A NEW BRITISH SPECIES OF *SENECIO*

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In September 1953 specimens of a large, radiate groundsel were received from Mr. H. E. Green, who had seen similar plants, growing by a roadside in Flintshire, since 1948. They could not be assigned to any described European species of *Senecio* and though they bore some resemblance to the hybrid *S.* × *baxteri* Druce (*S. squalidus* L. × *S. vulgaris* L.) were more robust, with larger heads and a high percentage of fertile fruits.

When, in 1954, a chromosome count was made from root tips of plants grown from the Flintshire seed they were found to have the chromosome number 2n = 60; in the same year Professor S. C. Harland and Miss A. Haygarth Jackson produced a similar plant by colchicine treatment of the synthetic hybrid *S. squalidus* × *vulgaris* (2n = 30). This evidence confirmed us in the view that the plant should be described as a new species. A description follows.

Senecio cambrensis Rosser, *sp. nov.*

Herba (annua vel) perennis, ad 50 cm. altitudine. Caulis erectus, basi sublignosus saepe parte media dense ramosa et foliosa. Folia inferiora petiolata, superiora sessilia, auriculata; omnia alte et irregulariter pinnatifida, cum lobis distantibus, majoribus liguliformibus, minoribus lanceolatis, marginibus dentatis vel quandoque lobulatis; folia iuvenescentia tomentosa praesertim subtus, glabrescentia, cum axillis foliorum maturorum lanuginosis. Inflorescentia foliosa, imprimis dense corymbosa postea ramis florentibus longioribus, pedunculis tempore fructescendi longius extensis. Capitula imprimis late cylindracea (ca. 10·0 × 6·0 mm.) tempore florendi flosculorum radii nonnihil campanulata (ca. 12·0 mm. tota diametro); periclinii squamae exteriores minus quam dimidium longitudinis interiorum, omnes apicibus nigris; flosculi radii (8)-13-(15), corollis flavis, ligulatis latis et curtioribus quam periclinio (ca. 4·8 mm. longitudine et 2·0 mm. latitudine) mox revolutis (saepe ante anthesin flosculorum meiorum disci). Grana pollinis a visu polari (32·8)-33·2-(36·9) μ maxime expansa, pleraque foraminibus quattuor. Cypselae 3·0-3·5 mm. longitudine. leviter sulcatae, costis glabris et sulcis hirtellis; pappus albus, sericeus, a fructu facile se disjungens.

Typus. Roadside near Ffrith, Flintshire, North Wales, 2-10-1954, with *Senecio vulgaris* L. No. 54102/2 *L. W. Frost and E. M. Rosser* in Herb. Musei Mancuniensis.

Isotypi. Herb. Musei Mancuniensis; Herb. Musei Cambrensis; Herb. J. E. Lousley.

An (annual or) perennial herb, up to 50 cm. high. Stem erect with base somewhat woody, often with the central portion densely branched and leafy. Lower leaves petiolate, upper sessile, auriculate; all deeply and irregularly pinnatifid, with lobes distant, the larger lobes strap-shaped, the smaller lanceolate, with margins of leaves dentate or sometimes lobulate; young, growing leaves tomentose, especially below, becoming glabrous, with tufts of cottony hairs in the axils of fully grown leaves. Inflorescence leafy, at first

a dense corymb, later with longer flowering branches and with peduncles elongated further when fruiting. Heads at first broadly cylindrical (ca. 10·0 × 6·0 mm.), somewhat campanulate when the ray florets open (total diameter then about 12·0 mm.); outer involucral bracts less than half the length of the inner ones, all with black tips; ray florets (8)-13-(15), bright yellow, with ligules broad and shorter than the involucre (ca. 4·8 mm.

Fig. 1. *Senecio cambrensis* Rosser. Habit. A plant which was collected at Ffrith, showing the horizontal stem base characteristic of the plants growing in stony soil and in the crdvices of the wall but otherwise typical of the species. (× ½).

long × 2·0 mm. broad) soon becoming revolute (often before the opening of the central florets of the disc). Pollen grains in polar view (32·8)-33·2-(36·9) μ when fully expanded, mostly four-pored. Cypselae 3·0-3·5 mm. long, shallowly grooved, with ribs glabrous and grooves hirtellous; pappus white, silky, readily becoming detached from the fruit. Fl. 5-10 (+ ?). 2n = 60.

