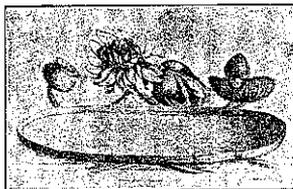


THE BOTANICAL SOCIETY
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OF THE BRITISH ISLES.

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Floreat flora.

REPORT FOR 1941-42

BY

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 † Sowter, F. A., Ashtead, 9 North Avenue, Leicester.
 Stationery Office, H.M., Princes Street, Westminster, S.W.1.
 Stephenson, Rev. Dr T., D.D., Irfon, Aberystwyth.
 Stern, Colonel F. C., O.B.E., M.C., Highdown, Goring-by-Sea, Sussex.
 Stevenson, Miss E. H., 28 Foxcombe Road, Weston, Bath, Somerset.
 Stewart, Mrs M. E., Partney, Spilsby, Lincs.
 Stewart-Sandeman, Mrs, Achnashellach, Ross-shire.
 † Still, A. L., B.A., Long Hayne, Cove, Tiverton, Devon.
 Stuart, Mrs C. U., 120 London Road, Worcester.
 Stuart-Edwards, J. J., Imperial Hotel, Exmouth, S. Devon.
 Swaine, Miss A. K., Pisang Cottage, Nailsea, Somerset.
 Swann, Eric L., 282 Wootton Road, King's Lynn.
- L Taylor, Dr G., British Museum (Natural History), Cromwell Road, London, S.W.7.

- Taylor, Miss M., 6 Kent Gardens, Ealing, W.13.
 Taylor, S. A., 34 Nelson Street, Leicester.
 Temperley, Geo. W., Restharrow, Apperley Road, Stocksfield, Northumberland.
 Templeman, A., Geological Museum, Exhibition Road, South Kensington, S.W.7.
- Thomas, Charles, Arden, 48 Manor Road North, Edgbaston, Birmingham 16.
 †Thomas, Miss E. Mary, Moorfield, Nottage, Porthcawl, Glam.
 Thorold, C. A., Hele, Bradninch, Devon.
 Tindall, Mrs K. B., West Downs, Winchester, Hants.
 Todd, Miss E. S., Aldbourne, Marlborough, Wilts.
 Toke, Chas. Hugh, The Haven, Green Lane, Crowborough, Sussex.
 Townsend, C. C., 68 Gloucester Road, Cheltenham, Glos.
 Travis, W. G., 9 Barton Road, Liverpool 9.
 Trethewy, A. W., Artillery Mansions, Victoria Street, S.W.1.
 Tristram, Mrs R. M., F.L.S., Revillo, Ash Bank, Stoke-on-Trent, Staffs.
 Tunbridge Wells Municipal Museum, 6 Upper Grosvenor Road, Tunbridge Wells, Kent.
- Turnbull, Miss E., Stone Lodge, Vines Lane, Hildenborough, Kent.
 Turner, A., 140 Pine Street, Nelson, Lancs.
 Turrill, W. B., D.Sc., F.L.S., The Herbarium, Royal Botanic Gardens, Kew, Surrey.
- Ullman, Lt.-Col. R. B., Trove, New Road, Esher, Surrey.
- †Vachell, Miss Eleanor, F.L.S., Fairfield, Ely Road, Llandaff, Cardiff.
 Valentine, D. H., M.A., Ph.D., Botany School, Cambridge.
 Verdcourt, B., 86 Claremont Road, Luton, Beds.
 Victoria, The Public Library of, Melbourne, c/o Henry Sotheran Ltd., 2 Sackville Street, Piccadilly, W.1.
 †Vivian, Miss C., 37 Wilton Crescent, London, S.W.1.
- †Wade, A. E., F.L.S., Dept. of Botany, National Museum of Wales, Cardiff.
 Waldy, Hon. Mrs H. P., Sonamerg, Higher Sea Lane, Charmouth, Dorset.
 *†Wales, National Museum of, Dept. of Botany (Keeper, H. A. Hyde, M.A.), Cardiff.
- *†Wallace, E. C., 2 Strathearn Road, Sutton, Surrey.
- †Wallis, J. R., Timberlog, Parsonage Lane, Lamberhurst, Kent.
 Warner, S. Allen, M.P.S., Whitelea, Broadway, Dيدcot, Berks.
 L. Warren, W. E., Selborne, Horsell Rise, Horsell, Woking, Surrey.
 Washington, U.S. Dept. of Agriculture, The Librarian, Washington, D.C., U.S.A.
- Watchorn, Dr Elsie, 25 Luard Road, Cambridge.
 †Watson, Wm., 245 Southlands Road, Bickley, Bromley, Kent.
 Waits, Lt.-Col. G. A. R., Highbury, Victoria Road, Fleet, Hants.
 Webster, Subaltern M. McCallum, A.T.S., c/o Bank of Scotland, Macduff.
 L. Wedgwood, Mrs, 2 Hatherley Road, Kew Gardens, Surrey.
 Wedgwood Herbarium, The, Marlborough College, Wilts.
- †Welch, Mrs B., B.Sc., 49 Lichfield Court, Richmond, Surrey.
 Wells, Mrs E. M., 91 Colum Road, Cardiff.
- †West, C., "The Cowl House," Holt Wood, Aylesford, Kent.
 Weyer, Major E. G. Van de, South Marston Manor, Swindon, Wilts.
 Weyer, Major William Van de, Clyffe, Dorchester, Dorset.
- †Whellan, J. A., Lieut., 42 Stamford Street, Liverpool 7.
 Whiting, Miss M. M., Rosemary Cottage, Blythburgh, Suffolk.
 Whyte, James S., 31 Hayswell Road, Arbroath, Angus.
 Wilkinson, J. S., 26 Golder's Rise, Hendon, N.W.14.
 Willan, Mrs Hugh, Bridges, Teffont, Salisbury.
 Williams, Mrs F. R., 234 Highland Avenue, Winchester, Mass., U.S.A.
 Williams, J. E., 29 Spencer Road, St Marks, Cheltenham.
 Williams, I. A., West Hall, Kew Gardens, Surrey.

- Williams, M. L., Layton Villa, Linden Road, Bognor, Sussex.
 †Wilmott, A. J., M.A., F.L.S., F.R.G.S., Dept. of Botany, British Museum
 (Natural History), Cromwell Road, S.W.7.
 Wilson, Albert, F.L.S., Tir-y-Coed, Ro Wen, near Conway.
 Winter, W. P., B.Sc., F.G.S., 6 Grange Avenue, Saltair, Yorks.
 †Wolley-Dod, Lt.-Col. A. H., Berkeley Cottage, Mayfield, Sussex.
 Woodhead, J. E., B.Sc., F.I.C., Ph.C., 325 Kennington Road, London, S.E.11.
 L Wright, Dr F. R. Elliston, Braunton, N. Devon.
 Yeoman, Miss Ruth, The Green, Brompton, Northallerton, Yorks.
 York Public Library, City of, York.
 †Young, Rev. Andrew, Stonegate, Tunbridge Wells, Kent.
 L Young, Miss Gertrude A., 5 Woodlands Terrace, Glasgow, G.3.
 Yuill, Edward, Norwood, Towthorpe Lane, Haxby, York.

ORDINARY MEMBERS ABROAD.

(The following are still regarded as members although the difficulty or impossibility of communicating with them under present conditions has prevented confirmation. Those members living overseas who have been able to return the Reconstruction Form are included in alphabetical order in the main list.)

- Arsene, Bro. Louis, Maison St Joseph, Highlands, Jersey.
 Geneve, Switzerland, Le Directeur du Conservatoire et du Jardin botanique de la Ville de.
 Holland, J. S. (Westwell Manor, Burford, Oxon.), New Modderfontein Staff Mess, P.O. Van Ryn Benein, S. Africa.
 Lindquist, Dr B., Skogshogskolan Experimentalfaltet, Stockholm, Sweden.
 McCrea, Mrs M. A., 4 Springfield Terrace, King's Road, Guernsey.
 Nannfeldt, Dr John Axel, Botaniska Institutionen, Uppsala, Sweden.
 Pharmacie, Bibliotheque de la Faculté de, 4 Avenue de la Observatoire, Paris, France.

SUMMARY OF THE ABOVE MEMBERSHIP LIST.

<i>Non-Subscribing Members.</i>		
Honorary Members	...	19
Corresponding Members	...	4
		— 23
<i>Subscribing Members.</i>		
Ordinary Members	...	296
Life Ordinary Members	...	13
Exchange Members	...	19
		— 328
Total Membership	...	351

ACCOUNTS FOR THE YEAR 1942.

GENERAL FUND.

To Balance from 1941	£475 1 10	By Printing Reports	£180 19 6
„ Part Interest on Post Office Savings Bank Deposit for 1941	1 9 9	„ Printing (other than Report) and Stationery ...	8 17 4
„ Subscriptions Received in 1942	55 9 0	„ Cost of circulating members who failed to return Reconstruction Form ...	1 4 5
„ Subscriptions Paid to late Treasurer in 1941 and since claimed	6 0 0	„ Fire Insurance on books at Yardley Lodge ...	0 6 0
„ Sale of Reports and Reprints	18 4 11	„ Honorarium to Caretaker at Yardley Lodge ...	1 11 6
„ Balance of Suspense Fund	24 11 0	„ Postages and Petty Expenses:—	
		Treasurer ...	£4 17 8
		Acting Secretary ...	5 10 0
		Caretaker at Yardley Lodge	1 10 0
			11 17 8
		„ Balance	376 0 1
	<u>£580 16 6</u>		<u>£580 16 6</u>

SUSPENSE FUND.

To Balance from 1941	£30 11 0	By Subscriptions claimed by Members as paid to late Treasurer in 1941	£6 0 0
		„ Balance of unclaimed subscriptions; transferred to General Fund	24 11 0
	<u>£30 11 0</u>		<u>£30 11 0</u>

PUBLICATIONS FUND.

To Balance from 1941	£155 19 9	By Binding 50 Copies each of Comital Flora and British Plant List	£11 8 0
„ Sales of Fl. Bucks, paid to us in error	4 1 0	„ Refund to Messrs T. Buncke & Co. Ltd. of amount paid in error ...	4 1 0
„ Sales of Fl. Northants	0 17 11	„ Balance	134 14 6
„ Sales of Comital, Flora and British Plant List ...	19 4 10		
	<u>£180 3 6</u>		<u>£180 3 6</u>

LIFE MEMBERS' FUND.

To Balance from 1941	£145 16 0	By Balance	£149 8 11
„ Part Interest on Post Office Savings Bank Deposit, 1941	3 12 11		
	<u>£149 8 11</u>		<u>£149 8 11</u>

MISS TROWER'S FUND.

To Balance from 1941 ...	£16 7 11	By Balance	£16 7 11
	<u>£16 7 11</u>		<u>£16 7 11</u>

BENEVOLENT FUND.

To Balance from 1941 ...	£41 3 6	By Balance	£41 3 6
	<u>£41 3 6</u>		<u>£41 3 6</u>

BALANCE SHEET AT 31ST DECEMBER 1942.

General Fund ...	£376 0 1	500 National Savings Certificates, at cost ...	£400 0 0
Publications Fund ...	164 14 6	Cash at Bank ...	120 4 3
Life Members' Fund ...	149 8 11	Deposit at Post Office Savings Bank ...	227 10 8
Miss Trower's Fund ...	16 7 11		
Benevolent Fund ...	41 3 6		
	<u>£747 14 11</u>		<u>£747 14 11</u>

(Signed) J. E. LOUSLEY,
Hon. Treasurer.

Examined and found correct.
February 21st, 1943.

(Signed) H. W. PUGSLEY,
Hon. Auditor.

**SUMMARY OF PROCEEDINGS OF MEETINGS
(OCTOBER 1942—MARCH 1943).**

A meeting of the Committee was held on October 28th, 1942, in the rooms of the Linnean Society of London, the Chairman and three other members being present. It was agreed that Mr J. E. Lousley should take the vacancy on the Editorial Sub-Committee caused by the death of Mr Corstorphine. The Sub-Committee appointed to report on the Society's property made its report, details of which are printed later in this volume. The consideration of the revision of its insurance was referred to the Editorial Sub-Committee, of which the Treasurer had now become a member. It was agreed that the same Sub-Committee should decide questions concerning the prices of the Society's publications, and also concerning any reductions to be made to members. An Honorarium was granted to Mr Whiting, caretaker at Yardley Lodge, Oxford, for his assistance in attending to orders received for the Society's publications.

A meeting of the Committee was held on Friday, March 26th, 1943, in the same rooms, the Chairman and eight other members being present. The actions taken at the previous meeting, at which a quorum was not present, were confirmed. A letter from Dr G. Taylor was considered, in which he reported the purchase from Messrs Blackwell (Dulau), of Oxford, of a book inscribed as having been presented to the Society, purchased by Messrs Blackwell as part of Dr G. C. Druce's library. As the book also bore Dr Druce's bookplate (see our Report for 1925, plate with pp. 935-8), the Committee decided that the firm should be asked to examine any other books from the same source still in their possession, to see if any of them were the property of the Society. The Treasurer reported that the present membership (344) would not, at the rate of subscription of ten shillings per annum, suffice to finance the normal peace-time activities of the Society. It was agreed that the subscription should return to the normal ten shillings per annum as from January 1st, 1944. Mr H. W. Pugsley was re-elected Hon. Auditor. Decisions of the Editorial Sub-Committee regarding the prices of reprints from Reports and of parts of Reports were accepted. It was agreed that the five best sets of the Reports should be reserved for sale to libraries (after a set had been set aside as the Society's own set), and that the remaining sets should be available to individuals asking for them. It was also agreed that the average reduction of 25% allowed to members purchasing whole volumes of Reports should also be allowed on the purchase of single parts of Reports, but only on a purchase for personal use.

At the Annual General Meeting which followed, presided over by the Chairman, the Rt. Hon. H. T. Baker, the recommendations and decisions of the Committee were approved. The Reports of the Acting Secretary, Treasurer, and Joint Editors were adopted. After present-

ing the latter, Mr Wallace reported that the publication of the 1939-1940 Report had given considerable satisfaction. The Chairman's expression of the thanks of the Society to the Linnean Society of London for their generous loan of their rooms for our meetings was received with acclamation.

REPORT BY THE HON. ACTING SECRETARY

(to the Annual General Meeting, 1943).

The death, on the day of our last Annual General Meeting, of Mr R. H. Corstorphine, has already been recorded in the Report recently published; it is a grievous and irreplaceable loss. The firm of Messrs Buncle will, however, still produce our publications, and it is hoped that a Report for 1941-42 will be brought out this year. A considerable number of Plant Records have been sent in, mainly by members working in their home areas, now that travel has become so difficult and even undesirable. The publication of the 1939-40 Report has stimulated the sale of "separates" of papers from our past Reports, and the arrangements which have been made to supply these from the stock at Oxford are working fairly satisfactorily, but members are requested to make allowance for the existing difficulties if they meet with a little delay. Although our property at 9 Crick Road has been put into a general order, the time available when I did this was too short to do the work thoroughly, and search is sometimes necessary by the caretaker, to whom we are indebted for sending off the orders. Let us hope that when we meet next year we shall be able to envisage the end of the present makeshifts.

A. J. WILMOTT.

HONORARY TREASURER'S REPORT ON FINANCE AND MEMBERSHIP, 1942.

During 1942 the Society has made considerable progress towards overtaking the arrears in our work caused by the period of enforced inactivity. The hard work done by Messrs Wallace and Wilmott has resulted in the publication of the Distributor's Reports for 1938 and 1939 and the Editor's Report for 1939-40, and their cost has been the principal charge to the accounts for 1942.

The income for the year, though small, has been greater than was anticipated. In 1941 most members paid their subscriptions at the old rate before they heard of the decision to make a temporary reduction to five shillings, and hence they had a balance to their credit sufficient to pay their subscriptions for the following year. The amount of £55 9s 0d which was received in respect of subscriptions during 1942 was therefore much larger than expected, and consisted mainly of the subscriptions of members who continued to pay at the old rate. Many of these members had deliberately and generously continued to pay the higher subscription, and although a total of £51 9s 3d. stood to the

credit of member's account as "Subscriptions paid in advance" on December 31st, 1942, it is likely that the greater part of this sum represents gifts to the Society by members who have not clearly stated their wishes.

The Suspense Fund, which was opened to clear up receipts and payments of the late Treasurer of which no records existed, has now been wound up. The balance of £24 11s 0d transferred to the General Fund represents payments made to Mr Druce by members who have since died or who failed to return properly completed Reconstruction Forms.

A welcome sequel to resumed activity has been the receipts from sales of Reports and Reprints and of the books published by the Society. These receipts have been larger than in an average pre-war year, and the opportunity of obtaining the publications again has been greatly appreciated.

It will be seen that we still remain liable to members for the Reports for 1941 and 1942, payment for the printing of which will considerably reduce the Society's assets. The next Annual General Meeting may therefore consider it advisable to revert to the former subscription of 10s 0d per annum in 1944. In the meanwhile we are most grateful to those members who have continued to pay at this rate. Mr H. W. Pugsley has again acted as Hon. Auditor, and I should like to express my personal thanks to him for his help in these difficult times.

Owing to the work of reconstruction, the last statement of membership was dated April 22nd, 1942, and this Report therefore only covers a period of just over eight months. Since April we have gained four new members—Mrs F. M. Barton, Dr P. W. Richards, Dr J. H. Davie, and Mr R. Lewis. Miss B. Hurst has resigned, and we are extremely sorry to record the loss through death of Messrs C. B. Tahourdin, A. H. Evans, and G. T. Fraser. With these four additions, and three losses, our membership now stands at 343.

December 31st, 1942.

J. E. LOUSLEY, Hon. Treasurer.

HONORARY JOINT EDITORS' REPORT.

The appearance of the 1939-40 Report appears to have given considerable satisfaction and pleasure. Although Mr Wallace has now joined the Royal Air Force, he is still in England and will be able to assist in the production of the 1941-42 Report, which is now in course of preparation. Although the material available is, naturally, reduced in quantity, it is hoped that an interesting Report can be prepared, and the reduction in size will accord with the present need for economy in the use of paper. It is hoped that members who are able to continue with some botanical work will, since so many are now unable to do any, bear in mind the need of material for a 1943, or perhaps 1943-44, Report, and send material for Plant Records, Plant Notes, papers, and Abstracts from Literature. Will those who can make contributions please pay

attention to the paragraphs at the beginning of some of these sections, since by following the requests there made they will save the Editors a vast amount of transcription in the preparation of the copy for the printer.

A supply of sheets of the *Comital Flora* and *British Plant List* has been reported by the printers to be available, and the binding of a number for immediate use has prevented these works from going out of print for the time being, which is specially fortunate as work on new editions cannot be seriously undertaken at present. The increased costs of binding and paper have necessitated the rise in prices shown on the cover. Preparatory work on new and revised editions of the Society's publications will be resumed as soon as practicable.

E. C. WALLACE.

A. J. WILMOTT.

REPORT ON THE SOCIETY'S PROPERTY.

Following the offer by Mr E. G. Baker to bequeath to the Society a portrait of his father, the Committee appointed a small Sub-Committee to report on the property of the Society. Their report shows that most of their property is still housed at Yardley Lodge, Oxford, where, in addition to Mr Chapple's correspondence and an annotated copy of the *British Plant List*, ed. 2, also a box of Dr Druce's B.E.C. correspondence (for 1905 and 1906), there are:—

1. A stock of past Reports, only two complete sets but some nearly complete.
2. A stock of reprints from these Reports.
3. Stocks of the *British Plant List*, ed. 2, and *Comital Flora*.
4. A stock of the *Flora of Northamptonshire*.
5. A ledger containing a cut copy of Watson's *Topographical Botany*, ed. 2, annotated by Dr Druce, evidently the foundation of the *Comital Flora*.
6. A cupboard full of MS. and proof of some published Reports, etc.

Some further stock in sheet form of both the *British Plant List* and *Comital Flora* is with Messrs Bunce & Co. Ltd., the amount available being unknown.

Mr Hall's bequest of his annotated copies of *British Plant List* and *Comital Flora* were defined as being "the property of the Society in the custody of the Editor for the time being."

After considering the treatment of specimens sent in for identification, the Committee decided that "the main requirement is that specimens recorded in Reports should be preserved somewhere, preferably in National Collections, and that the location of such specimens should be shown in the Society's Index of Records."

The Committee decided that one complete set of Reports and two copies—so far as available—of the reprints, should be set aside as the Society's copies, and this has been done.

OBITUARIES.

THOMAS BATES BLOW, who died at Welwyn, his birthplace, in January 1941, must have been a familiar figure to more than one generation of botanists. The two groups that attracted him most were ferns and charophytes, his collecting of the former being mainly in the homeland and of the latter in foreign countries.

His interest in ferns had started, so he once told me, by the time he was thirteen and it lasted all his life. A friend of his, Mr Greenfield, has kindly contributed the following note:—"A large part of Mr Blow's garden at Welwyn was given up to the cultivation of British hardy ferns, among which were examples of the choicest varieties acquired from the best sources. Mr Blow himself raised a large number of plants from spores and also by apospory; and during his long membership of the British Pteridological Society, of which he was a Vice-President, he did a considerable amount of hunting of wild ferns and found several varieties, including a fine crested form of *Blechnum Spicant*. His garden collection of varieties of *Polystichum angulare* and *P. aculeatum* was specially notable." In this garden, with its greenhouse containing examples grown from Japanese fernballs, Blow took a great pride.

In 1874 he made the acquaintance, which proved a lifelong friendship, of Henry and James Groves. They found him already a most ardent field botanist and his enthusiasm led them to study many critical plants of which previously they had fought shy. When a few years later the Groves brothers took up the study of charophytes Blow's help eventually proved of immense value, James Groves stating of him in 1927 that "his experience as a hunter of these plants far away exceeded that of any other man." An outline of his charophyte tours is to be found in the *Journal of Botany* for October 1938.

Whatever Blow did he did heartily. An inherited love of bee-keeping led to his making many visits abroad with the aim of improving the British breed and, shrewd man of business that he was, he had by the age of forty-two made enough out of his factory for modern apiary appliances to admit of his indulging in his fondness for travel. Amongst the countries he visited were the West Indies, British Guiana (where he had an exciting time of it in rushing torrents studying the life history of the *Podostemaceae*), Ceylon, New Zealand, Australia, Japan and the borders of the Mediterranean, the unfrequented paths appealing to him most: and on these travels he never missed an opportunity of collecting charophytes.

His most famous trip was to Madagascar in 1924, where for one thing he was determined to investigate the alleged larvicidal properties of charophytes in relation to mosquitoes. He was satisfied that there was nothing in the theory and, moreover, made a fine collection of these plants there, one of them, *Nitella Blowiana*, being named by Groves in his honour.



R. B. Conroy, Ph.D.

His specimens were all properly mounted by floating them out and latterly, on Groves's advice, he started preserving also some suitable fruiting portions in fluid, a practice that alone admits of the satisfactory determination of delicate specimens.

Blow had various other interests. He was an expert photographer and a great collector of prints and other works of art in Japan, where he lived off and on for fifteen years.

During the last war he drove ambulances for the French Red Cross and was made a Chevalier of the Legion of Honour.

Blow's life was full of adventure and he thoroughly enjoyed it all. Even after he had passed eighty he still maintained much of his youthful energy. His kindly, cheerful disposition brought him a vast circle of friends, many of very old standing.

A fine account of this remarkable man's eventful career by Mr Reginald Hine appeared in the *Hertfordshire Express* of January 25, 1941.

G. O. ALLEN.

Blow was by so far the oldest member of this Society that his name can be first found in the membership list printed in the Report for 1872 (as J. B. Blow, corrected in the next Report). He sent *Centaurea aspera* for distribution in 1876, from Guernsey and Jersey. One of the almost forgotten records made by him is *Filago gallica* from Hertfordshire, a specimen of which is in the Natural History Museum among the vouchers of the Botanical Record Club, of which he was Curator and Treasurer for many years.

A. J. WILMOTT.

ROBERT HENRY CORSTORPHINE, who died on March 25th, 1942, after a short illness, was born on November 13th, 1874. He was the son of Henry Corstorphine, English master at Arbroath High School, and at that school he received his early education. Proceeding to St Andrews University he did brilliantly in taking his B.Sc. in Chemistry, Botany, and Zoology, obtaining a distinction in the last-named. From the University he went to the West of Scotland Technical College, Glasgow, where he taught Chemistry and carried out investigations with G. G. Henderson on the Benzyl Group, the results being published in the *Transactions of the Chemical Society* (1901: "Condensation of Benzyl with Dibenzile Ketone"). He later moved to Dundee, still teaching Chemistry, but it was not long before he returned to Arbroath to join the publishing firm of T. Buncle & Co. (later Ltd.), of which he was Managing Director for nearly 40 years, dying only just before the celebration of the centenary of *The Arbroath Guide*, which had for so long been his life's work. The high standards which he set and his great attention to detail, coupled with his training in Botany and Zoology, resulted in the publication by the firm of several biological periodicals, and of various County Floras. In the production of illustrations he set a very high standard: the plate of my *Orchis hebridensis* was better than the original photographic print which I sent him!

His interest in Botany, which started in the course of his University career, developed into his chief hobby. The existing Flora of his county—that published by Gardiner in 1848—was so much out of date that Corstorphine set out to publish an up-to-date one to supersede it, and in this, he was assisted by his wife. In the course of the work to this end he explored all parts of Angus, but especially the Clova area, where later he had a residence. His knowledge of the flora brought him into contact with most of the British botanists, to whom Clova is, at some period of their lives, a lodestone. All who thus got to know him will remember, with a keen sense of loss, the delightful hospitality which they received from him and Mrs Corstorphine, his vivid sense not only of humour but also of fun, his companionship and guidance in the field, and his cheery help in whatever problem happened at the moment to be in the foreground. He was a good judge of character, and until he knew his man he sometimes developed a "blind eye" for some rarity being sought, for he had an extraordinary love of country, and took what might be called a "fatherly" interest in the safety and good health of its floral treasures. As a former teacher, he also had a dislike for "spoon-feeding," and preferred to let his visitor discover the plant for himself where possible, during the course of which he gained, I think, considerable insight into the character of his companion. He particularly deplored the destruction of the native flora by over-collecting, and I remember his discourse on the condition of Clova in respect of *Hieracia* before its spoliation by the "Hieraciarchs" of the previous generation. I have myself had the privilege of seeing one part of our mountains which these collectors never visited, and the abundance of the alpine hawkweeds in that place was such that I then felt able to understand Corstorphine's remarks about Clova "before and after." Corstorphine would sometimes point the lesson as some visitor was lunching with him at the top of Jock's Road, with the remark that "this (few square yards of green in front of him) was where Gardiner formerly got the *Juncus castaneus* which he distributed in such quantity," or words to that effect. It certainly is far too little realised how easy in some localities it is to exterminate a rarity—one by one, even—and all botanists should be alive to the danger of indiscriminate collecting.

As he worked at the Flora of Angus, Corstorphine amassed a fine herbarium of the county, the specimens in which were generally sent for revision by experts on the various groups. The Flora MS. is, unfortunately unfinished, and Dr Taylor has undertaken to finish, revise, and have it published. The herbarium of Angus plants, when this has been done, will go to Dundee University. His life was so full that he had but limited leisure, though even so he sometimes would take a day off to help some searcher who was failing in his quest for some special plant. Apart from botanical work such leisure as he found was spent in an occasional day's angling, or a game of golf, at which in his youth he showed some proficiency. On rocks he was a good climber until a serious accident forced him to go more gently. He was one of the few original members

of the Arbroath Special Constabulary, in which he enrolled in 1914 before volunteering for service in France as a transport driver, 1914-1918.

In addition to his membership of our Society he was a Fellow of the Linnean Society of London and of the Botanical Society of Edinburgh. He was also a member of the Moss Exchange Club, and with Mrs Corstorphine made many records for the bryophyte list of Angus. His death is a great loss to our own Society, for his technical knowledge and experience were of great help to us in the production of our Reports, as these had been in Dr Druce's day, both in the Reports and publication of County Floras. He was one of those who cannot be replaced, and who will be greatly missed,

A. J. WILMOTT.

R. H. Corstorphine will be very sadly missed, not only for his great genius for hospitality equally shared with Mrs Corstorphine, but for his wisdom and guidance both in the open and literary fields, his very high standards achieved in the scientific publications through impeccable attention to detail, his clarity of vision which enabled him to reach quickly to the core of a problem or difficulty, his ability to judge character which made him distinguish instantly the despoiler from the trustworthy botanist, his sense of humour and youthful sense of fun, and above all, his kindness and unfailing readiness to help all who sought his counsel.

M. S. CAMPBELL.

FRANCIS DRUCE, born on January 3rd, 1873, was killed on the night of 16th-17th April 1940, by an enemy bomb which burst outside his shelter after passing through his flat. The ensuing fire almost completely destroyed his collection and library, except for a number of valuable books, mostly herbals, which had been removed for safer storage, and are now mainly divided between the Linnean Society of London, who receive the fine copy of the Grete Herball, and Mr I. A. Williams. The fine collection of County Floras and related works was completely lost.

That such a peace-loving man should meet such a violent end seems particularly incongruous. He was of a more than usually retiring and reserved nature, avoiding crowds and preferring the company of one or two on his botanical expeditions, during which he had visited most areas of the British Isles and had seen *in situ* nearly as many of our native plants as his better-known namesake, Dr G. C. Druce.

Educated at Harrow and Oxford, he entered the old-established solicitor's firm of Druces & Attlee. Poor health brought about a partial retirement in 1910, but he did not completely retire until 1923. By temperament and training he made the ideal Treasurer for Scientific Societies, and in this capacity served the Royal Meteorological Society from 1913 to 1918 and again from 1925 to 1932. He was Treasurer of the Linnean Society from 1931 to the autumn of 1940, when he became Master of the Innholders' Company, of which when younger, in continuance of family tradition, he had been clerk. Of our own Society he became Treasurer when Sir Roger Curtis left this country, and during his Treasurership he did much to put and keep our finances on a sound

basis. His legally trained mind was also most helpful on our Rules Subcommittee when the existing Rules were drafted. At the time of his death he was Acting Secretary during Mr Chapple's absence on military duty.

Meteorology was an early but life-long interest to him. He formed a considerable library on the subject, which he presented to the Royal Meteorological Society about 1934, but he continued, even when travelling, his regular observations on temperature, winds, thunderstorms and clouds. His chief hobby, however, became the collecting of flowering plants and botanical books. The latter was the subject of an article in the Private Libraries series in the *Times Literary Supplement* (31st October 1938). His herbarium, of which but a few sheets remain, was composed almost entirely of plants collected by himself, mainly British.

Since 1919 I have explored with him most parts of the British Isles. He was a man of regular and conventional habits, which somewhat restricted the exploration of some of the more out-of-the-way hills, for he preferred to start after breakfast and return for tea. But he went extraordinarily well on the hills, especially on rock, going easily in places where with my unsound knee I could not attempt to follow. He seemed absolutely devoid of fear. If he thought he could obtain a specimen on difficult rock he just went and got it—if he thought it unsafe to try, which was rare, he just left it. To see him leaning over the edge of the summit of Ben Nevis to examine the precipices below, and calling to me over his shoulder that they were the finest precipices he had seen in the country, made me shiver, but I came to learn that he was quite safe, wherever he chose to go. Although a disciplinarian, impatient—sometimes even intolerant—of weakness, he was so considerate of my weak joint that I was never made to feel that its handicap was a nuisance to him—"We won't go up there, I don't think you would like it," or some such remark after he had made a reconnaissance, and the place was left.

