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line, composed of large massive limbs, the smaller branches ramifying much towards the points, giving the outline of an old tree a netted appearance, always thickest about two feet within the general outline. The Robinia has a very irregular shape; the main branches generally assume a tortuose or zigzag appearance, which is observable even at the extreme points. The branchlets and spray are short; a uniform lightness is observed all over the tree. The Sycamore, or Scotch Plane, has generally a regular outline, composed of large massive branches, each portion more or less rounded, and terminated with numerous tessellated points, turned upwards and slightly thickened, generally darkest round the outline of the tree. The bark is frequently green with Chlorococcum, and somewhat rough. The outline of the Walnut is often very irregular, and branches much. Many of the branches, as well as the tops, are somewhat dichotomous. The terminal, as well as the side spray is strong, and has a uniform openness throughout. The Willow, when large, is generally composed of low bending stems, their points assuming a slightly elevated habit, and as they ascend, the upper portions become more or less erect; a uniform openness is all over the tree.

III. *Note on the Drug called "Jaborandi."* By WILLIAM CRAIG, M.D., C.M., F.R.S.E.

Dr Coutinho, of Rio Janeiro, has lately introduced to the notice of the medical profession a new drug, which possesses remarkable properties as a sialogogue and diaphoretic. Jaborandi, the Indian name of this new medicine, is a shrub which grows in the interior of certain provinces of North Brazil. The parts used are the leaves and small branches. From these, when bruised, an infusion is prepared which possesses the remarkable properties of the drug. It is now fully a year since a small quantity of this plant was brought to Paris by Dr Coutinho; and Professor Gubler, after experiments at one of the hospitals of Paris, declares that the effects of Jaborandi are extremely remarkable and the evidence irresistible.

Owing to the difficulty of procuring the drug, little, if any of it reached this country till the beginning of this

year. It was on the 5th January that I received the first packet I believe that came to Scotland. Since then I have received sufficient to enable me to ascertain its physiological properties; but of various experiments I have performed with this drug, I shall merely refer to the general results. I shall afterwards give, so far as known, the botanical characters of the plant. An infusion of one drachm of the bruised leaves produces the following results:—About twenty minutes after the infusion is swallowed, salivation commences, and in a few minutes afterwards, the mouth is literally flowing with water. This continues for four or five hours, and during that period from ten to sixteen ounces of fluid may be easily collected. Some observers state that this fluid is alkaline; but I have invariably found it acid. I may mention that the infusion is acid, has a peculiar odour, is not unpleasant to the taste, and I have never found it produce any nausea. Notwithstanding the large amount of fluid secreted by the salivary glands, it produces no uneasiness in these glands. Simultaneously with the flow of saliva, perspiration appears on the forehead and the whole body. It extends to the limbs, but is most marked on the trunk. These effects can be produced in a temperature ranging from 54° to 56° Fahr., and without putting the patient to bed. It is not necessary to administer the infusion hot. The effects are produced when the infusion is cold. It appears to act by directly stimulating the sweat-secreting glands. The sweating continues for several hours.

I have not had much opportunity of testing its therapeutic virtues, but have tried it in two cases of fever, where the tongue was dry and the mouth parched, and by giving small doses of an infusion every few hours, I was enabled to restore the flow of saliva, and to keep the tongue and mouth moist. I believe it will in this respect be of considerable use in fevers and other diseases.

There can be no doubt that this drug possesses remarkable powers as a sialogogue. Certainly I know no medicine to be compared to *Jaborandi* in this respect. Its power as a diaphoretic is also well established, although I did not find it so remarkable as I had anticipated from reading the account of Professor Gubler's experiments.

M. Rabuteau, of Paris, has made a chemical analysis of the leaves of *Jaborandi*, and finds that they contain 1. A volatile principle; 2. A part soluble in water, and perfectly flavourless; 3. A part insoluble in water, but soluble in alcohol, and having a bitter flavour; and by experiments he has come to the conclusion that it is the last in which all the virtues reside.

This appears to be an erroneous conclusion, for it is clear from my experiments that the infusion possesses the power of producing the chief, if not the whole, physiological properties of the drug. I put some bruised leaves in proof spirit after they had been exhausted by infusion, but failed to get from this tincture the remarkable properties of *Jaborandi*.

With regard to the untoward results which sometimes follow the administration of this drug, such as nausea and vomiting, I believe most, if not all, of these are due to the fact that the "dregs" were swallowed as well as the infusion. These "dregs" consist to a great extent of pieces of the stem, leaves, and petioles. There is a large amount of fibrous tissue in these dregs, and irritation of the stomach and alimentary canal must follow. In the *Pharmaceutical Journal*, 1875, p. 561, Mr Martindale, of London, relates an experiment in which he swallowed about 50 grains of the "dregs" in addition to the infusion, and experienced nausea and vomiting. This was the natural consequence of swallowing such an amount of indigestible matter. In the article referred to he adds this sentence:—"The strained infusion, from what I hear, produces but little effect." In the *Pharmaceutical Journal*, 1875, p. 574, I described an experiment performed with the strained infusion, followed by remarkable effects.

May not the disturbance of vision noticed by Mr Martindale be due to the same cause as the sickness and vomiting?

The following may be regarded as ascertained facts regarding *Jaborandi*:—1. The leaves are possessed of remarkable sialogogic and diaphoretic properties. 2. Boiling water is capable of extracting the most, if not the whole, of these properties. 3. A strained infusion seldom produces any untoward results. 4. On account of the large quantity of

indigestible fibrous matter in the "dregs," these, when swallowed, produce unpleasant effects. 5. The dose of the infusion will be found to correspond to only a very few grains, possibly only two or three grains of the leaves.

There is considerable doubt as to the botanical source of *Jaborandi*. Some maintain that it belongs to *Piperaceæ*, while others assert with more probability that it belongs to *Rutaceæ*.

I believe that the name *Jaborandi* is given by the Brazilians to various plants possessed of stimulating properties, and in a Portuguese dictionary of Brazilian medicines, by Dr Chernoviz, published in 1868, *Jaborandi* is mentioned as the produce of *Ottonia Anisum*, Spreng. a plant belonging to *Piperaceæ*. Dr Chernoviz states that this plant is possessed of sialogogic properties, and that from the root a tincture is made (1 of *Jaborandi* to 8 of alcohol). From the parts of the plant I have examined, I may safely say that the *Jaborandi* of Dr Chernoviz is not the drug now attracting so much attention in Europe.

There is a plant at present in the market called "*Piper Jaborandi*," whose virtues I have not yet had time to investigate, but certainly it is not the *true Jaborandi*. The leaves are very different from those of the shrub whose effects I have described in this paper.

I have not been fortunate enough to receive those parts of the plant required to determine its botanical source; but the following facts have been ascertained.

The leaf is compound, impari-pinnate. The leaflets are four or five pairs, and scarcely opposite. They are glabrous, smooth, brittle when dry, and somewhat resemble the leaves of the *Prunus Laurocerasus*. They are elongated, elliptical, emarginate, and slightly unequal at the base. The leaflets vary much in size and in form, even on the same leaf, but the foregoing characters are possessed by all. The venation is well marked and very beautiful. There is a prominent mid-rib on the under surface, running along the entire length of the leaflet, from this mid-rib numerous veins proceed (at an angle of about 45 deg.) towards the margin of the leaflet, and form loops and anastomoses within the margin of the leaflet. The veins are well seen on both surfaces, but are most marked on the under side of the

leaflet. The petiole is cylindrical, flattened and thickened at the point of insertion into the stem. The distance from the stem to the first pair of leaflets varies in my specimens from 2 to 5 inches, the average distance between the pairs of leaflets being about 2 inches. The leaflets are nearly but not quite sessile, and are *inserted on the* upper surface of the petiole. They are thickly spotted with pellucid dots. These are well seen when the leaflet is held before a bright light. From an examination of sixteen leaflets, I find the average length is five inches, and the average breadth at the broadest part $1\frac{1}{2}$ inches. I have seen specimens of the stem and small branches, the diameter of the largest piece being about $\frac{1}{2}$ an inch. The bark peels off loosely, is very brittle, and produces a peculiar sensation when chewed. Between the bark and wood there is abundance of crystalline matter, but I failed to find any definite forms of crystals when examined under the microscope.

IV. *Notice of stations for Rare Plants near Edinburgh.* By
ROBERT KIRK.

The plants mentioned in the following list were collected in the autumn of 1873, and spring and summer of 1874, when I was competing for Professor Balfour's Herbarium medal. All the localities noted are not new, but where a well-known habitat is given, it will show that the plant is still found there.

Ranunculus arvensis, L. Dirleton.

Caltha palustris, L., β minor. In considerable abundance on a small stream on the West Lomond Hill.

Helleborus viridis, L. Arniston.

Chelidonium majus, L. St. David's, on the ballast heaps.

Hypericum grandifolium, Choix. Water of Leith near Currie.

Malcomia Chia, DC. do. do.

Eruca vesicaria, Cav. do. do.

Erysimum orientale, R. Br. do. do.

Iberis amara, L. Waste ground near the Battery at Burntisland.

Saponaria Vaccaria, L. On the Granton Railway.

Silene noctiflora, L. Fields near Largo.

Lavatera arborea, L. Burntisland.