

MILIUM SCABRUM Merlet

By T. G. TUTIN.

(a) GENERAL.

The occurrence of *Milium scabrum* in Guernsey was first reported by C. R. P. Andrews (1900A, B) but in spite of several searches it was not re-found until 1949. Andrews found the plant in April 1899 and during the period of 50 years which has elapsed before its rediscovery it has been suggested that it was never more than a casual. The following facts will, I believe, make it clear that the plant is native on the island and will also, at least in part, explain why it was not re-found sooner.

Andrews stated that the locality in which he found it was on the cliffs near Petit Bot on the south coast of Guernsey and subsequently (1940) amplified this in a letter, a copy of which is in the Herbarium at Kew. In this letter it is said to have been found on a grassy patch below the path along the top, but well above the vertical part of the cliff (not at the foot of a vertical cliff as Marquand (1901) states, about half way between Jaonnet and Petit Bot. In spite of these definite statements there appears to be some doubt about the original locality, as Lousley (*in litt.*) states that Pugsley informed him that Andrews found the plant in his vasculum at the end of a day's collecting and there was some uncertainty about the exact locality.

This doubt is increased by the fact that it was rediscovered by J. E. Raven and myself on L'Anresse Common on the north coast of Guernsey, and that in spite of repeated search we failed to find either the plant or any apparently suitable habitat for it in the neighbourhood of Petit Bot. It is likely, therefore, that search has been made during the past 50 years in a locality where the plant does not grow at all, or is at best very rare.

On the north and north-west coasts of Guernsey the plant grows abundantly, though usually in small patches, towards the western end of L'Anresse Common, Grand Havre (N. D. Simpson *in litt.*), at Vazon Bay and, doubtless, elsewhere.

The habitat in which *Milium scabrum* grows in Guernsey is on fixed dunes in short but nearly closed turf. The following lists from two stations on L'Anresse Common will give an idea of the common associates:—

A		B	
<i>Ranunculus bulbosus</i> L.	o	<i>Cochlearia danica</i> L.	la
<i>Erophila</i> sp.	o	<i>Cerastium semidecandrum</i> L.	r
<i>Cochlearia danica</i> L.	o	<i>Trifolium repens</i> L.	r
<i>Cerastium semidecandrum</i> L.	r	<i>Lotus corniculatus</i> L.	f
<i>Ononis repens</i> L.	f	<i>Vicia lathyroides</i> L.	r
<i>Lotus hispidus</i> Desf.	f	<i>Sedum acre</i> L.	lf
<i>Potertum Sanguisorba</i> L.	o	<i>Galium verum</i> L.	r
<i>Daucus Carota</i> L.	f	<i>Bellis perennis</i> L.	f
<i>Galium verum</i> L.	r	<i>Thymus</i> sp.	f
<i>Bellis perennis</i> L.	f	<i>Plantago Coronopus</i> L.	o
<i>Myosotis hispida</i> Schlecht. (<i>M.</i> <i>collina</i> auct.)	r	<i>Milium scabrum</i> Merl.	o
<i>Thymus</i> sp.	la	<i>Mibora minima</i> (L.) Desv.	r
<i>Plantago Coronopus</i> L.	r	<i>Dactylis glomerata</i> L.	f
<i>Plantago lanceolata</i> L.	f	<i>Festuca pratensis</i> Huds.	f
<i>Euphorbia portlandica</i> L.	r	<i>Festuca ovina</i> L.	a
<i>Milium scabrum</i> Merl.	f		
<i>Mibora minima</i> (L.) Desv.	o		
<i>Dactylis glomerata</i> L.	f		
<i>Festuca ovina</i> L.	a		
<i>Agropyron pungens</i> R. & S.	la		
<i>Camptothecium lutescens</i> B. & S.	la		

a=abundant, f=frequent, o=occasional, r=rare, l=locally.

