba balsam, the resin of which it separates, acting on the volatile oil as a mechanical absorbent alone.

On these principles M. Faure proposes formulæ for administering turpentine, its essential oil and copaiba balsam, in the pillular form. These we do not extract, because the turpentines of various countries differ remarkably in the degree of facility with which they become solidified, and it is only by experiment that the apothecary can become acquainted with the necessary proportions to be employed.—*Journal de Pharmacie*.

MODE OF DETECTING THE ADULTERATIONS OF SOME ESSENTIAL OILS WITH ESSENCE OF TURPENTINE.

The addition of a little iodine to the essential oil of juniper produces a great increase of temperature, with the disengagement of yellowish violet vapours. The residue on cooling is fluid, of a yellowish-brown colour, and possesses the odour of the essential oil.

Intense reaction follows the contact of the essential oil of savine with iodine, great heat is extricated, and similar vapours are evolved. The residue is a solid resinous mass of deep-brown-reddish colour, and empyreumatic smell. The essential oils of tansy, peppermint, and rue, do not suffer the slightest change. The colour of the essential oil of caraway is altered to a beautiful reddish-brown.

By the addition of a minute quantity of oil of turpentine to those oils which show no changes with iodine, a vehement action immediately ensues. Iodine may thus be used as a reagent for detecting turpentine, which, it seems, is a frequent adulteration of the oils on which it possesses no action when pure. The experiments above described were performed on oils prepared with the utmost care by the author of the essay, M. Valet.—*Arch. de Brandes*, vol. xxviii. arch. 3. p. 225.

ANALYSIS OF SULPHUREOUS WATERS.

Numerous examples of sulphureous waters occur, in which the sulphur exists in the double form of free and combined sulphuretted hydrogen. It being important to decide how much is free and how much in combination, great difficulty has been experienced in devising an analytic process for that purpose. M. Henry (fils) has at length succeeded, and has furnished us with a simple, elegant, and ready mode of proceeding. It consists in agitating a certain quantity of the mineral water with a known weight of finely-divided metallic sil-

ver, in a closely-stoppered bottle. All the free sulphuretted hydrogen is then decomposed, and its sulphur absorbed by the silver, the quantity is then estimated by the increase of weight gained by the latter. The water is then decanted into another bottle of equal size, fitted with an accurately-ground stopper, and containing a few crystals of the ammoniaco-nitrate of silver, by which the carbonates, muriates, and hydro-sulphurets, are decomposed and precipitated. This precipitate being collected and washed in ammonia, the carbonates and muriates (chlorurets) are dissolved, and the sulphuret left behind. Of this 100 parts carefully dried, indicate 14 of the sulphuretted hydrogen, or, as M. Henry terms it, hydro-sulphuric acid.—*No. dernier de Journal de Pharmacie*.

APPLICATION OF MICA OR MUSCOVY GLASS TO MINUTE CHEMICAL ANALYSES.

It is well known that mica is not brittle, and that it does not burn in the flame of a candle, it is therefore much employed in Russia for lamps and windows, and M. Voget is in the habit of using it for chemical analysis on the small scale. For this purpose a thin scale of mica is selected, and on this is placed the substance for examination, which may then be held over the spirit-lamp flame. An infinity of experiments may thus be readily performed, and repeated over and over again, without loss of materials, and with incredible economy of time. After the heating, it is sufficient to rub the bit of mica with a moistened rag, and it is as perfect as ever. Detonations, concentrations of metallic salts, the desiccation of minute quantities of moist substances, reduction of metals, are all readily performed in this cheap and simple manner. The transparency of the mica permits every change of colour to be clearly seen. Heat is readily communicated to the substance examined, while the imperfect conducting powers of the mica prevent any inconvenience, by holding it in the fingers to the flame. We cannot however use it with the blowpipe, for the summit of the flame produces a white stain on the surface like lime.

In order to ascertain whether the acids, alkalies, salts, or other substances, possessed any chemical action on mica, even when aided by an increased temperature, M. Voget made the following trials:—

A few drops of the sulphuric nitric, muriatic, acetic, phosphoric, and solution of tartaric acids, were successively concentrated on a slip of mica over the flame of a candle. The phosphoric acid left a faint permanent mark, the other acids produced no alteration whatever. Caustic potash was