He was an excellent organiser, running his expeditions to schedule, and he was Spartan in his determination to carry out programmes, regardless of anything but the very worst weather. Possibly his meteorological knowledge prevented him from making many mistakes, and I soon learnt that if he carried a macintosh I had better do so, and if he didn't, I need not, whatever the weather looked like. I once sweltered with one under a blazing sun, but never again. I remember starting off in heavy Irish mist to ascend Brandon Mountain from the east. What the summit would be like I feared to imagine, and as the ascent must be made by a single path which was unknown to us, I felt supremely unhappy when, after less than a mile, the water began to run down my spine, and was most relieved when Druce turned to me and said placidly, "Well, I think this is utterly ridiculous." But that was the only time I remember turning back, though I have vivid memories of standing eating a soaking lunch in torrential rain in Corrie Kander and on Lochnagar, and of hunting *Luzula arcuata* on the Ben More Assynt massif till we were unable to see for the rain which poured over our eye-balls.

every time we bent down to look at anything. It was this determination, coupled with efficiency and disregard of personal discomfort that made him a force to be reckoned with when anything had to be done.

He often seemed unable to go gently. I remember leaving London with him overnight in a heat wave and arriving for late breakfast at the Lawers Inn. It had been a tiring journey: we would have a quiet day and a stroll round. We had better take some lunch so that we should not feel tied. The result was that soon after midday we were overlooking Glen Lyon and picking the *Carex atrofusca* and *Carex microglochin* we had come to Lawers to see, in such biting cold wind from the Ben that my fingers were completely numbed white. "Rest" days were a little apt to be of this sort, a stroll becoming a hard day. But after dinner we would often stroll to some woodland haunt of birds and lie resting listening to their evensong. Or we would watch some glorious sunset, such as one from the end of the Torridon road over the Western Isles, a riot of colour never to be forgotten. At such times his rather restless soul seemed fully at peace.

Only once do I remember him excited, and the cause was—a rainbow! Rainbows, even fine double ones such as this was, are among the things that one takes for granted as being fixed and uniform. When, therefore, one sees a perpendicular rainbow shaft ascending like a pillar outside each rainbow arc and joining it where it disappears into the sea, one may well stare at it in wonder. We were returning to Flodigarry from the Cuillins, and Druce, noticing it first, cried out—"Oh! I say! Stop! Stop!!" And indeed it was a remarkable sight, astounding and unbelievable. The explanation was, however, simple, the pillars being parts of additional rainbow arcs formed by the reflection of the sun in the glassy waters of the sea behind us. It took the Outer Hebrides to break quite through his iron personality. As we landed at very low tide at Rodel from North Uist, on seaweed-covered and very slippery rock some distance below the jetty, and staggered along with our luggage, in imminent danger of going into the sea at any moment, his remark "I feel somehow as if nothing really matters" showed that even he was not impervious to the quality of life in the Outer Isles.

His love of Nature was very deep and intense. Wild Roses were probably his favourite flower, and they never failed to arouse his admiration. During our first visit to Thirsk the lanes were a riot of colour and it was easy to understand why Mr J. G. Baker took such an interest in them. Druce developed a really good eye for, and knowledge of, our native plants. At first it was generally I who found the rarity we were hunting, but in later years we divided the honours. On our journeys together we discovered *Myosotis sicula* in Jersey, rediscovered the supposedly extinct *Spiranthes gemmipara* in its original Cork station, and discovered two Orchids new to Science—*Orchis Francis-Drucei* and *O. kerryensis*. *Myosotis brevifolia* we discovered in Teesdale, but when on my return I showed it to Salmon as a new species, he told me that he was already describing it himself (though he did not do so until he had obtained better material the following year). Apart from the numerous

successful hunts we had together, Druce made great numbers of trips to various places, and the revision of his collection, had it survived, might well have produced much further of botanical interest. He made no study of any critical genus, although he often collected material for study, and he preferred that others should write up the results of his collecting. Only just before his death did he, with Mr Sandwith, publish in the *Journal of Botany* (1941, p. 86) an account of a rare Abyssinian crucifer—*Brassica integrifolia* var. *carinata*—which he had found on soil thrown over a shelter in Chelsea.

He gave his services freely and generously to causes which interested him, and among those who missed him greatly were they with whom he worked in connexion with his parish church, and particularly the boys' club, which was one of his great interests in life. His friends were glad that he did not live crippled to know the havoc wrought among his treasures.

A. J. WILMOTT.

GORDON TRAVERS FRASER was born at Tralee, Co. Kerry, on 28th August 1882, and died on 1st August 1942, after an illness of nearly three months. He was educated at Charterhouse and Trinity College, Cambridge, where he gained a B.A. degree, and rowed in the 1st Trinity Boat in the Bumping Races, winning his oar in 1902 and 1903. After coming down from Cambridge, he took up Civil Engineering and for some years he was on survey work in Ireland with his father. He was then engaged in the construction of London Tubes, and from 1908 to 1910 in South America on building the Transandine Railway in the Argentine and Chile. During the first world war from 1914 to 1918 he was working for the Government constructing a camp at Chiseldon, Wilts, and the Ordnance Depot at Didcot. Later on he took a Commission in the R.E. and was in charge of work at the Chepstow shipyards. When the war was over, he was engaged in building a railway for the Shale Oil Works in Norfolk and for the R.A.F. Camp at Halton, Bucks. Then for a few years he took up poultry farming, and when he finally retired he came to live in S. Devon in 1934.

Soon after his arrival he joined the Torquay Natural History Society, and quickly made his presence felt among local botanists. He was elected hon. secretary of the Botanical Section in 1935, two years later a member of the Committee, and Hon. Librarian in 1941, a post which he held until his death. His work in connection with the Society cannot be separated from what he did for the *Flora of Devon* and the Devonshire Association. On joining this Association in 1935, he immediately began to take an active interest in the preparation of the Flora, so that in 1936, when Rev. W. Keble Martin was made Editor, Fraser was appointed on to the Editorial Committee, and soon after that to be joint Editor. He brought to this work an infectious enthusiasm which inspired everyone connected with it, so that the whole mass of material for the Flora was collated and published by the summer of 1939. During these years he organised the weekly summer walks of the

Torquay N.H.S., and used them as a fruitful means of contribution to the Flora, and the Torquay neighbourhood has probably been more closely combed botanically than any other part of the County. Fraser also did much of the work of communicating with the expert referees, and of putting them in touch with the herbaria in the County. At the same time, setting to work himself assiduously to collect fresh material both for present use and future reference, he built up at the Torquay N.H.S. Museum a valuable representative County Herbarium, which had all the critical species and genera examined and named by experts.

In 1938 he had been appointed Botanical Recorder to the Devonshire Association, and as soon as the Flora was published in 1939 he began to get together material for a Supplement, and it is pleasing to know that he saw the publication of this early in 1942 as a *Supplement to the Transactions of the Devonshire Association* for 1941, shortly before his health broke down.

As a botanist Fraser himself would have been the last to claim to be an expert; and this was true only in the sense that he did not specialise in the study of any particular genus or order. But he had a wide and exact knowledge covering all the orders, and being a painstaking, careful worker he was quick to see what should be sent to the specialist for further examination.

The chief characteristics by which Fraser will live in the memory of his friends are his enthusiasm and energy. No task was taken up without his throwing himself completely into it as a work to be done, and to be done in the best possible way. Along with this was a capacity for inspiring in others the same enthusiasm, so that he created a body of keen helpers, whom by his tact and leadership he was able to make into a team. Under his guidance the Torquay N.H.S. excursions made a great contribution to the Botany of Devon, and he has left a memorial to himself in the Herbarium at the Society's Museum. He found it a collection of dried plants, and left it—and in this he was ably and untiringly helped by his wife—a herbarium, well arranged and representative of the County Flora, which should be of great value to future investigators. His loss is greatly felt in the district and those who were associated with him in his work, will always keep a grateful memory of the inspiration which he provided.

FRANCIS M. DAY.

PATRICK MARTIN HALL, M.C., F.S.I., F.L.S. (1894-1941). Patrick M. Hall, well-known and much-esteemed among British field-botanists, suffered a breakdown in health at the beginning of June 1941. Complete rest was ordered and, his eyesight being impaired, he was at once cut off from the solace of plants, books and correspondence, interests which would normally have occupied such a period of bodily inactivity. War-work had made impossible his annual botanical holiday in 1940, but he hoped that early August 1941 would bring such recovery as would allow him to spend a fortnight in his favourite Perthshire locality. For a time it seemed as if his hope would be realised, and in July he was op-

timistic about his condition. His sudden death on 5th August was a great shock to his family and friends.

By profession a chartered surveyor, partner in the Portsmouth firm Hall, Pain and Foster, and well-known in the south of England as a land-valuer, his recreational interests included field-botany, cricket, and the collection of old glass. During the 1914-18 war he served in the army in India and in Mesopotamia, winning military honours, attaining captain's rank, and being twice mentioned in despatches. The outbreak of the present war saw his appointment as County Chairman of Auctioneers for Hampshire, a post under the Food Ministry which carried duties enough to leave scant time for hobbies.

Hall was the only son of the late Ernest Hall, F.S.I., of Portsmouth, and was born on March 14th, 1894. He was educated at Winchester College, and Oriel, Oxford, as a classical scholar. Being interested in nature as a boy he joined the College Natural History Society and gravitated to the botanical side of its activities. This was the time he became interested in Violets and very soon he was in touch with Mrs E. S. Gregory, the authority on the genus in Britain thirty years ago. Many were the specimens sent to her for identification and comment. Then, too, he began his study of the Orchidaceae, and in the report of the Winchester College Natural History Society, pp. 8-12, 1912-3, published a paper on local orchids with R. B. Ullman. This article is noticed by Dr G. C. Druce in our Report for 1913 and several of the orchid hybrids referred to form the subject of plant notes in that Report. It would be about this time that Hall joined the Botanical Society, possibly when up at Oxford. His name first appears as a member in the Report for 1914, issued in 1915, by which time he was serving in the Army abroad.

On demobilisation he entered his father's business and qualified as a chartered surveyor, becoming a partner in the firm. He was a past Chairman of the Hants, Dorset and South Wiltshire Branch of the Chartered Surveyors' Institution, and an outstanding member of the Council of the Royal Counties Agricultural Society.

From about 1927 (he married in 1920) Hall began to take a much more active interest in field botany than hitherto and commenced to extend his herbarium, paying special attention to the plants of Hampshire. Being a member of the Hants Field Club, he soon was looked to as the authority on the plants of the county, and wrote several papers in the Club's *Proceedings*, chronicling the discoveries made up to the time of his death. His field work rapidly brought him into personal touch with most of the active members of the Botanical Society, especially Dr Druce and W. H. Pearsall.

On the death of the last named in 1936 Hall was appointed Hon. Editor of the Society's Reports and effected a raising of the standard of excellence and accuracy of our Reports, with special emphasis on the accuracy as related to plant records. Having become recognised as an authority on British Violets, Pansies, Bladderworts and Orchids, he had an extensive correspondence with British and Continental botanists. Holidays were nearly always spent on botanical excursions; the writers

have, in conjunction with Dr W. A. Sledge especially, many happy memories of days on Scottish mountains in sun and rain. We were always keen to explore and to collect plants from places other than the usual recorded stations and by following this policy often made most interesting discoveries. Hall was invariably enthusiastic in looking over "new ground" or trying to verify old or doubtful records, even in a fairly well-worked county like Hampshire. He knew intimately the New Forest and all the scarce plants found within its boundaries, and was greatly concerned over the diminution in quantity of some of them through over-collecting and other causes. It was always a joy to him to see a new plant, either to Hampshire, or one he had not seen *in situ* before. In Scotland especially this was noticeable; in Perthshire, where we saw *Carex atrofusca* in all its known stations; and on Deeside, going to Ben Avon one day for *Saxifraga caespitosa* and *Luzula arcuata*.

Apart from his botanical activities Hall was deeply interested in old glass, being a member of the Glass Collectors' Circle and an expert on early English wine glasses. He had a peculiar flair for discovering unusual specimens, of which he made a large and representative collection. As a cricketer he played for Hampshire and was for sixteen years honorary secretary of the Hampshire Hogs besides being a member of the M.C.C.

It is difficult to do justice in a paragraph to the character of the man himself. To those of us who counted him among our friends, there is nothing that can be said; to those, less fortunate, to whom he was only a signature, such a notice as this can convey little of his quality. Big in mind as in frame, light-hearted as a boy yet shrewd in assessment, devoid of affectation as of malice, ever-ready to lend his great organising ability to promote an activity even when circumstances prevented his own participation in it, it is trite to say his place will be hard to fill. Perhaps he would be content to have us sum him up as typical of the best kind of English gentleman, always ready to treat a minor calamity as a joke and a major one as just another hurdle to be taken. This was the man we knew, and for us, privileged in sharing his company, there are places, incidents, phrases even, forever inseparable from the name and memory of P. M. Hall.

His Herbarium has been bequeathed to the Department of Botany, Natural History Museum, with the exception of the Hampshire and Isle of Wight plants, which are to go to the projected County Museum at Winchester. In 1940 Hall, with the help of Mr Wallace, began to form a bryological section of the Hampshire collection.

R. MACKECHNIE and E. C. WALLACE.

Some references to papers by P. M. Hall may be useful:—

ORCHIDS.

- 1931: "Some Notes on British Orchids in 1930" (*B.E.C. 1930 Rep.*, 442-453).
 1933: "Three Hybrid Orchids" (*B.E.C. 1932 Rep.*, 364-366).

- 1934: "Abnormal Flower of *Cephalanthera*" (*Journ. Bot.*, lxxii, 49-51).
 "Notes on British *Orchidaceae*" (*B.E.C. 1933 Rep.*, 670-681).
- 1936: "An Abnormal Inflorescence of *Orchis mascula* L.—New Hybrid Orchid [$\times O. latifolia$]" (*Journ. Bot.*, lxxiv, 326-329).
- 1937: "The Irish Marsh Orchids" (*B.E.C. 1936 Rep.*, 330-352).
- 1939: "Natural Bi-generic Hybrid Orchids in Great Britain" (*S.E. Nat. and Antiq.*, xlvi, 23-35).

UTRICULARIA.

- 1939: "The British Species of *Utricularia*" (*B.E.C. 1938 Rep.*, 100-117).

HAMPSHIRE FLORA.

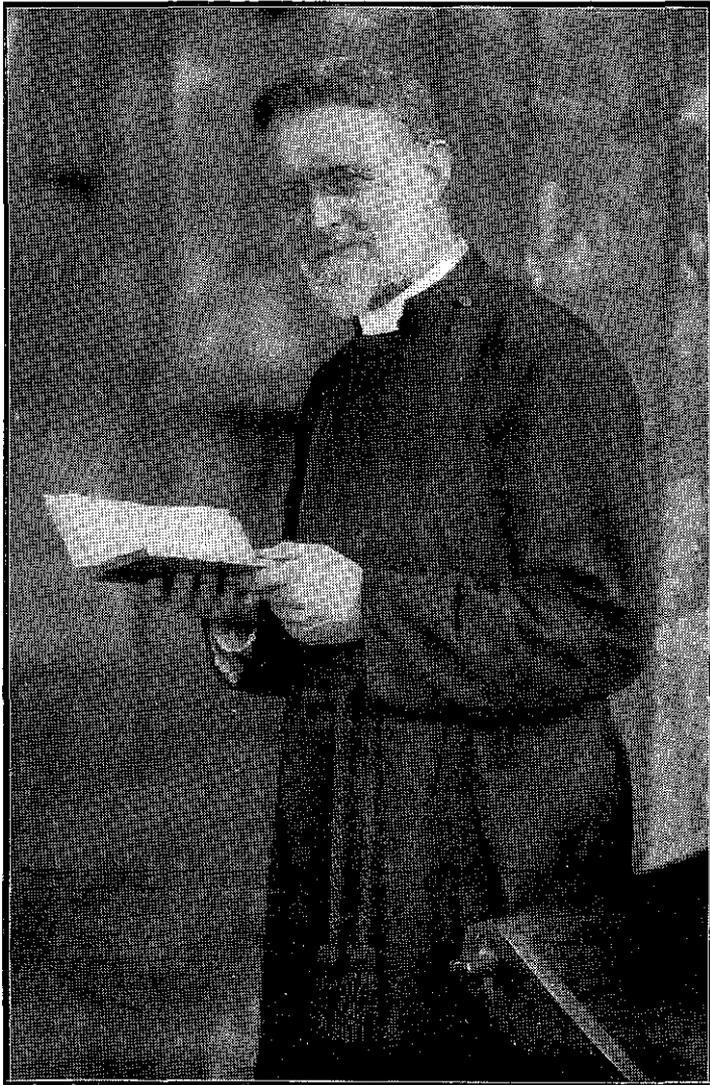
- 1941: "Hampshire Plant Notes" [followed by] "Wool-Aliens at Portchester, 1939" (*Papers and Proc. Hampsh. F.C. and Arch. Soc.*, xv, 62-76).

The Rev. H. J. RIDDELSDELL, M.A., A.L.S. (1866-1941), was a well-known British botanist, and his death, which occurred on 17th October 1941, has deprived his many friends and colleagues, who at various times collaborated with him in local flora work, of a happy association which will be much missed. British Botany was to him an absorbing hobby during the greater part of his life, and his never-flagging enthusiasm enabled him to accomplish an immense amount of collecting and systematic work. He specialised to some extent in critical genera, and particularly in the large genus *Rubus*, on which he became an authority.

Entering business after leaving school, he studied after business hours with such success that he gained the B.A. degree of London University and an Exhibition for Jesus College, Oxford, where he graduated, gaining the B.A. degree with honours. He obtained the Hall-Houghton Senior Greek Testament Prize and was enabled to stay up at Oxford for another two years. It was then that, making the acquaintance of a local botanist, he first became interested in botany, from which time his interest in the science never flagged.

At the age of 25 he took Holy Orders, when he became one of the curates to the parish church of Leeds. In 1897 he went as Sub-Warden to St Michael's Theological College, Aberdare, and later, when the College moved to that city, at Llandaff, 17 years in all. Here he began botanizing in earnest, and eventually produced "The Flora of Glamorgau," published as a Supplement to the *Journal of Botany* in 1907.

In the year 1908 the Rev. H. P. Reader had resigned the editorship of the *Flora of Gloucestershire*, which was being sponsored by the Cotteswold Naturalists' Field Club, and it became necessary to find a new editor. Riddelsdell was offered the post and accepted it. An immense amount of manuscript thereupon came into his hands, including not only the three years' accumulations of his predecessor, but also a mass of records and lists made by Boulger and his workers thirty years previously. In 1909 Riddelsdell produced the first of many Reports on



REV. H. J. RIDDELSDELL.

the Flora in the *Proceedings* of the Club. He revised the botanical districts into which the county had been divided, making seven to correspond with the drainage areas.

He increased the number of local secretaries, consulted the National and local herbaria and gave detailed instructions to Club members as to areas to be worked and the nature of the plant lists required. His subsequent criticisms of lists sent in were apt and instructive; there was too large a proportion of aliens, rarities and favourite plants such as orchids, and not enough common plants and critical species; it was important to know where common plants do *not* occur. In 1911 he issued a list of desiderata for specified localities.

In 1914 he became Rector of Wigginton in Oxfordshire. The War then intervened and the work was partially suspended. After the War he became Vicar of Bloxham, and there was little time for botanical work, what there was being reserved for the Rubi. He was associated with, and later carried on the work of, the Rev. W. Moyle Rogers in the study of this genus; afterwards with W. C. Barton he described a number of new *Rubus* species.

In 1932 the work on the Gloucestershire Flora was at a low ebb, and the Club appointed a Botanical Sub-Committee under the Secretaryship of the late C. W. Hedley, in order that there should be a definite organization. In 1936 Riddelsdell retired from parish work and went to live at Goring in Berkshire. From now on he had at last the leisure to put all his energy into the Flora, which he had come to consider his life's work. The manuscript was typed in batches, which were passed through the hands of specialists, the Introduction and nomenclature were set in hand, and a final revision had begun and all neglected areas explored when in 1938 he became seriously ill and was compelled to discontinue all work. After thirty years of work it was tragic that he should not have had the satisfaction and reward of completing the Flora, and the sympathy of botanists generally was accorded him. It remained for the Committee to carry on the work, which it has fortunately been possible to do up to the present time.

Up to the time of his illness, his mind was as acute as ever, and his enthusiasm, which was especially in evidence at field meetings, undiminished. No tramp was too long or bog too wet for him in his search for suspected species.

He was a scholar, of devout mind and courteous disposition, who, though forming definite opinions, was always willing to defer to those of others, with whom his association was at all times a pleasure.

He wrote many articles and notes in the *Proceedings of the C.N.F.C.* Commencing in 1913, he wrote on *Epipactis atroviridis*, *Helosciadium*, Distribution of *Rubus* in Gloucestershire, *Carex tomentosa*, Critical Plants recently identified, and The Phanerogamic Flora of the Cotswold Hills. In the *Journal of Botany* his writings were always of great interest to county botanists. Commencing in 1905 with an account of Lightfoot's Visit to Wales in 1773, he contributed notes on *Poa palustris*,

Ranunculus ophioglossifolius, *Montia segregates*, *Draba muralis*, *Himantoglossum hircinum*, *Ranunculus Lingua*, and many notes on Gloucestershire records.
W. R. PRICE.

Mr Barton writes:—He was a copious collector and sent regularly to the Botanical Exchange Club a large parcel with many useful notes. [He was also a prominent member of the Watson Botanical Exchange Club, becoming one of its principal Referees in 1915, and continuing in that capacity until the winding up of the Club in 1934.—Eds.]

Under the guidance of the Rev. W. Moyle Rogers he made a special subject of the difficult and critical genus *Rubus* and visited many parts of Great Britain to study the brambles *in situ*. When Rogers died his books and manuscripts with an invaluable selection from his *Rubus* specimens came into Riddelsdell's hands. With these aids he determined specimens for collectors and extended his own knowledge. The more important conclusions reached by Rogers were printed in the *Journal of Botany*, 1920-1921, and in 1930 the distribution records of *Rubus* according to Rogers' and Riddelsdell's determinations were brought up to date. From 1921 he worked at the genus in collaboration with the present writer and a number of new forms were described.

The work, however, to which he gave most of his leisure and thought was *The Flora of Gloucestershire*, sponsored by the Cotteswold Naturalists' Field Club. He accepted the editorship in 1908 and thenceforth spent much time and labour in dealing with the mass of records and lists already accumulated and in reorganising and directing the work of the Club members. In the *Proceedings* of the Club he issued many reports on the Flora and articles on matters of local botanical interest as well as (in 1933) our joint paper on "Some *Rubus* problems in the light of Genevier's herbarium." After his retirement in 1936 his time and energies were devoted to the completion of the Flora and a final revision had made some progress when illness compelled him to leave the task unfinished.

With Riddelsdell his vocation always came first; he was a scholarly and faithful servant of the church, personally devout and unworldly and beloved by all who knew him. From early years he made full use of leisure and considerable intellectual gifts, allowing no difficulties or discomforts to interfere with his purpose. His happy and appreciative temperament, his energy and enthusiasm, his quick eye and manifold interests made him a delightful companion in the field and in the study.

He was elected Associate of the Linnean Society of London in 1925. His herbarium includes a large collection of *Rubus* from many parts of Great Britain and many *Hieracia* from Wales; incorporated with that of the present writer, it is preserved in the herbarium of the British Museum.
W. C. BARTON.

RANDOLPH WILLIAM ROBBINS, who had been a member of this Society since 1929, died on August 1st, 1941, at Torquay, to which he had evacuated. From time to time he had contributed notes and records to

our Reports, and he supplied many useful records for Salmon's *Flora of Surrey*.

Robbins was a keen and careful botanist, always eager to understand new lines of research, but less willing to undertake the labour of writing up the results of his own observations. For this reason his publications were few, and almost limited to occasional papers in the *London Naturalist*, the last of which, on "Willowherbs," appeared in the latest issue of that journal. He will be remembered chiefly for his share as Joint Editor of *Botanical Records of the London Area*, which was published as a supplement to the *London Naturalist* from 1929 to 1936.

His Herbarium and collection of botanical books have been left to the London Natural History Society, of which he was a member since 1892, and of which, after holding most of the offices in turn (including that of President), he was a Vice-President at the time of his death.

J. E. LOUSLEY.

DESTRUCTION OF THE HERBARIUM OF THE PLYMOUTH INSTITUTION.

Botanists will learn with regret of the total destruction, during the air raids of the Spring of 1941, of the Herbarium of the Plymouth Institution, which was housed in the Athenaeum, Plymouth.

This herbarium, containing sheets dating back as far as 1836, chiefly comprised specimens of the plants of Devon and Cornwall, and among the collectors represented occurred the names of T. R. Archer Briggs, F.L.S. (author of *The Flora of Plymouth*, 1880); Isaiah W. N. Keys (author of *The Flora of Devon and Cornwall*, 1865-1871); the Rev. J. Jacobs (author of *The West Devon and Cornwall Flora*, 1835-1837); F. P. Balkwill; and the Rev. W. S. Hore.

The collection included many specimens of particular interest to West Country botanists, and several are specially referred to in the *Flora of Devon*, 1939, by Martin and Fraser. One remembers the well-preserved sheets of *Eryngium campestre* L., collected in September 1837 at Devil's Point, Stonehouse, by the Rev. W. S. Hore; *Carduus pycnocephalus* L., gathered on Plymouth Hoe (where, incidentally, it still grows) by Briggs in 1882; *Bupleurum opacum* Lange (labelled in error *B. tenuissimum* L.) from Flag Staff Hill, Torquay, where the Rev. W. S. Hore found it in 1837; and many others too numerous to mention here.

The Athenaeum, the headquarters (with museum and library) of the Plymouth Institution, founded in 1812, was built in the Greek style in 1818 and the collections were in the process of extensive re-organisation when the war intervened. Subsequently, during the severe air raids of March 20th and 21st, the building was damaged. Arrangements were therefore commenced to transfer the herbarium to the care of the Torquay Natural History Society but before this could be effected the Athenaeum was gutted by fire during the terrible air raids of April 21st and 22nd and all its contents, including the herbarium, were utterly

destroyed. The loss is indeed a grievous one but, fortunately, Briggs in his *Flora of Plymouth*, has placed on record most of the data indicated on the herbarium sheets and these facts are consequently preserved to us. More serious, perhaps, is the destruction of the fine Scientific Library and of the comprehensive collections of local minerals, rocks and fossils, of which the two former sections had been entirely re-organised.

E. MASSON PHILLIPS

(Curator, Museum of the Plymouth Institution).

PERSONALIA.

FLORA OF STAFFORDSHIRE (v.-c. 39).

Mr E. S. Eedes, of 19 Dartmouth Avenue, Westlands, Newcastle, Staffs., is collecting material for a *Flora of Staffordshire*, v.-c. 39, and would be glad to hear from any member who has notes or specimens of Staffordshire plants.

DISTRIBUTION OF THE OAKS.

Dr E. W. Jones, of the Imperial Forestry Institute, Oxford, writes: I am anxious to obtain information regarding the distribution of *Quercus Robur* L. (*Q. pedunculata* Ehrh.) and *Q. petraea* Liebl. (*Q. sessiliflora* Salisb.) in Britain. Both species have been recorded from practically every vice-county, but the records in local Floras mostly give insufficient information on their relative abundance and their modes of occurrence. Records of the following kind for any district will be welcome:—

Do either or both species occur?

What is their relative abundance?

In what habitats are they found—e.g. in woods, hedgerows, parks, etc.?

Is there any reason to suspect planting of either species?

For particular woods: does either species occur in pure stands? If not, in approximately what proportions are they mixed? What is the general nature of soil and vegetation in the woods in question?

To what species do individual oaks of exceptional age belong?

Records of *Q. petraea* from East of the Pennines and from the mid-land and southern counties, and of *Q. Robur* from western counties and Wales, and of both species from Scotland and Ireland, will be particularly useful.

If there is any doubt as to the identity of a tree, specimens should be sent: a few well-developed leaves from one of the twigs of the crown (not from an epicormic shoot) is usually adequate.

SEDUM RUPESTRE AND S. FORSTERIANUM.

Mr R. Lewis, of Monmouth, wishes to cultivate for comparison any forms of *Sedum rupestre* and *S. Forsterianum* from the British Isles,

and would be obliged if members able to do so would send him roots for the purpose. If there appears in any locality to be variation, he would like samples of the variants—green and glaucous foliage, smaller and larger flowers, more or less golden colour, etc. Specimens from Cheddar, St Vincent's Rocks, and the type locality of *S. Forsterianum* in Cardigan, would be particularly welcome.

T. B. FLOWER'S HERBARIUM.

The present whereabouts of T. B. Flower's herbarium is unknown, and recent work on the *Flora of Wiltshire* would be greatly helped if it could be consulted.

Flower wrote a flora of Wiltshire, first issued in the *Wilts. Archaeological and Nat. Hist. Mag.*, vol. iv onwards, published at Devizes, 1857-74. He was a careful collector of plants and in communication with most of the leading field botanists of his day.

J. W. White (*Fl. Bristol*, 1912) stated that at that time the herbarium was in the possession of Dr Harper, of Batheaston. Enquiries started in 1937 established that Dr Harper had died in 1915 and that the Batheaston house was now in the possession of his last surviving daughter, Miss Maud Harper, but was unoccupied. A neighbour believed that the herbarium was still at the house. Eventually Miss Harper was traced to a house at Lansdown, Bath. On being interviewed, this lady stated that the collection, together with Flower's books, had been sold to Messrs Gregory, booksellers, Bath. The collection was, she said, in a box, but the size indicated—about the size of a tea-chest—seems totally inadequate to hold what must have been a large herbarium. Mr Gregory, on being approached, readily remembered the purchase of the books, but was certain that he did not buy the herbarium. By his courtesy, we were allowed to question the assistant who collected the books, but were unable to elicit further information. Great help has been received from Miss M. Horsell and Mr T. H. Green, of Bath. Any further information will be welcomed.

J. D. GROSE.

NATURE RESERVES INVESTIGATION COMMITTEE.

In order to obtain material to lay before their parent body, the Conference on Nature Preservation in Post-War Reconstruction, in connexion with the proposals of the Addison, Uthwatt, and Scott Reports on National Parks, Compensation and Betterment, and Land Utilisation in Rural Areas respectively, this Committee has set up Sub-Committees, each covering a few counties, to investigate and make definite proposals concerning areas requiring preservation and/or protection, for Scientific and Economic purposes, the Enjoyment of Nature by the Public, or Education in Natural History. Such areas would include *National Parks*, smaller *Nature Reserves* of scientific interest, and *Scheduled Areas* to be preserved from "development." The *Nature Reserves* may be *Habitat Reserves* (ecological types needed for study,

etc.) or *Species Reserves* (for the protection of rare species, to which access may be controlled, or even sanctuary given). Management may be National, or Local if "*Local Habitat Reserves*" or "*Local Species Reserves*" are concerned; Local Reserves would be owned and managed by Societies, local authorities, or individuals, in contrast to the central administration envisaged for National Reserves.

If any of our members are interested in the preservation of particular areas specially known to them, or of particular species in any area, and wish to make any proposal for the consideration of the Subcommittee dealing with the county concerned, they should send the information to the Acting Secretary without delay, since the Subcommittees have to report at an early date.

The Acting Secretary will pass on such proposals to the General Secretary, Dr Herbert Smith, who will distribute them to the Subcommittee concerned. To avoid the necessity for copying, *each separate proposal should be sent in on a separate piece of paper*. Proposals should be as detailed as possible, including, where possible, data of area of land, present ownership, estimated costs, etc. Information should be marked *confidential* where desired, to avoid danger to rare species.

A. J. WILMOTT.

PLANT NOTES.

[In the case of direct contributions the name of the author of the note is printed in small capitals. When the note is an abstract, the author's name is followed by the reference, either in full or by date referring to the Bibliography. The abstractor is indicated as under "Abstracts from Literature."

Note to Contributors. Will those sending in Plant Notes please keep to the form adopted in the recent Reports. If the note comes from a publication, and more than one note is extracted from a single paper, first set down the "reference" in the same form as is adopted in the published "References" in the Reports, i.e., author's surname, comma, initials, semicolon, date of publication, colon, title of work, (and if from a serial publication) semicolon, followed by the name (abbreviated) of the serial, the volume, and pages (first and last). The Plant Note itself starts with the *B.P.L.* number and name of the genus or species concerned. If the note concerns one vice-county only, start the note with this information as is done with Plant Records. It would be a great convenience if all notes were prepared by different contributors on slips of the same size, that preferred being 8 inches by 4 inches, the long edge to be treated as the top of the page.—Ed.]