It will be noticed that *Scilla autumnalis* L., though abundant in the neighbourhood and often occurring within a few feet of patches of *M. scabrum*, does not appear to grow actually mixed with it. All the plants of *Milium* we observed had the culms bent sharply about 2 cm. above the base so that the small culm leaves and narrow inflorescence were lying flat among the other constituents of the turf, a habit that makes the plant difficult to see and indeed less conspicuous than the considerably smaller, but erect and reddish tufts of *Mibora*. Mr N. D. Simpson, who visited the locality when the seed was ripe early in May, tells me that at that time the plant was more conspicuous, as it had bleached to a whitish colour.

The distribution of *M. scabrum* is not very clearly understood, as this species has been confused with *M. vernale* M. Bieb., a similar but larger plant with a spreading panicle. As far as can be ascertained *M. scabrum* is confined to the coasts of western Europe from the Netherlands (coast near Leiden) to Portugal, while *M. vernale* is essentially a Mediterranean species. *M. scabrum* appears to be local throughout its range and to grow in habitats similar to those it occupies in Guernsey.

In view of its very local occurrence, early flowering season and inconspicuousness it is possible that it may have been overlooked and it seems worth making a careful search for it in suitable habitats in the southern part of England.

(b) CYTOLOGY.

Milium scabrum shares with *Airopsis tenella* (Cav.) Coss. & Dur., *Periballia laevis* (Brot.) Asch. & Graebn. (Litardière, 1948) and *Holcus*

Gayanus Boiss. (Litardière, 1949) the peculiarity of having the diploid chromosome number of 8 (plate 1). The three species examined by Litardière are, like *M. scabrum*, small annuals and have a south-western (hispano-lusitanian) distribution. In other respects, however, *M. scabrum* is widely different from the other three grasses with $2n = 8$, which are all members of the Tribe *Aveneae*, and shows an exceedingly close morphological agreement with *M. vernale* M. Bieb. and *M. effusum* L. *M. vernale* and *M. effusum* were examined cytologically by Avdulov (1928), who found $2n = 18$ and $2n = 28$ respectively. The latter number has been confirmed by A. & D. Löve (1944) and by myself (plate 1) using material from Swithland Wood, Leicestershire. It is rather curious to find three different basic chromosome numbers (4, 9 and 14) in a small genus which appears to be very homogeneous morphologically, especially when it is combined with the considerable difference in size of chromosomes that there is between *M. scabrum* and *M. effusum*. It has not so far been possible to re-examine *M. vernale* but as most of the differences between it and *M. scabrum* are matters of size it is possible that it is in fact a tetraploid with $2n = 16$.

(c) SYSTEMATIC POSITION OF MILIUM.

The genus *Milium* must in spite of its diverse chromosome numbers be regarded as a "natural" genus, since there is very close agreement in all other characters between its three species. It has been variously placed in the tribes *Stipeae*, *Panicaceae* and *Agrosteae* or *Agrosteae* sub-tribe *Milieae* (Cosson & Germain, 1845), all of which have spikelets with one floret. It resembles the *Stipeae* in the strongly indurated lemma and palea and the untoothed lodicules, but differs in the absence of awn, in having 2 lodicules instead of 3 and in the basic chromosome numbers, which in the *Stipeae* are 9, 10, 11, 12, 17 and 19, but apparently never 4 or 14. From the *Agrosteae* it differs in having untoothed lodicules and, at least from the bulk of this tribe, in having the lemma and palea strongly indurated in fruit. It resembles the *Panicaceae* in the dorsally compressed spikelets and indurated lemma and palea but differs from this tribe in most other respects. It would therefore seem best to keep the small tribe *Milieae* with *Milium* as the only genus.

