

A CENSUS LIST OF WOOL ALIENS FOUND IN BRITAIN, 1946-1960

Compiled by J. E. LOUSLEY

Plants introduced into Britain by the woollen industry have attracted increasing interest from field botanists in recent years and this follows a long period of neglect. Early in the present century Ida M. Hayward, assisted by G. C. Druce, made a detailed study of the alien plants introduced with wool in southern Scotland, culminating in 1919 with the publication of *The Adventive Flora of Tweedside*. The wide field of new interest opened up by Miss Hayward's discoveries encouraged a group of Yorkshire botanists to investigate the plants introduced by the heavy woollen industry round Bradford.

It is unfortunate that serious work in both Scotland and Yorkshire came to an end at about the same time. At Galashiels the mills were no longer allowed to pollute the rivers by the discharge of untreated effluents, and in the preface to *The Adventive Flora of Tweedside* reasons were given why few aliens were to be expected in future. Although she continued to reside in the town, and to take a keen interest in botany, Miss Hayward's own discoveries after 1919 were negligible. I found a few interesting species on the Gala shingle in 1939, and other botanists found a few, but aliens no longer abounded by the rivers and we had insufficient knowledge to know where else to look. In Yorkshire, J. Cryer, F. Arnold Lees, F. Rhodes and E. C. Horrell were enthusiastic students of wool aliens. Their hunting ground was mainly Frizenhall sewage farm where the Bradford drains were discharged and, although they had sometimes found plants elsewhere, the closure of the sewage works seems to have put an end to their studies. After 1920 there were only occasional records of wool aliens from Yorkshire or elsewhere. Many of these were recorded without any indication that the finders were aware of their connection with the industry.

We owe our present interest to the enthusiasm and enterprise of J. G. Dony. In 1946, when he was collecting records for his *Flora of Bedfordshire*, he led a B.S.B.I. field meeting which visited some gravel pits at Eaton Socon where a number of wool aliens were seen. On the following day the party visited a railway siding in the same county, and further wool aliens were found (Dony, 1948). On enquiry he found that wool waste ("shoddy") was unloaded at the sidings and delivered to local farmers for use as a manure, and when this was followed up foreign weeds were found to be plentiful in their fields. By 1952 he had found 112 species of wool aliens in Bedfordshire (Dony, 1953) and was in touch with the firms near Bradford that despatched the "shoddy"—in that year he went to Yorkshire and in Bradford, Morley, Heckmondwike and Kirkheaton found over 40 species.

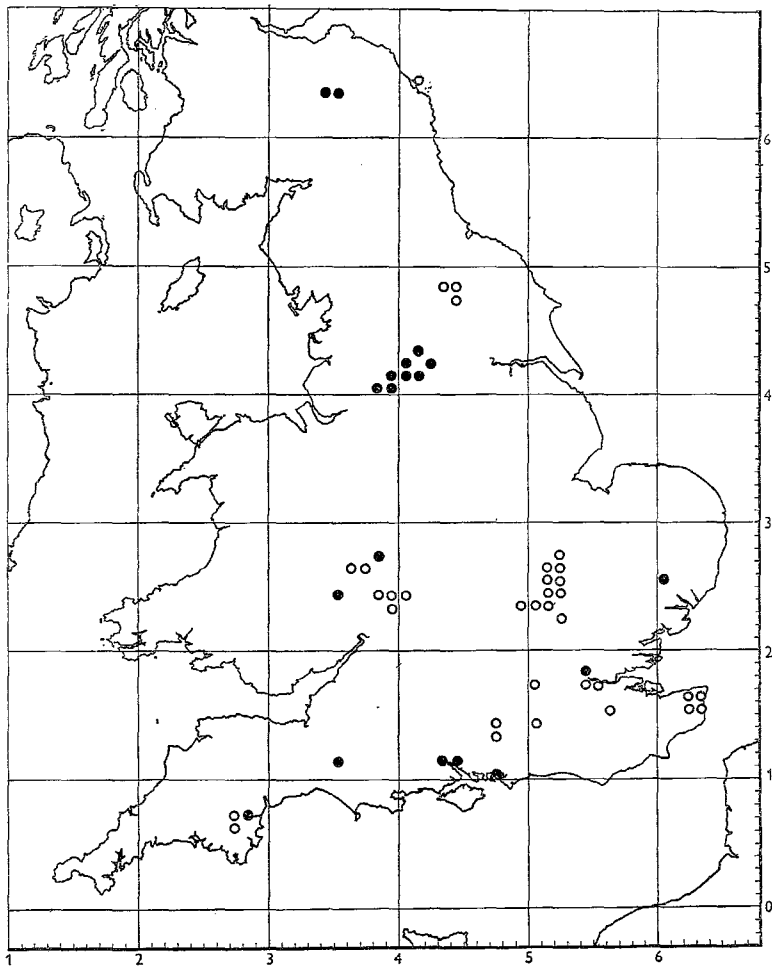


Fig. 1.—GRID SQUARES IN WHICH WOOL ALIENS HAVE OCCURRED, 1946-1960.

- Found in the vicinity of mills, works or factories.
- Other occurrences.

Dr. Dony's work not only encouraged a considerable number of botanists to take an interest in wool aliens but it placed the study on a much wider basis than before. It was now appreciated that these plants could be found in quantity in places far from woollen manufacturing districts, and that wherever shoddy was used as a manure well grown plants could be expected on railway sidings as well as in the fields. The new facts provided an explanation of many plants now known to be wool aliens from widely scattered parts of the country, and fields such as the one found by P. M. Hall at Portchester, Hampshire, in 1939 (Hall, 1940), fitted into a general scheme. As a result of Dony's enthusiastic studies in Bedfordshire other botanists were encouraged to record these plants elsewhere. Wool aliens are now known to occur in at least 27 vice-counties.

By early 1960 there were three county lists ready for publication; one for Bedfordshire by Dony, one for Worcestershire by Miss C. M. Goodman, and another for North Hampshire by the writer. To have printed three separate lists would have made unreasonable demands on space and would not have fulfilled the need for a working list of the wool aliens found in Britain in recent years. The other two writers very generously offered to place their accounts at my disposal and these are incorporated in the compilation which follows.

The records have been collected from the following sources:—

- V.c. 3, S. DEVON. Specimens collected from 1946 onwards from the vicinity of a mill at Newton Abbot by John E. Raven, Dr. C. West, D. McClintock, J. E. Lousley, and Miss M. McCallum Webster. In addition Miss Webster found a few species in a root crop near Buckfast (Webster, 1960).
- V.c. 5, S. SOMERSET. A list prepared by Mrs. V. I. Ricketts of species she found on refuse tips at Yeovil and named by C. C. Townsend, with some additions provided by Miss M. McCallum Webster. This list includes a number of natives of Ethiopia and adjacent countries of East Africa.
- V.c. 11, S. HANTS. All the records included are from Southampton Docks where wool waste was deposited in a reclamation area, and were made by J. E. Lousley. From the field at Portchester found by Hall in 1939 (Hall, 1940), and isolated records of species likely to be wool aliens from fields and tips over a considerable area, it seems probable that waste from carpet factories is distributed round Southampton.
- V.c. 12, N. HANTS. Plants found at Froyle in 1947 and 1948 by C. Langridge, and in the parishes of Alton, Selborne and Blackmoor in 1959 and 1960 by Lady Anne Brewis, J. E. Lousley, Miss M. McCallum Webster, and others. Gilbert White in his *Naturalist's Journal* covering the years 1768 to 1793 records the use of woollen rags as a manure in a hop garden in this district (Johnson, 1931, p. 340), so the use of wool on these light soils has a long history.

- V.c. 13, W. SUSSEX. A few wool aliens were found by A. W. Westrup by a glove factory at Emsworth. This deserves further investigation.
- V.c. 15, E. KENT. Wool aliens were reported by R. A. Graham from Sandwich in 1958 and were subsequently found in that district and round Birchington by D. McClintock, who is keeping the records for the county. From isolated records from Faversham and elsewhere it seems that the use of shoddy in connection with the fruit-growing industry may be widespread.
- V.c. 16, W. KENT. Wool aliens were first detected near Hextable by F. Rose and E. C. Wallace in 1948 (Lousley, 1949 and 1950). In 1960 D. McClintock found them in greater quantity in several places in the vicinity of Borough Green. There have also been scattered records of species likely to be wool aliens from hopfields near Malling, and from the Thames marshes near Abbey Wood. The records for this vice-county are based on a list supplied by D. McClintock.
- V.c. 17, SURREY. A few wool aliens were found near Chilworth by J. C. Gardiner in 1959 and additions made in 1960. Isolated records of *Xanthium spinosum* and other species in this district in the past suggest that shoddy may be in regular use.
- V.c. 18, S. ESSEX. All the records included in the list are from a few square yards of a refuse tip near Barking in 1958 (Lousley, 1959) but there are numerous isolated records of species likely to be wool aliens from tips in this district.
- V.c. 20, HERTS. Records supplied by J. G. Dony from Wymondley and Stevenage. It will be recalled that J. E. Little distributed wool aliens found in the same district in 1928 (Little, 1929b, and 1932).
- V.c. 21, MIDDLESEX. *Juncus pallidus* and other rushes have persisted in a gravel pit at East Bedfont. They are believed to have been introduced with "shoddy" used on nearby arable land (Lousley, 1947; Kent & Lousley, 1956).
- V.c. 24, BUCKS. J. G. Dony has found a few species in this county.
- V.c. 25, E. SUFFOLK. All records included are from a tannery near Stowmarket (Barnes, 1959).
- V.c. 29, CAMBRIDGE. A few records supplied by J. G. Dony are included.
- V.c. 30, BEDFORD. Based on a list supplied by J. G. Dony incorporating observations since 1946 to which many botanists have contributed (Dony, 1948, 1953, 1953b, 1955). To indicate rarity, dates are given in cases where a species has been found only once or twice.
- V.c. 31, HUNTS. Based on a list supplied by J. G. Dony of species found on railway sidings between St. Neots and Huntingdon.
- V.c. 33, E. GLOUCESTER. Records supplied by C. W. Bannister from arable fields at Ashchurch and Kinsham.

