

cases of rheumatism, etc.; the *Passerina Chamædaphne*, a tincture of which is employed as a cordial, tonic and febrifuge; the *Rehmania chinensis*, useful in general debility; the *Dimorphanthus edulis*, frequently prescribed for loss of blood, heart disease, etc.; the *Gynocardia odorata*, the seeds of which are extolled for skin disease and syphilis; and the febrifuges, the *Tournefortia argusina*, the *Trichosanthes dioica*, and especially the *Dichroa febrifuga*, the reputation of which is great in Cochin China, and which doubtless has more claims than the others to be looked upon as a substitute for cinchona.

## BALSAM OF COPAIBA.\*

BY DR. A. FUMOUEZE, OF PARIS.

As copaiba is composed of an essential oil, holding in solution a certain proportion of resin, which is itself composed of copaivic acid, and of a minute portion of soft resin, it only remains to ascertain which are the channels of elimination of its constituent principles. According to the rule laid down by Gubler,† substances which are foreign to the economy are eliminated by the enunctories of the normal elements which they resemble. Thus, volatile substances, such as the essential oil of copaiba, are exhaled by the sudoriparous glands and the respiration; its neutral salts and salifiable substances, for instance, the resins, are principally eliminated with the urine. If this theory were absolutely correct, it would suffice to administer separately the resin of copaiba in affections of the urinary organs, and the essence in those of the respiratory organs and skin.

But Bernatzick‡ has demonstrated by his experiments that this process is not quite so simple. This observer has just shown that the essence of copaiba is not entirely eliminated by the respiratory organs and the sudoriparous glands; but that a noticeable quantity of this essence, from 4 to 5 per cent., becomes oxidized in the organism, and is eliminated with the urine in the form of resin. A small portion is also passed unaltered in the urine, and gives to it the odor "sui generis" which it is found to possess after the administration of copaiba.

According to him, the resin of copaiba passes through the urine in the proportion of from 10 to 13 per cent. of the amount of resin

\* From the *American Journal of Syphilography*.

† Gubler: *Commentaires therap.*, preface, p. xiii. Paris, 1858.

‡ Bernatzick; *Pharmac. Studien uber den Copavia Bals.* Prag. Vjhschr., C. (xxv, 4), p. 239., 1868.