37. *ARABIS*. "A monographic study of *Arabis* in Western North America" (Rollins, R. C.; 1941: in *Rhodora*, xliii, 289-325, 348-411, 425-481) deals with the following British species:—*A. glabra* (L.) Bernh. (var. *typica* Hopkins, 1937: pubescence of stem simple or rarely forked, spreading; var. *furcatipilis* Hopkins, 1937: pubescence of the stem several-branched, appressed, smaller than in var. *typica*—the var. *lilacina* (O. E. Schulz, 1933, as *Turritis glabra* var.) with purplish to lilac-coloured buds is not considered worthy of distinction as the colour is ephemeral)—widely distributed in the mountains. *A. hirsuta* (L.) Scop., which is widespread and is subdivided into four American varieties (one of which is var. *glabrata* Torr. & Gray, 1838; non Doll, 1862).—[Wi.]

54/18(2). *BRASSICA integrifolia* (West) O. E. Schulz var. *carinata* (A. Br.) O. E. Schulz. Druce, F., and Sandwith, N. Y. (1941: An interesting Crucifer on a London shelter; *J.B.*, lxxix, 86-87) record the occurrence of this species on the raised top of a dugout shelter in Chelsea Embankment Gardens.—[Wa.]. The specimens closely resemble those of *B. juncea* in general appearance, but the fruit is most distinctive, shorter, with much shorter (4-6 mm. long) broad flat beak. The lowest leaves are often more or less pinnatifid, but often entire, obovate (dentate). The petals are bright golden yellow, up to 13 mm. long. Its native home is not certainly known, but existing records are from N.E. Africa. It was long cultivated in the neighbouring Chelsea Physic

Garden, a specimen in Herb. Thos. Moore being dated 1859, but it was thought to have been lost since 1936.—[Wi.]

55/1. *DIPLLOTAXIS TENUIFOLIA* (L.) DC. Said by A. E. Jones and J. Small to smell of foxes (at Badsey, Worcs.) (*Trans. Worc. Nat. Club*, ix, 286).

59. *CAPSILLA* Medik. The genetical analysis of certain morphological characters in various species is described by Shull, G. H. (1929: Species hybridizations among old and new species of Shepherd's Purse; *Proc. Internat. Cong. Plant Sci., Ithaca, New York*, 1926, Vol. i, 837-888). Controlled cultures were made of plants received from a wide range of localities. Ten species and two subspecies are recognised, falling into two groups: (1) the *Bursa-pastoris* group, (2) the *rubella* group. Crosses between species within the same group yield more or less fertile F_1 hybrids, while crosses between two species of different groups give sterile F_1 hybrids. The *Bursa-pastoris* group has chromosomes $n = 16$ and is considered to be a more recent derivative of the *rubella* group whose chromosomes are $n = 8$. One new subspecies and five new species are described. One of the latter, *Bursa penarthae*, is British, being based on a specimen collected at Penarth, Wales, by A. H. Trow on September 23, 1913. A photograph of the type specimen is given. The species is said to be "characterised by proximally tapering capsules, and rosette leaves of partially inhibited *rhomboidea* type."—[J. P. M. Brenan.]

87/2. *HELIANTHEMUM NUMMULARIUM* (L.) Mill. A form with cream-coloured flowers is recorded for several localities in Wiltshire (v.-cc. 7 and 8) and one with pure white flowers at Milk Hill (v.-c. 8)—(Welch & Grose, 1942, 72). I found a single plant with pure white flowers on the Devil's Dyke near Newmarket in 1910, A. J. WILMOTT.

100/9. *CERASTIUM TETRANDRUM* Curt. var. *pusillum* Wilmott. Wilmott, A. J. (1941: *Annotationes Systematicae*, VI; *J.B.*, lxxix, 102) describes this variety from dunes at Luskentyre, South Harris, Outer Hebrides.—[Wa.] It is a miniature edition of the species, with sepals only 3 mm. long.—[Wi.]

+153/6g. *MEDICAGO MINIMA* (L.) Bartal. var. *pulchella* (Lowe) Lowe—(1868: *Man. Fl. Madeira*, 166); *M. pulchella* Lowe (1838: *Trans. Camb. Phil. Soc.*, vi, reimpr. 25). 6, N. Somerset; waste ground, Bristol, with typical *M. minima*, 1941. In this variety the spines on the fruit are reduced to tubercles. New to the British List. Occurs in the Atlantic Islands and Italy, and presumably elsewhere in the Mediterranean region, C. I. and N. Y. SANDWICH.

166/3. *ASTRAGALUS DANICUS* Retz. In the *B.E.C. Report* for 1936, page 248, Mr J. D. Grose gave a list of the records of *Astragalus danicus* in South Wilts. Its continued existence over a wide area of Salisbury

Plain was observed in 1941 when it was seen in great profusion at the end of June to the north and north-east of Bulford Camp, on the chalk downs used as military ranges.

The old Marlborough Road runs across the area, which stretches west to Silk Hill and eastward across Nine Mile Water to Brimmerston Down and Milston Down as far as the Bulford-Tidworth Road. Milston Firs mark the southern limit of the main area but along the roadside it stretches to Sling Down, to near the point where a linear earthwork (shown on 1 in. Map) crosses the road. Small patches were seen south and south-east of The Wig on Ablington Down; between The Wig and Bourne Bottom and at the southern end of Bourne Bottom; also on the Harewarren to the south-west of Tidworth Golf Course; and east of the road, patches occur immediately south of the Shipton Bellinger turning and between there and the point where the county boundary crosses the road. The present eastern, western and southern limits of this main area seem to have been found, but the northward limit may not have been discovered.

The single small patch between Amesbury and Salisbury recorded by the Rev. Canon E. H. Goddard and Major G. Gwatkin in *B.E.C. Rep.* for 1928, page 733, still exists, and another small isolated patch was found in 1940 by Col. Payn in Hampshire near Danebury (*Proceedings of the Hampshire Field Club and Archaeological Society*, Vol. xv, Part I, page 65). This was a new County Record: but the plant should be found west of Shipton Bellinger, though the land abutting on the county boundary here is, or recently has been, arable.

Over the central part of the Wiltshire area, *Astragalus* forms the turf almost to the exclusion of other plants. Junipers occur and a little *Hippocrepis*, *Anthyllis*, *Onobrychis*, *Spiraea Filipendula*, *Rhinanthus*, and *Polygala calcarea* with a very few *Orchis ustulata* and *Senecio integrifolius*. The grasses are *Bromus erectus*, *Koeleria* and *Fescues*.—B. WELCH.

The known limits of distribution in S. Wiltshire (v.-c. 8) are set out by Welch & Grose (1942 : 73).

185/17c. *RUBUS INCURVATUS* Bab. var. **minor** W. Wats. Described by Watson ex J. W. H. Harrison *et al.* (1941B): "Folia parva, tenuiter serrata." From the Isle of Harris, v.-c. 110.—[Wa.]

194/7r. *ROSA GLAUCOPHYLLA* Winch var. **rupicola** Heslop Harrison. Described from North Harris, v.-c. 110.—J. W. H. Harrison *et al.* (1941B).—[Wa.] A distinctive plant with long narrow glabrous biserrate leaflets (10-32 × 5-13 mm.), glandular stipules and petioles, small rose flowers with sepals patent-erect after flowering.—[Wi.]

276/3. *PEUCEDANUM SATIVUM* (L.) B. & H. It is stated by Major R. McKinley (1938: "Vesicular Dermatitis due to Wild Parsnip;" *J. Roy. Army Medical Corps*, lxxi, 401-404) that rubbing of the skin, when "warm and sweaty," by (a) the broken stem, and (b), the yellow flower,

produced blisters (one illustrated) like those due to "mustard gas." Were it not that the yellow flower is mentioned the identification might be dubious, since the author states that "the weed is abundant on Salisbury Plain and is known locally as 'Wild Parsnip,' 'Heel Trot' or 'Hockweed' [sic]. It belongs to the natural order Araceae [sic]. It is variously referred to as *Heracleum*, the common cow parsnip, and *Pastinaca sativa*, the wild parsnip. I am unaware if they are the same." [I have twice in 1943 tried to produce a blister on my forearm without success, but the days were not hot: perhaps other members will report on the matter.—A. J. WILMOTT.]

284. **HEDERA.** A paper on the cultivated *Hederas* has been published by Lawrence, G. H. M., and Schulze, A. E. (1942: *Gentes Herbarum*, vi, fasc. iii, 106-173), in which the varieties of *Hedera Helix* L. are dealt with at great length.—[Wi.]

296/7. **GALIUM PALUSTRE** L. There are in Britain at least three plants included under *G. palustre* L., viz., a diploid (with $2n = 24$ chromosomes), a larger tetraploid ($2n = 48$), and a still larger octoploid ($2n =$ about 96) [which is probably the plant which in Britain has been called "var. *elongatum*"]. These have different ecological preferences: the diploid grows in damp places which dry out in summer, but the octoploid in the permanently damp or wet zones. *G. debile*, also a diploid ($2n = 24$), is a distinct species. *G. uliginosum* ($2n = 22$) is, in the Oxford district, a fen, and not a marsh, plant. Hancock, B. L. (1942: Cytological and ecological notes on some species of *Galium*; *Phytologist*, xli, 70-78).—[Wi.]

336(2). **Chrysogonum** L., *Gen. Pl.*, ed. v, 391, 1754. A member of the tribe *Heliantheae*, one of the genera with perfect but sterile disc florets: the leaves are basal and opposite, the ray flowers in one series, with largish yellow ligules, achenes adnate to two or three scales of the receptacle, but falling away from them.

336(2)/1b. **Chrysogonum virginianum** L., *Sp. Pl.*, 920 (1753), var. **dentatum** A. Gray in *Bot. Gar.*, vii, 31 (1882); *Syn. Fl. N. Amer.*, ed. 2, *Gamopet.*, 243 (1886). Alien, Eastern U.S.A.; sometimes cultivated as a border plant. The variety differs from the typical form in the acute serrations of the leaves. 20, Herts.; gravel pit, Ware, 1942, Miss ELDRIDGE, comm. and det. N. Y. SANDWICH.

355/3. **Madia capitata** Nutt. 1841: in *Trans. Amer. Phil. Soc.*, vii, 387; Howell 1890: *Fl. Northwest Amer.*, i, 347. The gatherings noted in *Plant Records* are so uniform and so distinct from the racemose-headed plants recorded as *M. sativa* Molina (*racemosa* Torr. & Gray) that they appear to be specifically distinct, although they are treated as a variety *M. sativa* var. *congesta* Nutt. by Jepson (1925: *Man. Fl. Pl. Californ.*, 1096). The characters given by Howell in distinguishing it are the presence of glands *all over* the plant, the inflorescence being

very viscid, the sessile heads in close capitate clusters, and the different shapes of the achenes (of disc almost linear, somewhat quadrangular, of rays oblique pyriform).—A. J. WILMOTT.

368/2c. ANTHEMIS NOBILIS L. var. *discoidalis* J. W. H. Harrison. Disc florets yellow, ray florets absent. Luskentyre banks, S. Harris, v.-c. 110.—J. W. H. Harrison *et al.* (1941B).—[Wa.]

423/1. TARAXACUM OFFICINALE Weber. Curtis, W. M. (1940: *Kew Bull.*, 1-29) discusses the results of some experimental work on "The Structure and Development of Some Apomicts of *Taraxacum*." Morphologically distinct biotypes showed considerable plasticity in habit and leaf form, being influenced by age, the supply of food, light and moisture. A regular sequence of leaf form was noted during the growing season; during the second season some biotypes had the lobed leaves of early spring replaced by a non-dissected type after flowering, while in autumn a lobed leaf again appeared. In three biotypes a slightly different sequence occurred, the autumn leaves remaining entire. In six biotypes the sequence of leaf pattern was repeated in the third and fourth growing seasons, although in older plants the leaves were less regularly lobed and were carried in an erect or sub-erect position in contrast with the flattened position often taken by leaves of young plants. Plants of an apomict having a normally lobed leaf, when grown in the shade and kept dry, formed shorter and more dissected leaves than the control plant. Growth in the shade and in a moist atmosphere for twelve months resulted in the formation of only entire leaves.—[Wa.]

427. SONCHUS. Spontaneous hybrids between *S. asper* (chromosomes $2n = 18$) and *S. oleraceus* L. ($4n = 32$) are described by Barber, H. N. (1941: *Ann. Bot. N.S.*, v, 375-377): it is sterile ($3n = 25$), and the auricles of the leaves are figured as showing features of both parents.—[Wi.]

427/2b. SONCHUS ARVENSIS L. var. *LAEVIPES* Koch. 17, Surrey; Epsom Common, 1941. These plants attracted attention from a little distance as differing from the normal form of *S. arvensis* in their larger flowers, more slender habit, and shiny leaves. Closer investigation showed that the peduncles and involucre were completely glabrous. The habitat was a depression on clay, which Mr Wallace tells me was the site of a pond which has long been drained. It is now clothed with coarse grasses, a few bushes, and vegetation characteristically associated with moist clayey places. In Central Europe the var. *laevipes* is usually found in similarly moist spots, and is a much more distinct plant than the forms from cultivated land with a few glandular hairs to which the name has sometimes been applied in this country, J. E. LOUSLEY.

457.—LEMONIUM. In "Chromosome Studies in some British Species of *Limonium*," Choudhuri, H. C. (1942: *Ann. Bot. N.S.*, vi, 183-217)

gives the following data for material obtained at Blakeney in Norfolk: *L. bellidifolium* Dum. ($2n = 18$); *L. binervosum* Salmon (" $2n = 32$ "); *L. vulgare* Mill. (" $2n = 32$ "); *L. humile* Mill. (as "*L. rariflora* O. Kuntze"—" $2n = 36$ ") ; $\times L. Neumani$ (n "usually $16_2 + 2_1$ "), but irregularities occur. Broad-leaved forms of *L. binervosum* which show some irregularity (" $9_2 + 7_1$ ") are considered to be possible hybrids derived from later generations of *L. bellidifolium* \times *binervosum*.—[Wi.]

460/2. *PRIMULA VULGARIS* Huds. The Primrose is cultivated at high elevations (c. 6000 ft.) in Ceylon in the region of high rainfall: several plants, previously normal, after transplanting to a lower elevation, developed abnormal flowers, showing more or less pronounced phylloidy of the calyx, some tetramery, and some abnormal stamens.—Bond, T. E. T. (1941: *New Phytol.*, xl, 152-156).—[Wi.]

465/1. *TRIENTALIS EUROPAEA* L. Matthews, J. R., and Roger, J. G. (1941: *J.B.*, lxxix, 80-83) discuss variation in this plant. There is much variation in length of runners, leaf size and breadth, and number of leaves in each whorl. The number of leaves varies from 3 to 10, but six leaves are of greatest frequency; dwarf ericetal plants usually seven-partite, but five- to six-partite and eight- to nine-partite corollas are met with. Seed output varies from one to eighteen, with an average of eight, seeds per capsule. The var. *nana* Druce was produced by transplanting typical woodland specimens and growing them under conditions of increased light and wind; there is, therefore, little doubt that the dwarf form of the plant is an ecological state induced by habitat conditions. Experimental study of the germination of this species is discussed by Matthews, J. R. (1942: *J.B.*, lxxx, 12-16). The experiments suggest that increased germination is obtained after freezing: In view of its northern distribution, and its greater frequency in north-east Scotland than in most parts of the country, it is possible that winter temperatures may have some definite effect on the germination capacity of the seeds. The experiments show that germination is considerably hastened if the seed has undergone preliminary freezing.—[Wa.]

480/8. *GENTIANA GERMANICA* Willd. The seeds vary in size from .35 mm. to .9 mm. diameter, the size being best given as (.35-.55-.75(-.9) mm., presumably in specimens from Hertfordshire (Salisbury, E. J.; 1943: Note on the variation in the seed size of *Gentiana germanica*; *Trans. Hertfordsh. N.H.S. and F.C.*, xxi, 346-347).

497/1. *SYMPHYTUM OFFICINALE* L. A form with bright scarlet flowers, but otherwise normal, is recorded from 8, S. Wilts., Patney, by Welch and Grose (1942 : 75).

545. *EUPHRASIA*. Callen (1941) describes two new varieties: *E. confusa* var. *maciana*, from several localities between Perthshire, Iona (Mid-Ebudes) and West Ross, distinguished from the typical form in being more robust, with larger, broader, glandular leaves and broader cap-

sule; *E. nemorosa* var. **imbricata**, from Roxburghshire (the Eildons above Melrose) and Eigg (N. Ebudes), a short (3-9 cm.) slender erect-branched plant with short internodes and small grey-green leaves, imbricate spikes, and capsule pilose throughout.—[Wi.]

573/1. *PRUNELLA VULGARIS* L. Broome (1941: *N.W. Nat.*, xvi, 202-3) reports the occurrence of a form with the leaves arranged in whorls of three at Dolywern, Denbighshire, v.-c. 50.—[Wa.]

615/3. *POLYGONUM BISTORTA* L. The British plant possesses leaves with the lower surface glaucous and puberulent on the veins, and is the variety *puberulum* G. Beck, *Fl. Nied.-Oesterreich*, i, 322 (1890).—Britton (1941).—[Wa.]

615/4a. *POLYGONUM VIVIPARUM* L. f. **Roessleri** G. Beck in *Reichb. Ic.* xxiv, 84 (1906). A variety of *P. viviparum* from Braemar, v.-c. 92, with the veins of the lower surfaces of the leaves clothed with partly rust-coloured hairs is referred by Britton (1941) to this form.—[Wa.]

615/9c. *POLYGONUM HYDROPIPER* L. var. **obtusifolium** A. Br. in *Flora*, vii, 356 (1824). Britton (1941) refers specimens collected at Ravensbourne, Kent, in 1903 by W.H.G. to this variety.—[Wa.] The leaves of the variety are oblong-lanceolate (20-25 × 6-9 mm.) obtuse, contracted into a short petiole or subsessile: the plant is more or less prostrate, with adventitious roots from lower nodes.—[Wi.]

615/27. *POLYGONUM SAGITTATUM* L. Meisner describes two varieties, α *sibiricum* and β *americanum*. The plant established in Ireland belongs to the latter variety. The Asiatic plant is less armed, with smooth or scabrid leaves bearing few pricklets on the mid-rib.—Britton (1941A).—[Wa.]

664/2. *SPIRANTHES SPIRALIS* (L. emend.) C. Koch. Major McClintock reports that about 50 very fine Lady's Tresses appeared in 1941 in an unnown lawn (see under *Orchis mascula* L.). "They had shown their heads before between mowings, but were better and more numerous than ever. But they seem to have exhausted themselves, because not one was to be seen this year" (1942). [It should be determined whether they have died or whether they are only feeding up again.—Ed.]

668/3(4). *EPIPACTIS pendula* C. Thomas. A new species, described by Thomas, C. (1942: *J.B.*, lxxix, 200-205) from the neighbourhood of Formby, v.-c. 59, S. Lancashire.—[Wa.] It is allied to *E. dunensis* (T. & T. A. Steph.) Godfrey, which also occurs in the vicinity, but attracted attention by its more robust habit, much greener colour, and pendulous flowers. Its differences from allies are set out as follows:—From *E. vectensis*: greater height (26-56 cm.), shorter bright green leaves, larger more-flowered racemes, and longer ovaries, lanceolate acute (rarely acuminate) sepals and petals, which are fulvous-tinged

outside; from *B. leptochila*: stems frequently aggregated, habit more compact and robust, pendulous flowers on weak pedicels, much longer ovaries, sepals and petals not rose-tinged, hypochile colourless within.—[Wi.]

669/1c. ORCHIS PURPUREA Huds. f. *Brookei* Wilmott. This form, which has the middle lobe of the labellum undivided and narrow, about twice as long as broad, more or less oblong but slightly contracted in the lower third, with the distal part either narrowly elliptic or long triangular, and terminating in an apiculus, is described by Wilmott, A. J. (1942B: *Annotationes Systematicae*. X; *J.B.*, lxxx, 16-17).—[Wa.]

669/14. ORCHIS MASCULA L. Major McClintock writes that owing to the war an area of about 1000 square yards of lawn (at Withyham, Sussex) was left unmown in 1941, and in this patch there appeared not less than 950 Early Purple Orchids, the existence of which was quite unsuspected; they showed every shade from the palest to the richest purple. Their reappearance was looked forward to in 1942 but very few (between 20 and 50) appeared. (Cf. *Spiranthes spiralis* (L.) C. Koch.)

684/1b. NARCISSUS OBVALLARIS Salisb. A double flowered daffodil growing with *N. obvallaris* Salisb. near Tenby, and supposed to be a sport from that species, is *N. Telemonius plenus*. As *N. obvallaris* is confined to one field and is associated there with a species which cannot be assumed to be a British native, it must be concluded that the two plants were originally introduced at this station at some remote date.—Pugsley, H. W. (1941A: *J.B.*, lxxix, 27-28).—[Wa.]

737. POTAMOGETON. Dandy and Taylor (1941: *Studies of British Potamogetons*. XV. Further Records of Potamogeton from the Hebrides; *J.B.*, lxxix, 97-101) record $\times P.$ *Billupsii* Freyer, *P. alpinus* Balb. and $\times P.$ *sparganifolius* Laest. ex Fr., all new to South Uist, v.-c. 110; $\times P.$ *prussicus* Hagstr. (*P. alpinus* \times *perfoliatus*) from Lochan near Oban Uaine, Benbecula, South Uist, and the island of Colonsay, South Ebudef, and collected by J. W. Heslop Harrison in 1940, is new to the British Isles.—[Wa.] $\times P.$ *prussicus* Hagstr. (1908: in *Bot. Notiser*, 103-106; 1916: *Critical Researches*, 148) combines the characters of the putative parents with which the British plants from Colonsay were growing, but none of the specimens possessed a flower spike from which final evidence of hybridity could have been obtained: the hybrid has been recorded for Norway and Germany.—[Wi.]

746/2. SCIRPUS MARITIMUS L. "The Section *Bolboschoenus* Palla," which includes the British species *S. maritimus*, is dealt with by Beetle, 1942 [*Amer. J.B.*, xxix, 82-88]: eight plants are distinguished, all of which have sometimes been placed under *S. maritimus*. The characters by which the British plant is separated in the key are:—Achenes compressed—to sharply trigonous; style 2-3-fid [not "lenticular; style 2-fid"]: leaf normally not over 6 mm. broad; secondary roots not con-

spicuous [not "leaf commonly 8-10 mm. broad; secondary rootlets conspicuous"]: style normally 2-fid; spikelets ovate acute [not "normally 3-fid"]:—[Wi.]

746/7. *SCIRPUS CESPIOSUS* L. In a Study of *Scirpus* sect. *Baeothryon*, Beetle (1941: *Amer. J.B.*, xxviii, 471-3) distinguishes the two plants which have been called var. *germanicus* (Palla) Asch. & Graebn.: and var. *austriacus* (Palla) Asch. & Graebn., as *S. cespitosus* and *S. cespitosus* var. *callosus* Bigelow (1824: *Fl. Bost.*, ed. 2, 21) respectively. The earliest varietal name for the typical plant appears from the synonymy to the var. *nemorosus* Roth (1789: *Tent. Fl. Germ.*, ii, 53; = var. *vulgaris* Rehb. (1827: in *Moessl. Handb. der Gewachsk.*, 74)). Details of American distributions of this species and *S. Hudsonianus* (Michx.) Fernald (= *Eriophorum alpinum* L.) are given.—[Wi.]

753/51(2). *CAREX bicolor* All. Harrison, J. W. H. (1941: *J.B.*, lxxix, 111-113; also 115) records this species as new to the British Isles from the Isle of Rhum, v.-c. 104, North Eubodes. Polunin, N. (1941: *J.B.*, lxxix, 158-160) discusses the geographical distribution.—[Wa.] *C. bicolor* is a very distinct-looking sedge, in the north a small plant about three inches high, but sometimes considerably taller, shortly creeping with narrow bluish-green leaves and arching culms bearing more or less pendulous spikes of "pastel-green fruits peeping out from behind dark scales" (Polunin, 1940: *Bot. E. Canadian Arctic*, p. 121). The upper spikelets are rather aggregated and shortly pedunculated, the lowest more distant and longer stalked; all are ovoid with roundish utricles (stigmas 2); the top one has male flowers at the base and the rest are female. The lowest bract is leaf-like and sheathing, the upper with short green tips. It is an arctic-alpine species growing on barish soil near water. As an arctic plant it is probably circumpolar, being often widespread and plentiful, but it is easily overlooked. In Europe it occurs in Iceland and Arctic Scandinavia and further south in the Pyrenees, the Alps, and the Carpathians.—[Wi.]

847. *PTERIDIUM*. In a revision of this genus by R. M. Tryon, jr., 1941, the single wide-spread species is subdivided into twelve varieties, exclusive of the numerous minor modifications sometimes named. They are treated as varieties because the critical differentiae are not stable; where two overlap large numbers of intermediates occur, and in areas where only one occurs aberrant individuals are apt to occur possessing one or other feature of another variety. They are grouped under two subspecies. The only British variety is ssp. *typicum* var. *typicum* R. M. Tryon, jr., and belongs to a group of varieties which have the fertile and sterile indusium ciliate, or pubescent, or both; ultimate segments densely to sparsely pubescent beneath between the margin and midrib; pinnules nearly at right angles to the costa, and other characters. The var. *latiusculum* (Desv.) Underwood ex Heller, recorded for Scandinavia (a relic?) and a few other localities in Europe, though mainly Eastern

North American, belongs to another set with fertile and sterile indusium glabrous, ultimate segments glabrous beneath between the margin and the midrib, or slightly pubescent on part of the segment; pinnales at an oblique angle to the costa. No other varieties occur in Europe.—[Wi.]

WEEDS in 1942. Major McClintock reports that weeds which on account of the war had to be left, mainly in beds of shrubs, at Withyham, Sussex, grew to the following "prodigious heights":—*Rubi* to over 13 ft. 2 in.; *Angelica sylvestris* L., 6 ft. 9 in.; *Heracleum Sphondylium* L., 8 ft. 7 in. and 9 ft. 10 in. on one plant; *Cirsium lanceolatum* (L.) Scop., three stems on one plant from 5 ft. 8 in. to 5 ft. 10 in.; *C. arvense* (L.) Scop., half grown at 6 ft. 2 in.; *Urtica dioica* L., to 8 ft. 4 in. (several over 8 ft.); *Holcus lanatus* L., 3 ft. 9 in.

PLANT RECORDS.

*=New vice-county record: when it precedes the *B.P.L.* number it refers only to the first record. [*] preceding *B.P.L.* number indicates that the paragraph includes a new vice-county record. †=Not native in this locality: when it precedes the *B.P.L.* number it applies to all the records.

Note.—In the case of direct contributions, the name of the contributor is printed in small capitals. In the case of records which are Abstracts, the reference is indicated in brackets, either in full or by a date referring to the Bibliography.

Note to Contributors.—For many years past, records sent in have been transcribed on to cards measuring 5 × 3 inches, in which form they are examined by all members of the Editorial Sub-Committee and then prepared for press. If those who contribute to Plant Records would send them in on 5 × 3 cards or stout paper slips (each record, or at least each vice-county's records for each species, on a separate slip) the preparation of the Records for examination and printing would be a simple matter, whereas at present it involves a very considerable number of hours of work. For those who will help in this way, the form used is:—

- Top line, *B.P.L.* number and name of species, the number preceded by * if N.C.R. and by † if not native in the locality. 405/13d. *Centaurea Scabiosa* L.
- Second line; name or variety or subspecies, followed on the next lines by any other subdivisions. Var. *succisifolia* E. S. Marshall.
- Following lines; number of v.-c., comma, name of vice-county (abbreviated), semicolon, habitat and locality of record, year (and reference number if any), name of discoverer followed (if different) by "comm." (i.e. communicavit: sent in by) and the name of the sender, followed by the name and any remarks of the person who made the determination, if different. 41, Glam.; cliffs at Lavernock Point, 1939, E. Vachell, det. C. E. Britton, who writes "....."
- (In the bottom left-hand corner add in pencil, if known, the details of the date, e.g. 15/8/39 if 15 Aug. 1939, and in the centre of the base of the slip, also in pencil, the whereabouts of any dried specimens, e.g., "Herb. Vachell," "Herb. Mus. Brit.," and "Hb. Kew." etc. (i.e. add in pencil the information not to be printed but useful for the future use of Editors.

1/1. CLEMATIS VITALBA L. 57, Derbyshire; still on an old wall at Matlock, 1942, D. McClintock.

1/1b. CLEMATIS VITALBA L. var. INTEGRATA DC. 48, Merioneth; Penmaenpool Glen; Barmouth; Llanaber; Caerdeon; Pandy Glen; Llanderfel; 1941, J. A. WEBB [the var. *integrata* appears to be the common form in v.-c. 48], comm. NAT. MUS. WALES.

3/1. ANEMONE PULSATILLA L. [+7, N. Wilts.; has been planted on Devizes Golf Course, Welch and Grose (1942 : 71).]

4/1. ADONIS ANNUA L. emend. Mill. 8, S. Wilts.; "King Manor Hill, abundant in and around several fields and flowering in spring and autumn, according to the time of the year when the soil is disturbed," Welch and Grose (1942 : 71).

*5/1. MYOSURUS MINIMUS L. 2, E. Cornwall; Bude, at least 1000 plants in a dryish lane with cart-ruts near Maer marsh, 1941, Dr J. H. DAVIE: first recorded in the *Annual Report of the Clifton College Scientific Society* for 1941, p. 13—also collected in 1942.

6/6. RANUNCULUS LINGUA L. 7, N. Wilts.; "near Chippenham, R. TANNER" (1938, still there 1941, J. D. GROSE), Welch and Grose (1942 : 72).

6/20. RANUNCULUS FLUITANS Lam. 7, N. Wilts.; near Stanley, also Hannington Bridge, 1941, J. D. GROSE, det. R. W. BUTCHER.

*6/30. RANUNCULUS LUTARIUS Bouvet. 46, Cardigan; pool between Aberporth and Mwnt, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

6/32. RANUNCULUS HEDERACEUS L. 106, E. Ross; near Munlochy, Black Isle, 1942, Miss U. K. DUNCAN.

6/33e. RANUNCULUS FICARIA L. var. BULBIFERA Marsden-Jones. 20, Herts.; Moor Park, Rickmansworth, 1942: 24, Bucks.; Chenies, 1942: 37, Worcester; Alfrick, Hill End Farm, Longdon, Guarford, 1941; F. M. DAY.

7/1d. CALTHA PALUSTRIS L. var. MINOR (Mill.) DC. 5, S. Somerset; Aldermans Barrow, C. J. Bartlett (1940: *Proc. Somerset Arch. and N.H.Soc.*, 1939, LXXXV, 234).

9/2. HELLEBORUS FOETIDUS L. 12, N. Hants; in chalk pit and hazel coppice above it, Greywell, 1941, Miss T. COLE, comm. N. E. G. CRUTTWELL. *Hants.*

11/1. AQUILEGIA VULGARIS L. 35, Monm.; near Hadnock Quarries, Monmouth, 1942, R. LEWIS.

+13/3. DELPHINIUM GAYANUM Wilmott. 24, Bucks.; in a cornfield near Medmenham; 1941, J. E. LOUSLEY.

*14/1. *ACONITUM ANGLICUM* Stapf. 42, Brecon.; roadside, Bwlch, 1942, S. G. CHARLES, comm. NAT. MUS. WALES.

+17/3. *BERBERIS ARISTATA* DC. 5, S. Somerset; this still occurs in the well-trimmed hedge in the lane at Bossington whence it was first recorded by Marshall (*Suppl. Fl. Somerset*, 9, 1914; *Journ. Bot.*, 393, 1907; *ibid.*, 74, 1909; *B.E.C. 1908 Rep.*, 358, 1909; *Watson B.E.C.*, 1908/9 *Rep.*, 173, 1909), but it is also to be seen in many other hedges about Bossington and Allerford. There can be little doubt that it has been deliberately planted. June 15th, 1942. J. E. LOUSLEY.