This tribe may be described as follows: Annual or perennial herbs. Leaves of the festucoid type but with few or no silica cells; 2-celled hairs absent. First foliage leaf of seedling narrow and erect. Ligule glabrous. Inflorescence an effuse or narrow panicle of rather few spikelets. *Spikelets* of one floret, awnless, slightly *dorsally compressed*; rhachilla disarticulating above the glumes, not or very rarely produced beyond the floret. Glumes exceeding the lemma or equalling it in length, subequal, persistent, herbaceous-membranous, 3-nerved; nerves more or less parallel, not reaching the tip of the glumes. *Lemma* rounded on the back, thick, *becoming strongly indurated in fruit*, very smooth and glossy, faintly 5-nerved; *awn absent*. *Palea strongly indurated in fruit*, 2-nerved. *Lodicules* 2, *untoothed*, acute. Stamens 3. Ovary

glabrous, without an appendage; styles free. Fruit with a linear hilum $\frac{1}{3}$ - $\frac{2}{3}$ the length of the caryopsis. Starch grains compound. Chromosome large or rather small, basic numbers 4, 14, (? 9).

I should like to thank the Director of the Royal Botanic Gardens, Kew, for the loan of specimens, and Mr C. E. Hubbard for assistance with the description of the tribe *Milieae*.

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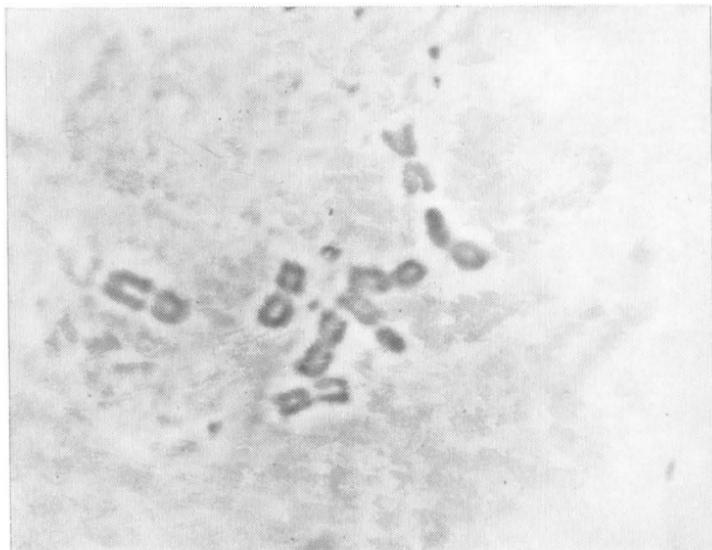
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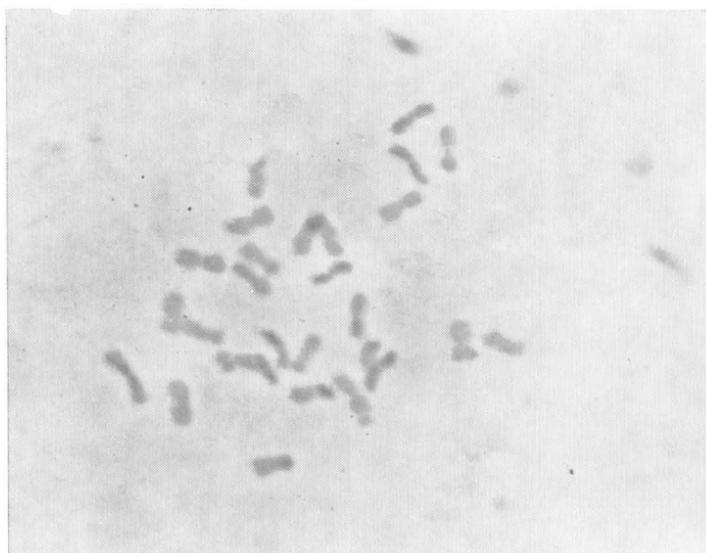
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A.



B.

Plate 1. Chromosomes of *M. scabrum* (A) and *M. effusum* (B) from root-tip preparations pre-treated with bromo-naphthalene for 3 hours, fixed in acetic alcohol and stained with Feulgen's stain. $\times 1800$.

From the Trower Fund.