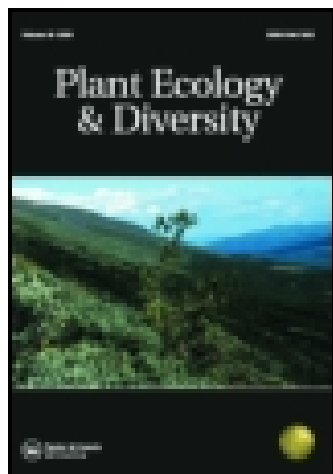


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## Transactions of the Botanical Society of Edinburgh

Publication details, including instructions for authors and subscription information:

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

### II. Climatal Changes in Scotland

James M'Nab <sup>a</sup>

<sup>a</sup> Royal Botanic Garden , Edinburgh

Published online: 29 Nov 2010.

To cite this article: James M'Nab (1873) II. Climatal Changes in Scotland , Transactions of the Botanical Society of Edinburgh, 12:1-4, 101-107, DOI: [10.1080/03746607309469485](https://doi.org/10.1080/03746607309469485)

To link to this article: <http://dx.doi.org/10.1080/03746607309469485>

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of Dundee had given him a small but beautiful cone found in coal-shale at Wemyss, Fife, which did not correspond with any described species.

II. *Climatal Changes in Scotland*. By JAMES M'NAB, Curator, Royal Botanic Garden, Edinburgh.

Since my paper on Climatal Changes was read before the Society in November 1873, much discussion has taken place on the subject, and many of my opinions are endorsed by old Scottish gardeners, as well as by amateur cultivators. All maintain that many varieties of fruit now cultivated are not equal to what they were thirty to fifty years ago. The Ribston pippin and Nonpareil apples are alleged to be inferior in size and flavour, as well as in quantity, to the specimens formerly seen on walls, espalier rails, and standards. If seen good now, it is only on walls in very favourable situations, and during very fine summers. Walter Nicol, a great authority on Scottish horticulture, wrote in 1810 that the Ribston pippin will thrive and ripen at John o'Groats, while it deserves a place at Exeter and Cork. The Jargonelle pear is another fruit at one time extensively grown, and thoroughly ripened on standard trees in various districts in Scotland. Standard ripened Jargonelles are now exceedingly scarce, although during a fine summer a few are occasionally seen.

What has become of the boasted Carse of Gowrie orchards, which, half a century ago, were so remunerative to their proprietors? We find it recorded, from the years 1809 to 1813 inclusive, that seventy varieties of apples were then cultivated as standards in the Carse orchards, including Ribston pippin, Nonsuch, Yorkshire Greening, &c.; thirty-six varieties of standard pears, including Galston, Moorfowl egg, Swan egg, Jargonelle, &c.; eight varieties of plums, including white and red Magnum, Orleans, and Damson. The money produce of the thirty apple orchards alone, covering 126 acres, exclusive of the grains and grass frequently grown amongst them, from 1809 to 1813 inclusive, amounted to L.10,515. During 1809, the apples from the 126 acres yielded L.2318; 1810, L.2366; 1811, L.1840; 1812, L.2333; and 1813, L.1668, averaging from

L.16 to L.20 per acre. These orchards still exist, and we learn that in some years apples are produced in considerable abundance, and in other years they are exceedingly scarce, but the average of any five consecutive years is greatly below what it was in former times.

About the same period the apple and pear orchards at Newburgh, in Fife, were productive and remunerative, and contained many excellent varieties. The French Reinette is particularly mentioned for its flavour. Standard pears were numerous, and some of great age. It is stated that the Jargonelle, Golden Knap, Swanton, and Lodge pears cannot have been less than three centuries old. (*Vide* Sir R. Sibbald, "Hist. of Fife," p. 403; and "Stat. Acct. Scot." ix. 62.) As far as I can learn, a heavy crop at Newburgh or Lindores has not been obtained for many years; partial crops are not unfrequent, but do not always ripen. The Clydesdale orchards half a century ago were a great source of profit to the proprietors, in consequence of the price obtained for the fruit in Glasgow. A letter before me, from an eminent horticulturist who has lived in that district for forty years, informs me that apples and pears of recent years have been on the decrease. The damson plum, which used to be abundant and productive in Clydesdale, has greatly failed, no proper crop having been got for a long time, and many of the trees are now rooted out. Gooseberries are, however, extensively grown.

The damson was formerly much cultivated in many parts of Scotland. About forty years ago I saw in Ayrshire trees bent down with ripe fruit. Such a sight I have not seen in Scotland, except in Ross-shire, for many years; but even there I am informed that heavy crops are only partial. The Ross-shire climate has always been considered one of the best north of the Tweed for ripening fruit, both wall and standard. Many plum orchards have recently been formed on the west coast, where the climate seems well suited for their growth; but instead of damsons, plants of the Victoria plum are most in demand.