+21/1b. *PAPAVER SOMNIFERUM* L. var. *HISPIDUM* H. C. Watson. 17, Surrey; during 1941 this occurred in many places about Headley, Box Hill and Fetcham, in far greater quantity than I have previously noticed it—the increase is almost certainly attributable to the greater acreage under the plough owing to the war: 23, Oxon.; near Chazey Wood, Mapledurham, 1941; the species was recorded from here in 1833, and is still plentiful in the field where I found it in 1923, J. E. LOUSLEY. Surrey

21/2e. *PAPAVER RHOEAS* L. var. *CHELIDONIODES* O. Kze. 8, S. Wilts.; Larkhill, 1939, R. C. L. BURGESS (Grose, 1940, 332).

+27/1. *ARGEMONE MEXICANA* L. 7, N. Wilts.; fallow field, Spirthill, 1942, J. D. GROSE, det. and comm. J. E. LOUSLEY.

+28/1. *ESCHSCHOLZIA CALIFORNICA* Cham. sensu lato sec. Jepson. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE, det. J. P. M. BRENNAN.

31/1. *CORYDALIS CLAVICULATA* (L.) DC. 57, Derbs.; Shirley Park, Sydnope Stand, and Farley Moor, at the latter still in flower in January on an exposed cliff face at 850 ft., after days of frost and snow, 1942, D. McCLINTOCK.

+31/4. *CORYDALIS LUTEA* (L.) DC. 43, Merioneth; Arthog, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

*32/4. *FUMARIA PURPUREA* Pugsl. 76, Renfrew; allotments at Merrylee, Glasgow, July 1942, R. MACKEOHNE.

Kent 32/5. *FUMARIA BORAEI* Jord. 16, W. Kent; near Hook Green, J. R. WALLIS.

*33/1. *MATTHIOLA INCANA* (L.) R. Br. 66, Durham; rocky inaccessible cliff, Sunderland, 1851, E. C. ROBSON (as *M. sinuata*: in Herb. H. T. Mennell), comm. A. J. WILMOTT—requires investigation: the correctness of the habitat in spite of wrong identification suggests that the locality given may be correct, A. J. W.—add to *C.F.* in brackets.

†35/5. *ROBIPPA AUSTRIACA* (Crantz) Bess. 21, Middlesex; several large patches for a distance of half-a-mile on waste ground by the Thames at Chiswick, 1941, N. D. SIMPSON and N. Y. SANDWICH.

*36/2. *BARBAREA VERNA* (L.) Asch. 46, Cardigan; Newcastle Emlyn and Llandyssil, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

Kent
39/7. *CARDAMINE BULBIFERA* (L.) Crantz. 14, E. Sussex; wood near Hook Green: 16, W. Kent; near Hoathly, Lamberhurst, J. R. WALLIS.

*44/3. *EROPHILA PRÆCOX* (Stev.) DC. 45, Pembroke; Nevern, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

45/4. *COCHLEARIA MICACEA* E. S. Marshall. 104, N. Ebudes; Fionchra and Ruinsival, Rhum, Harrison *et al.* (1941A), as *C. arctica* Schlecht.

†47/2. *HESPERIS MATRONALIS* L. 36, Hereford; Birchwood, Cradley, 1939, F. M. DAY.

†49/3. *SISYMBRIUM ALTISSIMUM* L. 20, Herts.; roadside near Sandy Lodge, Rickmansworth, 1941, F. M. DAY. 57, Derbs.; all round Derby, 1942, D. McCLINTOCK.

*†49/5. *SISYMBRIUM IRIO* L. 54, N. Lincs.; waste ground, Grimsby, 1941, Miss E. F. NOEL, comm. A. J. WILMOTT.

49/6. *SISYMBRIUM OFFICINALE* (L.) Scop. var. *LEIOCARPUM* DC. 29, Cambs.; ploughed field, Fulbourn, 1939: 39, Staffs.; Penn, Wolverhampton, 1941; F. M. DAY.

50/1. *ERYSIMUM CHEIRANTHOIDES* L. 57, Derbs.; Breadsall, also Matlock, 1942, D. McCLINTOCK.

†50/7. *ERYSIMUM REPANDUM* L. 14, E. Sussex; appeared in a freshly sown lea at Lye Green, 1942, D. McCLINTOCK.

†54/21. *BRASSICA ERUCASTRUM* L. 17, Surrey; gravel pit near Mitcham Junction Station, 1941, J. E. LOUSLEY.

55/2. *DIPLLOTAXIS MURALIS* (L.) DC. 55, Leics.; Hinckley, 1942, F. A. SOWTER. 57, Derbs.; in plenty at Matlock and Matlock Bath, 1942, D. McCLINTOCK.

†61/3. *LEPIDIUM DRABA* L. 20, Herts.; cornfields, Rickmansworth, 1941, F. M. DAY. 57, Derbs.; railway bank, Gt. Longstone Station, 1942, D. McCLINTOCK.

†61/3c. *LEPIDIUM DRABA* L. var. *VIRIDESCENS* Druce. 56, Notts.; Nottingham, 1936, R. BULEY, det. and comm. C. E. BRITTON.

[*]†61/4. *LEPIDIUM RUDERALE* L. 17, Surrey; grounds of Orphanage, Beddington, 1942, J. E. LOUSLEY. 55, Leics.; colonising the cleared sites in Leicester, 1942, F. A. SOWTER. *57, Derbs.; rubbish-heap north of Derby, 1942, D. McCLINTOCK.

†61/24. *LEPIDIUM NEGLECTUM* Thell. 11, S. Hampshire; waste ground, Christchurch, 1921, A. W. GRAVESON, comm. J. E. LOUSLEY.

64/1. *THLASPI ARVENSE* L. 53, S. Lincs.; among peas near Grantham, (last year's crop wheat), 1942, J. M. MELTHAM, comm. A. J. WILMOTT.

64/4. *THLASPI CALAMINARE* Lej. & Court. 57, Derbs.; covers a wide area which includes at least Matlock, Masson Lees, Masson Hill, Heights of Abraham, High Tor (two very distinct stations), Starkholmes and Ball Eye, by Cromford—from 400 ft. to 1000 ft.: a few plants had second blooms in August; 1942, D. McCLINTOCK.

*65/1. *IBERIS AMARA* L. 7, N. Wilts.; near Lammy Down, also abundant in chalk fields on Bishopstone Downs, 1941, J. D. GROSE (Welch and Grose; 1942, 72).

66/1. *TEESDALIA NUDICAULIS* (L.) R. Br. 56, Nottingham; sand quarry between Worksop and Blyth, 1941, Percy Biggin (1941: *N.W. Nat.*, xvi, 206).

†70/1. *VOGELIA PANICULATA* (L.) Hornem. 17, Surrey; Warlingham, 1941: Sanderstead, 1942, C. E. BRITTON.

Kent
†74/2. *BUNIAS ORIENTALIS* L. 15, E. Kent; well established in cultivated fields and waste places about Forstal, Aylesford, 1939: 17, Surrey; a few plants in a hedgebank near Nohome Farm, Epsom Downs, 1941: abundant in a neglected chalky field near Court Wood, Selsdon, 1941: river bank by the island at Sunbury Lock, 1942—as this plant is recorded from here on the authority of Lt.-Col. A. H. Wolley-Dod in Salmon's *Fl. Surrey*, 1931, and I gathered it in 1930 when it occurred in greater quantity than at present, it appears to be persistent at this station, J. E. LOUSLEY. 33, E. Glos.; Bourton-on-the-Water, 1941, D. McCLINTOCK.

†76/2. *RAPISTRUM ORIENTALE* Crantz. 17, Surrey; plentiful on waste ground, Warlingham, 1942, C. E. BRITTON.

†85/3. *RESEDA LUTEOLA* L. 14, E. Sussex; roadside near Mark Cross, introduced with road materials, J. R. WALLIS.

[*]88/3. *VIOLA REICHENBACHIANA* Jord. ex Bor. 39, Staffs.; shady part of a field overlooking Maer Hall, Maer, 1942, E. S. EDESS. *45, Pembroke; near Llechryd, 1941, J. A. WHELAN, comm. NAT. MUS.

WALES. 106, E. Ross; in rocky woods near Kilmuir, 1942, Miss U. K. DUNCAN.

88/4. *VIOLA RIVINIANA* Rchb. flore albo. 3, S. Devon; Scabbacombe Head, Brixham, 1939, F. M. DAY.

88/4. *VIOLA RIVINIANA* Rchb. f. *ROSEA* Neum. Wahlst. & Murb. 3, S. Devon; Berry Pomeroy, 1941, E. M. PHILLIPS.

88/46. *VIOLA RIVINIANA* Rchb. var. *DIVERSA* Greg. 37, Worcester; Old Hills, Powick; Worcestershire Beacon, West Malvern, 1941, F. M. DAY.

Kent
88/6b. *VIOLA CANINA* L. var. *ERICETORUM* Rchb. 16, W. Kent; near Scotney Castle, Lamberhurst; Bayham, 1942, J. R. WALLIS.

88/7. *VIOLA LACTEA* Sm. 3, S. Devon; Ivybridge, 1941, E. M. PHILLIPS.

88/7×4. *VIOLA LACTEA* Sm. × *RIVINIANA* Rchb. 2, E. Cornwall; St Cleer Downs, 1941, E. M. PHILLIPS.

88/8h. *VIOLA ODORATA* L. var. *SUBCARNEA* (Jord.) Parl. 3, S. Devon; near Mansands, Brixham, 1941: 17, Surrey; near Guildford, 1941: 36, Hereford; Chances Pitch, Colwall, 1939, F. M. DAY.

88/9b. *VIOLA HIRTA* L. var. *FOUDRASI* (Jord.) Rouy. & Fouc. 37, Worcester; Croft Bank, West Malvern, 1941, F. M. DAY.

88/9i. *VIOLA HIRTA* L. var. *PROPERA* (Jord.) Gillet. 3, S. Devon; Ingsden Wood, Ilington, 1940: 37, Worcester; Croft Bank, West Malvern, 1941, F. M. DAY.

88/15. *VIOLA VARIATA* Jord. 24, Bucks.; Great Missenden, 1942, F. M. DAY.

88/20. *VIOLA LLOYDII* Jord. 16, W. Kent; Crockham Hill, 1939, A. BRADDELL, det. and comm. C. E. BRITTON.

88/28. *VIOLA DESEGLISEI* Jord. f. *SUBTILIS* (Jord.) Drabble. 39, Staffs.; cultivated field, Eccleshall, 1942, E. S. EDEES [det. Mrs E. DRABBLE].

*89/2. *POLYGALA VULGARIS* L. 44, Carmarthen; Llanedy, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

89/4. *POLYGALA OXYPTERA* Rchb. s. l. 4, N. Devon; pasture, Landrake, Cove near Tiverton, 1942, A. L. STILL, det. A. J. WILMOTT, comm. E. C. WALLACE and J. E. LOUSLEY.

92/2. *DIANTHUS DELTOIDES* L. 12, N. Hants.; gravel pit at Newtown, 1942, H. WHEELER, comm. A. J. WILMOTT. 17, Surrey; a few patches in a chalky field, and two clumps on a sandy roadside about half mile away, between Chipstead and Kingswood, 1941—the first locality was recorded in Salmon's *Flora of Surrey* on the authority of L. G. Payne, and the plant must have persisted there for at least ten years: it is possible that it has been deliberately introduced in both localities by a misguided enthusiast, J. E. LOUSLEY.

96/1. *SILENE MARITIMA* With. 57, Derbs.; casual or escape at Little Eaton, 1942, D. McCLINTOCK.

96/10. *SILENE NUTANS* L. 64, Mid West Yorks.; still on rocks at Knaresborough, 1942, E. C. WALLACE.

98/9. *LYCHNIS GITHAGO* (L.) Scop. 23, Oxon.; oatfield near Badgemoor House, Henley-on-Thames, 1941, J. E. LOUSLEY.

101/2. *STELLARIA NEMORUM* L. 35, Monm.; banks of Wye near Hadnock, Monmouth, 1942, R. LEWIS.

*101/4b. *STELLARIA NEGLECTA* Weihe var. *ELIZABETHAE* (F. Schultz). 46, Cardigan; Cenarth, and near Aberporth, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

102/3. *ARENARIA NORVEGICA* GUNN. 104, N. Eubudes; extensions of range on Rhum are noted by Harrison *et al.* (1941A); the degree of ciliation is stated to be variable.

102/6b. *ARENARIA LEPTOCLADOS* Guss. var. *VISCIDULA* ROUY & FOUC. 17, Surrey; Chelsham, 1936, A. BEADELL, det. and comm. C. E. BRITTON.

102/8. *ARENARIA TENUIFOLIA* L. 34, W. Glos.; waste heap, Old Forge, between Whitecroft and Lydney, 1942, R. LEWIS. 41, Glam.; St Fagans Castle Grounds, in several places, 1942, Miss E. VACHELL. 63, South-west York; Lindrick Common, John Brown (1941: *N.W. Nat.*, xvi, 332).

*103/3. *SAGINA INTERMEDIA* Fenzl in Ledeb. 94, Banff; at 3050 ft. on N. side of Beinn a Bhuird, J. Grant Roger (J. R. Matthews, 1942: *J.B.*, lxxix, 208).

104/1. *SPERGULA ARVENSIS* L. emend. Rchb. 69, Westmorland; cult. land near Dungeon Ghyll, 1941; not recorded in Wilson's *Flora of Westmorland* where it is stated that *S. sativa* is the usual plant, but see *Journ. Bot.*, xliv, 171, 1906, E.; C. WALLACE.

+108/1. *CLAYTONIA ALSINOIDES* Sims. 3, S. Devon; Haytor Vale, 1942, Miss R. DAVENPORT, comm. A. J. WILMOTT. 17; Surrey; over about

one acre of woodland at Abinger, 1937: Sanderstead, 1941, C. E. BRITTON. 69b; Lake Lancashire; lanes near Skelwith, 1942, E. C. WALLACE.

112/12. *HYPERICUM DUBIUM* Leers. 95, Elgin; Forres, 1942: 96, Easternness; near Beauly, 1942, Miss U. K. DUNCAN.

Kent
112/14x12. × *H. DESERTANSII* Lamotte (*H. dubium* Leers × *perforatum* L.). 16, W. Kent; Dunton Green, 1942, A. BEADELL, det. and comm. C. E. BRITTON.

†116/8. *LAVATERA TRIMESTRIS* L. 18, S. Essex; waste ground, Dagenham, H. K. AIRY-SHAW.

123/1. *TILIA PLATYPHYLLOS* Scop. 40, Shropshire; near the Woodhouse Farm, Wyke: near the top of Benthal Edge: near Bridgnorth Golf Links: Tickwood: Willey: Aldenham; George Potts (1940: *N.W. Nat.*, xv, 262-3). Apparently native in v.-c. 40, remove square brackets in the *Comital Flora*. 63, S.W. Yorks.; Anston Stones Wood, 1942. The habitat—a rocky wood on the magnesian limestone—is almost identical with that not many miles south over the Derbyshire border, where it has been regarded as indigenous. It still occurs (*vide* C. M. Rob) at Richmond (65), the only Yorkshire locality in which it has been regarded as having any claims to be considered native, W. A. SLEDGE.

123/3. *TILIA CORDATA* Mill. 63, S.W. Yorks.; Anston Stones Wood, 1942, indigenous here in my opinion, W. A. SLEDGE.

124/1. *RADIOLA LINOIDES* Roth. 106, E. Ross; near Munloch, Black Isle, 1942, Miss U. K. DUNCAN.

†125/4. *LINUM USITATISSIMUM* L. 57, Derbs.; still at Breadsall (see W. R. Linton, *Fl. Derbysh.*): also Litton Eaton and the outskirts of Derby, along the main road, never thickly, but looking well established; 1942, D. McCLENTOCK.

127/1. *GERANIUM SANGUINEUM* L. 34, W. Glos.; woods near Symonds Yat Station, 1941, R. LEWIS.

†127/2. *GERANIUM VERSICOLOR* L. 55, Leicester; roadside near Swithland Wood, 1942, F. A. SOWTER.

127/11. *GERANIUM ROTUNDIFOLIUM* L. 17, Surrey; railway station, Cheam, 1941, J. R. WALLIS.

128/2. *ERODIUM MOSCHATUM* (Burm.) L'Hérit. 34, W. Glos.; a single plant near Brown's End, Bromsberrow, 1942, F. M. DAY.

*†132/3. *OXALIS STRICTA* L. 35, Monmouth; garden weed, Monmouth, 1940, R. LEWIS.

†133/3. *IMPATIENS PARVIFLORA* DC. 21, Middx.; on the R.A.F. Station, Uxbridge, 1941, D. McCLINTOCK. 24, Bucks.; Caversham, 1941, D. McCLINTOCK. 29, Cambs.; Portugal Street, Cambridge, 1939: 37, Worcs.; near Church, Powick, 1939, F. M. DAY. 57, Derbs.; abundant at many places along the road from Derby to Matlock, e.g., Derby: Darley Abbey: Allestree: Little Eaton: Duffield Bank: Belper: Cromford: Matlock Bath: Matlock; 1942, D. McCLINTOCK.

Kent †133/4. *IMPATIENS ROYLEI* Walp. 16, W. Kent; between Little Cheveney and Marden Beech, 1942, J. R. WALLIS. 36, Heref.; banks of the Wye between Bibbings Farm and Symonds Yat, 1942, R. LEWIS. 39, Staffs.; abundant on both banks of the Lyme brook, Newcastle, 1942, E. S. EDEES (No. 2396).

†145/4. *LUPINUS ANGUSTIFOLIUS* L. 17, Surrey; growing with vetches at Chelsham, 1942, A. BEADELL, det. and comm. C. E. BRITTON.

*149/3. *ULEX MINOR* Roth. 56, Nottingham; between Buddy and Edwinstowe, John Brown (1941: *N.W. Nat.*, xvi, 207), det. N. J. Sandwith.

†154/2. *MELILOTUS ALBA* Desf. 37, Worcs.; Upton-on-Severn, 1941 (*Trans. Worc. Nat. Club*, ix, 302).

†154/3. *MELILOTUS ARVENSIS* Wallr. 17, Surrey; Deepcut, Frimley, 1941, D. McCLINTOCK.

*†154/4. *MELILOTUS INDICA* (L.) All. 82, E. Lothian; waste ground in disused garden, St Germain's, 1942, Mrs A. STEWART-SANDEMAN, comm. A. J. WILMOTT.

155/7. *TRIFOLIUM ARVENSE* L. 34, W. Glos.; waste heap, Old Forge, between Whitecroft and Lydney, 1942, R. LEWIS.

155/20. *TRIFOLIUM CAMPESTRE* Schreb. 30, Beds.; downs between Dunstable and Whipsnade, 1942, A. J. WILMOTT.

160/6. *LOTUS TENUIS* W. & K. 17, Surrey; side of farm track near Ockley, 1941, E. C. WALLACE.

166/1. *ASTRAGALUS GLYCYPHYLLUS* L. 34, W. Glos.; top of Wet Arch, Upper Redbrook, near Newland, 1942, R. LEWIS.

166/3. *ASTRAGALUS DANICUS* Retz. 33, E. Glos.; Foxcote, 1942, Miss L. ABELL.

†170/1. *CORONILLA VARIA* L. 11, S. Hants.; a large patch flowering in railway cutting, Shawford, 1941, N. E. G. CRUTTWELL. 63, South-west York; by the railway line, Oughtibridge, 1941, Percy Biggin (1941: *N.W. Nat.*, xvi, 206).

†176/2. *VICIA TENUIFOLIA* Roth. 17, Surrey; waste ground, Ham Pits, 1942, N. Y. SANDWITH.

†176/5. *VICIA VILLOSA* Roth. 26, W. Suffolk; on effluent from sugar beet factory, Bury St Edmund's, 1938, J. E. LOUSLEY.

†176/6. *VICIA DASycARPA* Tenore. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE, det. J. P. M. BREMAN.

*†178/1. *LATHYRUS LATIFOLIUS* L. 45, Pembroke; Tenby, 1942, Mrs F. L. REES, comm. NAT. MUS. WALES.

178/6b. *LATHYRUS PRATENSIS* L. var. *VILLOsus* Schleich. 41, Glam.; near Wick, 1942, Miss E. VACHELL.

*†178/7. *LATHYRUS HIRSUTUS* L. H.12—new to Ireland; in a barley field, 1942, Mrs E. BOOTH, comm. A. J. WILMOTT.

†178/18. *LATHYRUS CICERA* L. 63, S.W. Yorks.; Elland, 1905, B. B. THOMPSON, comm. A. J. WILMOTT.

†178/20. *LATHYRUS HIEROSOLYMITANUS* Boiss. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE, det. J. P. M. BREMAN.

†183/9. *PRUNUS SEROTINA* Ehrh. 17, Surrey; Frensham Common (an old tree), 1942, W. E. FAREN DEN, det. and comm. A. B. JACKSON.

184/12. *SPIRAEA FILIPENDULA* L. 33, E. Glos.; Foxcote, 1942, Miss L. ABELL.

185/27b. *RUBUS PISTORIS* Bart. & Ridd. 39, Staffs.; hedgerow, Maer, 1942, E. S. EDEES [det. F. RILSTONE].

187/2×1. *GEUM RIVALE* L. × *URBANUM* L. 39, Staffs.; roadside between Warslow and Bottom House, Butterton, 1942, E. S. EDEES.

*189/6. *POTENTILLA VERNA* L. 11, S. Hants.; between Great Yews and Round Clump, about 5 miles S.S.W. of Salisbury, 1941, B. WELCH.

189/8. *POTENTILLA PROCUMBENS* Sibth. 39, Staffs.; roadside, Audley, 1942, E. S. EDEES.

†189/11. *POTENTILLA NORVEGICA* L. 69, Westmorland; stony roadside near Colwith, 1942, N. E. G. CRUTT WELL.

†189/13. *POTENTILLA RECTA* L. 21, Middx.; Teddington, 1905, B. B. THOMPSON, comm. A. J. WILMOTT.

†189/18. *POTENTILLA INCLINATA* Vill. 16, W. Kent; gravelly bank at Swanley, 1942, F. R. BROWNING. 63, S.W. Yorks.; Elland, 1904, B. B. THOMPSON, comm. A. J. WILMOTT.

190/1. *ALCHEMILLA MINOR* Huds. (*A. PUBESCENS* Lam.). 66, Durham; roadside ditch below Langdon Beck Hotel, "growing with *A. alpestris* Schm. and *A. pratensis* Schm. but distinct," 1923, A. J. WILMOTT (No. 2000).

190/2. *ALCHEMILLA PRATENSIS* Schmidt. 24, Bucks; one patch on a grassy bank, Hampden Woods, Great Missenden, 1942, J. BEDFORD, comm. and det. A. J. WILMOTT. 39, Staffs.; roadside, Upper Elkstone (No. 2509); roadside, Hollinsclough (No. 2502); Manifold Valley, Wetton (No. 2507); all 1942, E. S. EDEES. H.36, Tyrone; road bank, Aghacolumb, Arboe, 1942, F. H. W. KERR, comm. A. J. WILMOTT. H.39, Antrim; "White Rocks" near Portrush, 1942, C. D. CHASE.

[*]190/4. *ALCHEMILLA PSEUDOMINOR* Wilmott. 39, Staffs.; roadside near Clayton, Newcastle, 1942 (No. 2501), E. S. EDEES—except in the folds and towards the margin the leaves are subglabrous above, but this variation is admitted in Lindberg's *Monograph* (p. 91), A. J. WILMOTT. *H.36, Tyrone; roadside bank, Brookend, Arboe, 1942, F. H. W. KERR, comm. A. J. WILMOTT.

190/8. *ALCHEMILLA ALPESTRIS* Schmidt. 39, Staffs.; Cotton (No. 2503); Blore and Swinscoe (No. 2504); Alstonfield (No. 2505); Manifold Valley, Wetton (No. 2622); all 1942, E. S. EDEES—all these have petioles slightly pubescent with somewhat spreading hairs, A. J. WILMOTT. *H.36, Tyrone; Dr Gillespie's rockery, and common in meadow beside Ballygawley, 1942, F. H. W. KERR, comm. A. J. WILMOTT.

191/2. *AGRIMONIA ODORATA* Mill. 7, N. Wilts.; Silk Wood, A. B. Jackson (Grose, 1940 : 334). 12, N. Hants; roadside near Bramley, 1942, N. E. G. CRUTTWELL. 24, Bucks.; wood near Hambleden, associated with *A. Eupatoria* L. var. *sepium* Breb., from which it could be distinguished not only by the fruits but also by the much larger, deeper yellow flowers, 1941, J. E. LOUSLEY. 39, Stafford; Wetton; roadside between Wetton and Wettonmill, 1941, E. S. EDEES (*Trans. N. Staffs. Field Club*, 1941-42).

*†193/2. *POTERIUM POLYGAMUM* W. & K. 46, Cardigan; border of field, Nant y Ferwig, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

193/4. *POTERIUM OFFICINALE* (L.) A. Gray. 2, E. Cornwall; near Tredinnick, Lanhydrock, 1941, E. M. PHILLIPS.

194/2g. *ROSA ARVENSIS* L. var. *LAEVIPES* Greml. 50; Denbigh; near Llanrhaidr-yr-Mochnant, 1942, N. Y. SANDWICH.

194/7. *ROSA CANINA* L. var. *DUMALIS* (Bechst.) Dum. 48, Merioneth; Caerdeen: Penmaenpool Glen, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/8e. *ROSA CANINA* L. var. *VERTICILLACANTHA* (Mer.) Baker f. *CLIVICOLA* Rouy. 42, Brecon; Ciluni Valley, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/10g. *ROSA DUMETORUM* Thuill. var. *CALOPHYLLA* Rouy. 35, Mounmouth, St Mellons, 1941, A. E. WADE, det. E. B. BISHOP. *48,

Merioneth; near Pandryodyn, with the flowering branches unarmed, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/10m. *ROSA DUMETORUM* Thuill. var. *HEMITRICHA* (Rip.) W.-Dod. 48, Merioneth; Penhelig, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/12e(2). *ROSA AFZELIANA* Fr. var. *GLAUCOPHYLLA* (Winch) W.-Dod. 48, Merioneth; Bala, with the leaflets smaller than normal, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/13b. *ROSA CORIFOLIA* Fr. var. *TYPICA* Chr. f. *FRUTETORUM* (Bess.) W.-Dod. 42, Brecon; Ciluni Valley, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/13d. *ROSA CORIFOLIA* Fr. var. *WATSONI* (Baker) W.-Dod. 48, Merioneth; Llanwchlyn, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/19d. *ROSA TOMENTOSA* Sm. var. *PSEUDO-OUSEPIDATA* (Crép.) Rouy. 48, Merioneth; Ganllwyd, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

194/20e. *ROSA SHERARDI* Davies var. *TYPICA* W.-Dod. f. *PSEUDO-MOLLIS* (Baker) W.-Dod. 42, Brecon; Ciluni Valley, 1941: 48, Merioneth; between Coed y Brenin and Trausfynydd Camp, 1941, J. A. WEBB, det. E. B. BISHOP, comm. NAT. MUS. WALES.

*+195/2. *PYRUS COMMUNIS* L. 48, Merioneth; quarry, near Barmouth, 1941, J. A. WEBB; Dolgelly, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

*196/2. *CRATAEGUS OXYACANTHOIDES* Thuill. 36, Hereford; one bush, Hanway's Coppice, Colwall, 1939: 37, Worcs.; The Narrow Hedges, Castle Morton Common, 1939, F. M. DAY.

199/20. *SAXIFRAGA TRIDACTYLITES* L. 46, Cardigan; Towyn Warren, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES. (Confirmation of record for v.-c. 46.)

+200/1. *TELLIMA GRANDIFLORA* (Pursh.) R. Br. 17, Surrey; damp copse near a house, Hambledon Heath, 1934, J. E. LOUSLEY, det. J. P. M. BRENNAN.

203/1. *CHRYSOSPLENIUM ALTERNIFOLIUM* L. 34, W. Gos.; ditch at bottom of Wet Arch, Upper Redbrook; near Newland, 1942, R. LEWIS.

*211/4. *SEDUM FORSTERIANUM* Sm. 35, Monm.; wall, between Hadnock Quarries and Symond's Yat, 1942, R. LEWIS, det. A. J. WILMOTT.

†212/1. *SEMPERVIVUM TECTORUM* L. 42, Brecon.; wall near Bwlch, 1942, S. G. CHARLES, comm. NAT. MUS. WALES.

214/1. *HIPPURIS VULGARIS* L. 51, Flint; margin of a pond, near Mold, 1939, R. R. BROOME ex A. A. DALLMAN (1940 : *N.W. Nat.*, xv, 71).

219/2. *LYTHRUM HYSSOPIFOLIA* L. 16, W. Kent; marshy area on bank of Medway near Aylesford, a single plant, 1941 (not found the following year), CYRIL WEST. 29, Cambs.; damp hollow in field, by Chippenham Park Avenue, 1941, M. S. CAMPBELL, T. TUTIN and E. F. WARBURG (rediscovered here in 1940 in the locality given in Babington's *Fl. Camb.*).

220. *EPILOBIUM* L. Determined (or determinations confirmed) by G. M. ASH, unless otherwise stated.

220/3×5. *EPILOBIUM HIRSUTUM* L. × *TETRAGONUM* L. em. Curt. 17, Surrey; near Fetcham Millpond, Leatherhead, 1941, J. E. LOUSLEY.

220/6. *EPILOBIUM LAMYI* F. Sch. 24, Bucks.; ride in Great Wood, Hambleton, 1942, J. E. LOUSLEY.

*†220/7(2). *EPILOBIUM ADENOCAULON* Hausskn. 8, S. Wilts.; Chute, 1941, Rev. W. L. FREER, comm. J. D. GROSE. 17, Surrey; streamside, Itchingwood Common near Limpsfield, 1942, J. E. LOUSLEY and J. R. WALLIS. *19, N. Essex; Ugley Wood near Quendon, 1942, H. W. PUGSLEY and N. Y. SANDWITH. 30, Beds.; Deadmansea Wood, Whipsnade, 1942, A. J. WILMOTT.

220/7(2)×10. *EPILOBIUM ADENOCAULON* Hausskn. × *MONTANUM* L. 8, S. Wilts.; Chute, 1941, Rev. W. L. FREER, comm. J. D. GROSE.

220/8. *EPILOBIUM ROSEUM* Schreb. 39, Staffs.; canal side, Cheddleton, 1942, E. S. EDEES. *51, Flint; Afonwen; 1942, J. A. WEBB, comm. NAT. MUS. WALES.

220/9. *EPILOBIUM LANCEOLATUM* Seb. & Maur. 5, S. Somerset; Hopcott and Alcombe near Minehead, 1942—fairly plentiful in lanes in several places, and apparently new to district 2 of the *Flora of Somerset*, J. E. LOUSLEY.

†220/17. *EPILOBIUM PEDUNCULARE* A. Cunn. 3, S. Devon; near Melverton Station, 1941, Miss K. H. JOHNSTONE, comm. E. M. PHILLIPS (det. at Kew).

†223/6. *ORNOATHERA PUMILA* L. (*KNEIFFIA PUMILA* (L.) Spach). 16, W. Kent; waste ground, Bidboro', Tonbridge, 1934; J. E. LOUSLEY, det. J. P. M. BRENNAN.

247/5. *APTUM INUNDATUM* (L.) Rehb. fil. 57, Derbs.; pond-side at 1000 ft. at Minninglow, 1942, D. McCLINTOCK.

*250/4. *CARUM SEGETUM* (L.) B. & H. 46, Cardigan; near Aberporth, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

265/1. *OENANTHE AQUATICA* (L.) Poir. 36, Hereford; Holme Lacey, 1939, F. M. DAY. *47, Montgomery; pond in field on S. side of the Severn between Llandrinio and Crew Green, 1942, J. W. GOUGH and N. Y. SANDWITH.

