This article was downloaded by: [New York University]

On: 14 January 2015, At: 12:14

Publisher: Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number:
1072954 Registered office: Mortimer House, 37-41 Mortimer Street,
London W1T 3JH, UK

Transactions of the Botanical Society of Edinburgh

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/tped18>

I. Description of *Narthex Assafoetida*, Falconer, at present in flower in the Royal Botanic Garden

Professor Balfour

Published online: 01 Dec 2010.

To cite this article: Professor Balfour (1860) I. Description of *Narthex Assafoetida*, Falconer, at present in flower in the Royal Botanic Garden, Transactions of the Botanical Society of Edinburgh, 6:1-4, 64-68, DOI: [10.1080/03746606009467699](https://doi.org/10.1080/03746606009467699)

To link to this article: <http://dx.doi.org/10.1080/03746606009467699>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

He concludes that the ovary of Boraginaceæ, like that of Labiatæ, is in reality composed of two carpels, and that the division into four is caused by the inversion of the dorsal suture.

8th April 1858.—Dr SELLER, President, in the Chair.

The following gentlemen were admitted Fellows :—

JOHN R. TURNBULL, Esq., 7 Hill Place.
JOHN W. JOHNSTON, Esq., 78 Pleasance.

The Curator stated that Dr Von Martius had presented to the Library his work on the names of plants.

Professor Balfour stated that the following donations had been made to the Museum at the Botanic Garden, viz. :—

From Alex. Dickson, Esq.—Specimens of Rose with Bedeguar, and species of *Polyporus* from Germany; also fascicled stem of *Malva rotundifolia*, from the vicinity of London.

Mrs Gillespie Smith, Exmouth—Seeds of *Mangifera indica* (mango).

Mrs Mackay—Specimens of wax flowers and fruits, the latter including mango and custard apples.

The following papers were read :—

- I. *Description of Narthex Assafoetida, Falconer, at present in flower in the Royal Botanic Garden.* By Professor BALFOUR.

Dr Balfour stated, that since the time of Kæmpfer, who visited Persia in 1687, Assafoetida had been known to be the produce of an umbelliferous plant. Several species of plants have been supposed to yield this article of *Materia Medica*. Dr Christison states that it is probable that Assafoetida is obtained from at least two distinct species,—1. *Ferula Assafoetida* of Linnæus, or *Narthex Assafoetida* of Falconer; and, 2. *Ferula persica* of Willdenow. Both

these plants have been cultivated in this country for some time. A root of the latter plant was sent to Edinburgh by Pallas as the true Assafoetida plant, from the mountains of the province of Ghilan, in the west of Persia. It was cultivated in the Edinburgh Botanic Garden by Dr John Hope in 1786. The plant has flowered and fruited frequently in Britain. The former has never done so until the present year, when two specimens have pushed forth flowering stems in the Botanic Garden. The plant was found by Kämpfer growing in the province of Laristan, towards the Persian Gulf, not far from Gambroon; and he also states that the plant grows on the eastern confines of Persia, and the province of Khorasan near Herat. Since Kämpfer's day it has been found in various parts of Persia by European travellers.

The following statement is given by Dr Christison as to the seeds sent to this country:—"In 1839 seeds of the Herat plant were received in this country from Sir John McNeill, who visited the district, and saw the plant growing. In 1838, Dr Falconer saw the same plant growing in the valley of Astore, to the north of Cashmere, and afterwards cultivated it in the Saharunpore Botanic Gardens. In 1840, another locality was found by the expedition of Lieutenant Wood to the sources of the Oxus. This is situated in Syghan, near the western termination, and on the northern slope of the Hindoo Coosh range of mountains, about twenty miles north of Bamceen.

"Seeds were sent to the Edinburgh Botanic Garden both by Sir John McNeill and Dr Falconer, and were carefully reared by Mr William McNab the superintendent. In 1842 these seeds germinated, but the shoots merely appeared above ground, and then seemed to die. Mr McNab, however, did not give them up for lost. He would not allow the earth under the frame to be dug up, and determined to give them another year's trial. Accordingly, next summer new shoots appeared, and from them the present stock of plants in the garden has been derived. Ever since that time the plants have sent up a vigorous crown of leaves in early spring, but these have withered by midsummer, without any symptoms of flowering. The crown of the roots

continued, however, to increase annually, and in some of the specimens attained a diameter of four inches."

We have looked yearly for the production of flowers in vain, until the present spring, when two plants, which had been transplanted in the spring of 1857, showed evidence of pushing up a flowering axis. At first the shoots consisted entirely of an axis covered by large yellowish-green membranous sheaths. In this form it reached the height of 1 to 2 feet. Then flowering branches began to show themselves in the axils of these sheaths, which are the enlarged petioles or pericladia embracing the stems and covering the flowering buds. In the lower part of the axis these sheaths are terminated by leaves of a much smaller size than the ordinary leaves of the plant, but having the same pæony-leaf-like form. As we proceed upwards on the axis the size of the laminæ diminish, and ultimately at the upper part the sheaths alone are developed. These also become smaller as we reach the terminal umbels. In one of the plants there are no such leaves, in the other there are a few, thus resembling the figure given in Kämpfer's work. In that figure the sheaths do not present the conspicuous appearance which they do in the plants now in flower in the garden. Professor Balfour then proceeded to detail the generic and specific characters, filling up the description which had been given by Dr Falconer in "Royle's Materia Medica," and making one or two alterations. He stated that the colour of the flower is yellow, that the sheaths are not all aphyllous or leafless, and that the petals have an ovate form, without an acuminate point. Barren flowers, bearing stamens only, occur in peculiar rounded umbels below the fertile umbels. In these flowers the petals have a peculiar oblique and unequal form. The characters taken from the fruit could not be perfectly given in the present state of the plant. Perhaps the peculiar summer of 1857 may have had some effect in maturing the plant.

