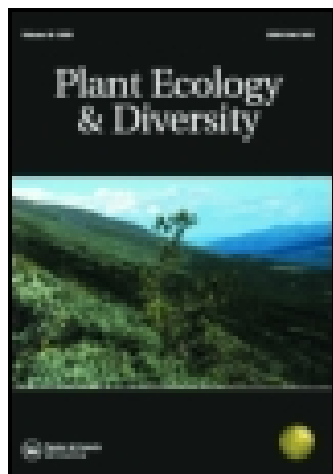


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## Transactions of the Botanical Society of Edinburgh

Publication details, including instructions for authors and subscription information:

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

### I. On Antholites Pitcairne and its Fruit (Cardiocarpum), with other Fossil Plants from Falkirk

C.W. Peach A.L.S.

Published online: 01 Dec 2010.

To cite this article: C.W. Peach A.L.S. (1873) I. On Antholites Pitcairne and its Fruit (Cardiocarpum), with other Fossil Plants from Falkirk , Transactions of the Botanical Society of Edinburgh, 11:1-4, 107-109, DOI: [10.1080/03746607309467940](https://doi.org/10.1080/03746607309467940)

To link to this article: <http://dx.doi.org/10.1080/03746607309467940>

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corded its occurrence in great profusion at the foot of a wall leading to Warriston Cemetery.

Mr Peter M'Kenzie presented a fasciated branch of Scotch fir, grown at West Plean, Stirlingshire.

9th February 1871.—Professor BALFOUR in the Chair.

The Chairman noticed the death of Frederick Antoine Guillaume Miquel, Professor of Botany in the University of Utrecht, and Director of the Botanical Museum of Leyden. He was an eminent botanist, and has published a number of works connected with systematic botany. He has described plants in the Dutch possessions, in the Indian Archipelago, and in Surinam, as well as the flora of Japan and New Holland. He has written valuable monographs on Piperaceæ, Ficus, Casuarinas, and Cycadaceæ. He died at Utrecht on 23d January last, at the age of fifty-nine. He was a foreign Honorary Fellow of the Society.

Letters were read from Professor Röper, of Rostock; Professor A. de Bary, Fribourg; and Dr Weddell, Poitiers, thanking the Society for their election as foreign members.

The following Gentlemen were elected Fellows of the Society:—

1. *Resident Fellows.*

ALEXANDER GALLETLY, Museum of Science and Art.  
JAMES PATON, 14 Gladstone Terrace.

2. *Non-resident Fellows.*

JOHN A. TINNE, Briarley, Aigburth, Liverpool.  
SAMUEL A. STEWART, 6 North Street, Belfast.  
NATHAN FELLOWES DUPUIS, M.A., Professor of Chemistry and Nat.  
Hist. University of Queen's College, Kingston, Canada.

3. *Associate.*

WILLIAM W. EVANS, Buckstone, Lothian Burn, Edinburgh.

The following Communications were read:—

- I. *On Antholites Pitcairnæ and its Fruit (Cardiocarpum), with other Fossil Plants from Falkirk.* By C. W. PEACH, A.L.S.

Mr Peach commenced by stating that in August last year he went to Falkirk for change of air, as well as for the purpose of a search in the coalfields for fossils. His son, who belongs to the Geological Survey, pointed out the most likely spots, and in one of these, the Cleuch, where some light coloured shale from Coxwad pit was deposited, he set to work. The stones enclosed the remains of an ancient forest, and in a day or two from amongst these he turned out a fine specimen of *Antholites Pitcairnæ*, agreeing with the figure in Lyell's "Elements of Geology." This long-desired treasure spurred him on, and he was fortunate enough to get another—this time with the fruit, *Cardiocarpum*, attached—a well-known coalfield fossil, but never before found attached to any plant. In the same stones he got *Calamites nodosus* in great abundance. Although very fragmentary, he had been able to make a restoration of the whole plant. Two or three other species of *Calamites* were amongst the above, but not in a good state for recognition. Specimens of *Flabellaria borassifolia* were very plentiful, and from them he built up the magnificent fronds from base to tip, and was fortunate enough to get a specimen of two of its woody stems, which are very rare; even the seeds, he suspected, had fallen on the prostrate leaves, their bright black shining remains being pressed into them. These leaves must have been of large size, and probably in a great measure resembled those of a *Yucca* of the present day. Ferns, he stated, were also abundant in the same shale. He then described the fossils he got at No. 1 pit, near the railroad station, and at the brickwork a little beyond, where, in the black shales overlying the splint coal, he got a few specimens of not well-preserved *Lepidodendron*, one fine piece of *Ulodendron major*, and a beautiful *Halonias*, showing leaf scars, branches, and bud-like prominences, arranged in a spiral manner, differing from the depressed scar markings on *Ulodendron*, both in size and arrangement. Hitherto *Halonias* had occurred in the Scotch coalfields, in rounded sandstone

casts, more like a very small *Stigmara*. In the last-named localities he had met with numerous mussel band fossils, great quantities of fish scales, teeth, &c., but in the Cleuch only one delicate specimen of *Anthracona*, and numbers of *Spirorbis carbonarius* attached to some of the plants. He dwelt specially on this little worm case as well as many of the plants, both being generically and specifically common with those of Canada, &c., as described in the "Acadian Geology" of Principal Dawson, and expressed himself deeply indebted for much information to that excellent work, as well as to Mr Carruthers of the British Museum. He exhibited a large series of specimens, and a number of drawings and restorations of the plants. He hoped that the fact of being able to show that *Antholites* was a true flowering plant, and that *Cardiocarpum* was its fruit, would be interesting to the Society. Mr Peach further said that he felt deeply indebted for the great kindness of all connected with the above coal-works, for so freely doing all in their power to help him in his pursuits.

II. *Report on the Cultivation of Cinchona at Rungbee, Darjeeling.* By C. B. CLARKE, M.A., in charge of Cinchona Plantations in Bengal. Communicated by Professor BALFOUR.

Mr Clarke gives full details regarding the Government Cinchona plantations in Bengal, more especially those at Darjeeling. At Rungbee, at an elevation of 3300 feet, the mean temperature is 64°; at Rishap, at 2550 feet, it is 71°, according to observations taken in 1867. During 1869, the rainfall was 157·70 inches at Rungbee, at an altitude of 5000 feet, and 91·6 inches at Rishap at 2000 feet. One year at Rungbee is very like another, both in temperature and in general distribution and quantity of rain. The proper climate for *Cinchona succirubra* and *C. Calisaya* appears to be a warm, equable, and excessively moist one. Though the rainfall at Rishap is so much below that at Rungbee, yet the humidity is almost as excessive and well adapted for Cinchona cultivation. The Rungbee plantations are visited about once a year by hail storms, which, however, do but little damage, and they are almost free