†283/1. *CAUCALIS LEPTOPHYLLA* L. 39, Staffs.; brewery alien, Burton-on-Trent, 1938, R. C. L. BURGESS, comm. J. E. LOUSLEY, conf. J. P. M. BRENNAN.

†283/8. *CAUCALIS LATIFOLIA* L. 12, N. Hants; weed in chicken run, Winklebury, near Basingstoke, 1941, Mr BECKETT (poultry farmer), comm. N. E. G. CRUTTWELL.

†287/2b. *SAMBUCUS NIGRA* L. var. *LACINIATA* L. 41, Glamorgan; Brynau, near Blackpill, 1941, J. A. WEBB: 48, Merioneth; near Pennal, 1940, and Penybont ar Dyfi, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

287/2e. *SAMBUCUS NIGRA* L. var. *VIRIDIS* Ait. 33, E. Glos.; Foxcote, near Andoversford, 1942, the greenish-white berry has a sweet flavour and is very popular with birds, Miss L. ABELL. †35, Monmouth; garden hedge, The Kymin, Monmouth, 1942, Mrs and Miss LEWIS, comm. R. LEWIS.

†289/1. *SYMPHORICARPUS RACEMOSUS* Michx. 48, Merioneth; Llanbedr, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

296/6. *GAIUM ULIGINOSUM* L. 14, E. Sussex; Newbridge, 1942, J. R. WALLIS. 34, W. Glos.; The Quabs, Bromsberrow, 1940, F. M. DAY.

†298/5. *ASPERULA ARVENSIS* L. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE.

[*]304/4. *VALERIANELLA CABINATA* Lois. 7, N. Wilts.; Lydiard Millicent, Mrs Shepherd (Grose, 1940; 334). *20, Herts.; flint wall, Solesbridge Lane, east of Chorley Wood, 1942, W. JOHNSON, comm. C. E. BRITTON. *24, Bucks; in quantity on cultivated ground at Fingest, and on old walls between Fingest and Turville, C. E. Britton (1942: *J.B.*, lxxix, 198). 57, Derbys.; in Millers Dale and by the Monsal Head Hotel,

1942, D. McCLINTOCK; far from habitations in Monsal Dale, 1916, A. J. WILMOTT.

306/2. *DIPSACUS PILOSUS* L. 36, Heref.; wood edge near Wye between Bibbing's Farm and Symond's Yat, 1942, R. LEWIS. 65, N.W. Yorks.; refound by Miss C. M. ROB at Whiteliffe Wood near Richmond, 1942—a splendid discovery which reinstates the species in North Yorkshire, W. A. SLEDGE.

328/3. *GNAFHALIUM SYLVATICUM* L. 57, Derbs.; Sydnope Stand and Stanton Woodhouse, 1942, D. McCLINTOCK.

341(2)/1. *SIEGESBECKIA ORIENTALIS* L. 59, S. Lancs; Rufford, twelve miles inland from its previously recorded locality at Freshfield, Hardy, E. (1940: *Nature*, cxlvi, 688).

†354/1. *GALINSOGA PARVIFLORA* Cav. 23, Oxon.; Oxford, reported by Druce 30 years ago from waste ground in a nursery garden, has spread last year to the adjacent Merton St., and still further to Oriel College quadrangle, where the flower beds contained a number of specimens, 1942, J. W. GOUGH.

†354/2b. *GALINSOGA QUADRIRADIATA* Ruiz. & Pav. var. *HISPIDA* (DC.) Thell. 21, Middlesex; Hurlingham, 1941, Mrs HEFORTH, comm. A. J. WILMOTT.

†354/2b. *GALINSOGA QUADRIRADIATA* Ruiz. & Pav. var. *HISPIDA* (DC.) Thell. f. *VARGASIANA* (Thell.) Mosseray. 21, Middlesex; Wilton Place, London, 1941, C. VIVIAN, det. N. Y. SANDWICH. -

†355/2. *MADIA SATIVA* Molina. 9, Dorset; temporary ley near Beaminster, 1942, A. W. GRAVESON, teste J. P. M. BRENNAN, comm. J. E. LOUSLEY. Attempts have been made to grow the plant in Europe for the sake of the oil which is extracted from the fruits, J. E. LOUSLEY.

†355/3. *MADIA CAPITATA* Nutt. 8, S. Wilts.; West Lavington, 1942, B. W. H. COULSON, comm. A. J. WILMOTT. 14, E. Sussex; ploughed up cricket field, Withyham, 1942, Major McCLINTOCK, comm. A. H. WOLLEY. DOD, det. A. J. WILMOTT. 17, Surrey; by path through (unploughed) field between W. Horsley and Clandon, 1942, H. J. BURKILL. All det. and comm. A. J. WILMOTT.

†368/1. *ANTHEMIS TINCTORIA* L. 57, Derby; near Cresswell, 1941, Percy Biggin (1941: *N.W. Nat.*, xvi, 206).

†370/8. *CHRYSANTHEMUM MAXIMUM* DC. 51, Flint; Bagillt, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

†370/13c. *CHRYSANTHEMUM PARTHENIUM* (L.) Bernh. var. *BREVIRADIATUM* (Schultes) Druce. 17, Surrey; Oxted, ligules very short, 1-2 mm. long, 1941, A. BEADELL, det. and comm. C. E. BRITTON.

†371/7. *MATRICARIA SUFFRUTICOSA* (L.) Druce. 79, Selkirk; Gala shingle at Galashiels, 1939. Possibly persistent, but more probably a re-introduction, J. E. LOUSLEY, det. J. P. M. BRENNAN.

378/1. *ARTEMISIA ABSINTHIUM* L. 36, Heref.; Bloody Furlong, Colwall, 1942, F. M. DAY.

Kent [*]†380/2. *PETASITES ALBUS* (L.) Gaertn. 14, E. Sussex, and 16, W. Kent; both sides of the brook at Groombridge, 1942, D. McCLINTOCK. *17, Surrey; roadside near Leith Hill Place, 1937, but found earlier by A. H. CARTER, J. E. LOUSLEY; southern side of Leith Hill, 1941, E. C. WALLACE.

†380/3. *PETASITES FRAGRANS* Presl. 35, Monmouth; shady hedge bank, Mayhills, Monmouth, naturalised, 1942, R. LEWIS. 106, E. Ross; naturalised on the seashore at Rosemarkie (in flower 24th February), 1943, Miss U. K. DUNCAN.

†381/1. *DORONICUM PARDALIANCHES* L. 23, Oxon.; well established under a roadside hedge between Beckley and Elsfield, 1942, J. W. GOUGH. 57, Derbs.; escaped by the river at Matlock, 1942, D. McCLINTOCK.

[*]†383/7. *SENECIO SQUALIDUS* L. 3, S. Devon; in quantity at North Road Station, Plymouth, and already spreading about the city on waste ground and bomb damage debris, 1941, E. M. PHILLIPS. 37, Worcester; roadside, Birlingham to Little Comberton, 1940, F. M. DAY. *48, Merioneth; Barmouth Junction, 1940, and Corwen, 1941, J. A. WEBB, comm. NAT. MUS. WALES. *57, Derby; tips of the Sheepbridge Iron Works, 1941, Percy Biggin (1941 : *N.W.Nat.*, xvi, 206).

383/8. *SENECIO VISCOSUS* L. 57, Derby; near Coal Aston, 1941 : †63, South-west York; side of new road from Meadow Hall to Ecclesfield : neglected garden on a Sheffield housing estate, 1941; Percy Biggin (1941 : *N.W.Nat.*, xvi, 206).

†383/30. *SENECIO TANGUTICUS* Maxim. 22, Berks.; edge of R. Kennet, Newbury, 1942 (about 20 plants, looking well established, near a timber yard), H. WHEELER, det. and comm. A. J. WILMOTT.

383/32. *SENECIO INTEGRIFOLIUS* (L.) Clairv. 8, S. Wilts.; downs between Martin Wood and Tidpit, abundant, 1942, A. H. G. ALSTON.

†385/1. *CALENDULA OFFICINALIS* L. 51, Flint; Prestatyn sands, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

396/1. *CIRSIUM ERIOPHORUM* (L.) Scop. 37, Worcs.; Coneyburrow Hill, Longdon, 1942, F. M. DAY.

396/3. *CIRSIUM HELENTOIDES* (L.) Hill emend. Huds. 63, South-west York; Anston Stones, John Brown (1941 : *N.W.Nat.*, xvi, 332, as "*C. heterophyllum* Hill").

396/4. *CIRSIUM ACAULE* (L.) Weber ex Wigg. 12, N. Hampshire; clayey woodland glade, between Old Basing and Rotherwick, 1941, E. C. WALLACE.

396/4×6. *CIRSIUM ACAULE* (L.) Weber ex Wigg. × *TUBEROSUM* (L.) All. 8, S. Wilts.; Great Ridge (Grose, 1940 : 335).

396/4b. *CIRSIUM ACAULE* (L.) Weber ex Wigg. var. *CAULESCENS* (Pers.) DC. 17, Surrey; on exposed London clay on Mitcham Common, 1941, a large variant of the species with branched stems nearly 30 cms. tall bearing 5 to 6 capitula, J. E. LOUSLEY. 62, N.E. Yorks.; Partridge Hill, Goathland, Capt. W. S. Medicott ex R. J. Flintoff (1940 : N.W. Nat., xv, 263-5).

396/6. *CIRSIUM TUBEROSUM* (L.) All. 8, S. Wilts.; Great Ridge, Mrs J. D. Grose (Grose, 1940 : 334).

396/8×9. *CIRSIUM ARVENSE* (L.) Scop. × *PALUSTRE* (L.) Scop. 17, Surrey; Warlingham, 1942, C. E. BRITTON.

396/8f. *CIRSIUM ARVENSE* (L.) Scop. var. *INCANUM* (Fisch.) Ledeb. 6, N. Somerset; Dial Hill district, Clevedon, 1942, Miss K. Gregory, comm. A. J. WILMOTT. 23, Oxon.; beside the canal, Kidlington, appeared 1940 and spread both 1941 and 1942, Mrs E. F. EVETTS, det. A. J. WILMOTT.

396/9×5. *CIRSIUM PALUSTRE* (L.) Scop. × *C. DISSECTUM* (L.) Hill. 61, S.E. Yorks.; Skipwith Common, 1942, new to Yorkshire, W. A. SLEDGE.

†397/1. *ONOPORDON ACANTHIUM* L. 12, N. Hants; a fine patch on waste ground, Basingstoke, 1942, N. E. G. CRUTTWELL.

†397/3. *ONOPORDON ILLYRICUM* L. 64, Mid-W. Yorks.; a single specimen 6 ft. in height and with several large heads grew on cleared ground at Becca Hall, Aberford, 1942. Enquiry elicited the information that screenings from foreign barley had been previously spread over the ground, W. A. SLEDGE.

†399/1. *SILYBUM MARIANUM* (L.) Gaertn. 12, N. Hants; earth of an air-raid shelter, Basingstoke, 1942, Rev. H. E. U. BULL, comm. N. E. G. CRUTTWELL.

Kent 405/7. *CENTAUREA PRATENSIS* Thuill. 16, W. Kent; Trottescliffe, 1942, A. BEADELL, det. and comm. C. E. BRITTON.

405/8. *CENTAUREA OBSCURA* Jord. 96, Easternness; near Allanfearn, 1942, Miss U. K. DUNCAN, det. A. J. WILMOTT.

405/12. *CENTAUREA CYANUS* L. 14, E. Sussex; appeared in a lea sown at Lye Green, 1942, D. McCLINTOCK. 22, Berks.; cornfield near

Theale, 1923: 23, Oxon.; field of oats near Badgemoor House, Henley-on-Thames, 1941, J. E. LOUSLEY; field between Wheatley and Garsington, 1941, B. F. HASSALL. 29, Cambs.; wheatfield near Hammond's Eau, Sutton, 1938: 95, Moray; plentiful in cornfields about Muirhead, Kinloss, 1938—the cornflower occurs frequently in waste places and as single plants in places where it is an obvious introduction. It has become decidedly rare of recent years in its proper habitat, and it seems useful to publish the only occasions when I have seen it growing in cornfields in quantity. In Moray it occurred over a considerable area in masses similar to those familiar to botanists of past generations, J. E. LOUSLEY.

†407/3. *CARTHAMUS TINCTORIUS* L. 51, Flint; tips near Holywell, 1942, J. A. WEBB, *COMM. NAT. MUS. WALES*.

*410/1. *ARNOSERIS MINIMA* (L.) Schw. & Koerte. 64, Mid-West Yorks.; wheat field between Selby and Camblesforth, only one plant seen, 1942, W. A. SLEDGE.

411/1b. *LAPSANA COMMUNIS* L. var. *PUBESCENS* Koch. 17, Surrey; Warlingham, 1942, C. E. BRITTON.

*416/3. *CREPIS BIENNIS* L. 40, Shropshire; hayfield and roadside near Brodwell Junction Station, 1942, J. W. GOUGH and N. Y. SANDWITH.

†416/10. *CREPIS TARAXACIFOLIA* Thuill. 53, Cheshire; waste heaps of a disused colliery, Neston, 1941, H. E. Green (1941: *N.W.Nat.*, xvi, 203).

*†419/8. *HERIACIUM BRUNNEO-CROCEUM* Pugs. 46, Cardigan; Blaenffos, 1941, J. A. WHELLAN, *COMM. NAT. MUS. WALES*. *48, Merioneth; near Hengwrt and Corris, 1940, Llanycil, 1941, J. A. WEBB, *COMM. NAT. MUS. WALES*.

419/62. *HERIACIUM PRÆCOX* Sch.-bip. 17, Surrey; on a roadside bank bordering a beech plantation, Chelsham, 1940, A. BEADELL, det. H. W. PUGSLEY, *COMM. C. E. BRITTON*.

421/3. *HYPOCHAERIS GLABRA* L. 54, N. Lincs.; Laughton Common, John Brown (1941: *N.W.Nat.*, xvi, 332).

†425/2. *LACTUCA SERRIOLA* L. 3, S. Devon; waste ground near North Road Station, Plymouth, 1941, E. W. CLARKE, *COMM. E. M. PHILLIPS*.

†425/6. *LACTUCA ALPINA* (L.) Hook. f. 96, Easternness; in rubble at a disused distillery, Nailth, 1939; Mrs A. STEWART SANDEMAN, det. A. J. WILMOTT; still there in 1942; Miss U. K. DUNCAN.

†428/1. *TRAGOPOGON PORRIFOLIUS* L. 12, N. Hants; waste ground, Basingstoke, 1942, N. E. G. CRUTTWELL.

433/1. WAHLENBERGIA HEDERACEA (L.) Rchb. 12, N. Hants; shady bog, Fleet, 1941, N. E. G. CRUTTWELL.

435/2. CAMPANULA LATIFOLIA L., *flore albo.* 37, Worcs.; Temple Guiting Wood, 1940, A. E. JONES (*Trans. Worc. Nat. Club*, ix, 285)—this wood contains some doubtfully native plants, J. E. LOUSLEY. *Handls*

†435/7. CAMPANULA RAPUNCULUS L. 33, E. Glos.; garden weed near Blockley, 1941, D. McCLINTOCK.

435/8. CAMPANULA PATULA L. 35, Monmouth; Priory Grove Wood, Monmouth, 1940 (found here since the wood was cut in 1936), R. LEWIS. 36, Hereford; Whitehouse Farm, Cradley, 1939, F. M. DAY.

†436/2. LEGOUSIA SPECULUM-VENERIS (L.) Fisch. 12, N. Hants; cornfield, Wootton-St-Lawrence, 1942, G. W. WILLIS, comm. N. E. G. CRUTTWELL, det. J. P. M. BRENNAN.

439/1. OXYCOCCOS QUADRIPETALUS Gilib. 62, N.E. Yorks.; by Ellerbeck, 1942, H. B. WILLOUGHBY SMITH, comm. A. J. WILMOTT.

†443/1. GAULTHERIA SHALLON Pursh. 3, S. Devon; pinewood on Peak Hill, Sidmouth, 1942: 17, Surrey, pinewood, Farnham Common, 1941, E. C. WALLACE.

445/1. CALLUNA VULGARIS (L.) Hull. 33, E. Glos.; Foxcote, 1942, Miss L. ABELL.

458/4. ARMERIA MARITIMA Willd. Calyx hairy on and between its ribs. 95, Elgin; Culbin Sands, near Forres, 1942, Miss U. K. DUNCAN.

460/3. PRIMULA VERIS L. 92, S. Aberdeen; Craig Leek, Invercauld, 1941, R. MACKECHNIE.

460/4. PRIMULA FARINOSA L. 69, Westmorland; Loughrigg Fell, Ambleside, 1942, E. C. WALLACE.

467/2b. ANAGALLIS ARVENENSIS L. var. CARNEA Schrank. 14, E. Sussex; near Lye Green, 1942, Mrs D. McCLINTOCK, comm. D. McCLINTOCK.

468/1. CENTUNCULUS MINIMUS L. 6, N. Somerset; plentiful on a damp track in the Stoke Lane Valley near Nettlebridge, 1941, C. I. and N. Y. SANDWICH. [Very rare in the Bristol area, and hitherto only recorded from Leigh Woods in v.-c. 6, and from Syston Common in v.-c. 34.] 14, E. Sussex; Broadwater Forest, 1942, J. R. WALLIS. 106, E. Ross; near Munloch, Black Isle, growing, as so frequently the case, with *Radiola Linoides*, 1942, Miss U. K. DUNCAN. *SWP*

469/1. SAMOLUS VALERANDI L. 37, Worcs.; wet coppice between Castle Morton and Hollybed Commons, 1939, F. M. DAY.

+473/2. *VINCA MINOR* L. 106, E. Ross; naturalised in woods near Rosemarkie, 1943 (in flower 24th February), Miss U. K. DUNCAN.

+474/2. *BUDDLEIA DAVIDI* Franchet. 41, Glamorgan; foot of a wall and in the crevices of the remains of the tiled floor of a bombed building, Cardiff, 1942, A. E. WADE. +51, Flint; Greenfield, near Holywell, 1942; J. A. WEBB, comm. NAT. MUS. WALES.

477/1. *BLACKSTONIA PERFOLIATA* (L.) Huds. 14, E. Sussex; a single plant on a sandy bank near Bayham, 1942, J. R. WALLIS.

478/4. *CENTAURIUM PULCHELLUM* (Sw.) Druce. 12, N. Hants; chalky bank in old disused brickworks, Sherborne St John, 1941, N. E. G. CRUTTWELL.

480/4c. *GENTIANA AMARELLA* L. var. *PALLIDA* (Pugs.) Wilmott. 17; Surrey; Warlingham, 1941, C. E. BRITTON (as *G. axillaris* var. *pallida*).

+488/1. *PHACELIA CILIATA* Benth. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE.

+490/2. *OMPHALODES VERNA* Moench. 33, E. Glos.; in two woods a mile apart near Blockley, 1941; D. McCLINTOCK. 45, Pembroke; Ludchurch, near Narberth, 1942, Miss E. C. HOWELLS, comm. NAT. MUS. WALES. 69, Westmorland; East side of Windermere, south of Bowness, in fair quantity, Mary B. Pack and Arthur W. H. Pack (1941: *N.W.Nat.*, xvi, 92).

497/1. *SYMPHYTUM OFFICINALE* L. 39, Staffs.; Balterley, 1942 (No. 2279), E. S. EDEES.

Kent +499/1. *TRACHYSTEMON ORIENTALE* (L.) D. Don. 16, W. Kent; naturalised in woodland west of Maidstone, 1942, CYRIL WEST.

500/1. *ANCHUSA SEMPERVIRENS* L. 35, Monm.; roadside, Mayhill, Monmouth, 1941, R. LEWIS.

+502/4. *NONNEA VENTRICOSA* (Sibth. & Sm.) Griseb. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE.

505/1. *MERTENSIA MARITIMA* (L.) S. F. Gray. 60, West Lancs.; shingle near Carnforth, 1941, J. N. FRANKLAND.

506/2. *MYOSOTIS BREVIFOLIA* C. E. Salmon. 64, Mid-W. Yorks.; Force Gill, Whernside, 1942, W. A. SLEDGE. 65, N.W. Yorks.; Hanswell Moor, Swaledale, at 750 ft., and Calamine House, Yoredale, at 1200 ft., 1942, C. M. ROB.

507/1. *LITHOSPERMUM OFFICINALE* L. 3, S. Devon; Coffete, Yealpton, 1941, E. M. PHILLIPS.

513/1e. *CONVOLVULUS ARVENSIS* L. var. *STONESTREETII* Druce. 12, N. Hants; still flourishing and flowering well (both 1941 and 1942) where discovered by G. W. Willis in 1915, Basingstoke, N. E. G. CRUTTWELL.

515/2. *CUSCUTA EUROPAEA* L. 7, N. Wilts.; Staverton, in great quantity, 1941, Mrs M. le F. SHEPHERD and C. D. HEGINBOTHOM independently, comm. J. D. GROSE. 17, Surrey; this species, which is most erratic in quantity and even appearance from year to year, was exceptionally abundant in 1941 and 1942 in many of the well-known stations by the Mole and Thames: 21, Middlesex; Thames bank opposite Chertsey, 1942, J. E. LOUSLEY.

†515/7. *CUSCUTA SUAVEOLENS* Ser. 68, S.W. Yorks.; spontaneously on Thyme, Groundsel, Nettle, *Calendula* and *Spiraea* in Lister Park, Bradford, 1942, A. MALINS SMITH, comm. W. A. SLEDGE.

†517/14. *SOLANUM SISYMBRIIFOLIUM* Lam. 20, Herts.; in field of linseed, near Harpenden, 1942, H. F. BARNES, det. and comm. A. J. WILMOTT.

†520/2. *LYCIUM HALIMIFOLIUM* Mill. 51, Flint; Pantasaph and Rhyll, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

521/1. *ATROPA BELLADONNA* L. 35, Monm.; waste ground (? casual here), Staunton Road, Monmouth, 1941, R. LEWIS.

†522/1. *DATURA STRAMONIUM* L. 17, Surrey; allotments, Walton-on-Thames, 1942, J. E. LOUSLEY.

†522/1b. *DATURA STRAMONIUM* L. var. *CHALYBEA* Koch. 12, N. Hants.; filled-in bomb crater, Basingstoke, 1941, plant five feet high with purple stems and lilac flowers, N. E. G. CRUTTWELL (as var. *Tatula* (L.)).

†522/3. *DATURA METEL* L. 19, N. Essex; Hythe Quay, Colchester, 1938, J. E. LOUSLEY, det. J. P. M. BRENNAN.

524/1. *HYOSCYAMUS NIGER* L. 37, Worcs.; very plentiful at the holes of the rabbit warren, Coneyburrow Hill, Longdon, 1942, F. M. DAY.

†527/1. *VERBASCUM PHELOMOIDES* L. 45, Pembroke; Tenby, 1941, Mrs F. L. REES, comm. NAT. MUS. WALES.

†527/4. *VERBASCUM VIRGATUM* Stokes. 17, Surrey; plentiful in a derelict field on the N. Downs above Oxted, 1942, A. BEADELL, comm. C. E. BRITTON. 34, W. Glos.; Ryton, Bromsberrow, 1940, F. M. DAY.

Kent 527/7×3. *VERBASCUM LYCHNITIS* L. × *THAPSUS* L. 16, W. Kent; Furze Bottom near Leaves Green, 1937, A. BEADELL, comm. C. E. BRITTON.

Text [*]527/8. *VERBASCUM NIGRUM* L. 16, W. Kent; near Biggin Hill, 1942, a form with sulphur-coloured flowers, A. BEADELL, comm. C. E. BRITTON. 24, Bucks.; seven or eight plants of the rare state with white corollas amongst large numbers of normal yellow-flowered plants in a clearing in Great Wood, Hambleden, 1941, J. E. LOUSLEY. *†45, Pembroke; with white flowers at Tenby, 1941, Mrs F. L. REES, comm. NAT. MUS. WALES.

527/8×3. *VERBASCUM NIGRUM* L. × *THAPSUS* L. 17, Surrey; chalky slope above River Mole, Boxhill, 1942, two slightly different plants occurred, J. E. LOUSLEY. 24, Bucks.; roadside in Hambleden village, 1941, J. E. LOUSLEY.

†532/2. *LINARIA PURPUREA* Mill. 51, Flint; walls, Gronant, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

*532/3. *LINARIA REPENS* (L.) Mill. 51, Flint; Bagillt and Pantasaph, 1942, J. A. WEBB, comm. NAT. MUS. WALES. †96, Easternness; naturalised on railway sidings at Daviot, near Inverness, 1942, Miss U. K. DUNCAN.

†532/26b. *LINARIA CYMBALARIA* (L.) Mill. var. *PALLIDIOR* (Rouy) Druce. 8, S. Wilts.; wall in Salisbury Cathedral Close (Welch and Grose, 1942, 75).

†537/2. *MIMULUS MOSCHATUS* Dougl. 14, E. Sussex; near Bayham, 1942, J. R. WALLIS: by a stream at Rowfant, 1942, A. BEADELL, comm. C. E. BRITTON. 57, Derbs.; by the R. Wye near Haddon Hall and on Tansley Moor, 1940, D. McCLINTOCK. Seeds

[*]539/1. *LIMOSELIA AQUATICA* L. 12, N. Hants.; peaty cart-rut, Hook Common, 1942, N. E. G. CRUTTWELL. *33, E. Glos.; near the lock, R. Severn, Forthampton, 1939, F. M. DAY. Hants

†542/1. *ERINUS ALPINUS* L. 12, N. Hants; naturalised all up the side of a house at Lasham, 1941, N. E. G. CRUTTWELL. 51, Flint; limestone wall near Holywell, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

543/6. *VERONICA SCUTELLATA* L. 57; Derbs.; by a pond near Bread-sall, 1942, the Misses BUXTON, comm. D. McCLINTOCK.

†543/41. *VERONICA FILIFORMIS* Smith. 17, Surrey; meadow by stream south of Ockley, 1942, N. Y. SANDWICH and E. C. WALLACE. 60, W. Lancs.; grassy wayside in lane near Gressingham, Lime Valley, 1942, J. N. FRANKLAND.

[*]545/19(4). *EUPHRASIA ANGLICA* PugsL. 7, N. Wilts.; apparently widespread in Savernake Forest (Welch and Grose, 1942, 75). *8, S. Wilts.; near Blackslough, 1942, J. D. GROSE, det. H. W. PUGSLEY. *47, Montgomery; open glade on lower wooded slopes of Breidden Hill, 1942, J. W. GOUGH and N. Y. SANDWICH, confirmed by H. W. PUGSLEY.

+546/4. *BARTSIA VISCOSA* L. 23, Oxon.; beside the canal, Kidlington (with *Cirsium arvense* var. *incanum*, q.v.), 1940, not there in 1941, Mrs EVETTS.

[*]548/5(2). *RHINANTHUS CALCAREUS* Wilmott. 7, N. Wilts.; Arn Hill, Warminster (No. 4469); Ewin's Hill, Aldbourne (No. 4472): both 1942, J. D. GROSE. *12, N. Hampshire; grassy down near Hawkey, 1941, E. C. WALLACE.

549/2. *MELAMPYRUM ARVENSE* L. 7, N. Wilts.; cornfield near Manton and clover field near Aldbourne (Welch and Grose, 1942: 75— not recorded for the county since 1895, seeds possibly dormant since the fields were last cultivated).

550/10. *OROBANCHE MINOR* Sm. 17, Surrey; Wandsworth Common, 1942, J. E. LOUSLEY.

551/1. *LATHRAEA SQUAMARIA* L. 33, E. Glos.; near Blockley (on Laurel), 1941, D. McCLINTOCK. 37, Worcs.; east side of Raggedstone Hill, "growing on the roots of holly, a rather uncommon host for this species" (*Trans. Worc. Nat. Club*, ix, 293). 51, Flint; growing under a Cherry Laurel (*Prunus Lauro-Cerasus* L.) in a garden, Caengwole, Kate Philips (1940: *N.W.Nat.*, xv, 262).

553/2. *PINGUICULA VULGARIS* L. 12, N. Hants; in fen, Mapledurwell, Mrs SCOTT, coll. 1941, and comm. N. E. G. CRUTTWELL. Han.

558. *MENTHA*. All mints recorded by F. M. DAY were determined by A. L. STILL.

558/1. *MENTHA ROTUNDIFOLIA* (L.) Huds. 36, Hereford; near Boat Inn, Breinton Common, 1939 and 1942, F. M. DAY.

[*]558/2. *MENTHA ALOPECUROIDES* Hull. 7, N. Wilts.; Okus, Swindon, 1941, J. D. GROSE—det. A. L. STILL as \times *M. nitida* var. *alopecuroides* Hull. *51, Flint; near St Asaph, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

558/3. *MENTHA LONGIFOLIA* (L.) Huds. 3, S. Devon; Nethway, Brixham, 1942: 36, Hereford; Whitehouse Farm, Cradley, 1940: R. Wye, Hereford, 1939; F. M. DAY.

+558/4. *MENTHA SPICATA* Huds. 35, Monm.; railway bank between Monmouth and Hadnock, 1942, R. LEWIS. 36, Heref.; garden at Downs School, Colwall, "somewhat hairy plants with hairy calyces, probably under Smith's var. β ," 1942, F. M. DAY.

558/6a. *MENTHA PIPERITA* L. var. *OFFICINALIS* Sole. 37, Worcs.; edge of Castle Morton Common, 1939, F. M. DAY.

558/6d. *MENTHA PIPERITA* L. var. *SUBCORDATA* J. Fraser. 36, Heref.; Evendine Corner, Colwall, 1939; by R. Wye, Breinton, 1942: 37, Worcs.; near Pixham Ferry, Powick, 1940; F. M. DAY.

558/7c. *MENTHA AQUATICA* L. var. *LOBELIANA* Beck. 3, S. Devon; Cornworthy, 1942: 34, W. Glos.; The Quab, Bromsberrow, 1942, "near this variety": 36, Hereford; Brock Hill Wood, 1941; Bloody Furlong, Colwall, 1940; Swinyard Hill, Eastnor, 1942: 37, Worcs.; Malvern Common, 1941; F. M. DAY.

558/7e. *MENTHA AQUATICA* L. var. *MAJOR* Sole. 34, W. Glos.; near Brown's End, Bromsberrow, 1942: 36, Hereford; Southend, Mathan, 1939: 37, Worcs.; Hanley Swan, 1939, F. M. DAY.

558/7h. *MENTHA AQUATICA* L. var. *NICARENENSIS* Briq. 3, S. Devon; Broadsands, Churston Ferrers: near Mansands, Brixham, 1941: 36, Hereford; Walls Hill, near Ledbury, 1940; F. M. DAY.

558/9. × *MENTHA VERTICILLATA* L. 29, Cambs.; Wicken Fen, 1939, F. M. DAY. I gather from Mr H. Gilbert Carter and Dr Godwin, who were with me at the time, that this is the first record for the Fen.— F. M. DAY.

558/9q. × *MENTHA VERTICILLATA* L. var. *RIVALIS* (Sole) Briq. 36, Hereford; White House Farm, Cradley, 1939: Canon Frome, 1940; F. M. DAY.

558/10. *MENTHA GENTILIS* L. 36, Hereford; R. Frome, Canon Frome, 1940; R. Wye, above Hereford, 1940: 37, Worcester; R. Teme, Cotheridge: R. Severn, Upton-on-Severn, 1940; F. M. DAY.

558/12. *MENTHA RUBRA* Huds. 3, S. Devon; bank of Otter below Otterton, 1942, E. C. WALLACE. 21, Middx.; Harefield, 1942: 36, Hereford; R. Wye, above Hereford, 1939; F. M. DAY.

558/13b. *MENTHA ARVENSIS* L. var. *OBTUSIFOLIA* Briq. 36, Heref.; Brock Hill, Colwall, 1942, F. M. DAY.