Mr M'Nab gives the following notice of the plants now in flower :—

"The large plant of *Narthex Assafoetida*, now in flower in the Botanic Garden, was lifted from a glazed pit where it had been growing vigorously for the last five years. An

alteration in the pits rendered it necessary to remove the plant to its present site. This was done on the 10th of March 1857. At the time of removal the leaves were beginning to unfold, and continued to do so freely throughout the spring months. The plant has always been protected with glass during winter. On the 15th of February of the present year it showed symptoms of flowering, appearing at first like a large round ball of a greenish-yellow colour, having a few short leaves rising from it. On the 19th of March the plant had assumed a peculiar club-shaped appearance, 21 inches high and 15 inches in circumference at top. About the 22d of March the sheaths began to unfold themselves and expose the dense clusters of flowers, and at this stage the daily growths became most conspicuous.

“From 8 A.M. of the 22d March to 8 A.M. of the 23d, growth 4 inches.

Do.	23d	do.	do.	24th	”	4½	”
Do.	24th	do.	do.	25th	”	4½	”
Do.	25th	do.	do.	26th	”	3½	”
Do.	26th	do.	do.	27th	”	2½	”
Do.	27th	do.	do.	28th	”	1½	”
Do.	28th	do.	do.	29th	”	5½	”
Do.	29th	do.	do.	30th	”	6½	”
Do.	30th	do.	do.	31st	”	2½	”

“At the present time the upright growth has nearly ceased, while the lateral branches (29 in number) are daily increasing in length. This day, 7th April 1858, the plant is 5 feet 7 inches high, and the branches 36 inches in diameter of spread.”

The *Assafoetida* plants grow in a very dry climate. Besides the gum-resin, Falconer states that the fruit of the *Narthex Assafoetida* is imported into India from Persia and Afghanistan, under the name of Anjoodan, being extensively employed by the native physicians in India. Anjoodan is the term applied to the seed of Heengsch or Hingisch, or Hulleet, by Avicenna, also quoted by Kæmpfer, and used by the Indo-Persian and Arabic writers generally in describing the *Assafoetida* plant.

Falconer thinks that the fruits sent by Sir John McNeill from Persia were not those of *Narthex*.

Assafoetida is got by incision into, or slices taken from,

the top of the root. The whole plant has a strong garlic odour.

The communication was illustrated by a flowering branch of the plant, with its leaves and sheathing petals, as well as by stereoscopic photographs taken by William Walker, Esq., F.R.C.S.E.

II. *Recent Botanical Intelligence.* By Professor BALFOUR.

1. BRAUN on *Parthenogenesis*.

Dr Balfour gave a rapid sketch of the progress of vegetable embryogeny, from the times of Grew, Ray, Camerarius, Linnæus, and Morland, up to the present day. He then gave an abstract of Dr Braun's statements in regard to Parthenogenesis, or the production of perfect seed without the agency of pollen.

The doctrine of reproduction in plants and in animals by the agency of two sexes has been so generally received, that it has become a physiological character in the organized kingdom of nature. Of late years, however, facts have been produced, which seem to prove that reproduction may take place in certain instances without fecundation. To this Siebold has given the name of Parthenogenesis, or virgin-birth. This has been demonstrated in a very interesting manner by Siebold, in the case of bees, and of some butterflies (*Wahre Parthenogenesis bei Schmetterlingen und Bienen*, von Th. von Siebold, 1856). Various experiments have also been made on diclinous, especially monoecious plants, which seem to show a similar mode of production in the vegetable world. The earliest observations appeared to be so completely at variance with the received doctrine of science, that they were discarded, and the facts, as narrated, were referred to some error or fallacy in the experiment. The difficulty of isolating the flowers of plants, and preventing the contact of a single grain of pollen, was so great, that botanists were cautious in giving assent to the facts which seemed to be proved by the experiments. These remarks apply to the observations of R. J. Camerarius in 1694, of Spallanzani from 1767 to 1779, of Henschel in 1817-18, of Girou de Buzaire in 1827 to 1833, of Ramisch in 1833-38, and of Bernhardt in 1834-39. Within the last few years, however, the experiments of Tenore, Gasparrini, Naudin, and Smith of Kew, seem to place the doctrine of vegetable parthenogenesis beyond doubt.

The following are the plants on which the most direct and positive observations have been made :—

A. *Dioecious Plants.*

1. *Cannabis sativa*, common hemp.
2. *Spinacia oleracea*, common spinach.
3. *Lychnis dioica*, common campion.
4. *Mercurialis annua*.
5. *Bryonia dioica*, bryony.
6. *Datisca cannabina*.
7. *Pistacia narbonensis*, and other species of the genus.