- V.c. 36, **HEREFORD**. A few records are included of plants found by Mrs. L. E. Whitehead at Hereford station, but reports of species which are usually wool aliens from the sewage farm and elsewhere suggest that others are likely to be found in the district.
- V.c. 37, **WORCESTER**. The records included are those in a list supplied by Miss C. M. Goodman who has been compiling them since 1952. Many botanists have contributed but special mention must be made of C. W. Bannister, who has given most valuable assistance, and Miss M. McCallum Webster. To indicate rarity, dates are included where a species has been found only once or twice. Most of the records are from arable fields round Evesham and Pershore but wool aliens are widely scattered in the county and occur, for example, also at Newnham Bridge and Kidderminster.
- V.c. 59, **S. LANCASTER**. All records are from the east side of the county round Rochdale and Mossley, where wool as well as cotton is used in the manufacture of textiles. They are all from localities discovered by the Rev. C. E. Shaw and most of them are based on specimens collected, or notes made, by the writer in his company.
- V.c. 62, **NORTH-EAST YORK**. All records are from arable fields round Thirsk and Topcliffe found by Miss C. M. Rob, and based on specimens collected by her, the writer, J. G. Dony or Miss M. McCallum Webster.
- V.c. 63, **SOUTH-WEST YORK**. Wool aliens have been found on waste ground, railway sidings and sewage works over a wide area including Bradford, Halifax, Kirkheaton, Morley, Batley and Shipley. Those who have contributed include J. G. Dony, D. McClintock, Mrs. F. Houseman, Miss M. McCallum Webster, L. Magee, M. M. Sayer, Mrs. R. Draper and J. E. Lousley.
- V.c. 64, **MID-WEST YORK**. The records are mainly those from waste ground and near a mill at Baildon, and are based on a list prepared by Mrs. F. Houseman, who discovered these localities.
- V.c. 65, **NORTH-WEST YORK**. All records are from a few fields in the Kirklington district discovered by Miss C. M. Rob in 1958 and also visited by Miss M. McCallum Webster.
- [V.c. 68, **CHEVIOTLAND**. *Acaena anserinifolia* and *Solanum triflorum* established on Holy Island were probably introduced with wool (Lousley, 1956).]
- V.c. 79, **SELKIRK**, and v.c. 80, **ROXBURGH**. The vicinity of Gala-shiels, which was investigated so profitably by Hayward and Druce early in the century, still produces wool aliens on shingle, refuse tips, and at the sewage farm. The records included have been contributed by J. E. Lousley, Miss E. P. Beattie, and Miss M. McCallum Webster.

Care has been taken to restrict the list to records where there was no reasonable doubt about the introduction of the plants with wool and this has necessitated the exclusion of records without supporting evidence. In most cases no difficulty has arisen but where there has been doubt, and especially with species which occur commonly as natives, the decision has been based on the following considerations:—

- (a) The frequent occurrence of the species in association with undoubted wool aliens.
- (b) Observation of plants growing on heaps of shoddy or the presence of seeds in shoddy—usually evidenced by growing plants from this in sterile soil under cultural conditions.
- (c) The occurrence of the species in Australia or South Africa (from where most of our wool is imported). This has been given additional weight in the case of plants known to be common on sheep-runs.
- (d) The inclusion of the species as an accepted wool alien in lists compiled in other European countries.
- (e) Observation of differences between the form found and native forms of the species. In some cases these differences are slight and not easy to describe: in others it is likely that further search will reveal that the native and foreign plants have been separated as forms, varieties, or even species.

In the case of some common British species their frequent introduction with wool is greatly under-recorded since most observers have failed to note them and the evidence was not available until recently. Examples of this include *Spergularia rubra*, *Dactylis glomerata*, *Holcus lanatus* and *Phleum pratense*. There are, no doubt, other species of this kind still to be added.

The identification of wool aliens imposes many difficult problems, and while every care has been taken, it must be emphasized that this list is intended as a basis for further research. Herbarium material is therefore cited to assist workers interested in any particular group, though these citations are by no means complete. In both Australia and Africa, taxonomic research is advancing extremely rapidly at the present time and frequent revision of our material will be required as new accounts are published. Similarly, the nomenclature will require revision.

For the identification of Bedfordshire specimens J. G. Dony has been mainly responsible, and many of those from Worcestershire, Yorkshire, Kent and Hampshire have been named by J. E. Lousley. We are grateful to Dr. C. E. Hubbard and Miss M. McCallum Webster for their great assistance in naming the grasses, to Mr. J. P. M. Brenan and Dr. P. Aellen for naming many of the *Amaranthaceae* and *Chenopodiaceae*, and to many members of the staffs of the Royal Botanic Gardens, Kew, and the British Museum (Natural History) for help with other groups. The staff of the Royal Botanic Garden, Edinburgh, have assisted with the identification of Tweedside aliens.

In addition to the botanists already mentioned, thanks are due to a very large number of helpers who have contributed records or specimens but are too numerous to mention individually. But for the generosity of J. G. Dony and Miss C. M. Goodman in placing their lists at my disposal this account would not have been possible. Special thanks must also be recorded to Miss M. McCallum Webster for her great help. I am also indebted to D. H. Kent for secretarial assistance and advice, and to Dr. F. H. Perring for preparing the map from my data.

The following abbreviations have been used to indicate the location of herbarium material:—

B	The private collection of Miss E. P. Beattie, Edinburgh.
GD	The private collection of Miss C. M. Goodman, Birmingham.
EXR	The herbarium of the Department of Botany of the University of Exeter.
K	The herbarium of the Royal Botanic Gardens, Kew.
BM	The herbarium of the Department of Botany, British Museum (Natural History).
L	The private collection of J. E. Lousley, Streatham, London.
LIN	The herbarium of the Public Museum and Art Gallery, Luton.
R	The private collection of Miss C. M. Rob, Thirsk.
W	The private collection of Miss M. McCallum Webster, Kew.

Exsiccatae from the *Wool Adventive Flora of Britain* distributed by J. E. Lousley, of which 1,659 numbers had been issued by the end of 1960, have been sent to the British Museum (Natural History), Royal Botanic Gardens, Kew, Royal Botanic Garden, Edinburgh, the National Museum of Wales, and several herbaria overseas.

It has been decided not to include countries of origin in the list, since merely to add the countries in which the species are believed native would be extremely misleading, while to give all the countries in which they are known to occur would have doubled the length of the paper. A considerable proportion of the plants listed, and especially those native in Mediterranean countries, have been found in abundance in sheep raising districts far from their native homes. As a broad generalization, approximately 70% have come to us from Australasia, 20% from Africa, and say 10% from the rest of the world, but nearly all the common wool aliens have been transferred between continents first.

The list includes 529 species, of which 187 are grasses. In addition, a very large number of varieties have been named, and if these had been treated separately the list would have been much

longer. In their *Adventive Flora of Tweedside*, Hayward and Druce claimed 359 species, of which 82 were grasses, but some of their names are not accepted to-day.

The families are in the sequence of the *List of British Vascular Plants*, 1958, edited by J. E. Dandy, and genera and species arranged alphabetically.

PAPAVERACEAE

ARGEMONE MEXICANA L. (usually as var. *ochroleuca* (Sweet) Lindl.)—12 (L); 30 (LTN); 37 (L); 59 (L); 62 (w); 63 (L); 64.

GLAUCIUM CORNICULATUM Curt.—30, 1959 (LTN).

[PAPAVER HYBRIDUM L. has been grown from shoddy by Webster.]

CRUCIFERAE

BRASSICA GRIQUANA N. E. Br.—30, 1951 (LTN, L).

B. JUNCEA (L.) Czern. & Coss.—12 (K); 30 (LTN); 37 (L).

B. TOURNEFORTII Gouan.—3 (EXR); 12 (L); 15 (L); 30 (LTN); 37 (GD, L); 59; 62 (L); 63; 64; 65.

CAPSELLA GRACILIS Grenier (*C. bursa-pastoris* × *rubella*)—3 (K, EXR, L).

DIPLOTAXIS ERUCOIDES (L.) DC.—37, 1958 (L).

HIRSCHELDIA INCANA (L.) Lagr.-Foss.—3 (EXR); 15; 16; 30 (LTN); 37 (GD); 63 (L); 64; 80 (w).

LEPIDIUM ALETES Macbr.—37, 1958 (L); 63 (L); 65 (L).

L. BONARIENSE L.—80 (K, w).

L. DENSIFLORUM Schrad.—30 (LTN).

L. DESERTORUM Eckl. & Zeyh.—80 (K).

L. DIVARICATUM Soland.—30 (L); 37, 1959 (L); 63 (L); 65 (L).

subsp. ECKLONI (Schrad.) Thell.—63 (*Herb. F. Houseman*).

L. FASCICULATUM Thell.—63 (w).

L. HYSSOPIFOLIUM Desv.—3 (EXR); 12 (K, L); 15; 16; 30 (LTN); 37 (GD), 59; 62; 63; 64; 80 (w). The differences between this species and *L. divaricatum* are critical and the records require revision.

L. PSEUDO-DIDYMUM Thell.—80 (K, w).

RAPISTRUM RUGOSUM (L.) All.—5; 17; 30, 1955 (LTN); 37, 1954 (GD); 59; 62.

R. ORIENTALE (L.) Crantz—12 (K); 37, 1955.

SISYMBRIUM ALTISSIMUM L.—63 (L); 64; 80 (w).

S. ERYSIMOIDES Desf.—3 (EXR); 12 (L); 16 (L); 20; 30 (LTN); 37 (GD), 59; 65 (L).

S. IRIO L.—3 (L); 12 (L); 15; 30 (LTN); 31; 37 (GD, L); 59 (L); 63; 64; 65; 80 (K, w).

S. THELLUNGII O. E. Schultz—37, 1956.

VELLA ANNUA L. (*Carrichtera annua* (L.) Aschers. & Schw.)—12 (L); 30, 1951 (LTN, L); 64 (w).

FRANKENIACEAE

FRANKENIA PULVERULENTA L.—63, 1958 (L).