The common black sloe of the plum tribe, indigenous to Scotland, used to ripen its fruit abundantly in many of our hedge-rows and mountain glens. I have not been fortunate enough to fall in with ripe fruit for many years,

notwithstanding the abundant crop annually produced. Although the bramble is frequently loaded with fruit, only a small proportion of the berries come to maturity, save in an exceptional season. The bramble is one of our hardiest native plants, and it is remarkable to observe the quantity of fruit produced and ripened along the English hedgerows in comparison with that found in a ripe condition in our best Scottish districts. The amount of fruit formed seems nearly the same, but a smaller percentage arrives at perfection.

A paper read before the Caledonian Horticultural Society in 1811, by that celebrated horticulturist Mr A. Gibson Hunter of Blackness, describes the fruits he observed during a tour in the Highlands of Scotland. He states that the Swan egg and Moorfowl egg, autumn Bergamot, Jargonelle, and other pears, produced on standards more regular and abundant crops, of superior flavour and well-ripened, although smaller than wall-grown fruit of the same kinds. He also states that the green-gage plum, the chief of its family, produces better crops, and of more excellent quality, when grown on standards than on the best exposed walls; and that standard trees of green gage, damson, and magnum bonum plums, in many parts of the Highlands, were often seen loaded with fruit; he particularly instances the gardens at Keppoch, parish of Kilmonivaig, in the south-west of Inverness-shire.

On consulting the minute-books and memoirs of the Caledonian Horticultural Society from 1810, we find that the chief fruit competitions took place early in September; amongst others, prizes were offered for peaches, sometimes as many as three sorts, six specimens of each, grown on open walls, without the aid of fire flues. Nectarines, apricots, and the finer plums were always well competed for, from all districts of Scotland. Some years as many as thirty competitors sent peaches, and all well-ripened open-air fruit; some besides, sent eleven named varieties thoroughly ripened, but marked for exhibition only. One year forty-seven competitors submitted apricots. After 1837 the prize for peaches from open walls "without the aid of fire-flues" was discontinued, the generality of the competition peaches sent in being grown on flued walls or

in peach houses, to get them sufficiently matured for the first week of September, the competition for the two modes of ripening having previously been separate.

During the early horticultural exhibitions, the finer kinds of apples seem to have been more freely grown in Scotland than at present, as numerous passages in the horticultural memoirs testify. In 1813 and 1814, and occasionally down to 1824, excellent wall-grown specimens of the Newtown pippin apple were sent for competition from various gardens in Mid-Lothian. Dr Duncan, sen., in his discourse before the Caledonian Horticultural Society in 1814, says that he tasted as fine Newtown pippins grown on the open wall at Dalkeith Park, the seat of the Duke of Buccleuch, as the best imported from America. Such a remark, with reference to the Newtown pippin, is never heard now in Scotland. About 1815 we find it stated that two trees of the golden pippin at Pearton, in the parish of Ormiston, East Lothian, annually produced 100 to 120 dozen of large and highly-flavoured apples. The golden pippin is now rarely seen in Scotland, although it formed two of twelve sorts at most of the early fruit competitions.

The prize for the heaviest twelve Jargonelle pears from open walls, fit for dessert at first week of September, were freely competed for; but now it is often impossible to get heavy specimens fit for use at this season. Admirably grown specimens of French and Flemish pears used to be sent for competition from many districts of Scotland during the first week of December. It is rare now to see the same number of competitors as formerly, and the quality of the specimens now produced often compares unfavourably with those exhibited in bygone times. After a series of years we find those varieties produced at the meetings of the Society in March, not having been sufficiently matured to exhibit in December. Chaumontel and other sorts, originally produced at the December meetings, have been latterly exhibited in March. Now a competition for French and Flemish pears takes place in the first week in April. Although the fruits of many of the finer pears are produced in abundance, many of them shrivel up during the winter, their juices not being sufficiently matured, for want of summer heat, to enable them to keep properly.

Cherries used to be freely grown and well-ripened in many districts of Scotland, but now, if the May Duke variety is ripe in July without artificial means, we are satisfied.

In 1814, and several successive years, ripe figs—early white black Genoa, the black and brown Ischia—were exhibited, the produce of the open walls at Ormiston, Tranent, where the fig trees bore freely for many years.

In 1814 a gooseberry competition was arranged in the Horticultural Society's rooms on August 2d, the general crop being always in July. During several of the early September meetings prizes were occasionally offered for retarded gooseberries, but few competitors came forward. In 1826 none were sent for competition, owing to the forwardness of that season. In 1849, and every year afterwards, gooseberries have been regularly competed for in September, without restrictions as to retarding, and now we find gooseberry competitions as late as September 17.