558/13d. *MENTHA ARVENSIS* L. var. *AGRESTIS* (Sole) Sm. 3, S. Devon; Southdown, Brixham, 1941: above Mudstone Bay, Brixham, 1942; F. M. DAY. 6, N. Somerset; in cultivated land on Mendip near Cranmore Tower, c. 950 ft., 1941, C. I. SANDWICH, conf. A. L. STILL. [This locality lies within the area where Sole found it. He wrote (in 1798): "This mint grows in cornfields about the Mendip Hills; Shepton Mallet and Frome; and in neglected gardens in that part of Somersetshire abundantly . . ."]. 37, Worcester; Cotheridge, 1940, F. M. DAY.

558/13e. *MENTHA ARVENSIS* L. var. *AUSTRIACA* (Jacq.) Briq. 36, Heref.; near the church and near Old Country House, Mathon, 1942, F. M. DAY.

558/13f. *MENTHA ARVENSIS* L. var. *PRÆCOX* (Sole) Sm. 20, Herts.; Sarratt, "but too hairy to be typical," 1942: 36, Heref.; near the Seven Stars Inn, and near Old Country House, Cradley, 1942; F. M. DAY.

558/13g. *MENTHA ARVENSIS* L. var. *ALLIONII* (Bor.) Briq. 3, S. Devon; Lustleigh, 1939, F. M. DAY. ("Yes, calyx teeth short and broad, rather a small plant for *Allionii*; due perhaps to poor conditions."—A. L. S.).

558/13j. *MENTHA ARVENSIS* L. var. *DENSIFOLIATA* Briq. 36, Heref.; near the church, Mathon; 1942, F. M. DAY.

558/13m. *MENTHA ARVENSIS* L. var. *BREVIDENS* J. Fraser. 29, Cambs.; gravel pit, Cottenham; 1939, F. M. DAY. ("The nearest I can think of is var. *brevidens*, not too typical."—A. L. S.).

*561/10. *THYMUS NEGLECTUS* Ronn. 51, Flint; Milwt and Carmel, near Holywell, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

566/2. *SALVIA HOERMINOIDES* Pourr. 37, Worcs.; Coneyburrow Hill, 1942, F. M. DAY.

569/1. *NEPETA CATARIA* L. 37, Worcs.; Longdon, 1942, F. M. DAY.

569/1b. *NEPETA CATARIA* L. var. *SUBINCISA* Asch. 49, Caernarvon; near Llandudno, 1941, Mrs DALLAS, comm. C. E. BRITTON.

577/4. *STACHYS PALUSTRIS* L. × *SYLVATICA* L. (×*S. AMBIGUA* Sm.). 36, Heref.; roadside between the church and Old Colwall, Colwall, 1942, F. M. DAY. 69, Westmorland, in small damp copse near Loughrigg Tarn, 1942, N. E. G. CRUTTWELL, confirmed by A. J. WILMOTT.

578/2. *GALBOPSIS TETRAHYT* L. 57, Derbs.; with pink, deep pink, cream, and white flowers near Minninglow, 1942, D. McCLINTOCK.

+581/2. *LAMIUM MACULATUM* L. 51, Flint; Marian, near Newmarket, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

581/10. *LAMIUM GALBOBDOLON* (L.) Cr. forma *PELORIA*. 17, Surrey; in a sunken lane near Bletchingley, 1942, N. Y. SANDWICH, E. C. WALLACE, and Mrs B. WELCH; the form with peloric terminal flower which has been found in N. Somerset, Suffolk, and Bucks.

587/1b. *AJUGA REPTANS* L. var. *ALBIFLORA* Zersi. 41, Glam.; Kenfig Dunes, 1942, Miss E. VACHELL.

600/1. *CHENOPODIUM RUBRUM* L. 36, Heref.; Petty France, Colwall, 1942, F. M. DAY.

600/6. *CHENOPODIUM MURALE* L. 7, N. Wilts.; Spirthill, 1942, J. D. GROSE. 17, Surrey; grounds of orphanage, Beddington, 1942, J. E. LOUSLEY.

+600/8×24. *CHENOPODIUM ALBUM* L. × < *BERLANDIERI* Moq. subsp. *ZSCHACKEI* (Murr) Zobel var. *TYPICUM* (Ludw.) Aell. (*C. VARIABILE* Aell. var. *MURRI* Aell.). 17, Surrey; abundant and very uniform on debris from bombed houses dumped on Wimbledon Common, 1942, J. E. LOUSLEY, C. P. CASTELL, and W. H. SPREADBURY, det. J. P. M. BRENNAN.

+600/8(2). *CHENOPODIUM RETICULATUM* Aell. 25, E. Suffolk; near Southwold, 1934, J. E. LOUSLEY, det. J. P. M. BRENNAN.

+600/11b. *CHENOPODIUM PRATERICOLA* Rydb. var. *THELLUNGIANUM* Aell. (*C. LEPTOPHYLLUM* auct. non Nutt.). 20, Herts.; waste ground, Totteridge Lane, Barnet, 1929, J. E. LOUSLEY, det. J. P. M. BRENNAN.

600/12. *CHENOPODIUM FIGIFOLIUM* Sm. 29, Cambs.; arable field, Stow cum Quy, 1939, F. M. DAY.

600/13. *CHENOPODIUM GLAUCUM* L. 12, N. Hampshire; drained bed of Fleet Pond, 1941, E. C. WALLACE. 20, Herts.; farmyard near Allen's Green, Sawbridgeworth, 1941, H. W. PUGSLEY and E. C. WALLACE. -tan

+600/21f. *CHENOPODIUM HIRCINUM* Schrad. subsp. *EU-HIRCINUM* Aell. var. *TYPICUM* Ludwig & Aellen, f. *DEMINUTUM* (Ludwig) Aell. 27, E. Norfolk; by old malt houses, Geldeston, 1934 (as *C. opulifolium* Schrad.), J. E. LOUSLEY and A. W. GRAVESON, det. J. P. M. BRENNAN.

+606/11. *ATRIPLEX TATARICA* L. 25, E. Suffolk; Felixstowe Docks, 1938, J. E. LOUSLEY, det. J. P. M. BRENNAN.

615/3. *POLYGONUM BISTORTA* L. 36, Hereford; Nupend, Cradley, 1940, F. M. DAY. 57, Derbs.; near Cromford and Parwich, 1942, D. McCLEINTOCK.

*615/5b. *POLYGONUM AMPHIBIUM* L. var. *TERRESTRE* Leers. 48, Merioneth; Harlech, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

*615/15. *POLYGONUM AEGUALE* Lindm. 51, Flint; Point of Air, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

+615/31. *POLYGONUM POLYSTACHYUM* Wallich. 46, Cardigan; Tresaith, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES. 48, Merioneth; near Llanelltyd and in profusion along Bala Lake near Llanycil, 1941, J. A. WEBB, comm. NAT. MUS. WALES. 49, Caernarvon; Bettws-y-coed, J. A. WEBB, 1942: 51, Flint; Holway, near Holywell, 1942; J. A. WEBB, comm. NAT. MUS. WALES.

+615/32. *POLYGONUM SIEBOLDII* De Vriese. 39, Staffs.; waste ground, Endon, 1942, E. S. EDEES [det. A. B. JACKSON].

+615/33. *POLYGONUM SACHALINENSE* Schmidt. 17, Surrey; Holmbury, St Mary, 1938, C. E. BRITTON. +48, Merioneth; Caerynwch, Brithdir, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

+616/1. *FAGOXYRUM SAGITTATUM* Gilib. 51, Flint; Bagillt, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

618/11. *RUMEX PULCHER* L. 3, S. Devon; Dittisham, 1942, F. M. DAX. Cliffs west of Branscombe, 1942, E. C. WALLACE. 21, Middx.; Batchworth Heath, Northwood, 1941, F. M. DAX.

618/13. *RUMEX MARITIMUS* L. 17, Surrey; Frensham Great Pond, 1941, E. C. WALLACE. Plentiful at Godstone Mill pond, which is about a mile from the station for this very rare Surrey plant where Mr E. C. Wallace showed it to me in 1934. At the latter place it was not to be found in 1942, J. E. LOUSLEY. 63, S.-W. Yorks.; Lake in Sandbeck Hall grounds, abundant, John Brown (1941 : *N.W.Nat.*, xvi, 207). SWT.

+618/17. *RUMEX SCUTATUS* L. 45, Pembroke; railway bank, Tenby, 1942, Mrs F. L. REES, comm. NAT. MUS. WALES.

*623/1. *DAPHNE LAUREOLA* L. 45, Pembroke; near Kilgetty, 1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

623/2. *DAPHNE MEZEREUM* L. 33, E. Glos.; near Withington, 1942, Miss L. ABELL.

*+625/1. *HIPPOPHAE RHAMNOIDES* L. 42, Brecon; tip at Cwmfield, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

+628/9. *EUPHORBIA VIRGATA* W. & K. 57, Derbs.; Little Eaton, 1942, D. McCLINTOCK.

+628/11. *EUPHORBIA CYPARISSIAS* L. 11, S. Hants.; between Great Yews and Round Clump, about 5 miles S.W.W. of Salisbury, 1941, B. WELCH.

632/2. *MERCURIALIS ANNUA* L. 23, Oxon.; in a lane and adjacent gardens in Old Headington village, 1942, J. W. GOUGH. 55, Leics.; near Lutterworth, 1942, F. A. SOWTER.

633/1x4. *ULMUS GLABRA* Huds. x *PLOTII* Druce. 7, N. Wilts.; Blunsdon, Wolf Hall (Grose, 1940 : 336).

*633/2. *ULMUS NITENS* Moench. 40, Shropshire; Willey and below Benthall Edge opposite Iron Bridge (one tree), George Potts (1941 : *N.W.Nat.*, xvi, 331), det. A. Gepp.

*+633/3. x *ULMUS HOLLANDICA* Mill. 48, Merioneth; Towyn and Mathafon, 1941, J. A. WEBB, comm. NAT. MUS. WALES. *51, Flint; Greenfield, near Holywell, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

+635/1. *CANNABIS SATIVA* L. 51, Flint; tips near Holywell, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

637/1b. *URTICA DIOICA* L. var. *ANGUSTIFOLIA* Wimm. & Grab. 3, S. Devon; Dittisham, 1942: 37, Worcester; Drake's Broughton, 1939: St Ann's Well, Malvern, 1940; F. M. DAY.

+639/1. *HELEXINE SOLEIROLII* Req. 51, Flint; Whitford, 1942, J. A. WEBB, comm. NAT. MUS. WALES.

644/1. *CARPINUS BETULUS* L. 30, Beds.; hedge at edge of Old Hill Wood, Whipsnade, 1942 (? planted or not), A. J. WIEMOTT.

*646/2. *QUERCUS PETRAEA* Lieblein. 7, N. Wilts.; Great Copse, Luder Lane, Swindon, 1942, J. D. GROSE (as *Q. sessiliflora*).

[*650/14. *SALIX ARBUSCULA* L. 104, N. Ebudes; ravine N.W. of Fionchra, Rhum (Harrison *et al.*, 1941A).—[Not seen, ED.]]

650/17. *SALIX MYRSINTES* L. 92, S. Aberdeen; in abundance and luxuriance on rocks and ledges, north side of Sgor Lochan Uaine, 1941, E. C. WALLACE.

651/1. *POPULUS CANESCENS* Sm. 16, W. Kent; Pearson's Green, near Bewl Bridge, Lamberhurst; 1942, J. R. WALLIS.

651/2b. *POPULUS TREMULA* L. var. *VILLOSA* (Lang) Syme. 16, W. Kent; Mount Pleasant, Lamberhurst, 1942, J. R. WALLIS.

+651/2b. *POPULUS CANDICANS* Ait. 23, Oxon.; by River Thames, Cuddleston, 1940, N. E. G. CRUTTWELL (as *P. Tacamahacca* Mill.).

652/1. *EMPETRUM NIGRUM* L. 57, Derbs.; Matlock Moor and Farley Moor, 1942, D. McCLINTOCK.

653/1. *CERATOPHYLLUM SUBMERSUM* L. 37, Worcs.; pond near Farmer's Arms, Birt Street, Birt's Morton, 1939, F. M. DAY.

653/2. *CERATOPHYLLUM DEMERSUM* L. 36, Hereford; R. Wye, Hereford, 1939, F. M. DAY.

667/3. *CEPHALANTHERA LONGIFOLIA* (Huds.) Fritsch. 12, N. Hants.; Herriard Park, 1942, N. E. G. CRUTTWELL.

668/1. *EPIPACTIS PALUSTRIS* (L.) Crantz. 7, N. Wilts.; on dry open down, Morgan's Hill (Grose, 1940: 336).

668/2. *EPIPACTIS HELLEBORINE* (L.) Cr. em. Rend. & Britt. 57, Derbs.; four feet high with 49 flowers in the Via Gellia, 1942, D. McCLINTOCK (as *E. latifolia*).

668/3. *EPIPACTIS LEPTOCHILA* (Godf.) Godf. 23, Oxon.; beechwood near Maidensgrove Scrubs, Nettlebed, 1941; 24, Bucks.; Rassler Wood, near Marlow, 1941. On the Chilterns from Nettlebed and Bix to Hambleton and Marlow *E. leptochila* was observed in flower in many places at the end of July 1941. In this district it is much more common than *E. latifolia*, J. E. LOUSLEY.

Kent [*]669/8. *ORCHIS PRAETERMISSA* Druce. 16, W. Kent; Dunton Green, 1942, A. BEADELL, comm. C. E. BRITTON. *63; S.W. Yorks.; marsh by river Torne near Auckley, 1942, W. A. SLEDGE. *

*669/9. *ORCHIS PURPURELLA* T. & T. A. Steph. 47, Montgomery; bog c. 1000 ft. on Boncyn Celyn, S.E. of Lake Vyrnwy, 1942, J. W. GOUGH and N. Y. SANDWICH, confirmed by V. S. SUMMERHAYES. *61, S.E. York.; Skipwith Common, 1942, W. A. SLEDGE. *H.36, Tytone; marshy spot by Tonegan Bridge, Camowen River, near Carrickmore, 1942, F. H. W. KERR, det. A. J. WILMOTT.

*669/9b. *ORCHIS PURPURELLA* T. & T. A. Stephenson var. *PULCHELLA* (Druce) Pugsl. 75, Ayr; Drumboiy near Fenwick, 1941, R. MACKECHNIE.

*669/11. *ORCHIS FUCHSII* Druce. 76, Renfrew; near Clarkston, 1941, R. MACKECHNIE.

669/11×9b. *ORCHIS FUCHSII* Druce × *O. PURPURELLA* T. & T. A. Steph. var. *PULCHELLA* (Druce) Pugsl. 75, Ayr; Drumboiy near Fenwick, 1941, R. MACKECHNIE.

669/17. *ANACAMPTIS PYRAMIDALIS* (L.) Rich. 54, N. Lincoln; sand dunes south of Skegness, 1942, E. C. WALLACE.

674/4. *HABENARIA VIRIDIS* (L.) R. Br. 33, E. Glos.; Foxcote, 1942, Miss L. ABELL.

†676/3. *IRIS SPURIA* L. 9, Dorset, naturalised over about ten acres of grassland, 1942, long known locally, C. R. SYLVESTER BRADLEY, comm. A. J. WILMOTT.

*†680/1. *SISYRINCHIUM ANGSTIFOLIUM* Mill. 86, Stirling; side of Loch Arklet, 1942, R. K. P. MILLER, comm. A. J. WILMOTT.

†686/2. *LEUCOJUM AESTIVUM* L. 96, Easternness; Drumnadrochit (streamside towards Milton: not noticed in gardens but *Narcissus poeticus* within 50 yards of the three plants seen), 1942, M. S. CAMPBELL, comm. A. J. WILMOTT.

702/8. *ALLIUM CARINATUM* L. 37, Worcs.; Upton-on-Severn, 1941 (see *Trans. Worc. Nat. Club*, ix, 302—first noticed here by Miss Todd in 1924 and erroneously allocated by Dr Druce to Gloucestershire).

702/9. *ALLIUM OLERACEUM* L. 37, Worcs.; lane near Bye Way Inn, Suckley, 1939, F. M. DAY.

†706/4. *SCILLA HISPANICA* Mill. 17, Surrey; Chelsham, 1939, growing with *S. non-scripta* (L.) Hoffm. & Lk. on the border of a wood, but presumably derived from a near-by cottage garden, C. E. BRITTON.

[*]707/2. *ORNITHOGALUM UMBELLATUM* L. 9, Dorset; Studland Heath, 1942, A. DUNSTON, comb. A. J. WILMOTT. *†100, Clyde Isles; Keppel, Great Cumbrae Island, 1941, R. MACKECHNIE.

709/1. *FRIPIILLARIA MELEAGRIS* L. 24, Bucks. (Ousel District); near Mentmore, J. E. Dandy (1942: *J.B.*, lxxx, 77).

714/1. *NARTHECIUM OSSIFRAGUM* (L.) Huds. 14, E. Sussex, Abbot's Down near Tunbridge Wells, a solitary specimen, 1942, J. R. WALLIS.

718/7. *JUNCUS FILIFORMIS* L. 69, Westmorland; pasture by the *Suss*
Brathay below Elterwater, 1942, E. C. WALLACE.

718/8. *JUNCUS SUBNODULOSUS* Schrank. 20, Herts.; meadows by the river south of Bishop's Stortford, 1941, H. W. PUGSLEY and E. C. WALLACE.

[*]718/11. *JUNCUS NODULOSUS* Wahl. 65, N.-W. York.; Teesdale, removes the ? in *Comital Flora*, W. A. Sledge (1940: *Naturalist*, 253). *69, Westmorland; Birkdale Pastures near the junction of the Tees and Maize Beck, W. A. Sledge (1940: *Naturalist*, 253).

718/14. *JUNCUS COMPRESSUS* Jacq. 7, N. Wilts.; near Lacock Mill, also Knighton, 1941, J. D. GROSE. 12, N. Hampshire; marsh at North Warnborough, 1941, E. C. WALLACE. 37, Worcs.; R. Severn, Upton-on-Severn, 1940, F. M. DAY. 63, S.-W. Yorks.; meadow, South Wongs Farm, between Tickhill and Oldcoates, 1941, John Brown (1941: *N.W.Nat.*, xvi, 206).

†718/16. *JUNCUS MACER* S. F. Gray. 12, N. Hants.; locally abundant on bare peaty and gravelly places, Hook Common, 1942, N. E. G. CRUTTWELL. 34, W. Glos.; wood clearing between Staunton and Coleford, 1941, R. LEWIS.

719/2×3. *LUZULA FORSTERI* (Sm.) DC. × *L. PILOSA* (L.) Willd. 16, W. Kent, lane near Bayham; lane west of Lamberhurst, J. R. WALLIS.

719/4. *LUZULA MULTIFLORA* (Retz.) DC. 30, Beds.; Deadmansea Wood, Whipnade, 1942, both v. *congesta* (Thuill.) Koch and the var. *typica* (Beck), with pedicellate heads, growing on the same root, as not infrequently observed by me. A. J. WILMOTT.

722/1. *SPARGANIUM NEGLECTUM* Beeby. 34, W. Glos.; The Quab and near Brown's End, Bromsberrow, 1942: 36, Hereford; Coddington, 1940: 37, Worcs.; Stoulton, 1939: Defford Common, 1940; F. M. DAY.

722/2b. *SPARGANIUM RAMOSUM* Huds. var. *MICROCARPUM* Neum. 36, Hereford; R. Lugg, Lugwardine, 1940; R. Frome, Canon Frome, 1941; F. M. DAY.

729/1(2). *ALISMA LANCEOLATUM* With. 20, Herts.; canal, Cassiobury Park, Watford, 1941, F. M. DAY.

734/1. *BUTOMUS UMBELLATUS* L. 39, Staffs.; canal, Cheddleton, 1942, E. S. EDEES.

737/3. *POTAMOGETON NODOSUS* Poir. 23, Oxon.; in the River Thames nearly opposite Bolney Court, 2 miles S. of Henley-on-Thames, 1941. This species, formerly known to British botanists as *P. Drucei*, has been frequently collected from the River Loddon since it was discovered there by Dr Druce in 1893. I have seen it at intervals over about two miles of the course of the Loddon, and the discovery of the plant in the Thames near Cookham by the Rev. D. M. Heath encouraged search in that river nearer the confluence of the Loddon. *P. nodosus* was found in July 1941 to occur freely for about 1½ miles, from a patch by an eyot just north of the George and Dragon Hotel at Wargrave, past Shiplake Station almost to the point where the non-functioning Bolney Ferry is marked on the 1 in. Ordnance map. Over this stretch it was examined from a small boat after observation from a river steamer, and it occurs both in Berkshire and Oxfordshire. From Bolney to Hurley nothing more was seen of *P. nodosus*, J. E. LOUSLEY.

737/16. *POTAMOGETON PERFOLIATUS* L. 3, S. Devon; river Otter below Otterton, 1942, E. C. WALLACE.

*+744/1. *CYPERUS LONGUS* L. 23, Oxon.; in the wild part of Mill Meadow Recreation Ground, Henley-on-Thames, 1941. Here the plant is certainly not native, but is flourishing in wet ground almost on the river-bank, where it is likely to be carried down by winter floods to the water-meadows below Henley, J. E. LOUSLEY. 24, Bucks.; in two spots 200 yards apart near the R. Chess near Chesham, 1941, D. McCLINTOCK.

745/3. *HELEOCHARIS MULTICAULIS* (Sm.) Sm. 16, W. Kent; boggy patch of ground south of Hawkenbury, 1942, J. R. WALLIS.

746/2. *SCIRPUS MARITIMUS* L. 33, E. Glos.; R. Severn, Forthampton, 1939, F. M. DAY.

[*]746/8. *SCIRPUS PAUCIFLORUS* Lightf. 12, N. Hants.; marsh near North Warnborough, 1941, E. C. WALLACE. *47, Montgomery; bog c. 1000 ft. on Boncyn Celyn, S.E. of Lake Vyrnwy, 1942, J. W. GOUGH and N. Y. SANDWICH. Kent

753/3. *CAREX ACUTIFORMIS* Ehrh. 39, Staffs.; Walton's Wood, Madeley, 1942 (No. 2543), E. S. EDEES.

753/6. *CAREX SAXATILIS* L. 92, S. Aberdeen; sparingly on Cairn Toul, 1941, R. MACKECHNIE and E. C. WALLACE.

753/7. *CAREX ROSTRATA* Stokes in With. 39, Staffs.; Chartley Moss, Stowe, 1942 (No. 2483), E. S. EDEES.

753/8. *CAREX LASIOCARPA* Ehrh. 61, S.E. Yorks.; Kelleythorpe Marsh, Driffield, 1942. Given as extinct in East Yorks. in Robinson's *Flora*. Growing with *C. diandra*, which was noted here in 1939, though I then missed the *C. lasiocarpa*, W. A. SLEDGE.

753/9. *CAREX HIRTA* L. 39, Staffs.; Newcastle, 1942 (No. 2477), E. S. EDEES.

753/9d. *CAREX HIRTA* L. var. *SPINOSA* Mort. 37, Worcs.; Naunton: Ripple; 1939, F. M. DAY, det. E. NEEMES.

753/10. *CAREX PENDULA* Huds. 39, Staffs.; Walton's Wood, Madeley, 1942 (No. 2466), E. S. EDEES.

753/12. *CAREX STRIGOSA* Huds. 23, Oxon.; still in Noke Wood, Sibthorp's locality (not found there since Sibthorp's time according to Druce, 1927, *Fl. Oxf.*, ed. 2, 458), 1941, N. Y. SANDWITH.

753/13. *CAREX HELODES* Link. 6, N. Somerset; very local in one spot in damp wooded valley between Nettlebridge and Edford, 1941, C. I. and N. Y. SANDWITH. (The first certain record for the Bristol area). 8, S. Wilts.; Great Bradley Wood, also Penstones Wood, 1941, J. D. GROSE. 39, Staffs.; Walton's Wood, Madeley, 1942 (No. 2460), E. S. EDEES. 57, Derbs.; Tansley Moor, 1942, D. McCLEINTOCK.

753/25. *CAREX DIGITATA* L. 63, S.W. Yorks.; Anston Stones Wood, 1942, W. A. SLEDGE.

753/27. *CAREX HUMILIS* Leyss. 8, S. Wilts.; a number of additional records given by Welch and Grose (1942 : 77).

753/32. *CAREX PILULIFERA* L. 30, Beds.; Deadmansea Wood, Whipnade, 1942, A. J. WILMOTT.

753/34. *CAREX PALLESCENS* L. 30, Beds.; Deadmansea Wood, Whipnade, 1942, V. H. CHAMBERS, comm. A. J. WILMOTT. 36, Heref.; Old Country Wood, Coddington, 1942, F. M. DAY.

753/35. *CAREX VAGINATA* Tausch. 92, S. Aberdeen; Beinn Bhrotain, Cairngorms, 1941, E. C. WALLACE.

753/47. *CAREX AQUATILIS* Wahl. 69, Westmorland; Elterwater, and by the Brathay near Skelwith, 1942, E. C. WALLACE.

753/49e. *CAREX GOODENOWII* Gay var. *JUNCEA* (Fr.) Asch. 41, Glam.; Kenfig Pool, 1942, Miss E. VACHELL, confirmed by E. NELMES.

753/54. *CAREX LACHENALII* Schkuhr. 92, S. Aberdeen; in great abundance on Cairn Toul, northern slopes, 1941, R. MACKECHNIE and E. C. WALLACE.

753/57×59. *CAREX REMOTA* L. × *OTRUBAE* Podpera. 63, S.W. Yorks.; ditch near Chapel Hill, Balne, W. A. SLEDGE. Fishlake, by a grass lane leading to Jubilee Bridge, Thorne, 1942, Dr J. M. TAYLOR, comm. W. A. SLEDGE.

*753/58. *CAREX CANESCENS* L. 47, Montgomery; bog on mountains between Hirnant and Lake Vyrnwy, 1942, J. W. GOUGH and N. Y. SANDWICH.

753/59. *CAREX OTRUBAE* Podp. 54, N. Lincoln; ditches inland from Skegness, 1942, E. C. WALLACE.

*753/59(2). *CAREX VULPINA* L. 33, E. Glos.; Coombe Hill Canal, 1941, E. NELMES.

753/60. *CAREX SPICATA* Huds. (*C. CONTIGUA* Hoppe). 39, Staffs.; Eccleshall (No. 2535): Ashley (No. 2536), both 1942, E. S. EDEES.

*753/61. *CAREX PAIRAEI* F. Schultz. 8, S. Wilts.; Chute (Grose, 1940 : 337).

753/63. *CAREX PANICULATA* L. 34, W. Glos.; The Quabs, Bromsberrow, 1940, F. M. DAY.

753/67. *CAREX ARENARIA* L. 54, N. Lincs.; Laughton Common, John Brown (1941 : *N.W.Nat.*, 16, 332).

*753/75. *CAREX DIOICA* L. 47, Montgomery; bog c. 1000 ft. near summit of Boncyn Celyn, S.E. of Lake Vyrnwy, 1942, J. W. GOUGH and N. Y. SANDWICH.

Kent +756/1. *SETARIA ITALICA* (L.) Beauv. 16, W. Kent; waste ground, Green Street Green, 1941, J. E. LOUSLEY.

+765/7. *PHALARIS PARADOXA* L. 39, Staffs.; brewery alien, Burton-on-Trent, 1936, R. C. L. BURGESS, det. C. E. HUBBARD, comm. J. E. LOUSLEY.

766/1b. *ANTHOXANTHUM ODORATUM* L. var. *LONGIARISTATUM* Celak. 39, Staffs.; roadside between Dunwood and Rudyard, Longsdon, 1942, E. S. EDEES.

770/1×5. ×*ALOPECURUS HYBRIDUS* Wimm. 6, N. Somerset; pasture on Tickenham Moor, 1942, C. I. and N. Y. SANDWICH: new to the Bristol district.

770/6. *ALOPECURUS AEQUALIS* Sobol. 12, N. Hants.; drained Hants
bed of Fleet Pond, 1941, E. C. WALLACE.

777/1g. *PHLEBUM PRATENSE* L. var. *NODOSUM* (L.) Schreb. 39,
Staffs.; roadside on the Westlands estate, Newcastle, 1941, E. S. Eedes
(*Trans. N. Staffs. Field Club*, 1941-42, as *P. nodosum* L.).

783/1. *CALAMAGROSTIS EPIGEIOS* (L.) Roth. 63, S.W. Yorks.; near
Barnby Dun, John Brown (1941 : *N.W.Nat.*, xvi, 332).

*783/2. *CALAMAGROSTIS CANESCENS* (Weber) Gmel. em. Druce. 92,
S. Aberdeen; a small patch in sedgy wood by the Dee at Braemar, 1941,
an interesting extension of range, R. MACKECHNIE and E. C. WALLACE.

783/4c. *CALAMAGROSTIS NEGLECTA* (Ehrh.) Beauv. var. *HOOKERI*
(Syme). 90, Forfar; Rescobie, 1941, Miss U. K. DUNCAN. A most inter-
esting re-discovery of a plant long considered "extinct" there, Ed.

784/1. *GASTRIDIVM LENDIGERUM* (L.) Gaud. 13, W. Sussex; wood-
land glade in clearing, Loxwood, 1941, E. C. WALLACE.

*785/2. *APERA INTERRUPTA* (L.) Rehb. 54, N. Lincs.; sandy road-
side, Seacroft, south of Skegness, 1942, E. C. WALLACE. Sussex

791/2. *DESCHAMPSIA ALPINA* (L.) R. & S. 92, S. Aberdeen; Coire
an t'Saighdeir, Cairn Toul, 1941 : several places on Beinn Bhrotain and
on the Monadh Mor, 1941 : 100, Clyde Isles; Glen Sannox, 1937; R. MAC-
KECHNIE and E. C. WALLACE.

*794/2. *AVENA PUBESCENS* Huds. 46, Cardigan; Towyn Warren,
1941, J. A. WHELLAN, comm. NAT. MUS. WALES.

+794/6. *AVENA STRIGOSA* Schreb. [29, Cambs.; "the record in 1939-
1940 *Report*, p. 303, for Southam should be cancelled: the plant is *A.*
fatua," F. M. DAY.] 34, W. Gos.; a single plant on rubbish heap,
Bromsberrow, 1942 : 37, Worcester; Cotheridge, 1940; F. M. DAY.

*795/2. *AERHENATHERUM TUBEROSUM* (Gilib.) Druce. 48, Merioneth;
Brithdir, 1941, J. A. WEBB, comm. NAT. MUS. WALES.

*800/1. *SIEGLINGIA DECUMBENS* (L.) Bernh. 47, Montgomery; pas-
ture at E. end of Lake Vyrnwy, near Llanwdden, 1942, J. W. GOUGH
and N. Y. SANDWICH.

818/1. *MELICA NUTANS* L. 63, S.W. Yorks.; wood on Permian
Limestone near Thorpe Salwin, 1940, John Brown (1941 : *N.W.Nat.*,
xvi, 206, as *M. montana* Huds.).

824/9. *POA GLAUCA* Vahl. 98, Argyll; Ben Douran, 1940, E. C.
WALLACE.

[*]825/3(2). *GLYCERIA DECLINATA* Bréb. 8, S. Wilts.; Folly Farm, Bedwyn (Grose, 1940, 337). 34, W. Gloucester; on the mud of dried-up ponds on Inglestone Common near Wickwar, 1941, C. I. and N. Y. SANDWITH. (The first record for the Bristol area, and new to district 5 of Gloucestershire). *99, Dumbarton; by a small stream entering the Clyde near Bowling, 1932, R. MACKECHNIE. *Walls*

826/4b×829/1. *FESTUCA PRATENSIS* Huds. × *LOLIUM PERENNE* L. 39, Staffs.; roadside, Ipstones, 1942, E. S. EDEES.

826/18. *FESTUCA MYUROS* L. 18, S. Essex; rubbish tips, Dagenham, 1939, J. E. LOUSLEY and E. C. WALLACE.