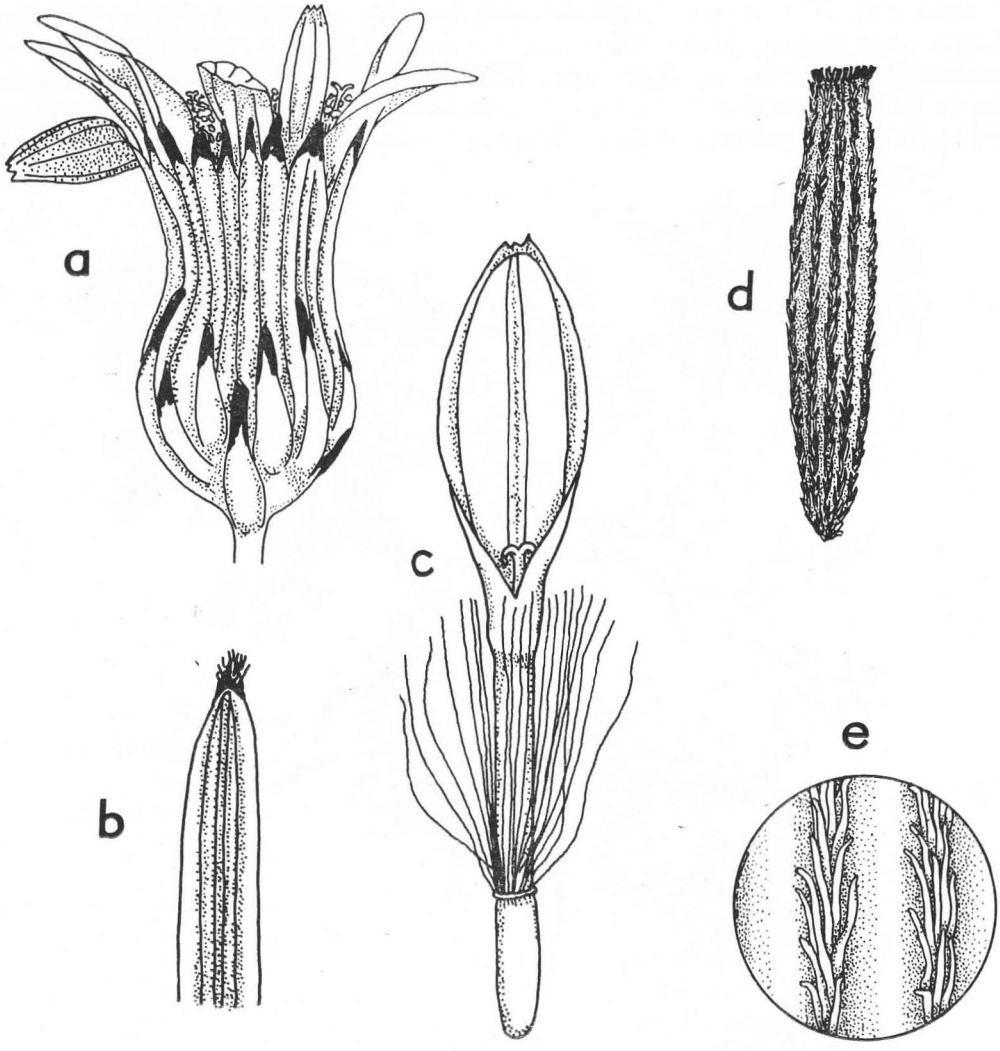

Fig. 2. *Senecio cambrensis* Rosser. (*a*) Capitulum at time when ray florets are fully expanded (× 5); (*b*) a single involucral bract (× 10); (*c*) ray floret (× 10); (*d*) cypsela (× 20); and (*e*) the surface of the cypsela (× 160).

First Record

Near Cefn-y-bedd, 15-8-1948, *H. E. Green* in Herb. MANCH.

Reference has already been made to the experimental evidence provided by Professor Harland and Miss Jackson, whose synthesis of *S. cambrensis* has shown that it is an allopolyploid which appears to have originated at Ffrith very recently by hybridisation between *S. squalidus* and *S. vulgaris*, followed by doubling of the chromosomes. Both the naturally-occurring and synthetic plants were exhibited at the Exhibition Meeting of the Botanical Society in November, 1954, already reported (Lousley, 1955).

The present population at the type locality includes some plants of *S. vulgaris* (non-radiate) and though the hybrid *S.* × *baxteri* Druce could not be found in the vicinity *S. squalidus* was collected a few miles away. The wild plant shows little variation; plants grown in the greenhouse from seed collected at Ffrith differ from those in the wild

population only in their greater luxuriance. Mr. Green reports that the species has spread slowly in the area since it first appeared; since it seems probable that it will eventually spread to other areas some notes on the distinction between *S. cambrensis* and radiate forms of *S. vulgaris*, *S. squalidus* and *S.* × *baxteri* are given below.

(1) Radiate forms of *S. vulgaris* L.

S. cambrensis may be distinguished in the field from all these forms by its more robust habit, broader, generally more numerous ligules of the ray florets, and the longer, more sparsely pubescent but longer-haired cypselae shown in Fig. 2 (d) and (e) (cypselae < 2·5 mm. in *S. vulgaris*); older plants of the polyploid may be distinguished also by the woody base of the stem. Comparison of the pollen grains (three-pored and 20-25 μ in diameter in *S. vulgaris*) may also be used in determination of herbarium material or fresh material in the laboratory.

(2) *S. squalidus* L.

The more prominent auricles of the upper cauline leaves, the smaller, less broadly campanulate involucres, short, ovate ligules, and the larger, long-haired cypselae distinguish the polyploid from all forms of *S. squalidus* (cypselae < 2·5mm.). As in *S. vulgaris*, pollen grains of *S. squalidus* are smaller and only three-pored (20-25 μ in diameter).

(3) *S.* × *baxteri* Druce.

Discrimination between this hybrid and *S. cambrensis* in the field may be more difficult; the high percentage of abortive fruits in the hybrid is likely to prove the best guide. At the end of the season, however, when, as Mr. Green has also observed, the capitula of *S. cambrensis* become successively smaller, the polyploid itself, like other *Senecio* species (e.g. *S. sylvaticus* and *S. viscosus*), may produce a high proportion of abortive fruits and confusion between the hybrid and the polyploid is probable. Where fruits are available, those of the hybrid (judging by the small quantity of undoubted hybrid seed which has been available for examination) can be distinguished by their smaller size (< 2·5 mm.) and by the very short, scattered hairs with which the grooves are lined. Though the pollen may contain some four-pored grains the majority of those examined were three-pored (ca. 25 μ in diameter), compared with a high proportion of four-pored grains in *S. cambrensis*.

Discussion of leaf characters in general seems unlikely to prove of any value, in view of the variability in leaf dissection exhibited by *S. squalidus* and *S. vulgaris*, though the deeply dissected, highly tomentose developing leaves of *S. cambrensis* may be used to discriminate between its seedlings and those of the parent species.

Since *S. vernalis* Waldst. & Kit., a European annual having the chromosome number n = 10 (Afzelius, 1929), has been reported from Britain on a number of occasions (though probably always erroneously) it may perhaps be usefully stated here that although young plants of *S. vernalis* bear a superficial resemblance to those of the polyploid *S. cambrensis* they may easily be distinguished from the latter by their relatively longer ligules, smaller cypselae and normal small-grained pollen. Fruit characters and pollen grain size and morphology also serve to distinguish the polyploid from such closely related European species as *S. leucanthemifolius* Poir. (n = 10, Afzelius, 1949), and *S. rupestris* Waldst. & Kit. (n = 10, Afzelius, 1924 as *S. nebrodensis* L.). *S. abrotanifolius* L. var. *tyrolensis* A. Kerner (2n = 60, Tischler, 1950), recorded only from the Tyrol, and other 12-ploid species, are sufficiently distinct from *S. cambrensis* to require no detailed consideration here.

It is a pleasure to record my thanks to Mr. H. E. Green both for material and information, to Professor S. C. Harland for permission to make use of experimental evidence, to Mr. J. Ellis for the chromosome count of *S. cambrensis* and to Mr. G. B. Kerferd who kindly revised the grammar of my Latin diagnosis.

REFERENCES

AFZELIUS, K., 1924, Embryologische und zytologische Studien in Senecio und verwandten Gattungen, *Acta Horti Bergiani*, **8**, 123-219.

————————, 1949, On chromosome numbers in Senecio and some allied genera, *ibid.*, **15**, 65-77.

LOUSLEY, J. E., 1955, The British Flora during 1954, *Nature*, **175**, 200.

TISCHLER, G., 1950, *Die Chromosomenzahlen der Gefässpflanzen Mitteleuropas*; 's Gravenhage.