In Scotland the quince grows freely as a dwarf shrub, but very seldom produces fruit. About 1814 ripe Scotch-grown quinces were sent to the autumn horticultural exhibition, ripened in Perthshire. This was considered a very rare occurrence. A competition for quinces afterwards took place, and a prize was awarded for excellent specimens produced at Leuchie House, North Berwick.

In 1831 a prize was given for Scotch-grown American cranberries (*Vaccinium macrocarpum*). Of recent years the culture was attempted by the late Lord Murray in Argyleshire, but without success.

I doubt if even the filbert and hazel are as productive now, and ripen the nuts as well in Scotland as in former times. This will be better answered by those who have had nut plantations under their care for a series of years. As far as I have observed, they are not ripened as in olden times.

Nicol, in his "Gardener's Kalendar" for 1810, recommends that the seeds of tomatos be sown at the bottom of a wall in the open air with a south aspect, to have the fruit ripened to perfection. He also records the ripening of capsicums in the open border. In 1826, 1827, and 1828, prizes were offered for tomatos grown on open walls. The competition does not seem to have been general, not more than three

competitors exhibiting at one time, and it was ultimately abandoned.

From 1810 to 1830, prizes were offered for home-made wines, particularly red and white currant, and gooseberry champagne; numerous competitors annually appeared, producing specimens which were much appreciated. In 1825, no less than 37 competitors exhibited currant wines, each sending two bottles. After 1834, prizes for home-made wines were discontinued, as the specimens did not come up to the mark, evidently from the want of heat to mature the saccharine juices of the currants.

From 1812 to 1826 the white poppy seems to have had field culture in various parts of Scotland, for making opium. In 1824 I recollect a field of the opium poppy (two acres in extent) cultivated at Tanfield, near Edinburgh. During August and September, women and girls were employed collecting the drug. About the same period fields of lettuce were grown in Scotland for making lactucarium. About 30 lbs. of the drug was made by one person in a year, and considered little inferior to the article produced in more favoured climates.

About fifty years ago tobacco was frequently grown in Scotland. The plants were generally strong and vigorous. The prepared leaves, although coarse, were employed with effect in killing greenfly in plant structures, as tobacco-paper is now used.

Several recent winters have been remarkable for their mildness, particularly 1873-4, many parties boasting of the bouquets which they have collected from their open gardens. The Gloire de Dijon and other roses have flowered freely on walls and in the open ground, and scarlet pelargoniums and other summer plants, bedded last spring, are still alive. The past winter and spring to this date (March 12) have produced more open-air flowering plants than any season known to me, showing that, if our summers are not so warm as formerly, our winters are much milder.

Some English meteorologists have been discussing the subject of climatal change, but I do not believe that any satisfactory opinion will be formed without consulting the records of English horticulture as to the ripening of fruits



and plants in early times; even then, they, and the Scottish meteorologists should give details of the average temperatures of a certain number of summer months, say for ten years fifty or sixty years ago, and compare these with similar tables at the present time. My opinion is, that there is no difference in the average annual temperature now and in the olden times; but that we do not get the same intensity of heat in May, June, July, August, and September—the months when it is required to ripen the wood sufficiently to stand a severe winter, and prepare it for next year's flower and fruit. The same remark applies to many small shrubs standing in nurseries, which, when not sufficiently ripened by summer heat, are hurt by winter or spring frosts. It seems as if a proportion of the old summer temperature was now diffused, more or less, over the whole year.

In the *Revue Horticole*, M. Naudin, member of the Institute of France, in alluding to my views on the alleged change of climate in Scotland, says that a similar belief prevails in France. Arago, however, concludes that if such a deterioration has taken place, it is to an almost inappreciable extent—half a degree Centigrade in 1000 years.

### III. On Tea Cultivation in India, &c.

1. Extract of letter from Surgeon-Major William Jamieson, Director of the Botanic Garden, Saharunpore.

"The Dehra Doon Tea Company is prospering, and promises to become one of the best investments for money in India. In all good concerns, tea is giving dividends of 15 to 30 per cent. For years I recommended tea cultivation as a safe investment for capital. Parties now find that what I asserted was correct, and ere long I trust to see India a rival to China in supplying tea. The export from Calcutta to Europe will amount this season to upwards of 20,000,000 lb, and in addition a brisk trade with Central Asia is being opened up. Merchants from the Punjab, the factories in the Kangra Valley, Dehra Doon, Kumaon, and Gurhwal, buy up the teas, particularly green teas, at rates varying from 2s. to 2s. 6d. per lb., pack them in their