CARYOPHYLLACEAE

KOHLRAUSCHIA PROLIFERA (L.) Kunth—63 (L).

POLYCARPON TETRAPHYLLUM (L.) L.—63; 80 (w).

SILENE GALLICA L. (including *S. ANGLICA* L.)—3 (κ); 5; 37, 1955 (L); 62 (κ); 63; 64.

S. NOCTURNA var. *BRACHYPETALA* Benth.—12 (L); 30, 1959 (LTN).

SPERGULA ARVENSIS L.—12 (L). Probably not uncommon but overlooked.

SPERGULARIA DIANDRA (Guss.) Heldr. & Sart.—37, 1959 (L).

S. RUBRA (L.) J. & C. Presl. (A form differing from native plants in the colour and shape of the stipules)—12 (κ, L); 64; 80 (w).

ILLECEBRACEAE

HERNIARIA HIRSUTA L. (including subsp. *CINEREA* (DC.) Loret & Barr.)—12 (w); 15 (L); 30, 1957 (κ, LTN); 37, 1957 (L); 63 (L).

PARONYCHIA BRASILIANA DC.—12 (w); 63 (κL).

PORTULACACEAE

PORTULACA OLERACEA L.—12 (L); 37 (L); 63 (L); 64.

AIZOACEAE

CARPOBROTUS sp.—63 (L).

CRYOPHYTON CRYSTALLINUM (L.) N.E.Br.—30, 1956 (LTN); 37, 1959; 63 (L).

DROSANTHEMUM FLORIBUNDUM (Haw.) Schwantes—12 (L).

AMARANTHACEAE

ACHYRANTHES ASPERA var. ARGENTEA (Lam.) C. B. Clarke—5.

ALTERNANTHERA NODIFLORA R. Br.—12 (L).

AMARANTHUS ALBUS L.—12 (L); 37, 1957 (GD); 59; 79 (B); 80 (κ).

A. BLITOIDES S. Wats.—5; 11 (L); 37, 1959 (L); 63 (L). (See Sandwith, 1948).

A. CAPENSIS Thell.—37, 1958 (L).

A. CLEMENTII Domin.—37, 1959 (GD).

A. CRISPUS (Lesp. & Thév.) Terrace.—37, 1958 (L).

A. DEFLEXUS L.—3 (κ, L); 37, 1955 (GD, L); 63 (L).

A. DINTERI var. *UNCINATUS* Thell.—12 (κ, L); 30 (LTN); 37 (GD, κ); 62 (κ); 63 (L); 64.

A. GRAECIZANS L. (*A. angustifolius* Lam.)—5; 37, 1958 (L). subsp. *SILVESTRIS* (Vill.) Brenan.—37, 1960 (κ).

- A. HYBRIDUS L. (*A. chlorostachys* Willd.)—3 (EXR); 5; 11; 12 (L); 15; 16; 20; 25; 30 (LTN); 37 (GD); 59; 62; 63; 64; 65; 79 (B).
 subsp. INCURVATUS (Timeroy ex Gren. & Godr.) Brenan (subsp. *cruentus* (L.) Thell.)—12 (K); 37 (L).
- A. MACROCARPUS Benth.—12 (L); 37, 1955 (GD, L), 1959 (L).
- A. MITCHELLII Benth.—12 (L).
- A. PALMERI S. Wats.—12 (K).
- A. QUITENSIS Humb. Bonpl. & Kunth—15 (L); 16; 37 (GD, L).
- A. RETROFLEXUS L. (including var. *DELILEI* (Richter & Loret) Thell.)—3 (EXR); 5; 11; 12 (K); 15; 16; 25; 30 (LTN); 31; 37 (L); 62; 63 (K); 64.
- A. SPINOSUS L.—5; 30, 1953 (L); 63 (L).
- A. THUNBERGII Moq. (often with spotted leaves—f. *MACULATUS* Thell.)—11 (L); 12 (L); 15; 16; 25; 30 (LTN); 37 (GD); 59; 62; 63 (L); 64; 79 (B); 80 (L).
- A. VIRIDIS L.—25; 30 (L); 37 (K, L).
- A. STANDLEYANUS Parodi ex Covas (*A. vulgatissimus* auct., non Speg.)—37, 1955 (GD).

CHENOPODIACEAE

- ATRIFLEX—Much of the material of this genus is immature and in need of revision.
- A. EARDLEYAE Aellen.—30, 1949 (LTN).
- A. MUELLERI Benth. agg.—30, 1950 (LTN); 37 (L); 63 (L).
- A. NITENS Schrank. (not typical)—37 (L).
- A. SEMIBACCATA R.Br.—30, 1948 (LTN).
- A. SUBERECTA Verdoorn—30, 1955 (LTN).
- BASSIA BIRCHII (F. v. Muell.) F. v. Muell.—12 (K, L).
- B. ECHINOPSIDA F. v. Muell.—12 (K).
- B. QUINQUECUSPIS F. v. Muell.—12 (L); 63 (K).
- CHENOPODIUM ALBUM L. Many forms and varieties of this species occur and are to be found in all places where wool aliens are plentiful.
- C. AMBROSIOIDES L. (including *C. ANTHELMINTICUM* auct.)—5; 16; 37, 1959 (L); 63 (L); 65 (L).
- C. ARISTATUM L.—37 (K).
- C. AURICOMIFORME Muir & Thell.—30 (LTN, L); 37 (*Herb. J. P. M. Brenan*).
- C. BLACKIANUM Aellen (*Dysphania littoralis* R.Br.)—12 (L).
- C. × BONTEI Aellen—12 (L); 37, 1958 (L).
- C. BOTRYS L.—12 (L).
- C. CARINATUM R.Br. (including var. *MELANOCARPUM* (J. M. Black) Aellen)—12 (K, L); 30 (LTN); 37 (K, L); 62; 63 (L); 64.
- C. CRISTATUM (F. v. Muell.) F. v. Muell.—12 (K, L); 15 (L); 16 (L); 30 (K, LTN); 37 (GD); 63 (L); 64.
- C. GIGANTEUM D. Don—30 (LTN); 37 (GD); 63 (L); 64.
- C. GLAUCUM L.—11 (L); 15; 16; 63 (L).

- C. HIRCINUM Schrad. (including var. DEMINUTUM Ludw.)—18 (L); 37 (K, GD, L); 63 (L).
- C. HYBRIDUM L.—30 (LTN).
- C. MYRIOCEPHALUM (Benth.) Aellen (*Dysphania myriocephala* Benth.)—12 (K).
- C. MULTIFIDUM L. (*Roubieva multifida* (L.) Moq.)—12 (K); 63 (L).
- C. MURALE L.—3 (EXR); 5; 16; 30 (LTN); 37 (L); 59; 62; 64; 80 (W).
- C. NITRARIACEUM F. v. Muell.—12 (K); 37 (K); 63 (L); 64.
- C. PHILLIPSIANUM Aellen?—63 (L).
- C. PRATERICOLA var. LEPTOPHYLLOIDES Aellen—37, 1955 (L).
- C. POLYGONOIDES (Murr) Aellen?—63 (K).
- C. PROBSTII Aellen—5; 11; 12 (L); 15; 16 (L); 20; 30 (LTN); 31; 37 (GD); 59; 62; 63 (L); 64; 65; 80 (W).
- C. PROCERUM Hochst. ex Moq.—5 (K).
- C. PSEUDAURICOMUM Murr—63 (L).
- C. PUMILLO R.Br.—12 (K, L); 16 (L); 30 (K, LTN); 37 (GD); 59; 63 (L); 64. (See Brenan, 1948.)
- C. SCHRADERANUM Schult.—12 (K, L); 30, 1952 (LTN); 37, 1960 (L).
- C. STRICTUM Roth—30, 1958 (LTN); 37, 1955 (GD).
- C. URBICUM L.—30, 1958 (LTN); 37, 1955 (GD).
- KOCHIA SCOPARIA var. VILLOSA Moq.—12 (K).
- K. DENSIFLORA Turcz.—37, 1953 (L); 63 (L). (See Aellen, 1955). Perhaps synonymous with *K. scoparia* var. *villosa*.
- MONOLEPIS NUTTALLIANA (Schult.) Greene—30, 1950 (LTN).
- RHAGODIA HASTATA R.Br.—15 (L); 16.
- SALSOLA PESTIFERA A. Nels.—11; 30 (LTN); 31; 37 (GD); 63 (L); 64.
- SCLEROBLITUM ATRICLINUM (F. v. Muell.) Ulbr.—30, 1952 (K).

PHYTOLACCACEAE

- [PHYTOLACCA ACINOSA Roxb.?—63 (L). Not certainly a wool alien.]

TILIACEAE

- TRIUMFETTA ANNUA L.—30 (*Herb. N. Y. Sandwith*).

MALVACEAE

- ANODA CRISTATA var. BRACHYANTHA (Reichb.) Hochr.—37, 1958 (L).
- ABUTILON THEOPHRASTI Medic.—30 (LTN); 37 (GD); 63 (W).
- HIBISCUS TRIONUM L.—3 (W); 5; 30 (LTN); 37, 1958, 1960 (L).
- LAVATERA CRETICA L.—37, 1958 (L).
- L. PLEBEIA Sims—30, 1950 (LTN), EFLE (L); 37, 1959 (L).
- MALVA NICAENSIS All.—5; 30 (LTN); 63.

- M. PARVIFLORA* L.—3 (EXR); 12 (K, L); 15; 30 (LTN); 37 (GD); 62; 63 (L).
M. FUSILLA Sm.—3 (W); 15; 16; 18 (L); 30 (LTN); 37 (GD); 62 (K); 63 (L); 65.
M. VERTICILLATA L.—5; 37 (L, K).
MALVASTRUM COROMANDELIANUM (L.) Garcke—30, 1959 (K, LTN).
M. PERUVIANUM (L.) A. Gray—30, 1949 (LTN).
M. SPICATUM A. Gray—12; 30, 1959 (LTN).
SIDA CORDIFOLIA L.—30, 1959 (LTN).
S. GLOMERATA Cav.—30, 1952 (LTN).

GERANIACEAE

- ERODIUM BOTRYS* (Cav.) Bertol.—3 (EXR); 12 (L); 15; 16 (L); 20; 25; 30 (LTN); 31; 37 (GD); 59; 62; 63 (L); 64; 65; 79 (B); 80.
E. CHIUM Willd.—12; 30, 1958 (L).
E. CICONIUM (L.) Willd.—30 (LTN, L).
E. CUCUTARIUM (L.) L'Hérit. (many forms of this differ from those of the native British species)—3 (K); 11; 12 (L); 15; 16 (L); 25; 30 (LTN); 37 (GD); 59; 62; 63; 64; 79 (B); 80 (W).
E. CRINITUM Carolin (see Melville, 1959)—12 (K, L); 15; 16 (K, L); 29; 30 (LTN); 31; 37 (K, GD, L); 62, 63 (L); 64.
E. CYGNORUM Nees subsp. *CYGNORUM*—3 (W); 12 (K, L); 30 (LTN); 37 (K, GD, L); 59; 62; 63; 65.—subsp. *GLANDULOSUM* Carolin.—37, 1958 (L).
E. MALACHOIDES (L.) Willd.—3 (K, EXR); 30 (LTN); 37, 1955 (GD), 1956 (L); 63.
E. MOSCHATUM (L.) L'Hérit.—3 (EXR); 12 (L); 15; 16 (L); 20; 25; 30 (LTN); 31; 37 (GD); 59; 62; 63; 64; 79 (B); 80 (W).
E. OBTUSIPPLICATUM (Maire, Weiller & Wilczek) J. T. Howell 3 (EXR); 16; 30 (LTN); 37 (GD); 59 (L); 62; 63; 65.
E. STEPHANIANUM Willd.—37, 1958 (L).
GERANIUM PUSILLUM L.—12; 79 (B).
MONSONIA BIFLORA DC.—30, 1951 (L).
M. BREVIROSTRATA Knuth—30 (LTN, L), 31; 37, 1958 (K, L); 62; 63 (W); 65 (B).
PELARGONIUM INODORUM Willd.—12 (L).

LEGUMINOSAE

- ASTRAGALUS STELLA* DC.—37, 1958 (L).
HEDYSARUM PALLENS (Moris) Halacs.—37, 1955 (L).
H. SPINOSISSIMUM L.—30, 1959 (LTN, L); 37, 1958 (L).
LATHYRUS SETIFOLIUS L.—63 (L).
LUPINUS ANGUSTIFOLIUS L.—12 (K); 59.
MEDICAGO—Most species are very variable and many named varieties have been reported.

- M. ARABICA* (L.) Huds.—3 (EXR); 5; 12 (L); 15; 16; 20; 25; 30 (LTN); 37 (GD); 59; 62; 63; 64; 79 (B); 80.
- M. ASCHERSONIANA* Urb.—12 (L); 16; 30 (LTN); 37 (GD); 59 (L); 63 (L).
- M. CILIARIS* (L.) Krock.—30, 1950 (L), 1955 (LTN), 1958 (K, L).
- M. LACINIATA* Mill.—3 (EXR); 12 (L); 15; 16 (L); 20; 30 (LTN); 31; 37 (GD); 59; 62; 63; 64; 65; 79 (B); 80 (W).
- M. MINIMA* (L.) Bartal.—3 (EXR); 12 (L); 15; 16 (L); 17; 18 (L); 20; 24; 25; 29; 30 (LTN); 31; 33 (L); 37 (GD); 59; 62; 63 (L); 65; 79 (B); 80 (W).
- M. POLYMORPHA* L. (*M. hispida* Gaertn.; *M. denticulata* Willd.)—3 (EXR); 5; 12 (L); 15; 16 (L); 17; 20; 25; 30 (LTN); 33 (L); 37 (GD); 59; 62 (L); 63 (L); 64; 65; 79 (B); 80 (W).
- M. PRAECOX* DC.—3 (K, L); 12 (L); 15; 16 (L); 17; 30 (LTN); 31; 33 (L); 37 (GD); 62; 63 (L); 79 (B); 80 (W).
- M. TRIBULOIDES* Desr.—12 (K); 30 (LTN); 37 (GD, L); 62 (L); 63 (L).
- MELILOTUS ALBA* Medic.—3 (EXR); 63 (L).
- M. INDICA* (L.) All.—3 (EXR); 12 (L); 15; 16; 17; 30 (LTN); 37 (GD); 59; 63; 65.
- M. SULCATA* Desf.—30, 1951 (LTN).
- PSORALEA* sp.—12 (L).
- SESBANIA ACULEATA* (Schreb.) Poir.—30, 1959 (LTN).
- S. BENTHAMIANA* Domin—63 (K, L).
- SCORPIURUS SUBVILLOSUS* L.—30 (LTN); 37 (L).
- S. SULCATUS* L.—30 (LTN); 37, 1958 (L).
- TRIFOLIUM AGRARIUM* L.—30 (L).
- T. ANGUSTIFOLIUM* L.—3 (L); 12 (L); 15; 16; 20; 30 (LTN); 37 (GD); 59; 62; 63 (L); 64; 65 (L).
- T. ARVENSE* L.—15; 65—much more common than these records indicate.
- T. CAMPESTRE* Schreb.—is commonly associated with wool aliens, and probably introduced with them.
- T. CERNUUM* Brot.—16 (L); 37 (L); 65 (K, L).
- T. ECHINATUM* M. Bieb.—30, 1958 (LTN).
- T. FRAGIFERUM* L.—15.
- T. GLOMERATUM* L.—3 (W); 12 (K, L); 16 (L); 30 (LTN); 33 (L); 37 (GD, L); 63 (L); 65.
- T. LAPPACEUM* L.—37, 1958 (L).
- T. PATENS* Schreb.—30, 1958 (LTN, L).
- T. PURPUREUM* Lois.—30, 1958 (LTN, L).
- T. RESUPINATUM* L.—16; 25; 30 (LTN); 37 (L, GD); 63.
- T. SCABRUM* L.—63 (L).
- T. STRIATUM* L.—3; 12; 15; 30 (L); 37 (L); 62; 63 (L); 65.

- T. SUBTERRANEUM* L.—3 (w); 12 (L); 15; 16; 20; 30 (LTN); 31; 37 (GD); 59; 62; 63; 64; 80 (w). Often as var. *OXALOIDES* (Bunge) Rouy (see Lousley, 1949).
- T. TOMENTOSUM* L.—3 (w); 12 (κ, L); 15; 16 (L); 17 (L); 30 (LTN); 31; 37 (GD, L); 63 (L); 64; 65.
- TRIGONELLA AURANTIACA* Boiss.—37, 1955 (GD, L).
- T. COERULEA* (L.) Ser.—63 (L).
- VICIA ATROPURPUREA* Desf.—30, 1951 (L); 37, 1956 (GD); 63 (L).
- V. DASYCARPA* Ten.—30 (LTN).
- ZORNIA* sp.—30 (w).

ROSACEAE

- ACAENA ANSERINIFOLIA* (J. R. & G. Forst.) Druce—30 (LTN), 37 (GD, L); 80 (κ). Established in 3, 16, and 68 from wool-introduced plants (see Lousley, 1953, 1956).
- A. HIERONYMA* O. Kuntze—37, 1956.
- A. INTEGERRIMA* Gill.—30, 1954 (LTN, L).

CRASSULACEAE

- CRASSULA MACRANTHA* (Hook. f.) Diels & Pritzel—12 (κ); 37 (κ).
- C. SIEBERIANA* (Schultes) Druce—12 (κ, L).

LYTHRACEAE

- LYTHRUM HYSSOPIFOLIA* L.—12 (κ); 30 (LTN); 59 (L); 63; 79 (B).
- L. JUNCEUM* Banks & Sol.—16; 63 (L).

ONAGRACEAE

- OENOTHERA DRUMMONDII* Hook. forma—63 (L).
- O. LACINIATA* Hill.—30, 1959 (LTN, L); 63 (κ, L).
- O. STRICTA* Ledeb.—30 (LTN, L); 37 (L).

HALORAGACEAE

- MYRIOPHYLLUM VERRUCOSUM* Lindl.—30, 1946 (LTN, L) (see Brenan & Chapple, 1949).

UMBELLIFERAE

- AMMI MAJUS* L.—3 (EXR); 12 (L); 15; 16; 30 (LTN); 37 (GD); 62; 63 (L); 64; 65.
- A. VISNAGA* Lam.—30 (LTN); 37 (GD, L).
- ANETHUM GRAVEOLENS* L.—37, 1958, 1959 (GD, L).
- APIUM LEPTOPHYLLUM* (Pers.) F. v. Muell.—30 (LTN); 37 (GD).
- BUPLEURUM SEMICOMPOSITUM* L.—63 (L).
- CAUCALIS MELANANTHA* (Hochst.) Hiern—65 (L).
- DAUCUS CRINITUS* Desf.—30, 1959 (LTN).
- D. GLOCHIDIATUS* (Labill.) Fisch., Mey. & Avé-Lall.—12 (κ, L); 30 (LTN); 37 (GD); 63; 65 (L).

- RIDOLFIA SEGETUM Moris.—30, 1958 (LTN).
 TORILIS AFRICANA Spreng.—65 (L).
 T. LEPTOPHYLLA (L.) Reichb. (*Caucalis leptophylla* L.)—12;
 30, 1956 (LTN); 37, 1957 (L).

CUCURBITACEAE

- [CITRULLUS VULGARIS L.—63 (L) and CUCUMIS MELO L.—63 (L) were growing with wool aliens on a sewage farm, and grow on sheep-runs in the southern hemisphere, but other means of introduction are possible.]
 CUCUMIS MYRIOCARPUS Naud.—12 (K, L); 30, 1957 (LTN), 37, 1958 (L); 59; 63 (L); 64; 80 (B).
 ECBALLIUM ELATERIUM (L.) A. Rich.—30, 1955 (*Herb. H. Bowen*).

POLYGONACEAE

- FAGOPYRUM TATARICUM Gaertn.—30, 1959 (LTN).
 POLYGONUM PATULUM Bieb.—30, 1951 (LTN, L).
 P. PLEBEJUM R. Br.—30, 1954 (LTN, L); 63 (W).
 P. SENEGALENSE Meisn.—37, 1955 (GD, L); 63 (L). (See Lousley, 1955).
 RUMEX BROWNII Campd.—3 (L); 12 (K, L); 15; 30 (LTN); 37 (GD); 59; 62; 63 (L); 64; 65 (L); 80 (K).
 R. CRYSTALLINUS Lange—63 (L).
 R. DENTATUS subsp. HALACSYI (Rech.) Rech. f.—30, 1954 (LTN).
 R. PULCHER subsp. DIVARICATUS (L.) Murbeck—30, 1950 (LTN, L), 37, 1958 (L); 63 (L); 65.
 R. TENAX Rech. f.—12 (K, L).

URTICACEAE

- GIRARDINIA CONDENSATA (Hochst. ex Steud.) Wedd.—5.
 URTICA INCISA Poir.—12; 62 (K).

BORAGINACEAE

- AMSINCKIA—British material is in course of revision.
 A. INTERMEDIA Fisch. & Mey.—12 (L); 37, 1956 (L), 1959 (K); 63 (L).
 A. MENZIESII (Lehm.) Nelson & Macbr.—12 (K); 80 (K).
 ANCHUSA RIPARIA DC.—63 (L).
 ASPERUGO PROCUMBENS L.—12 (L).
 CYNOGLOSSUM AUSTRALE R. Br.—63 (L).
 ECHIAM LYCOPSIS L. (*E. plantagineum* L.)—12 (L); 15 (L); 30 (LTN); 37 (GD, L); 62 (W); 64; 80 (B).
 HELIOTROPUM EUROPAEUM L.—18 (L); 30, 1956 (LTN); 37, 1958 (L); 63 (L).
 LAPPULA ECHINATA Gillib.—30, 1956 (LTN); 37, 1957, 1958 (L); 63 (L); 79 (B); 80 (K).

CONVOLVULACEAE

- CONVOLVULUS ERUBESCENS Sims—37, 1958 (L).
 CUSCUTA CAMPESTRIS Yuncker—30, 1955 (L); 63, 1959, 1960 (L).

SOLANACEAE

- DATURA FEROX L.—3 (κ, EXR); 12 (L); 15; 18 (L); 30 (LTN, GD); 37 (GD, L); 59; 63 (L); 64.
 D. METELOIDES DC.—37, 1957 (L).
 D. STRAMONIUM L. (including D. TATULA L.)—3 (EXR); 5; 11; 12 (L); 15; 16; 30 (LTN); 37 (GD); 59; 62; 63; 64; 79 (B).
- NICANDRA PHYSALODES (L.) Gaertn.—5; 12 (L); 15; 30 (LTN); 37 (GD); 62; 63 (L); 64.
- NICOTIANA. All material of this genus is in need of revision in view of recent work in Australia.
 N. GOODSPEEDII Wheeler?—64 (L).
 N. INGULBA J. M. Black?—12 (L).
 N. OCCIDENTALIS Wheeler—30 (LTN, L).
 N. RUSTICA L.—65 (L).
 N. SUAVEOLENS Lehm.—12 (κ); 30, 1950 (LTN, L).
 N. VELUTINA Wheeler—12 (L); 63 (L).
- PHYSALIS ACUTIFOLIA (Miers) Sandwith (*P. wrightii* A. Gr.)—30 (κ). (See Sandwith, 1960).
 P. IXOCARPA Brot. ex Hornem.—3 (EXR); 5; 11; 12 (L); 15; 16; 30 (LTN); 37 (GD); 59; 62; 63 (L); 64; 65; 79 (B).
 P. PERUVIANA L.—11 (L); 63 (L, W).
- SOLANUM AMERICANUM Mill.?—37 (L); 63 (L).
 S. CURTIPES Bitter—37, 1959 (L).
 S. ELEAGNIFOLIUM Cav.—12 (L); 18 (L).
 S. NIGRUM L.—3, 12; 30; 37; 59; 63; 64; 65. Many of the plants introduced with wool differ considerably from the usual British forms. The group to which *S. nigrum* belongs is much in need of revision on a world basis.
 S. NITIDIBACCATUM Bitter—12 (κ); 37; 63. Specimens have been so named at Kew but most botanists in this country have been unable to separate this species from *S. sarrachoides* Sendtn.—see below.
 S. NODIFLORUM Jacq.?—3 (L); 37 (L).
 S. ROSTRATUM Dunal—15; 37, 1958 (L); 63 (L); 64.
 S. SARRACHOIDES Sendtn.—12 (L); 18 (L); 30 (LTN); 37 (GD); 62.
 S. SISYMBRIFOLIUM Lam.—12 (L); 30, 1954 (LTN, L).
 S. TORVUM Swartz—11 (L).
 S. TRIFLORUM Nutt.—18 (L); 30, 1955 (LTN); 37, 1956 (GD, L). Established in 68.

SCROPHULARIACEAE

- CALCEOLARIA MEXICANA Benth.—80 (B).
 C. TRIPARTITA Ruiz & Pav.—63 (K).
 PARENTUCHELLA VISCOSA (L.) Caruel—80 (B).
 VERBASCUM VIRGATUM Stokes—30, 1954 (LTN); 37, 1958; 64;
 65.

MARTYNIACEAE

- IBICELLA LUTEA (Lindl.) Van Eselt—64 (L). The fruits of this species and of *Proboscidea jussieu* Keller are not uncommon in imported wool but the latter has yet to be found growing in this country.

VERBENACEAE

- VERBENA BONARIENSIS L.—12 (L); 30 (LTN); 37 (L); 59; 63 (L); 64.
 V. MENTHAEFOLIA Benth.—30 (K); 63 (K). (See Townsend, 1961).
 V. OFFICINALIS L.—64.
 V. SUPINA L.—3 (K); 63 (L).
 V. URTICAEFOLIA L.—63.

LABIATAE

- MARRUBIUM VULGARE L.—3 (EXR); 12 (L); 15; 16; 30 (LTN); 37 (GD); 59; 62; 63 (L); 64; 80 (K).
 SALVIA REFLEXA Hornem.—12 (L); 30 (LTN, GD); 37 (GD); 63 (L); 64. (See Sandwith, 1950.)

PLANTAGINACEAE

- PLANTAGO CORONOPUS L.—80 (w). Probably common but unrecorded.
 P. INDICA L.—37, 1955 (L).
 P. VARIA R.Br.—37, 1960 (L).

RUBIACEAE

- GALIUM SETACEUM Lam.—30, 1957 (LTN, L).
 G. SPURIUM L.—63.

COMPOSITAE

- ANACYCLUS CLAVATUS (Desf.) Pers.—37, 1957 (L).
 A. RADIATUS Lois.—37 (GD).
 ACANTHOSPERMUM AUSTRALE (Loefl.) Kuntze—30, 1954 (LTN, L).
 ARTEMISIA AFRA Jacq.—30, 1951 (LTN, L).
 A. ANNUA L.—59 (L).
 A. BIENNIS Willd.—3 (K, EXR); 5.
 A. DRACUNCULUS L.—30 (L).
 BIDENS BIPINNATA L.—5; 11 (L); 12 (L); 15 (L); 30 (LTN, L); 37 (L, GD); 62; 63 (L); 64; 65; 79 (L).
 B. FRONDOSA L.—15 (*Herb. R. A. Graham*); 30 (LTN, L); 37, 1955 (GD); 1957 (L).

- B. PILOSA L.—5; 11 (L); 12 (L); 15; 16; 25; 30 (LTN); 37 (GD); 59; 62; 63; 64; 65.
- B. VULGATA Greene—12 (L); 30, 1958 (L); 37, 1957 (L). (See Young, 1957.)
- BRACHYCOME CILIARIS (Labill.) Less. ?—63 (L).
- B. GRAMINEA (Labill.) F. v. Muell.—63 (L).
- CALOTIS CUNEIFOLIA R.Br.—12 (K, L); 15; 16 (L); 30 (K, LTN, L); 37 (GD, L); 63 (L); 64; 65 (L). (See Lousley, 1955b.)
- C. DENTEX R.Br.—30, 1950 (K, L).
- C. HISPIDULA F. v. Muell.—12 (K, L); 16; 30 (LTN, GD); 37 (K, GD, L); 63 (L); 65 (L).
- C. LAPPULACEA Benth.—3 (K, EXR); 15 (K, L); 30, 1952 (K, LTN), 1959 (L); 63 (L).
- C. SQUAMIGERA C. T. White (*C. hispidula* var. *sessiliceps* Thell.)—12 (K); 37 (L).
- CARDUUS ARGENTATUS L.—30, 1954 (LTN, L); 65.
- C. PYCNOCEPHALUS L.—12 (K); 15; 16; 30 (L); 37, 1955, 1960 (L); 63; 65 (L).
- C. TENUIFLORUS Curt.—12 (L); 16 (L); 30 (LTN); 37 (GD); 65; 80 (K).
- CARTHAMUS LANATUS L.—12 (L); 15; 16 (L); 25; 30 (LTN); 37 (GD); 59; 62 (L); 63 (L); 64; 65; 79 (B).
- var. CRETICUS (L.) Halacsy—37 (GD); also grown from shoddy (K).
- CENIA TURBINATA Pers. (including var. PUSILLA Schlecht.)—12 (K, L); 63 (L); 64.
- CENTAUREA CALOTRAPA L.—12 (W); 30 (LTN); 37 (GD); 59 (L); 63 (L); 64; 65; 80.
- C. DILUTA Ait. f.—5; 30, 1957 (LTN); 37, 1958 (L); 63 (L).
- C. MELITENSIS L.—3 (EXR); 12 (L); 30, 1946 (LTN); 37 (GD); 59 (L); 63; 65; 80 (W).
- C. SOLSTITIALIS L.—12 (L); 15; 16; 30 (LTN); 37 (GD); 64.
- C. REPENS L. (*Acroptilon repens* (L.) DC.)—36 (K, L). (See Lousley, 1960.)
- CHRYSANTHEMUM CORONARIUM L.—30, 1956 (LTN).
- CHRYSOCOMA TENUIFOLIA Berg.—12 (K); 15 (L); 30 (L); 63 (K, L).
- CICHORIUM PUMILUM Jacq. (including var. ENDIVIA (L.) Täckholm)—30, 1957 (LTN); 37, 1955 (L).
- [COREOPSIS TINCTORIA Nutt.—37, 1959 (K, L).]
- COSMOS BIPINNATUS Cav.—12 (L); 15 (L).
- COTULA AUSTRALIS (Spreng.) Hook. f.—3 (K, L), established since 1946; 15; 30, 1950 (LTN); 37, 1959 (L).
- C. CORNOPIFOLIA L.—63 (L); 79 (B).
- C. SQUALIDA Hook.—63, 1953 (L).
- C. ZEYHERI Fenzl—63 (K).
- CRYPTOSTEMMA CALENDULACEA (L.) R.Br.—3 (L); 12 (L); 18 (L); 30, 1954 (LTN, GD); 62; 63 (L); 64; 65; 80 (K).

- DICHOCEPHALA INTEGRIFOLIA (L.) O. Kuntze—12 (κ, w, L).
 ERIGERON BONARIENSIS L.—3 (EXR); 12 (L); 15; 30 (LTN);
 37 (L); 59; 62; 63 (L); 64; 65 (L); 80 (w).
 GALINSOGA CILIATA (Raf.) Blake—15.
 G. PARVIFLORA Cav. Occurs frequently in the company of
 wool aliens but records not kept.
 GNAPHALIUM JAPONICUM Thunb.—12 (κ, L).
 G. LUTEOALBUM L.—12 (κ); 63 (L); 64; 65 (L).
 G. UNDULATUM L.—12 (L).
 HEDYPSOIS RHAGADIOLOIDES var. CREPIFORMIS (Reichb.)
 Rouy—12 (κ).
 HELIANTHUS ANNUUS L.—11; 63.
 HELICHRYSUM BRACTEATUM (Vent.) Willd.—79 (B).
 HELIPTERUM CORYMBIFLORUM Schlect.—37, 1954 (GD).
 H. FLORIBUNDUM DC.—12 (L).
 HYPOCHOERIS GLABRA L.—12 (L); 30 (LTN); 37 (GD, L); 63
 (L); 65; 80 (κ).
 INULA GRAVEOLENS (L.) Desf.—12 (κ, L); 15; 30 (LTN); 37 (GD,
 L); 63 (L); 64; 65.
 LASIOSPERMUM PEDUNCULARE Lag.—30, 1951 (LTN, L, GD).
 MADIA SATIVA Molina—30, 1950 (LTN).
 [ONOPORDUM ACANTHIUM L.—37, 1958 (L).]
 PODOLEPIS LONGIPEDATA A. Cunn.—37 (κ); 63 (L). The
 Yorkshire specimen is an annual with a slender root
 and the identification must be treated as tentative.
 PULICARIA ARABICA (L.) Cass.—37, 1960 (L).
 SCHKUHRIA PINNATA (Lam.) Thell.—12 (L); 15 (L); 25; 30
 (LTN); 37 (GD); 63 (L); 65. (See Sandwith, 1942).
 SCOLYMUS MACULATUS L.—37, 1958 (L).
 SENECIO ARENARIUS Thunb.—30, 1951 (LTN).
 S. BIPINNATISECTIS Belcher—30, 1959 (LTN).
 S. GLOSSANTHUS (Sond.) Belcher—12 (L); 63 (L).
 S. INAEQUIDENS DC.—5; 12 (κ); 15; 30 (LTN, L); 37 (L);
 63 (L); 64; 79 (L); 80 (L). These plants belong to
 a complex, represented in Australia as well as South
 Africa, which presents extremely difficult taxonomic
 problems. I am confident that much of our material
 is identical with *S. inaequidens* DC. as understood
 in South Africa, and specimens sent to the National
 Herbarium, Pretoria, have been carefully compared
 there and confirmed (Lousley, 1953b and 1954).
 Similar material was previously identified as *S.*
laetus (Sol. ex Forster) A. Richard which is a New
 Zealand endemic (Ornduff, 1960) although the name
 has often been used incorrectly for a polymorphic
 plant widespread in Australia. No doubt the
 Australian "*S. laetus*" occurs as a wool alien in this
 country but this may include more than one species
 and the relationship to the numerous species
 described from the parallel complex in South Africa

is far from clear. While *S. inaequidens* appears to be the commonest representative of the group in Britain, and has a tendency to become established, other species also occur and still await determination.

- S. PTEROPHORUS* DC.—30 (L); 37 (L); 63 (L).
SEGESBECKIA ORIENTALIS L.—12 (K, L); 15 (L); 30, 1954 (LTN); 1956 (L); 37 (GD); 64.
SILYBUM MARIANUM (L.) Gaertn.—3; 12 (L); 15; 30 (LTN); 37, 1956; 62; 63; 64.
SOLIVA ANTHEMIFOLIA (Juss.) R. Br.—12 (K, L); 37 (K, GD, L); also grown from shoddy (W).
S. PTEROSPERMA Juss.—12 (K).
STUARTINA HAMATA W. R. Philipson—12 (K, L).
TAGETES MINUTA L.—3 (EXR); 5; 11 (L); 12 (L); 15 (L); 16 (L); 20; 25; 30 (LTN); 31; 37 (GD); 59; 62; 63 (L); 64.
UROSPERMUM PICROIDES (L.) F. W. Schmidt—37, 1958 (K, L).
VERBESINA ENCELIOIDES (Cav.) A. Gray—12 (K); 30, 1956 (LTN); 37 (GD); 63 (L); 64.
VITTADINIA TRILOBA (Gaudich.) DC. var. *TRILOBA*—12 (K, L); 30, 1958 (LTN).
XANTHIUM AMBROSIODES Hook. & Arn.—30 (LTN, L); 37 (GD, L); 63 (L).
X. CHINENSE Mill.—5.
X. SPINOSUM L.—3 (EXR); 5; 11; 12 (L); 13; 15 (L); 16 (L); 17; 18 (L); 25; 30 (LTN); 37 (GD); 59; 62; 63; 64; 79 (B); 80 (W).
X. STRUMARIUM L.—11; 25; 30 (LTN, L); 37, 1953 (GD).

LILIACEAE

- ASPHODELUS FISTULOSUS* L.—37, 1958 (GD, L).

JUNCACEAE

- JUNCUS BUFONIUS* L.—65 (L). This was a form which could be matched with Australian specimens. It is probably common as a wool alien but unrecorded on account of its occurrence also as a native in the same places.
J. PALLIDUS R. Br.—21 (L); 30 (LTN, L). (See Lousley, 1947, and Dony, 1953.) Extremely complex populations of *Juncus* have occurred in gravel pits in Bedfordshire and Middlesex and include plants likely to have arisen as hybrids between *J. pallidus* and native *J. effusus* L. and *J. inflexus* L. Some match closely foreign material named, for example, *J. vaginatus* R. Br., *J. radula* Buchenau, and *J. procerus* E. Mey. Plants of alien *Junci* also occur in v.-c. 63 but all these plants require further study before names can be applied with confidence.

CYPERACEAE

- CYPERUS ERAGROSTIS Lam. (*C. vegetus* Willd.)—63 (L); 64.
 C. VAGINATUS subsp. GYMNOCAULOS (Steud.) Kük.—63 (L).

GRAMINEAE

- AEGILOPS BIUNCIALIS Vis.—37, 1958 (K).
 [AGROPYRON ATTENUATUM (Humb., Bonpl. & Kunth) Roem. & Schult. Grown from Uruguay wool from Bradford (L).]
 A. SCABRUM (R. Br.) Beauv.—30, 1957 (LTN); 37, 1958 (L); 59 (L).
 AGROSTIS AEMULA R. Br.—37, 1955 (K).
 A. AVENACEA J. F. Gmel.—12 (K, L); 15; 16; 30 (LTN); 37 (K, GD.); 59; 62; 63 (K, L); 64; 65; 80 (K).
 A. HIEMALIS (Walt.) Britton, Sterns & Poggenb.
 A. LACHNANTHA Nees—12 (K); 30 (LTN); 37 (GD); 59 (L); 62; 63 (K, L); 64.
 A. SEMIVERTICILLATA (Forsk.) C. Chr.—3 (EXR, L); 15; 37, 1957 (GD).
 ATRA CARYOPHYLLEA L.—15 (L); 37 (GD, L); 80 (W).
 A. CUPANIANA JUSS.—37, 1952 (GD, L).
 A. ELEGANS Gaud.—37, 1957 (L); 63 (L).
 A. PROVINCIALIS Jord.—63 (L).
 ALOPECURUS GENICULATUS L.—37, 1955 (L); 1960 (K); 80 (K).
 A. PRATENSIS L.—63 (L).
 AMPHIBROMUS NEESII Steud.—12 (L); 30, 1954 (L); 37, 1954 (GD, L); 63 (L).
 APERA INTERMEDIA Hack.—15 (L).
 A. SPICA-VENTI (L.) Beauv.—37 (L); 64.
 ARISTIDA ADSCENSIONIS L.—37, 1958 (L).
 AVENA FATUA L.—12; 62; 63.
 A. STERILIS L.—37, 1957.
 A. STRIGOSA Schreb.—37, 1952 (GD).
 BOTHRIOCHLOA INSCULPTA (Hochst.) A. Camus—12 (L).
 BRACHYPODIUM DISTACHYUM (L.) Beauv.—30, 1950 (K); 37, 1956 (K, L); 63 (L).
 BRIZA MAXIMA L.—30, 1959 (LTN, L).
 BROMUS ALOPECUROS Poir.—37, 1955 (GD).
 B. ALOPECUROIDES Poir.—3 (K); 65 (L).
 B. ARENARIUS Labill.—3 (K, W); 30, 1960 (K); 62 (K).
 B. BREVIS Nees—37 (K, GD); 63 (L); 80 (K, W).
 B. CARINATUS Hook & Arn.—30, 1954 (K, L).
 B. DIANDRUS Roth (*B. gussonii* Parl.)—11; 12; 15 (L); 25 (L); 30, 1958 (LTN); 37 (GD); 62; 63 (L); 64; 65; 80 (K).
 B. FERRONII Mabilie—30, 1946 (LTN).
 B. INERMIS Leyss.—64 (L).
 B. INTERMEDIUS Guss.—37, 1958 (L); 65 (L).

- B. *JAPONICUS* Thunb. (including var. *VELUTINUS* (Koch) Aschers. & Graeb.)—30, 1955 (LTN); 37, 1957 (K); 63 (L).
- B. *MACROSTACHYS* var. *LANUGINOSUS* (Poir.) Boiss.—3 (L); 65 (L).
- B. *MADRITENSIS* L. (including var. *CILIATUS* Guss.)—3 (K); 5; 12 (L); 3 (K); 5; 12 (L); 30; 37 (GD, L); 63 (K); 65 (L).
- B. *MOLLIFORMIS* Lloyd—12 (K); 15; 37, 1958 (GD); 63 (L).
- B. *MOLLIS* L.—15; 16; 63 (K, L); 65 (L); 80 (K).
- B. *RIGIDUS* Roth.—30, 1956 (LTN); 63 (L); 65.
- B. *RUBENS* L.—12 (K, L); 15 (L); 30 (LTN); 37 (GD); 62; 63 (L, GD); 65; 80 (W).
- B. *SECALINUS* var. *HIRTUS* Aschers. & Graebn.—65 (L).
- B. *SCOPARIUS* L.—12 (K); 30 (LTN); 37 (GD); 63 (K, L).
- B. *STERILIS* L.—79 (L). Probably more common but unrecorded.
- B. *TECTORUM* L. (including var. *HIRSUTUS* Regel)—15; 25 (L); 30, 1946 (LTN); 37, 1958 (L).
- B. *TRINII* Desv.—37, 1955 (K).
- B. *WILDENOWII* Kunth (*B. unioloides* Kunth)—5; 12 (L); 15; 25; 30 (LTN); 37 (GD); 59; 63 (L); 64; 65; 80.
- CENCHRUS CILIARIS* L.—30, 1954 (K).
- C. *PAUCIFLORUS* Benth.—37, 1955 (K, L).
- C. *SETIGERUS* Vahl—37, 1958 (L).
- C. *TRIBULOIDES* L.—63 (L).
- CHLORIS ACICULARIS* Lindl.—12 (L).
- C. *DIVARICATA* R.Br.—3; 12 (L); 30 (L); 37, 1955 (GD, L), 1959 (K); 63 (L).
- C. *PYCNOTHRIX* Trin.—5; 12 (K, L).
- C. *TRUNCATA* R.Br.—3 (EXR); 12 (K, L); 15; 30 (LTN); 37 (K, GD, L); 63 (L).
- C. *VENTRICOSA* R.Br.—12 (K, L); 37, 1953 (L).
- C. *VIRGATA* R.Br.—12 (K, L); 15 (L); 30 (L); 37 (K, GD, L); 63 (L).
- CRITHOPSIS DELILEANUS* (Schult.) Roshev.—37, 1956 (GD, L);
- CYNODON DACTYLON* (L.) Pers.—25; 30 (L); 37, 1959 (K), 1960 (K, GD, L); 63 (L).
- C. *HIRSUTUS* Stent—37, 1959 (K); 63 (L).
- C. *INCOMPLETUS* Nees—12 (L); 30 (LTN); 37 (K, GD); 63 (L). (See Lousley, 1958b.)
- CYNOSURUS CRISTATUS* L.—15 (L); 30 (L).
- C. *ECHINATUS* L.—15 (L); 30 (L); 37.
- DACTYLIS GLOMERATA* L.—63 (L). This appears frequently from shoddy cultures and is probably common.
- DACTYLOCTENIUM RADULANS* (R.Br.) Beauv.—12 (K, L); 15 (L); 16 (L); 30 (LTN); 31 (K); 37 (K, GD, L); 63 (L).
- DANTHONIA CAESPITOSA* Gaud.—30, 1950 (K, L); 63 (L).
- D. *PENICILLATA* (Labill.) F. v. Muell.—16 (L); 30 (L).
- D. *RACEMOSA* var. *OBTUSATA* F. v. Muell. ex Benth.—12 (K).
- D. *SETACEA* R.Br.—37 (L).

- DICHANTHIUM SERICEUM (R.Br.) A. Camus—12 (L); 30, 1958 (K, LTN, GD); 37, 1958 (L).
- DIGITARIA ADSCENDENS (Humb., Bonpl. & Kunth) Henrard—30 (L); 37, 1955 (K, GD), 1959 (K).
- D. DIDACTYLA Willd.—16, 1948 (L).
- D. EXASPERATA Henrard—37 (K).
- [D. ISCHAEMUM (Schreb.) Muhl.—Has been grown from shoddy collected in 30 (L) and 37 (L).]
- D. SANGUINALIS (L.) Scop.—3 (W); 11 (L); 12 (L); 30 (K, LTN); 37 (K, L); 64 (L).
- subsp. VULGARIS var. ROTILERIANA Henrard—37 (K).
- DIPLACHNE FUSCA (L.) Beauv.—12 (L); 16 (L); 30 (LTN); 37 (K, GD, L); 63 (L).
- D. MUELLERI Benth.—37 (L).
- ECHINOCHLOA COLONUM (L.) Link.—37 (K, GD, L); 63.
- E. CRUS-GALLI (L.) Beauv.—3 (EXR); 5; 12 (L); 15; 25; 30 (LTN); 31; 37 (K, GD, L); 59; 62; 64.
- E. PUNGENS (Poir.) Rydb.—37, 1958 (GD).
- EHRHARTA LONGIFLORA Sm.—30, 1957 (L); 63 (K, L).
- ELEUSINE AFRICANA O'Byrne—3 (EXR); 5; 11 (L); 12 (L); 15 (L); 16; 30 (LTN); 37 (GD, L); 63 (L). (See O'Byrne, 1957, and Kent, 1958.)
- E. FLOCCIFOLIA (Forsk.) Spreng.—5 (*Herb. C. C. Townsend*).
- E. MULTIFLORA Hochst.—12 (K); 30, 1950 (L); 37, 1959 (K, GD, L).
- ELYMUS VIRGINICUS L.—63 (K).
- ERAGROSTIS BARRELIERI Daveau—30, 1959 (LTN); 37, 1958.
- E. BROWNI (Kunth) Nees—37, 1955 (K, GD, L).
- E. CHLOROMELAS Steud.—12 (K); 37, 1959 (K); 63 (L).
- E. CILIANENSIS (All.) Vign.-Lut.—12 (L); 15; 16; 30 (L); 37 (GD, L).
- E. CURVULA (Schrud.) Nees—12 (K); 15 (L); 37, 1959 (L); 63 (L).
- E. DIELSII Pilg.—30, 1959 (LTN, L).
- E. LEPTOSTACHYS (R.Br.) Steud.—37 (L); 63 (L).
- E. OBTUSA Munro—37, 1959 (K, L).
- E. PARVIFLORA (R.Br.) Trin.—12 (L); 30 (LTN); 37, 1959 (K, GD, L).
- E. POAEOIDES Beauv.—12 (W); 30 (L); 37, 1959 (L).
- E. TEFF (Zuccagn.) Trotter—5 (K); 12 (K); 37 (L); 63 (L).
- ERIOCHLOA CREBRA S. T. Blake—37, 1950 (GD), 1959 (K).
- E. GRACILIS (Fourn.) Hitch.—37, 1958.
- E. PSEUDO-ACROTRICHA (Stapf) Hubbard—12 (K, L); 30, 1959 (K, LTN); 37 (L); 63 (L).
- GASTRIDIVM PHLEOIDES (Nees & Meyer) C. E. Hubbard—12 (K, L); 37, 1955 (L); 63 (L).
- GLYCERIA MULTIFLORA Steud.—30, 1954 (K, L); 37, 1957 (L).
- G. FLICATA Fr.—37 (L).
- G. SPICATA Guss.—30, 1956 (L); 37, 1957.

- HARPACHNE SCHIMPERI Hochst. ex A. Rich.—12 (L).
- HOLCUS LANATUS L.—63 (L). Common in cultures from shoddy.
- HORDEUM COMPRESSUM Griseb.—37 (L).
- H. EUCLASTON Steud.—37 (GD, L).
- H. FLEXUOSUM Nees ex Steud.—63 (K); 64 (L).
- H. GLAUCUM Steud.—12 (K, L); 15; 16; 17; 30 (LTN); 37 (K, GD); 59; 62 (L); 63 (L); 64; 65; 80 (K). (See Dony, 1955, and Hubbard, 1955.)
- H. HYSTRIX Roth—12 (L); 15; 16; 30 (LTN); 37 (GD); 62 (K); 63 (L); 65; 80 (K).
- H. JUBATUM L.—30 (LTN); 37 (GD); 63 (L); 64.
- H. LEPORINUM Link.—15; 30 (LTN); 37 (GD); 62 (L); 63 (L); 65. (See Dony, 1955.)
- H. MARINUM Huds.—16 (L); 30 (LTN); 63 (K).
- H. MURINUM L.—15; 16; 30 (L); 37; 63. No doubt more commonly introduced than these records indicate.
- H. MUTICUM Presl—37, 1958 (L).
- H. PUBIFLORUM Hook. f. (including var. PAMPEANUM (Haum.) Melderis)—37 (L); 63 (K, L).
- H. PUSILLUM Nutt. (including var. PUBENS Hitchcock)—12 (L); 15 (L); 30 (LTN); 37, 1958 (L); 63 (K, L). (See Dony, 1955).
- H. VIOLACEUM Boiss. & Heldr.—63 (K); 64? This has been confused with *H. pubiflorum* which also sometimes has violet-coloured spikes.
- KOELERIA PHELOIDES (Vill.) Pers.—12 (L); 15 (L); 30, 1952 (LTN); 37 (GD); 63 (L); 65; 80 (W).
- LAMARCKIA AUREA (L.) Moench.—3 (K, EXR); 30, 1959 (LTN); 37, 1957 (GD, L); 63 (L).
- LEPTOCHLOA PEACOCKII (Naud. & Betché) Domin—12 (K).
- L. SQUARROSA Pilg.—12 (L).
- LOLIUM LOLIACEUM (Bory & Chaub.) Hand.-Mazz.—30, 1954 (LTN); 37, 1954 (GD); 63 (L).
- L. MULTIFLORUM L.—37 (GD); 63 (L).
- L. PERENNE L.—30 (L); 37 (L). Common in cultures from shoddy and probably much more frequent as a wool alien than these records suggest.
- L. RIGIDUM Gaud.—3 (W); 12 (K, L); 15; 30, 1954 (LTN); 37 (GD); 59; 63 (L); 65; 80 (K).
- L. TEMULENTUM L. (including var. ARVENSE With.)—3; 12; 30 (LTN); 37; 63 (L).
- MICROLEANA STIPOIDES R. Br.—30, 1959 (K, LTN); 63 (K, L).
- NASSELLA TRICHOTOMA (Nees) Hack.—30, 1955 (LTN, L. GD).
- ORYZOPSIS MILIACEA (L.) Benth. & Hook.—30, 1957 (LTN); 37, 1959 (K); 63 (L); 64 (K).
- PANICUM BUNCEI F. v. Muell.—12 (K); 37 (K).
- P. CAPILLARE L.—17; 30, 1955 (LTN).
- P. DECOMPOSITUM R. Br.?—37 (L).

- P. LAEVIFOLIUM Hack.—5 (κ); 11 (L); 12; 30 (LTN); 37, 1953 (GD, L); 59; 63 (κ, L); 64 (L).
- P. SUBALBIDUM Kunth (*P. longijubatum* Stapf)—30 (L).
- PASPALIDIUM JUBIFLORUM (Trin.) Hughes—30 (LTN, L).
- PASPALUM DILATATUM Poir.—30, 1959 (κ, LTN, L, W).
- PENTASCHISTIS AIROIDES (Nees) Stapf—12 (κ); 37, 1957 (κ).
- PHALARIS ANGUSTA Nees—37, 1955 (GD, L).
- P. BRACHYSTACHYS Link—15 (L); 30, 1959 (*Herb. H. Bowen*); 37, 1960 (L); 59 (κ); 62 (W); 63 (L); 64 (L).
- P. MINOR Retz—5; 12 (κ, L); 15; 16; 30 (LTN); 37 (GD); 59; 63; 64; 65; 79.
- P. PARADOXA L. (including var. *PRAEMORSA* Coss. & Dur.)—3 (W); 5; 12 (κ, L); 15; 16 (L); 30 (LTN); 37 (GD); 62 (L) 63 (L); 65 (L).
- P. TUBEROSA L.—37 (GD, L); 59 (L); 62; 63 (L); 64 (L).
- PHLEUM PRATENSE L.—37, 1959 (L); 65.
- POA AUSTRALIS R. Br.—37, 1956 (GD, L).
- P. COMPRESSA L.—37 (κ).
- P. LEPTOCLADA Hochst.—63 (κ).
- P. PALUSTRIS L.—37 (GD, L).
- POLYPOGON ELONGATUS Humb., Bonpl. & Kunth—37, 1955 (κ).
- P. MARITIMUS Willd.—15 (L); 30 (L); 37, 1955 (GD), 1958 (L); 63 (L).
- P. MONSPELIENSIS (L.) Desf.—3 (EXR, L); 5; 12 (κ); 15; 16; 30 (LTN); 37 (GD); 59 (κ); 62; 63 (L); 64 (L); 65; 79 (L); 80 (κ).
- [P. TENELLA R. Br. has been grown from shoddy (κ).]
- PUCCINELLIA DISTANS (L.) Parl.—63 (κ, L). This differs considerably from our native plant.
- RHYNCHELYTRUM VILLOSUM (Parl.) Chiov.—30 (κ).
- SCHISMUS BARBATUS (L.) Thell.—12 (W); 30 (L); 37 (κ, GD, L).
- SCHMIDTIA KALAHARIENSIS Stent—15 (L); 30, 1959 (LTN, L, GD).
- SECALE CEREALE L.—3; 12.
- SETARIA GENICULATA (Lam.) Beauv.—30, 1959 (κ, L, W).
- S. LUTESCENS (Weigel) Hubbard (*S. glauca* (L.) Beauv.)—5; 30, 1953 (LTN); 31; 37, 1958 (GD).
- S. PALLIDE-FUSCA (Schum.) Stapf & Hubbard—63 (L).
- S. VERTICILLATA (L.) Beauv.—3 (EXR); 5; 11 (L); 12 (L); 15; 30 (LTN); 31; 37 (GD); 63 (L); 64.
- S. VIRIDIS (L.) Beauv.—11; 12; 30 (LTN); 37 (GD); 63 (L).
- SNOWDENIA POLYSTACHYA (Fresen.) Pilger—5 (κ, L, W).
- SORGHUM HALEPENSE (L.) Pers.—30 (κ); 37, 1958 (GD, L); 63 (L).
- S. VULGARE Pers.—12; 15 (L).
- SPOROBOLUS AFRICANUS (Poir.) Robyns & Tournay—12 (L); 30, 1958 (LTN); 37, 1959 (κ, L); 63 (L).
- S. ELONGATUS R.Br.—63 (L).
- S. IOCLADOS Nees—63 (L).

- STIPA CAPENSIS Thunb. (*S. tortilis* Desf.)—30, 1959 (κ, LTN, L, w); 37 (L).
 S. DUSENII Hitch.?—37, 1956, 1958 (GD, L).
 S. FORMICARUM Delile—37, 1960 (κ).
 S. HYALINA Nees—30, 1954 (κ).
 S. NEESIANA Trin. & Rupr.—37, 1956 (L); 63 (κ, w).
 S. VARIABILIS Hughes—37 (L); 63 (κ). Grown from shoddy (κ).
 S. VERTICILLATA Nees—12 (L); 37, 1955 (GD, L); 63 (L).
 TAENIATHERUM CRINITUM (Schreb.) Nevski—37, 1956 (κ, L).
 TRAGUS AUSTRALIENSIS S. T. Blake—12 (L); 30; 37 (κ, GD, L).
 Difficulty has been found in distinguishing this from *T. racemosus* and the records of both species may require revision.
 T. BERTERONIANUS Schult.—30 (L, *Herb. J. P. M. Brenan*); 37, 1959 (κ).
 T. KOELERIOIDES Aschers.—30 (*Herb. R. A. Graham*); 63 (L).
 T. RACEMOSUS (L.) All.—12 (κ, L); 15; 16; 30 (LTN); 31; 37 (GD, L); 63 (κ).
 TRIRAPHIS MOLLIS R.Br.—12 (L); 37, 1959 (L).
 VULPIA ALOPECUROS (Schousb.) Link—63 (L); 64 (L).
 V. AUSTRALIS (Nees ex Steud.) Blom—15 (L); 37 (L).
 V. BROMOIDES (L.) Gray—3; 12 (L); 15; 16; 30 (LTN); 37 (GD); 62; 63 (L); 80 (w).
 V. CILIATA (Danth. ex DC.) Link—63 (L).
 V. GENICULATA (L.) Link—30 (LTN); 37, 1956 (κ, GD, L); 63 (L).
 V. MYUROS (L.) C. C. Gmel.—3; 12 (κ); 15; 37 (GD, L); 62; 63 (L); 64; 65 (L); 80 (w).
 V. MEGALURA (Nutt.) Rydb.—12 (L); 15 (*Herb. D. H. Kent*); 30, 1955 (LTN, GD); 37, 1955.

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NARDURUS MARITIMUS (L.) MURB. IN BRITAIN

By CLIVE A. STACE

I. INTRODUCTION AND DESCRIPTION

This grass has been found in a sufficient number of places in the past few years in England to be considered, at least by some, a native.

In habit, the slender upright culms, bearing a narrow long-awned one-sided panicle, resemble those of certain other British grasses, notably *Vulpia* species. It also bears a superficial resemblance to *Nardus stricta* L., from which it is easily distinguished by its lax annual (not stiff and densely tufted perennial) habit, and by its spikelet characters, which are typical of the Festuceae to which it belongs, i.e., spikelets with several pinnately arranged florets (not one-flowered as in *Nardus*).

Since a description of *Nardurus maritimus* does not appear to have been previously published in English, one is given here. It has been compiled both from living and herbarium material of British plants which the author has examined.

DESCRIPTION OF NARDURUS MARITIMUS (L.) MURB. (See Fig. 1.)

Plant annual; mostly glabrous, smooth or somewhat scabrous in the upper parts; variously suffused with purplish colour—usually present at base of culms on stems and sheaths, occasionally reaching the panicle axis or even the glumes. *Culms slender*, solitary or few and then loosely tufted, 3 to about 40 cm. high, erect or ascending or sometimes geniculate at the base; nodes 2-3, blackish or purplish-brown. Leaf-sheaths wider than the blade when opened out, subglabrous, smooth; ligule short, up to 1 mm. long, truncate, equally lengthed along its width, membranous; leaf-blades green or sometimes purplish, soon browning, short, 1-4 cm. long, the upper ones shorter than the lower, narrow, more or less pointed, not stiff, inrolled usually, glabrous without, shortly pubescent within.

Panicle far exserted from topmost sheath at anthesis, *very narrow and slender*, erect or slightly nodding in taller specimens, 1-10 cm. long, usually more or less one-sided, with c. 3-18 *spikelets nearly always borne singly at each node*. Rhachis green or purplish, angular, slightly scabrous.

Spikelets stalked; peduncle stout, very slightly thickened at apex, 1-1.5 mm. long; rest of spikelet 4-7 mm. long (excl. awns), 3-6 flowered, readily breaking up at maturity below each floret. *Glumes* 2, shorter than the lowest lemma on each side, unequal, narrowly lanceolate and very finely pointed, rather obscurely nerved, smooth on the back; *lower* 1.5-3.5 mm. long, 1-nerved; *upper* 3-5 mm. long, 3-nerved. *Lemmas* greatly overlapping, ovate-lanceolate, inrolled around palea, 2-4 mm. long, tipped with