+827/1(2). *BROMUS GUSSONEI* Parl. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE.

+827/4. *BROMUS TECTORUM* L. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE.

+827/8. *BROMUS RUBENS* L. 25, E. Suffolk; Felixstowe Docks, 1939, J. E. LOUSLEY and E. C. WALLACE.

+827/9. *BROMUS INERMIS* Leyss. 54, N. Lincoln; sea front at Skegness, 1942, E. C. WALLACE.

+827/13. *BROMUS UNIOLOIDES* H. B. & K. 25, E. Suffolk; Felixstowe Docks, 1938, J. E. LOUSLEY.

827/19(2). *BROMUS LEPIDUS* Holmberg. 7, N. Wilts.; near Aldbourne, J. D. Grose (1940: 337) and J. E. Lousley. 12, N. Hants.; Tunworth, 1942, N. E. G. CRUTTWELL: 17, Surrey; fields at Addington, 1942, A. L. STILL. 39, Staffs.; sandy roadside, Tyrley, 1942 (No. 2556), E. S. EDEES. +61, S.E. Yorks.; Aughton near Bubwith: +63, S.W. Yorks.; near Gale Common, south-east of Knottingley: near Auckley: +65, N.W. Yorks.; fields near Leckby Carr, W. A. SLEDGE. Catterick Bridge, Hudswell, Sedbury Bottom, Downholme Park and Arrathorne, C. M. ROB. All Yorks. records 1942.

+829/4. *LOLIUM MULTIFLORUM* Lam. 39, Staffs.; Audley, 1942, E. S. EDEES.

830/1×2. *AGROPYRON JUNCEUM* (L.) Beauv. × *PUNGENS* R. & S. 54, N. Lincoln; sea shore south of Skegness, 1942, E. C. WALLACE, det. C. E. HUBBARD.

830/1×2d. *AGROPYRON JUNCEUM* (L.) Beauv. × *PUNGENS* R. & S. var. *ARISTATUM* Hack. 54, N. Lincoln; dunes south of Skegness, 1942, E. C. WALLACE, det. C. E. HUBBARD.

836/3. *ELYMUS EUROPAEUS* L. 63, S.W. Yorks.; Anston Stones Wood, 1942, W. A. SLEDGE: 65, N.W. Yorks.; in plenty in woods along

south bank of Swale from Lowthwaite to below Colburn, 1942, C. M. ROB.

*844/2×5. ×EQUISETUM LITORALE KÜHL. 2, E. CORNW.; Caerhays (with *E. palustre* L.), 1941, A. H. G. ALSTON.

844/3. EQUISETUM SYLVATICUM L. 17, Surrey; woodland glade, south of Dunsfold on Sussex border, 1941, E. C. WALLACE. *Sur.*

854/1. POLYSTICHUM SETIFERUM (Forsk.) Woyнар. 60, W. Lancs.; glen near Lancaster, gritstone rocks, 1942, J. N. FRANKLAND.

854/1b. POLYSTICHUM SETIFERUM (Forsk.) Woyнар var. HASTULATUM Druce. 4, N. Devon; Long Hayne, Cove, Tiverton, 1941, A. L. STILL, comm. E. C. WALLACE. 17, Surrey; lane near Bowlhead Green, 1937, E. C. WALLACE.

854/1c. POLYSTICHUM SETIFERUM (Forsk.) Woyнар var. ALATUM (Moore) Druce. 4, N. Devon; Palfrey Lane, Cove, Tiverton, 1941, A. L. STILL, comm. E. C. WALLACE.

856/5. DRYOPTERIS AEMULA (Ait.) Kuntze. 62, North-east York.; Hackness, 1939, a re-discovery, C. A. Cheetham and S. P. Rowlands (1940 : *Naturalist*, 24).

*856/11. DRYOPTERIS ROBERTIANA (Hoffm.) C. Chr. 62, N.E. Yorks.; railway track in Newton Dale, Mr Highfield (W. A. Sledge; 1941 : *Naturalist*, 12).

863/1. HYMENOPHYLLUM TUNBRIGENSE (L.) Sm. 14, E. Sussex; near Lye Green, 1941, D. McCLINTOCK. *Sussex*

870/5. LYCOPODIUM CLAVATUM L. 41, Glam.; Mynydd Margam, 1942, Miss M. THOMAS and Miss E. VACHELL, confirmation of old record.

+868/1. AZOLLA FILICULOIDES Lam. 7, N. Wilts.; Kennet and Avon Canal, Limpley Stoke, 1939, Cecil Sandwith (*N.W.Nat.*, 15, 266).

+871/2. SELAGINELLA KRAUSSIANA A. Braun. 3, S. Devon; near Grenofen Bridge, south bank of R. Walkham, Buckland Monachorum, 1941, Miss K. H. JOHNSTONE, comm. E. M. PHILLIPS.

THE WEATHER OF 1941 AND 1942 AND ITS EFFECTS.

(Adapted by permission from the Phenological Reports of the Royal Meteorological Society.)

1941.

The year opened with a cold January, as in the preceding year, but was of a different type in other respects. February produced much snow, including a fall in the N.E. district which gave an equivalent rainfall 744 per cent. of the average for the week commencing 16th February. Under the influence of northerly and north-easterly winds, which were very persistent, the temperature remained below the average (although not very markedly except for a mid-May frost) almost continuously until the third week in June, when a warm, dry, sunny period occurred, lasting for about four weeks, after which conditions again deteriorated, August being wet. Conditions improved at the end of that month, and the autumn was genial.

This unusual season caused a certain amount of uncertainty and irregularity in the appearance of plants such as are usual when the temperature for long periods rarely exceeds the average to any extent. Many plants were up to three weeks later than usual in flowering until the warm June-July spell, which was followed by a general "catch up" and a tendency to earliness amongst the late summer flowers. In Scotland the season was fairly good for alpine plants, about average in the Braemar district. Sedges on Ben Douran in Argyll were definitely later and poorer than in 1940.

The year will be remembered for having made amends for a belated summer, and for some damage to blossom and foliage in the spring. In parts of Surrey and Sussex, mostly in the Weald, the oaks were stripped bare of leaves while in flower by a frost and myriads of caterpillars. The countryside in autumn was greener than usual, with unusually late defoliation of our trees, and a poor show of autumn colours.

1942.

Again the year began, after a mild December, with a cold spell which lasted until mid-March and which included the coldest February in England and Wales since 1895. Frosts, however, were not very intense and the normal daily temperatures were reached on a few occasions. From this point until the second week in June there was a period, free from any return to harmful frosts, with three warm spells and with a dry sunny spell in the middle third, preceded and followed by rainy spells. This dry period produced a drought of 32 days—the longest for 13 years—during the greater part of which winds between N. and E. prevailed, mean temperatures being not far from normal, with relatively warm days and cool nights. June was a dry month, cold in the middle, but ending as it began with a cold spell. After the

first week in July, temperature and sunshine were mainly below, and rainfall above, the normal, and although temperature rose markedly at the end of August there was no dry sunny period of any duration during that month. The period September-October produced a sequence consisting of a warm dry sunny spell, a cold wet sunless spell and a warm wet sunless ending.

Plants were late again in the spring, due as much, to the drought conditions as to the cold. In Yorkshire the lateness of the ash in coming into leaf was most marked, it being a month behind 1941. It also flowered poorly and so "keys" were scarce in the autumn.

The harvest had been good over the whole country, and exceptional in some parts. As the result of the amount of rain in the later part of the summer there was enough aftermath growing in many grass fields to enable farmers to make more silage. The abundance of the year in respect of crops extended to cultivated and wild fruits of almost every kind, although it is not likely to be generally remembered as a genial summer owing to the frequent occurrence of weeks with deficient sunshine. The appearance of the grass fields in autumn was exceptionally green, and the weather was sufficiently quiet and free from frost to produce a wealth of autumn colours. Reference has been made by observers and in the Press to the particularly rich golden brown colour of the oaks, which, in sheltered places, kept their foliage into December.

E. C. WALLACE.

NOMENCLATURE AND CORRECTIONS TO BRITISH PLANT LIST.

A. J. WILMOTT.

This section includes alterations which have been made in the course of preparing this Report. It is hoped that members who are sending in Plant Records for 1943 will correct their copies of *B.P.L.* before doing so.

In some instances it will be found that names have been used contrary to *B.P.L.*, ed. 2, without any correction being inserted here. This has been done only when present circumstances have prevented adequate investigation being made. It is undesirable to list the alteration as a correction to *B.P.L.* until the investigation can be completed. In these instances the *B.P.L.* number will always be added to indicate the plant for which the name has been substituted.

The tracing of the correct authorities for varietal names is frequently a matter of considerable difficulty, and when an authority has not been found easily, it is inserted in this section. It is often difficult to be quite certain that a given combination has not been previously published, but when it seems extremely probable that this is the case, "*comb. nov.*" is added (and should in use be replaced by "Wilmott"). When no publication of the combination has been traced, but it seems very likely that it has appeared somewhere, "*comb. nov. [?]*" is used, I should be pleased to receive any corrections, towards the next edition of the *Plant List*.

ABBREVIATIONS OF AUTHORS' NAMES. Some of the abbreviations used in the *British Plant List* are not the usual ones, and the following alterations should be made throughout:—

- R.Br. [Robert Brown].—Br. by priority would refer to "P.Br.," i.e. Patrick Browne, author of "The Civil and Natural History of Jamaica," 1756.
- Rchb.—Reichb. is an unnecessary lengthening of this well-known abbreviation for H. G. L. Reichenbach. Reich. indicates the earlier Reichard, whose name is better given in full to avoid confusion.
- Rchb. f.—Or Rchb. fil., similarly for the son, H. G. Reichenbach.

In connexion with the entries under *Hieracium*, a few words of explanation seem necessary concerning the correct use of the terms "*sp. nov.*", "*nom. nov.*", and "*comb. nov.*", after a new name. When a plant is described as a new species based on a new type, the term *sp. nov.* should be used. The modern use of the type method for obtaining fixity of application of name makes it necessary to differentiate between *sp. nov.*, with a new type, and *nom. nov.*, which is used when a new name or new epithet is given to a previously described plant because the one by which it has previously been known has been shown to be illegitimate according to International Rules of Nomenclature, needing

replacement, therefore, by a new one, i.e. *nom. nov.* The type of a *nom. nov.* remains the same as it was under the previously used, though illegitimate, name. Again, when a previously published epithet is adopted in a different genus or with a different rank, to form a name consisting of a different combination of words, this new combination is termed *comb. nov.* It should be clear that no change of type can be permitted in such a case, for if the same epithet, intended to indicate the same plant, were allowed to have a different type according to the combination in which it appeared, the value of the type method as a means of obtaining fixity and stability in nomenclature would be seriously undermined. It is, therefore, not correct to use the term *sp. nov.* in the sense either of *nom. nov.* or of *comb. nov.*, for technically it indicates that the author may have selected a new type, which in fact he could not, or should not, have done, in view of the nature of his "protologue," i.e. original published account. Thus *Hieracium* 164(2) "*fulvocaesium* Pugsl., *sp. nov.*," was published with no explanation but the reference to *H. orarium* var. *fulvum* Hanb. . . . (1894): there is no description other than that given in the reference cited, so the type *must* be that of *H. orarium* var. *fulvum*. *H. fulvocaesium* is therefore not a *sp. nov.*, but a *nom. nov.*: as a *sp. nov.* it could be considered to have no description and no type, i.e. to be *nom. nudum*, a mere name, and therefore illegitimate. Again, 129 *H.* "*anglorum* (Ley) Pugsl., *sp. nov.*" was published solely with the reference to "*H. scanicum* var. *anglorum* Ley . . . (1909); non *H. scanicum* Dahlst. . . . (1894)." The citation "(Ley) Pugsl." indicates that a previously published epithet has been adopted, and that the type depends on the protologue of "(Ley)." If a *sp. nov.* were intended, the "(Ley)" would have to be omitted and the new type stated, and something new in the way of description added to show why the type had been changed. *H. anglorum* (Ley) Pugsl., published in *this* form, cannot be *sp. nov.*, but must be *comb. nov.* The application of the type method needs to be made with care, for otherwise, wrong uses of the terms may cause considerable argument, and create trouble concerning the typification of new names, and concerning their consequent validity or illegitimacy. In adding the names of *Hieracia* in this section, I have, therefore, added the term which correctly indicates the nature of the novelty, when it was not thus designated in the original publication. The use of "*haud*" in synonymy here indicates that the first cited author *misidentified* the plant described by the author following the *haud*: *non* indicates that the two uses of the name or epithet were independent and unconnected.

13 *DELPHINIUM*—See Wilmott: 1942A.

3 *Garyanum* Wilmott (D. Ajacis auct., *haud* L.).

4 *Ajacis* L. sec. Wilmott (D. orientale Gay).

54 *BRASSICA*.

14 *haber* (DC.) Wheeler.—See 1938 *Rep.*, 23.

b. *orientalis* (L.), *comb. nov.*

- 18(2). *integrifolia* (West) O. E. Schulz.
 b. *carinata* (A. Br.) O. E. Schulz—[in Engler 1919: *Pflanzenr.*, iv, 105, p. 58], (*B. carinata* A. Br. 1841; *Sinapis abyssinica* A. Br. ap. Regel).—See Plant Notes.
- 59 **CAPSELLA** Medik.—*Nomen conservandum*.
 1 **Bursa-pastoris** (L.) Medik.
 2-28 All as of "[E. Almq.]" comb. nov., unless any of the combinations have been previously used. E. Almqvist treated these ["species element." i.e. "elementary species"] as subdivisions of *Capsella Bursa-pastoris*. This treatment made all his names illegitimate by Art. 13 of the International Rules, which forbids the subdivision of species into species. They would be better treated as subspecies.
 29 **penarthae** (Shull), comb. nov.—*Bursa penarthae* Shull 1929; see Plant Notes.
- 88 **VIOLA**.
 8 **odorata**.
 d. **dumetorum** (Jord.) Rouy & Fouc.—1896: *Fl. Fr.*, iii, 25.
 f. **floribunda** (Jord.) Rouy & Fouc.—1896: *l.c.*
 h. **subcarnea** (Jord.) Parl.—1890: *Fl. Ital.*, ix, 130.
- 112 **HYPERICUM**.
 14 × **dubium**; × **H. Desetangsii** Lamotte.—Erroneously in 1939-40 Rep., 313, as *H. perforatum* × *quadrangulum*. Delete "× quadrangulum" from *B.P.L.*: cf. × *H. dubioides* Druce in 1928 Rep., 868.
- 153 **MEDICAGO**.
 6 **minima**.
 g. **pulchella** Lowe.—See Plant Notes.
- 155 **TRIFOLIUM**.
 20 **campestre** Schreb. (*T. procumbens* auct., vix L.).
- 185 **RUBUS**.
 17 **incurvatus**.
 c. **minor** W. Wats. ex J. W. H. Harrison *et al.*—See Plant Notes.
- 190 **ALCHEMILLA**.—See Wilmott 1939: *J.B.*, lxxvii, 249-250.
 1 **minor** Huds. see Wilmott (*A. pubescens* Lam.).
 4 **pseudominor** Wilmott (*A. minor* auct. *haud* Huds.).
 4(2) **filicaulis** Buser—*Vice* 4b.
- 194 **ROSA**.
 7 **squarrosa**.
 r. **rupicola** (J. W. H. Harrison ex J. W. H. Harrison *et al.*), comb. nov.—[See Plant Notes].

289 SYMPHORICARPOS.

*1 *racemosus* Mich.—Vice tautonym.

355 MADIA.

3 *capitata* Nutt. N. Amer. (Oregon-California).—See Plant Notes.

368 ANTHEMIS.

2 *nobilis*.

c. *discoidalis* J. W. H. Harrison ex J. W. H. Harrison *et al.*—See Plant Notes.

419 HIERACIUM.—From Pugsley 1941: *J.B.*, lxxix, 177-183, 193-197, to which the page numbers here cited refer, and where the detailed references of the synonymy are given. The numbers given have been passed or chosen by Mr Pugsley.

10(2) *scarpicum* Pugsl.—p. 180.

11(2) *ebudicum* Pugsl.—p. 179.

11(3) *hebridense* Pugsl.—p. 179.

25(2) *Grovesii* Pugsl.—p. 177.

30 *globosiflorum* Pugsl.—p. 178, *H. globosum* Backh. 1856, non Desf. 1829.

32(2) *macrocarpum* Pugsl.—p. 177.

33(2) *pseudanglicum* Pugsl.—p. 178.

33(3) *gracilifolium* (Hanb.) Pugsl.—p. 178, comb. nov. (not “nom. nov.”). *H. nigrescens* var. *gracilifolium* Hanb. 1892, pro parte. [Type is that of Hanbury’s variety.]—Delete 44b.

34(2) *cremnantes* (Hanb.) Pugsl.—p. 178, comb. nov. *H. Marshallii* var. *cremnantes* Hanb. 1892.—Delete 49b.

36 *Hanburyi* Pugsl.—p. 178. *H. chrysanthum* Backh. 1855, non Ledeb. 1853.

39 *pseudocurvatum* (Zahn) Pugsl.—p. 178, comb. nov. *H. nigrescens* Backh. 1856, haud Willd. *H. curvatum* Hanb. 1894, haud Elfstrand. *H. nigrescens* var. *pseudocurvatum* Zahn 1921. [Type a Backhouse specimen not seen by Zahn.]

47 *hyparcticoides* Pugsl.—p. 179, nom. nov. *H. hyparcticum* Hanb. 1894, haud Almq. ex Elfstrand. [Type from Ben More Assynt, coll. Hanbury or Marshall.]

49(2) *dasythrix* (Linton) Pugsl.—p. 179, comb. nov. *H. Pictorum* var. *dasythrix* Linton 1893.—Delete 121b.

63 [*pseudorepandum* Pugsl.—p. 181, nom. nov. *H. repandum* (Ley) Ley 1905, non Schrank 1813. Mr Pugsley writes that he “deliberately ignored ‘repandulare,’ which is not a Latin word,” but although not inserted in Art. 27 of the *International Rules of Botanical Nomenclature* (1935: p. 7), which deals with names of species, it probably should be presumed that the words in Art. 25 (p. 6, dealing with names of genera and their subdivisions), viz., “These

- names may be . . . composed in an absolutely arbitrary manner," would also apply in Art. 27 and would legitimise the epithet "*repandulare*."]]
- 63(2) **Riddelsdellii** Pugsl.—p. 181, nom. nov. *H. ciliatum* var. *venosum* Ley 1907, non *H. venosum* L. 1753.—Delete 63b.
- 63(3) **basalticolum** Pugsl.—p. 181.
- 64 **ciliatiflorum** Pugsl.—p. 194. *H. ciliatum* Almq. 1871, non Willd. 1800.
- 66(2) **degarwyense** Pugsl.—p. 180.
- 72(2) **Beebyanum** Pugsl.—p. 181.
- 73 **chloranthum** Pugsl.—p. 180, nom. nov. *H. onosmoides* Hanb. 1892, haud Fries 1848. *H. buglossoides* Linton 1893, haud Arv.-Touv. 1876. *H. saxifragum* var. *pseudonosmoides* Hanb. 1904. [Type should be based on Hanbury 1892: best selected from the specimens collected on sandhills near Balintore, E. Ross.]
- 74(2) **subplanifolium** Pugsl.—p. 181, nom. nov. *H. lasiophyllum* var. *planifolium* Hanb. 1892, non *H. planifolium* Brenner 1894. [Type is that of Hanbury's variety.]—Delete 55c.
- 76 **fratrum** Pugsl.—p. 182. *H. sordidum* W. R. Linton ex Linton 1911, non Gillies 1835.
- 77(2) **britanniciforme** Pugsl.—p. 182.
- 80(2) **carneodorum** Pugsl.—p. 180, nom. nov. *H. Sommerfeltii* var. *splendens* Hanb. 1897, non *H. splendens* Elfstrand 1896. [Type that of Hanbury 1887, i.e. specimen in Hb. Hanbury cultivated by Ley (1897), from Nant Francon, Carnarvonshire.]—Delete 80c.
- 91(2) **subprasinifolium** Pugsl.—p. 193.
- 91(3) **pseudo-Stenstroemii** Pugsl. (as *Pseudo-Stenstroemii*)—p. 194. *H. silvaticum* var. *Stenstroemii* F. N. Williams 1902, haud *H. serratifrons* var. *Stenstroemii* Dahlst. 1893. This is apparently sp. nov.! although no description is given, and no type cited, since it is not a change of name for 85 *Stenstroemii*. F. N. Williams's account (*Prodr. Fl. Brit.* i, 134) of "*H. silvaticum* var. *Stenstroemii*" must presumably be regarded as the "protologue." The type should therefore be in Herb. Hanbury, from "Upper Wharfedale, Yorkshire, collected 1891," presumably named as *H. murorum* var. *Stenstroemii* (Hanbury, in *Lond. Cat.*, ed. ix, n. 952d: cited by F. N. Williams).
- 92(2) **semicrassiceps** Pugsl.—p. 194.
- 99 **cuneifrons** (Ley ex W. R. Linton) Pugsl.—p. 183, comb. nov. *H. subulatidens* var. *cuneifrons* Ley ex W. R. Linton 1905. [Type that of W. R. Linton, 1905.]—Delete 99 and 99b.
- 99(2) **itunense** Pugsl.—p. 193.
- 100(2) **pollinarioides** Pugsl.—p. 193.

- 106(2) **tricolorans** (Zahn) Pugsl.—p. 182, comb. nov. *H. silvaticum* var. *tricolor* W. R. Linton 1905. *H. bifidum* subsp. *tricolorans* Zahn 1921. [Type that of W. R. Linton, 1905.]—Delete 156c.
- 106(3) **subcyaneum** (W. R. Linton) Pugsl.—p. 182, comb. nov. *H. silvaticum* var. *subcyaneum* W. R. Linton 1905. [Type that of W. R. Linton, 1905.]—Delete 156d.
- 106(4) **silvaticoides** Pugsl.—p. 182.
- 110 **oïstophyllum** Pugsl.—p. 194. *H. sagittatum* Lindb. ex Stenstr. 1889, non H. & L. 1809.
- 110(2) **subhirtum** (Hanb.) Pugsl.—p. 194, comb. nov. *H. rivale* var. *subhirtum* Hanb. 1894.—Delete 110b.
- 117(2) **crebridentiforme** Pugsl.—p. 195.
- 117(3) **auratiflorum** Pugsl.—p. 195.
- 120(2) **clivicolum** (Hanb.) Pugsl.—p. 195, comb. nov. *H. euprepes* var. *clivicolum* Hanb. 1894. [Type that of Hanbury, 1894.]—Delete 120c.
- 121(3) **uisticolum** Pugsl.—p. 195.
- 127 **submutabile** (Zahn) Pugsl.—p. 197. *H. mutabile* (Ley) Ley 1909, non F. Schultz 1845. *H. vulgatum* var. *submutabile* Zahn 1921, “?” according to Pugsley, but the “?” must be ignored, for the new combination cannot be made unless Zahn’s type is adopted. [The type is that of *H. vulgatum* var. *mutabile* Ley 1900.]
- 129 **anglorum** (Ley) Pugsl.—p. 197, comb. nov. *H. scanicum* var. *anglorum* Ley 1909, haud *H. scanicum* Dahlst. 1894.
- 131(2) **subminutidens** (Zahn) Pugsl.—p. 197, comb. nov. *H. caesium* var. *subminutidens* Zahn 1921.—Delete 166b.
- 134(2) **lepidulum** Stenstr.—p. 197.
- 150(2) **neocoracinum** Pugsl.—p. 183, nom. nov. *H. caesium* var. *subminutidens* Zahn 1921.—Delete 174b.
- 152(2) **pseudosarcophyllum** Pugsl.—p. 183. *H. sarcophyllum* W. R. Linton 1905 ex parte, haud Stenstr. 1889.
- 154(2) **cillense** Pugsl.—p. 183, described as sp. nov. with one of Ley’s specimens of *griseum* as type: really nom. nov. with new description added. *H. hypochaeroides* var. *griseum* Ley 1905. [*H. griseum* Ley MS., non Formanek 1896.]—Delete 74b.
- 159(2) **caesiopilosum** Pugsl.—p. 196.
- 164(2) **fulvocaesium** Pugsl.—p. 196, nom. nov. *H. orarium* var. *fulvum* Hanb. 1894.—Delete 178b.
- 164(3) **erythraeum** [W. R. Linton] Pugsl.—p. 196, as “sp. nov.”, with description and indication of type. W. R. Linton’s use of the epithet is invalid, being without description, but the citation of his name in brackets is harmless, as the Linton material is all that is at present known, and the typification is unaffected.

- 172(2) **vennicontium** Pugsl.—p. 196. nom. nov.; *H. euprepes* var. *glabratum* Linton 1893, non *H. glabratum* Hoppe ex Willd. 1800. [Type is that of Linton's variety.]—Delete 120b.
- 173(2) **melanochloricephalum** Pugsl.—p. 195.
- 176(2) **angustisquamum** (Pugsl.) Pugsl.—p. 197, comb. nov. *H. holophyllum* var. *angustisquamum* Pugsl. 1920.—Delete 176c.
- 184(4) **Roffeyanum** Pugsl.—p. 197.
- 187(2) **speluncarum** Arv.-Touv.—p. 177.

457 **LIMONIUM.**

- 1 **vulgare** Mill.—*Vice* tautonym.
- 4 **bellidifolium** (Gouan) Dumort.—(*Statice Limonium* var. *bellidifolia* Gouan 1760: Fl. Monsp. 231). The Maltese *Statice reticulata* L. is apparently not the same as the British plant.
- × **binervosum**—[See Plant Notes: some specimens considered to be possibly this hybrid].

480 **GENTIANA.**

- 4 **Amarella.**
- c **pallida** (Pugsl.) comb. nov. [?]*G. axillaris* var. *pallida* Pugsl. 1936: *J.B.*, lxxiv, 165, 169; I can find no previous combination.

482 **NYPHOIDES.**

- 1 **orbiculata** Gilib.—Gmelin's epithet "*peltatum*," though a year earlier than that of Gilibert, was illegitimate, as he should have adopted that of "*nymphoides* (L.);" under his new genus *Limnanthemum*.

490 **OMPHALODES.**

- 2 **vernā** Moench—*Vice* tautonym.

522 **DATURA.**

- 1 **Stramonium.**
- b. **chaliſbea** Koch—1844: *Syn. Fl. Germ.*, ed. 2, 586. *D. Tatula* L.

527 **VERBASCUM.**

- 1 **phlomoides** L.—With small initial "p."

532 **LINARIA.**

- 1 **vulgaris** Mill.—*Vice* tautonym.

545 **EUPHRASIA.**—See Plant Notes.

- 5 **nemorosa.**
- h. **imbricata** Callen.
- 18 **confusa.**
- c. **maciana** Callen.

- 548 RHINANTHUS.**—See 1939-40 Rep., 361-379.
- 5(2) *calcareus* Wilmott.
- 6 *spadiceus* Wilmott. (*R. monticola* auct. non Lamotte.)
b. *oreadensis* (Wilmott) comb. nov.
- 7 *borealis* (Sterneck) E. S. Marshall.
× *spadiceus* = × *R. Gardineri* Druce.
- 8(1) *Lintoni* Wilmott.
- 8(2) *lochabrensis* Wilmott.
- 615 POLYGONUM.**—See Plant Notes.
- 3 *Bistorta*.
a *puberulum* G. Beck.
- 4 *viviparum*.
c *Roessleri* (G. Beck) comb. nov. [?].
- 9 *Hydropiper*.
c *obtusifolium* A. Br.
- 27 *sagittatum*.
b. *americanum* Meisner.
- 32 *Sieboldii* De Vriese. (*P. cuspidatum* Sieb. & Zucc. non Willd.)
—cf. Bailey 1924: *Man. Cult. Plants*, 246.
- 616 FAGOPYRUM.**
- 1 *sagittatum* Gilib.—*Vice* tautonym.
- 638 PARIETARIA.**
- 1 *diffusa* M. & K.—*P. ramiflora* Moench is *nomen illegitimum superfluum*, since Moench cites *P. judaica* L. as synonym.
- 650 SALIX.**
- 3 *alba*.
b. *caerulea* (Sm.) Koch—1837: *Syn. Fl. Germ.*, ii, 644.
- 651 POPULUS.**
- *6 *candicans* Ait.—The identity of *P. Tacamahacca* Mill. is disputable; cf. Rehder 1940: *Manual Cult. Trees and Shrubs*, ed. 2, 76, 77.
- 668 EPIPACTIS.**
- 3(4) *pendula* C. Thomas.—See Plant Notes.
- 669(1) ORCHIS.**
- 1 *purpurea*.
c. *Brookei* (Wilmott) comb. nov.—See Plant Notes.
- 669(2) ANACAMPTIS.**
- 1 *pyramidalis* (L.) Rich.
b. *sanguinea* (Druce) comb. nov. [?]*—Orchis pyramidalis* var. *sanguinea* Druce 1929: *B.E.C. 1928 Report*, 639.

- c. **fudayensis** (J. W. H. Harrison) J. W. H. Harrison.—The combination was made in January 1939 in *J.B.*, 77, p. 4; only in July 1939 by P. M. Hall (1938 Rep., p. 29; 1939).

691 POLYGONATUM.

- 3 **officinale** All.—*Vice* tautonym.

719 LUZULA.

- 4 **multiflora.**

- a. **typica** (Beck) comb. nov. [?]*—L. erecta* var. *typica* Beck 1890: *Fl. Nied.-Ost.*, 159.
b. **congesta** (Thuill.) Koch—1837: *Syn. Fl. Germ.*, ii, 734. *Juncus congestus* Thuill. 1799: *Fl. Paris*, 179.

735 POTAMOGETON.

- 5 **alpinus.**

×**perfoliatus** (×**P. prussicus** Hagstr.)—See Plant Notes.

753 CAREX.

7. **rostrata** Stokes in With. (*C. inflata* auct. non Huds.)
51(2) **bicolor** All. Rhum.—See Plant Notes.
59 **Otrubae** Podp.—See 1939-40 Rep., 263; *C. vulpina* auct. brit., non L.; *C. nemorosa* Rebert. 1804 non Schrank 1789.
59(2) **vulpina** L. sec. Nelves.—The second author should be cited so long as the former application of the name *C. vulpina* (=59) remains current.

847 PTERIDIUM.

- 1 **aquilinum.**

a. **typicum** R. M. Tryon, jr.—See Plant Notes.

VICE-COUNTIES.

A. J. WILMOTT.

The system of collecting and recording data concerning the distributions of species on a basis of "vice-counties," areas more equal in extent than the counties themselves, was initiated over eighty years ago by H. C. Watson. Before his time knowledge of the distributions of the British species was slight. There existed a few local Floras and in addition the lists in Turner & Dillwyn's *Botanist's Guide*, but the standard British Floras were generally content to indicate a few localities known to the author. After his production (1835-37) of *The New Botanist's Guide*, Watson began and himself carried out all the work which gave us for the first time a working knowledge of the distribution in Britain of each British species of vascular plant.

At first, in the *Cybele Britannica*, Watson was content with the general view obtained by subdividing Britain into eighteen provinces; but before that work was finished he felt the need of more detailed knowledge, and because some of the counties were so much larger than the average he set out in the fourth volume (pp. 139-, 1859) a scheme for the division of Britain into 112 vice-counties, which were either the counties themselves (with the exception of small counties such as Rutland, Kinross, Clackmannan, and Nairn, which he added to larger ones) or subdivisions of large counties along lines which he defined. The statement of the boundaries of the vice-counties there given was repeated in the first edition of the *Topographical Botany* (i, 21-24 : 1873), in which the scheme was carried into effect. The map issued with it was a poor one, produced, as Watson himself states (*Top. Bot.*, ii, 585 : 1874), for "antecedent works," and is neither adequate nor in some respects accurate. Data were collected to such an extent, and the interest in the scheme was such, that the small first, privately distributed, edition (limited to 100 copies) was superseded by a second edition in 1883. The scheme was adopted by Ewing in a *Glasgow Catalogue of Native and Established Plants*, a second edition of which appeared in 1899, in which data are given for the Western and Central Counties of Scotland. A Supplement to the second edition of the *Topographical Botany*, by Arthur Bennett, appeared in 1905 (*Journ. Bot. Suppl.*), and a second Supplement by Bennett, C. E. Salmon and J. R. Matthews in 1929-1930 (*Journ. Bot. Suppl.*). All of these, with additional data from personal information, were condensed (not entirely accurately, unfortunately) in Druce's *Comital Flora*, published in 1932, in which the original statement of the vice-county boundaries was reprinted on the back of a new and better (but still neither adequate nor completely accurate) map.

During all these years it has in general been recognised that the boundaries of the vice-counties must be regarded as fixed and non-

variable. Indeed, it should be obvious to the most casual student that if any boundary were at any time changed, the whole of the past records for the vice-counties concerned would need revision. Any such revision would necessitate the review of the whole of the literature investigated for all the records so far made and accepted. Stated this way, it should be quite clear that the value of the whole system is dependent upon the absolute permanence of the boundaries as defined and used by Watson in *Topographical Botany*, and either used or intended to be used by his successors. Admittedly the boundaries are not always such as we would draw to-day if we were initiating a similar work, but it must be repeated that if they are now altered, all past work on vice-county distribution in the areas concerned, carried on for nearly a century, becomes unsound and in need of revision.

The vice-county system was adopted by Kennard and Woodward over thirty years ago for Mollusca, and in recent years other branches of Zoology have begun to adopt the system. Owing to various causes, in part the rather vague definitions sometimes given by Watson, a few discrepancies in usage were noted by those of the Association for the Study of Systematics who were recommending the general adoption of the vice-county system for all groups. With a view to the clarification of these discrepancies and the settlement of the exact boundaries of all the vice-counties, it was proposed that a thorough investigation of the matter should be carried out and a detailed statement of the boundaries made, if possible with an adequate map. Our Society was asked for its co-operation, and just before the war a sub-committee was appointed to examine the problem. One joint meeting, with a representative of the A.S.S., was held, presided over by P. M. Hall, at which some preliminary decisions were made, which included the basic one on which all agreed, viz., that the boundaries of the vice-counties were those laid down by Watson, and should not be altered. Another decision was that when any vice-county is subdivided, the subdivisions must all be lettered, and not only in part, as in the past with 69 and 69A: it should be plain that "69" cannot be permitted to mean both the whole of Watson's vice-county 69 (i.e., Westmorland *with* North Lancashire) and also Westmorland *without* North Lancashire.

Unfortunately, certain suggestions have been published in recent years in which proposals for the "emendation" of the boundaries and numbering have been made. It is to counter this unintentionally subversive tendency that this note has been written, for those who suggest such action clearly do not appreciate what such changes involve in relation to the past literature. Work has now been recommenced towards the clarification of the actual vice-county boundaries, and it is hoped that it will be possible to make a definite statement of them without too much delay. Meanwhile it is hoped that the suggested alterations will be dropped, and the following subdivisions concerning two recent proposals are suggested as in agreement with the past system of records.

Vice-counties 86, 87, 99 (see *Glasgow Naturalist*, ix, 93 : 1931).

- 86F. Stirling; Forth drainage area.
- 86K. Stirling; Kelvin drainage area.
- 86L. Stirling; Loch Lomond drainage area.
- 87F. West Perth; Forth drainage area.
- 87C. West Perth; Clyde (or Falloch) drainage area.

The treatment of Dumbarton and its isolated portion is at present a matter for investigation and discussion. Watson's map appears to include the isolated portion in the North West Lowlands province as part of Lanark, whereas the Glasgow botanists place it in Stirling (as 86A). No decision should be taken until Watson's original MSS. of *Topographical Botany* have been searched for any records from the detached portion which would show how he dealt with the area, for the map, prepared for another work, cannot by itself be taken as settling the matter. Meanwhile, records from the detached portion should be kept separate until an agreed settlement is reached (? as 77D).

Vice-county 103 (see *Nature*, cxlvii, 134 : 1941; and *Proc. Univ. Durham Phil. Soc.*, x, 275 : 1941).

- 103W. Coll, Tiree and Gunna instead of the suggested "110B".
- 103M. Mull, etc. (103 exclusive of 103B).

The vice-county system is concerned with the collection of the records and not with the scientific results obtained from their study. If this kind of subdivision of the original vice-counties be made, the data obtained can be compared as easily as by any contrary method. Another point which is lost sight of by those advocating the changes is that the original boundaries were known to be entirely arbitrary and never in any special way related to any natural lines of distribution; there is therefore no point whatever in trying to make this or that boundary a natural one. No advantage is therefore gained by changing the original boundaries and a very great deal, as has been pointed out, is lost.

A BOTANICAL HOTEL.

J. EDWARD LOUSLEY.

In time of war, when travel is almost impossible and so many areas "prohibited," when life tends to become monotonous, and those happy care-free days of unrestricted botanising seem so very distant (perhaps never to return), it is pleasant to reflect on far-away pre-war haunts. Memories of past excursions often centre round the places at which we slept and fed, and I find that my own thoughts more often revert to short leisurely evening strolls in the neighbourhood of hotels than to the more hurried and strenuous excursions to remote hills and lochs.

The hotels at Lawers, Clova, Sligachan, Killin and Inchnadampf, at Maelog, Austwick, Symond's Yat, Langdon Beck, Thetford and Alfriston, at Kenmare, Dingle and Renvyle (that oasis of comfort after days of Irish "eggs and bacon"!) come crowding to the mind for the treasures within range of an easy walk. High Force can produce rarities within its own grounds, but I know of only one hotel which can boast a list of interesting plants which grow actually upon its own walls.

The Star Castle Hotel on St Mary's, in the Isles of Scilly, was built in 1593 as part of the defences to forestall any attempt by Spain to stage another attack after the defeat of the Armada by Drake. Its solid walls have withstood several attacks and after a period as the centre of government of the islands it has now been converted into the most southerly and most westerly hotel in England.

The visitor enters the Castle by a stone bridge over the moat and here, in the crevices of the lichened masonry of the bridge, grow *Cochlearia danica*, *Erodium maritimum*, *Linaria Cymbalaria*, and *Plantago Coronopus*. The entrance way then continues through a cobbled passage with stone walls lined with dark green *Asplenium marinum* and *Cotyledon Umbilicus-Veneris*.

On the top of the broad ramparts (which serve as an open air passage to some of the bedrooms in the guard-rooms) there is a more varied flora in which the Leguminosae are conspicuous. Great mats of *Trigonella ornithopodioides* are intermixed with *Trifolium scabrum*. *Lotus corniculatus* and the rarer *Lotus hispidus* mingle with *Medicago maculata*, *Sagina ciliata* and *Sagina maritima*. On the outer walls *Silene maritima* still grows in the station noted by Townsend in 1864, associated with *Parietaria diffusa*.

The Star Castle stands on the highest part of a promontory known as the "Hugh," round the entire circuit of which run the outer defences built in 1742. Within the area so enclosed grow many other plants which are not properly the subject of this note, but it may be permissible to include *Ranunculus muricatus*, *Silene anglica* and *S. gallica* which flourish as weeds in the hotel's flower garden. None of the species mentioned are of great rarity, but such a flora growing on an English building used as a hotel must surely be unique!

THE PIONEER FLORA OF BOMBED SITES IN CENTRAL LONDON.

J. EDWARD LOUSLEY.

The destruction by enemy bombs of large areas in Central London has provided an exceptional opportunity of studying the recolonisation of habitats which were botanically almost completely sterile. The "bare area" so often postulated by writers on ecology as the place colonised by the first stage of a plant succession, and so very rarely to be seen in this country, would appear to be attained on a large scale as a result of the bombing. Viable seeds of phanerogams are unlikely to exist in large numbers in the mortar and brickwork of the old buildings destroyed, though algae and bryophytes doubtless grew on their walls and roofs. Thus by making a survey of the sites of buildings destroyed in the air-raids we may feel confident that the phanerogams listed have arrived since the date of the destruction.

The sites discussed in this paper, twenty-one in all, are in densely built-up areas of the City, Holborn, and by the main road which runs south from London Bridge through Borough High Street and the Elephant and Castle to North Kennington. They were damaged between September 7, 1940, and May 11, 1941—in most cases on the nights of December 29, 1940, and May 10, 1941. Great care was taken to make records only from places which were known to have been completely built over, such as restaurants, banks, churches and shops with which I was familiar before the war.

The extent to which even the extremely valuable land of the "square mile" of the City of London contained places where weeds might flourish is probably not fully appreciated even by Londoners. In the alleys and courts, behind the mighty façade of enormous blocks of offices and shops, many disused and often neglected churchyards, "squares," backyards, and even pleasant gardens, harboured plants which were seldom to be seen by the casual enquirer. Some of these species are somewhat unexpected. For example, on the mediaeval masonry of the short length of so-called "Roman Wall" opposite St Alphage, the Pellitory-on-the-Wall (*Parietaria diffusa* M. & K.) has flourished for several years. It may well have been originally planted there, but the other species such as *Cirsium vulgare* (Savi) Airy Shaw with which it is accompanied, and which also survive the surrounding desolation, have certainly not been deliberately introduced. The care which has been taken in the selection of the sites for observation makes it certain that any such pre-war floras have been excluded even though their habitats may now be indistinguishable from surrounding cleared areas.

For about a year after the heavy air-raids very little phanerogamic vegetation appeared on the tumbled masses of masonry and brickwork, doubtless because of the absence of suitable soil in the crevices. Under such conditions *Epilobium angustifolium* was the only species which occurred at all frequently. Its most surprising achievement to come

under my observation occurred near the Elephant and Castle, where the plant flowered in the summer of 1941 on the stump of the wall of a building destroyed the previous autumn. Seed must have arrived and germinated very shortly after the damage took place. The three *Senecios*—*S. squalidus*, *S. viscosus* and *S. vulgaris*, all with wind-borne fruits, were almost the only other species to arrive in 1941.

Clearance and levelling of the sites exposed much soft rubble and dust which provided favourable conditions for many additional species. These included a number of species with wind-borne fruits such as *Epilobium angustifolium*, *Erigeron canadensis*, *Tussilago Farfara*, *Senecio squalidus*, *S. viscosus*, *S. vulgaris*, and *Sonchus oleraceus*. Others whose fruits probably arrived on the wheels of lorries and carts engaged on removing the debris, or on the boots of the workmen, may include:—*Capsella Bursa-pastoris*, *Cerastium vulgatum*, *Stellaria media*, *Plantago major*, *Chenopodium album*, *Polygonum Persicaria*, *P. heterophyllum*, *Rumex crispus* and *R. obtusifolius*. Finally four plants, *Trifolium pratense*, *T. hybridum*, *Lolium perenne* and *L. multiflorum*, almost certainly came in the nosebags of the horses engaged in the work.

The small ruined 15th century church of St Olave's, Hart Street, Crutched Friars, is of exceptional interest. William Turner, the "Father of English Botany" and author of a famous Herbal, was buried in the south aisle of this church on July 9, 1568, where there is an inscription to his memory. Enemy action has brought down the roof and upper walls, and access to the interior is impossible, but from the road *Epilobium angustifolium*, *Tussilago Farfara*, *Senecio vulgaris* and *Sonchus oleraceus* may be seen growing in the north aisle. St Mary's Church, Kennington Park Road, is a larger modern church which has been less seriously damaged by the bombing. Access is again not possible, but inspection through a crack in the charred door showed a most luxuriant vegetation growing in the pavement of the aisles, in which *Epilobium angustifolium* was the dominant species.

The extent to which the invading flora could endure shade was often surprising. For example, a small shop in Newington Causeway was damaged and left unused. Three of the walls were intact and the ceiling though sagging appeared to be water-tight; only the shop front was missing. Towards the back of the shop, behind the ruined counter, several plants of *Tussilago Farfara* and *Senecio vulgaris* were growing under dimmer, drier conditions than one would have supposed possible.

The lists on which this paper is based were all made in the last fortnight of October 1942, at a time when most of the sites had only been cleared for a few months and others were still uncleared. As might be expected the pioneer vegetation was very scanty, averaging only about four species to each locality. The two richest places will illustrate the comparative frequency of species:—

(1) Site in Fenchurch Street, near Mark Lane.

Senecio vulgaris—abundant.

Poa annua—abundant.

- Erigeron canadensis*—frequent.
Capsella Bursa-pastoris—a few plants.
Matricaria inodora—a few very young plants.
Senecio squalidus—one small plant.
Galinsoga parviflora—one small plant.

(2) Site formerly occupied by "Isaac Walton's" shop, Newington Causeway.

- Senecio vulgaris*—abundant.
Epilobium angustifolium—abundant.
Poa annua—abundant.
Senecio viscosus—common.
Tussilago Farfara—frequent.
Sonchus oleraceus—several plants.
Polygonum Persicaria—one plant.
Plantago major—one plant.

Observations in the West End of London suggest that pioneer colonists there usually comprised the same species. In the suburbs the range of invading species was much wider owing to the proximity of numerous gardens and other open ground. The purpose of this paper is to record the pioneer flora of bombed sites in Central London in 1942. There can be little doubt that in 1943 a richer and more luxuriant flora will appear.

Species observed as pioneer colonists on 21 bombed sites in the City of London and adjacent districts in October 1942.

- 59/1. *CAPELLA BURSA-PASTORIS* Weber—Fenchurch Street only.
 100/5. *CERASTIUM VULGATUM* L.—Mirories only.
 101/3. *STELLARIA MEDIA* Vill.—Borough High Street only.
 155/2. *TRIFOLIUM PRATENSE* L.—Ludgate Hill and Borough High Street only.
 155/15. *T. HYBRIDUM* L.—Fenchurch Street only.
 220/1. *EPILOBIUM ANGUSTIFOLIUM* L.—Abundant, 11 sites.
 320/3. *ERIGERON CANADENSIS* L.—Locally abundant, 3 sites. This species now occurs in great quantity in many parts of London and became more frequent in the central area when earth-covered air-raid shelters were constructed. It may be expected to cover many of the damaged sites in a short time.
 354/1. *GALINSOGA PARVIFLORA* Cav.—One small plant, Fenchurch Street. It occurs in greater quantity on the bombed sites of the West End.
 371/1. *MATRICARIA INODORA* L.—Fenchurch Street only.
 378/3. *ARTEMISIA VULGARIS* L.—Chiswell Street only.
 379/1. *TUSSILAGO FARFARA* L.—11 sites, very abundant. This species has long been common on railway embankments well into London, and the trains may well have brought the pap-pused fruits in the vortex in their rear.

- 383/7. *SENECIO SQUALIDUS* L.—High Holborn, Borough, London Wall and Fenchurch Street. This species is common in the suburbs of London; the burned out ruins of the City will probably prove to its liking.
- 383/8. *S. VISCOSUS* L.—8 sites, including Ludgate Hill, Holborn, Borough High Street, and Elephant and Castle. In recent years this plant has greatly increased in the southern suburbs.
- 383/10. *S. VULGARIS* L.—17 sites. By far the most common and abundant species, and usually the first to arrive.
- 396/2. *CIRSIIUM VULGARE* (Savi) Airy Shaw—High Holborn only. (The London Wall station is not the site of a bombed building.)
- 396/8. *C. ARVENSE* (L.) Scop.—High Holborn only.
- 427/4. *SONCHUS OLERACEUS* L.—4 sites.
- 588/10. *PLANTAGO MAJOR* L.—Newington Causeway, a single plant.
- 600/8. *CHENOPODIUM ALBUM* L.—High Holborn, a few plants.
- 615/7. *POLYGONUM PERSICARIA* L.—Newington Causeway only.
- 615/14. *P. HETEROPHYLLUM* Lindm.—High Holborn only.
- 618/3. *RUMEX CRISPUS* L.—Ludgate Hill and Chiswell Street only.
- 618/6. *R. OBTUSIFOLIUS* L. Newington Butts and Minories only.
- 824/14. *POA ANNUA* L.—7 sites, often in quantity.
- 829/1. *LOLIUM PERENNE* L.—Ludgate Hill, Minories and Chiswell Street.
- 829/4. *L. MULTIFLOSUM* Lam.—St Bride's Street.

There were 88 records, of 27 species, from 21 bombed sites selected as known to have been completely built over before the war.

STAFFORDSHIRE ADDITIONS TO THE COMITAL FLORA.

E. S. EDEES, M.A.

The literature of Staffordshire botany contains many plants which are not recorded for v.-c. 39 in the *Comital Flora*. These are brought together in the present paper.

Some of the plants recorded below have not been seen for many years and may now be extinct. But where there is good evidence that a plant did once exist in the county, I think it should be included within brackets in the *Comital Flora*.

Aliens are marked with a dagger and plants which seem to have been wrongly named are appended in a separate list.

The following abbreviations are used:—

T.N.S.F.C.—*The Transactions of the North Staffordshire Field Club*. Shaw, 1798.—*The History and Antiquities of Staffordshire*, by Stebbing Shaw. Vol. I contains a long list of plants contributed by the Rev. Samuel Dickenson. Vol. II contains a few additional records by other botanists.

Garner, 1844.—*The Natural History of the County of Stafford*, 1844, and *Supplement*, 1860, by R. Garner.

Brown, 1863.—*The Natural History of Tutbury*, by Sir O. Mosley and E. Brown.

Edwardes, 1876.—“List of Plants found near Denstone in 1876,” by the Rev. D. Edwardes in *T.N.S.F.C.*, xi, 51, 1877.

Garner, 1878.—“The Staffordshire Flora,” by R. Garner in *T.N.S.F.C.*, xii, 95, 1878.

Purchas, 1885.—“Some More Notes on Dovedale Plants,” by the Rev. W. H. Purchas in the *Journal of Botany*, xxiii, 181, 1885.

Painter, 1892.—“List of Plants found within Five Miles of Biddulph Church, 1885-92,” by the Rev. W. H. Painter in *T.N.S.F.C.*, xxxi, 74, 1897.

Burton Flora, 1901.—“The Flora of Burton-on-Trent and Neighbourhood,” published in the *Transactions of the Burton-on-Trent Natural History and Archaeological Society*, 1896-1901.

Bagnall, 1901.—“The Flora of Staffordshire,” by J. E. Bagnall, published as a Supplement to the *Journal of Botany*, 1901.

Berrisford and Walker, 1906.—“Plants found on the Railway Embankment at Oakamoor,” by S. Berrisford and A. Walker in *T.N.S.F.C.*, xl, 73, 1906.

Reader, 1923.—“The Flora of Hawkesyard,” by the Rev. H. P. Reader in *T.N.S.F.C.*, lvii, 105, 1923.

Reader, 1924.—“The Saline Flora of Staffordshire,” by the Rev. H. P. Reader in the *Journal of Botany*, lxi, 278, 1923, and in *T.N.S.F.C.*, lviii, 40, 1924.

Ridge, 1929.—“ The Flora of North Staffordshire,” by W. T. Boydon Ridge, published as an Appendix to the *T.N.S.F.C.*, 1922-9.

B.E.C. Rep.—*The Report of the Botanical Society and Exchange Club of the British Isles*. I have not worked systematically through all the volumes in this series and there may well be some Staffordshire records in them which have been overlooked.

Curtis, 1930.—“ Adventive Flora of Burton-upon-Trent,” by Sir R. Curtis in *B.E.C. 1930 Rep.*, 465 (1931).

- 2/2. *Thalictrum minus* L. Weaver Hills, Pickard in *T.N.S.F.C.*, lx, 155, 1926. “ The specimens were few in number and small.”
- 21/4. *Papaver Lecoqii* Lam. Mill Dale near Alstonfield, Purchas in *Bagnall, 1901*. Bagnall approved the record.
- 32/1. *Fumaria capreolata* L. Canal side, Shobnall, *Brown, 1863*; Stafford, Moore in *T.N.S.F.C.*, xxxi, 76, 1897; Burton, Mason in *Burton Flora, 1901*; found on a wall at Stanton, Copeland in *T.N.S.F.C.*, lvii, 132, 1923. I do not know how far these records are reliable. Garner describes the species as frequent. Bagnall questions this and considers the Shobnall record of Brown “ probably a rampant form of *F. officinalis*.” Ridge approved Moore’s Stafford record.
- 32/5. *F. Boraci* Jord. Hedges by road to Rugeley, by canal towing path, *Reader, 1923*.
- 32/11. *F. micrantha* Lag. Found occasionally, *Brown, 1863*.
- +32/13. *F. parviflora* Lam. Burton, J. E. Lousley, R. C. L. Burges, W. H. Hardaker and O. Thomas in *B.E.C. 1936 Rep.*, 238 (1937). Det. H. W. Pugsley. “ Abnormal alien plants.”
- +36/2. *Barbarea verna* (L.) Asch. Near Stoke, *Garner, 1844*; Burton, quoted by *Garner, 1844*; railway embankment at Oakamoor, *Berrisford and Walker, 1906*.
- 36/4. *B. arcuata* (Presl) Rchb. Burton, Druce in *B.E.C. 1929 Rep.*, 102 (1930).
- +52/1. *Camelina sativa* Crantz. Recorded for several different places by Shaw, Garner, Bagnall and Ridge.
- [88/14. *Viola contempta* Jord. “ Gobaldisham Heath, E. Vachell ” in *B.E.C. 1930 Rep.*, 459 (1931). Det. E. Drabble. (An error; the specimen in Herb. Drabble is labelled “ Suffolk ” by Drabble, and the plant came from Garboldisham Heath in Norfolk.—ED.)]
- *88/22. *V. agræstis* Jord. Specimens from Ashley and Betley have been determined by Mrs E. Drabble.
- *88/23. *V. segetalis* Jord. Swynnerton. Det. Mrs E. Drabble.

- *88/24. *V. segetalis* Jord. f. *obtusifolia* (Jord.) Drabble. Audley, Madeley, Balterley. Det. Mrs E. Drabble.
- 88/31. *V. lepidula* Jord. Abundant in some parts of the Manifold Valley, E. S. Edees in *T.N.S.F.C.*, lxxiii, 50, 1939. Det. P. M. Hall.
- †100/9. *Cerastium tetrandrum* Curt. Stafford, Spark in *Bagnall*, 1901. Garner says "not rare in waste places." This is difficult to understand. I have seen the plant once, a few specimens on the platform of Cliffe Park station in the parish of Rushton. *T.N.S.F.C.*, lxxvi, 24, 1942.
- 102/6. *Arenaria leptoclados* (Rchb.) Guss. Codsall, Coldrick Wood and Arley Wood, *Bagnall*, 1901; Mavesyn Ridware, *Reader*, 1923; Manifold Valley, *Ridge*, 1929.
- †108/2. *Claytonia perfoliata* Donn. Endon, Edwardes in *Garner*, 1878; abundant in a field at Perry, *Bagnall*, 1901; Stableford, *Ridge* in *T.N.S.F.C.*, xlii, 88, 1908; Caverswall, *Ridge*, 1929; *Burston*, G. J. V. Bemrose in *T.N.S.F.C.*, lxxv, 16, 1941.
- †115/2. *Althaea hirsuta* L. Burton, Sir R. Curtis in *B.E.C.* 1931 *Rep.*, 639 (1932).
- †123/1. *Tilia platyphyllos* Scop. Planted about Burton, Gibbs in *Burton Flora*, 1901; Madeley, Daltry in a letter to *Ridge*, 1929.
- †123/2. *Erodium moschatum* (L.) L'Hérit. Several old records quoted by *Garner*, 1844; Bishop's Wood near Eccleshall, *T.N.S.F.C.*, xxv, 32, 1891; railway embankment at Oakamoor, *Berrisford and Walker*, 1906.
- †133/2. *Impatiens biflora* Walt. In the canal at Great Haywood, P. P. Thornton in *T.N.S.F.C.*, lxxvi, 25, 1942.
- †133/3. *I. parviflora* DC. Lichfield, Sir R. Curtis in *B.E.C.* 1931 *Rep.*, 640 (1932).
- †155/4. *Trifolium incarnatum* L. Barlaston, *Garner*, 1844; occasionally found after cultivation, *Brown*, 1863; Denstone, *Edwardes*, 1876; Audley, G. J. V. Bemrose in *T.N.S.F.C.*, lxxvii, 84, 1933.
- †160/8. *Lotus angustissimus* L. Railway embankment at Oakamoor, *Berrisford and Walker*, 1906; Burton, Druce in *B.E.C.* 1926 *Rep.*, 22 (1927).
- †170/1. *Coronilla varia* L. Burton, *Curtis*, 1930.
- 183/4. *Prunus Cerasus* L. There are several records for this species, but it has probably been confused with *P. avium* L. Garner and others who record *P. Cerasus* in lists make no mention of *P. avium*, which is certainly our common wild cherry.
- †183/5. *P. domestica* L. Hawkesyard Park, *Reader*, 1923.

- †184/10. *Spiraea salicifolia* L. Needwood and Cannock Chase, quoted by *Garner, 1844*; hedge on hill above Bentley Farm (Mrs E. Reynolds, 1848), quoted by *Reader, 1923*; *Trentham, Ridge, 1929*.
- 187/2×1. ×*Geum intermedium* Willd. Kingston, *Bagnall, 1901*; between Ellastone and Stanton, Deacon and Ridge in *T.N.S.F.C.*, 1, 134, 1916; Madeley, Daltry in *T.N.S.F.C.*, 1, 135, 1916.
- †188/1. *Fragaria moschata* Duchesne. Brañston, near the Trent, *Brown, 1863*.
- †193/2. *Poterium polygamum* W. & K. Whittington Heath, Fraser in *Bagnall, 1901*.
- 194/14. *Rosa micrantha* Sm. Lane from Hill Ridware to Rugeley (Mrs E. Reynolds, 1848), quoted by *Reader, 1923*, who saw a specimen; Oakamoor, near Cotton, Teddesley, *Bagnall, 1901*.
- 194/21. *R. villosa* L. Recorded for several different places by *Garner, Bagnall, Reader and Ridge*.
- †195/9. *Pyrus intermedia* Ehrh. Arley Dingle, *Bagnall, 1901*.
- 195/11. *P. rupicola* Syme. Dovedale, Fraser in *Bagnall, 1901*. *Bagnall* approved the record. See also *Purchas, 1885*.
- †195/16. *P. germanica* (L.) Hook. fil. Stoke, *Garner in T.N.S.F.C.*, xiii, 89, 1879.
- 196/2. *Crataegus oxyacanthoides* Thuill. Cotton-in-the-Clay, near Hanbury, two or three trees between Great Haywood and Farley, Barton-under-Needwood, Little Aston, Kinver, Arley, *Bagnall, 1901*; Burton, *Painter in Burton Flora, 1901*; near Weston, *Ridge, 1929*. A recent specimen from Newcastle has been determined at the British Museum by S. B. Batko.
- †199/24. *Saxifraga umbrosa* L. Belmont Woods in 1837, rocky dell below Upper Cotton, *Garner, 1844*; neither of these there in 1897, *Bagnall, 1901*; Denstone, *Edwardes, 1876*; Marsh Hill near Stockton Brook, *Ridge in T.N.S.F.C.*, xlvii, 96, 1913.
- †211/3. *Sedum reflexum* L. Tutbury Castle, Biddulph Hall, Croxden Abbey, Burton Abbey, *Garner; 1844*. The record for Biddulph Hall is confirmed by *Painter, 1892*, and by *Ridge, 1929*. Stapenhil, *Brown, 1863*; Barton, *Gisborne in Burton Flora, 1901*.
- 216/1. *Myriophyllum spicatum* L. There are several records by *Shaw, Garner, Bagnall, Reader and Ridge*.
- 216/3. *M. verticillatum* L. Forton, *Shaw, 1798*; Aqualate Mere, quoted by *Garner, 1844*; Kingston, *Perton, Bagnall, 1901*.
- 225/3. *Circaea alpina* L. Remove brackets. There are several records in *Garner, Bagnall and Ridge*.

- †240/1. *Astrantia major* L. Burton, Sir R. Curtis in *B.E.C. 1926 Rep.*, 115 (1927).
- †250/1. *Carum Carvi* L. Wolverhampton, Endon, Newcastle, *Garner, 1844*; railway embankment at Oakamoor, *Berrisford and Walker, 1906*.
- †250/3. *C. Petroselinum* (L.) B. & H. Croxden Abbey walls, *Garner, 1844*.
- †276/5. *Peucedanum Ostruthium* (L.) Koch. Endon, Baddeley Edge, Axe Edge, between Calton Moor House and Mayfield, *Garner, 1844*; Bagnall, *T.N.S.F.C.*, iv, 5, 1870.
- †283/2. *Caucalis daucoides* L. Burton, J. E. Nowers in *Burton Flora, 1901*; railway embankment at Oakamoor, *Berrisford and Walker, 1906*; Burton, Druce in *B.E.C. 1928 Rep.*, 740 (1929).
- †283/8. *C. latifolia* L. Railway embankment at Oakamoor, *Berrisford and Walker, 1906*; railway embankment at Rochester, Melford in *T.N.S.F.C.*, xlii, 86, 1908.
- †291/1. *Lonicera Caprifolium* L. Gardens and hedges, but introduced, *Brown, 1863*; near Denstone, Goodall in *T.N.S.F.C.*, xvi, 78, 1882; Sinai Park, Mason in *Burton Flora, 1901*; between Cheadle and Oakamoor, *Ridge, 1929*.
- †291/5. *L. Xylostemum* L. Needwood Forest, Hewgill in *Garner, 1844*; Sinai Park, *Brown, 1863*; Knypersley Hall, *Painter, 1892*; Trysull Dingle, Fraser in *Bagnall, 1901*; Belmont Woods, *Ridge, 1929*.
- †296/10. *Galium tricornue* Stokes. Denstone, *Edwardes, 1876*; railway embankment at Oakamoor, *Berrisford and Walker, 1906*; Burton, Druce in *B.E.C. 1928 Rep.*, 740 (1929).
- †296/12. *Galium spurium* L. var. *Vaillantii* DC. Burton, J. E. Lousley, R. C. L. Burges, W. H. Hardaker and C. Thomas in *B.E.C. 1936 Rep.*, 260 (1937).
- 301/1. *Valeriana officinalis* L. Bagnall describes this species as rare in Staffordshire and gives only three records, two of them on the authority of C. Bailey. Ridge increases the number with several of his own. A specimen gathered by myself in the Manifold Valley, was determined by B. L. Burté as "what Drabble would have called *V. angustifolia* Host."
- †302/1. *Kentranthus ruber* (L.) Dr. Old walls at Burton, *Garner, 1844*. Approved by Ridge.
- 318/19. *Aster Tripolium* L. There are old records for Branston, Tixall, Shirleywich, Ingestre and even for Stoke, but the plant was not seen by Reader in 1923 and may now be extinct. The following description from Cox's *Staffordshire, 1738*, is worth quoting: "The lesser Sea Starwort, thought only to grow by the Sea Shore, and

- delighting in Salt-water; yet found in this Inland County, 50 Miles from the Sea, at Ingestre, about two Miles from Stafford; but not out of its natural Aboad, for it grows in a marsh, where a Salt Water breaks out and frets away the Grass." The substance of this is taken from Plot's *Natural History of Staffordshire*, 1686.
- +381/1. *Doronicum Pardalianches* L. There are about a dozen records, old and new, and most of the old ones are confirmed by Ridge. My record for Ashley, quoted in *B.E.C. 1939-40 Rep.*, 283 (1942), is not an N.C.R.
- +383/1. *Senecio sarracenicus* L. Near Compton Mill, Bradwell, Needwood Forest, quoted by *Garner, 1844*. *Garner* looked in vain for this plant at Bradwell, but found it at the neighbouring Wolstanton, *Garner, 1878*.
- +383/7. *S. squalidus* L. Found in great quantity on the slag heaps near Walsall, Bentley Common, Ocker Hill and Tipton, to which it had spread from the adjoining railway. Also seen near the Wren's Nest and on the top of Dudley Castle.—Druce in *B.E.C. 1928 Rep.*, 190 (1924); