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Artificial Coffee Beans

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reflexus, fere 2 lin. latus. Columna 4 lin. longa, rostellum subulato-aciculare, 1 lin. longum.

This species is a native of some part of the Andes, whence it was sent to Messrs. Charlesworth, Shuttleworth, & Co., of Heaton, Bradford, by Mr. E. Klaboch. A plant was presented to Kew in April 1890, where it flowered about a year later. The leaves are dull olive-green in colour, with a broad irregular silvery band on either side, between the mid-rib and margin. The scape, ovary, and sepals are also olive green, and pubescent; the petals pellucid white; the limb of the lip, also the tube formed by the union of the unguis of the lip with the column, is white, the mouth of the same being light yellow. There is a specimen in Dr. Lindley's *Herbarium*, collected by Fendler, near Tovar in Venezuela, which so closely resembles the present species that it will probably prove to be a form of the same. A note describes the leaves as dark green. The structure of the flowers in this genus is very remarkable, and not always correctly described from dried specimens. The claw of the lip is united to the sides of the column, forming a tube, which is produced behind inside the spur of the lateral sepals almost to the latter's free apex, and there terminates as a pair of free linear processes. This tube contains much nectar, and the pollinia are situated just at its apex.

CCVIII.—ARTIFICIAL COFFEE BEANS.

The manufacture of artificial coffee beans has apparently assumed some importance in the United States. Specimens of these spurious beans have been obligingly communicated to the Museums of Economic Botany at Kew by Dr. Brown Goode, Assistant Secretary of the Smithsonian Institution at Washington D.C. The idea of preparing artificial coffee beans for the purpose of mixing with genuine beans for sale in the unground state is, however, not entirely new. In April 1860, the late Dr. Lindley, F.R.S., presented to the Kew Museums some very carefully modelled beans, believed to be made from finely powdered chicory. There is no indication as to the country whence these were obtained. The American beans are supposed to be composed of rye flour, glucose, and water. They are prepared to resemble in size and colour a moderately good sample of roasted coffee beans. By the introduction of a few genuine beans they are made to possess the aroma of true coffee. The modelling is sufficiently good to deceive the ordinary public, but if the beans are at all critically examined it is noticed that the groove on the flat surface is broad and shallow and it does not extend into the heart of the bean by a narrow long slit as in the natural product. Also there is no trace of the silver skin at the mouth of the slit. In other respects the artificial beans very closely resemble true coffee. They are made to vary slightly in size and colour, some are frayed or broken at the edge, and the general characteristics are those of a fair coffee with small and somewhat broken beans.

The introduction of spurious coffee beans as an article of commerce in the United States is thus described in an article from the *New York World*, reproduced in the *Board of Trade Journal*, 1890, p. 448:—

“The average bulk of the genuine coffee imported into the United States is 8,000,000 bags, or 130,000,000 pounds per annum. Experts

estimate that fully 20 per cent. of the coffee sold to consumers is bogus, which raises the consumption to 216,000,000 pounds. Taking 30 cents per pound as the average retail price, the people of America pay 65,000,000 dollars every year for this one article of food, of which 13,000,000 dollars is paid for roasted and ground beans, peas, rye, or a manufactured article in no way resembling the Brazilian berry. To this must be added the production and sale of what are called "coffee substitutes." So extensive is this business that it is quite safe to say that consumers pay 12,000,000 dollars for what they believe to be cheap coffee. This raises the total expenditure to 77,000,000 dollars, and it represents a sale of 276,000,000 pounds, for the "substitute coffee" usually sells at 20 cents per pound. It will thus be seen that 96,000,000 pounds of bogus coffee are sold in the United States every year, and some estimates place it at 120,000,000 pounds. Taking the lowest figures, 25,000,000 dollars are received for substances which can be profitably placed on the market at six cents a pound. The manufacturers, therefore, receive 6,000,000 dollars for their goods, while retailers gain a profit of 18,000,000 dollars. There are two kinds of bogus coffee, an imitation bean and the ground article. The bean is the most difficult to produce, and it is only recently that actual success in this direction has been attained. The bogus bean must not only look like the genuine berry when raw, but it should be capable of taking a proper colour when roasted. A very good specimen is now manufactured in Philadelphia and Trenton, being composed of rye flour, glucose, and water. The soft paste is then moulded and carefully dried. To the eye of an expert, the presence of this imitation is easy of detection, and it cannot be used to any great extent among wholesalers. But when coffee goes to the retailer adulteration begins. Sometimes the retailer is deceived, but nine times out of ten he is the one who introduces adulteration. The ground article is very easily produced for a proper colour and infuse an aroma by strong decoctions of coffee essence."

"When mixed with real coffee even the expert eye and tongue may be deceived, while to the ordinary consumer it seems to be the genuine product. Bogus coffee beans have only a slight resemblance to the natural berry, for though they possess proper form the cicatrice on the inner face is too smooth. Then, again, the grey colour of the raw bean is not quite up to the mark, but when these manufactured beans are roasted with 5 per cent. of genuine coffee they find a ready sale. These bogus beans can be made at a cost of 30 dollars per 1,000 pounds, and when mixed with 50 pounds of pure coffee the whole 1,000 pounds cost 37.50 dollars, or 3 $\frac{3}{4}$ cents per pound, so that a profit of nearly 100 per cent. is the result. There are any number of "coffee substitutes," the Hillis variety being the most successful. This company is already manufacturing 10,000 pounds per week, it being sold by the barrel to retailers in nearly all of the New England, Middle, and Western States. The profits of this concern are supposed to be 300 dollars per day, and its operations have reached such a scale that the stockholders were recently offered nearly 1,000,000 dollars for their secret and business, but it was declined. No one accustomed to coffee drinking would imagine that a decoction of this stuff was like either Mocha or Rio, but when mixed with four times its bulk of genuine coffee only an expert could detect the imposition. The manufacturers of these "coffee substitutes" claim that they are not violating the law of adulteration of food products because they do not sell their goods as coffee, but simply as a substitute. While this may be true it does not apply to the retailer, who mixes the bogus stuff with good coffee, and sells the whole as the

genuine article. Though manufactories may be beyond the penalties of the adulteration law they should be suppressed, for without them coffee adulteration by retailers would be impossible. When it is remembered that American people are compelled to pay 25,000,000 dollars for ingredients that can be manufactured for one-fifth the sum received by coffee growers, the necessity for the suppression of this nefarious trade is apparent. Oleomargarine cannot be sold as butter, neither should "coffee substitutes" be made to masquerade under the name of Java, Mocha, or Rio."

SMITHSONIAN INSTITUTION TO ROYAL GARDENS, KEW.

United States National Museum, Washington,
March 30, 1891.

DEAR MR. THISELTON DYER,

I TAKE pleasure in informing you that I have succeeded in obtaining samples of bogus coffee for which you expressed a desire in your letter of January 17. I have sent them forward to you through the Smithsonian Bureau of International Exchanges.

Wesley and Son will notify you of their receipt, and transmit them to you.

I am, &c.

(Signed) G. BROWN GOODE.

W. T. Thiselton Dyer, Esq., C.M.G., F.R.S.,
Royal Gardens, Kew.

The production of artificial coffee has also received some attention in Germany. According to the *Magdeburgische Zeitung* (quoted in the *Board of Trade Journal*, March, 1891, p. 301), an Imperial decree has been issued in Germany forbidding the manufacture and sale of machines for producing artificial coffee beans, which certain German newspapers have of late been extensively advertising, and which have attracted the notice of the Government, as contravening the food law. These beans are not intended to supply by themselves a beverage which, from similarity of taste or effect, might form a substitute for coffee, and cannot therefore be looked upon as such, but are intended to be used in trade for mixing with the genuine article. It has been a question of directing much energy towards the discovery of some cheap compound with the undeniable object of deceiving the public. In the meantime the sale of such compound is not to be prohibited, provided it be known by such a name as will exclude all possibility of deception.

It will be noticed, however, from the following despatch received at the Foreign Office from Her Majesty's Chargé d'Affaires at Berlin the production of artificial coffee beans in Germany has been prohibited by law, and no samples have so far been obtainable from that country.

The Hon. P. H. LE POER TRENCH TO FOREIGN OFFICE.

MY LORD,

Berlin, June 30, 1891.

WITH reference to your Lordship's despatch, No. 32 of this series, of the 8th of April last, I have the honour to report that I have made inquiries in this city, as well as in other places throughout

Germany, but, so far, have not succeeded in finding any of the artificial coffee beans the authorities of Kew Gardens are anxious to obtain for the museum attached to the gardens.

The Under Secretary of State for the Department of the Interior informs me that it is quite impossible to get any of these beans, as all the machines for making them have been confiscated.

I have, &c.

(Signed) P. LE POER TRENCH.

The Marquis of Salisbury, K.G.,
&c. &c. &c.

CCIX.—KANAFF OR DECCAN HEMP.

(*Hibiscus cannabinus*, L.).

Recently an announcement has been made of the discovery of a new textile plant on the shores of the Caspian. The plant known as Kanaff by the natives is said to yield a soft elastic and silky fibre, capable of being readily bleached or dyed in every shade of colour. From a report which appeared in a Tiflis journal, it is supposed that Kanaff fibre, from its abundance and consequent cheapness, and its extraordinary durability, will successfully compete with any other textile for sacking, ropes, and pack-thread. The fibre is said to have a greater resistance than hemp, and its specific gravity is less.

The chief source of information respecting the plant yielding this fibre is contained in an article entitled *Note sur le Summ, le Yucca, et quelques autres plantes textiles*, by MM. Jules Grisard et Max. Vanden-Berghe, in the *Revue des Sciences Naturelles appliquées*, 1890, pp. 992-993. According to these authors, Kanaff or Kanap was at one time supposed to be *Apocynum sibiricum*. It is however now identified as *Hibiscus cannabinus*, L., a well-known fibre plant in India, also found in a cultivated state in Persia, and other places westward. In a note in Boissier's *Flora Orientalis*, vol. i., p. 840, it is stated that *Hibiscus cannabinus*, L., is cultivated in the province of Ghilan in Persia, and that cords and ropes are prepared from its fibre. Specimens of Kanaff fibre have recently been received at Kew, but no authentic specimens of the plant producing it have so far been seen. There is every probability, however, that the plant is one of the many varieties of *Hibiscus cannabinus*, and the utilisation of its fibre on the shores of the Caspian is a fact of some interest. The information so far furnished is as follows:—

“The French *Revue des Colonies* reports the discovery of a new textile on the shores of the Caspian. This plant, called Kanaff by the natives, grows in the summer, and attains a height of 10 feet, with a diameter varying from two to three centimetres. By careful cultivation and manipulation, M. O. Blakenbourg, a chemist and engineer, who has made a special study of Kanaff, has obtained an admirable textile matter; it is soft, elastic, and silky, gives a thread, which is very tough, and can be chemically bleached without losing its value. The stuffs manufactured out of Kanaff, and then bleached, can be successfully dyed in every shade of colour, and would compete with any of the furnishing materials now in use. But it is particularly for making sacks, tarpaulin, ropes, &c., that this new textile, from its cheapness and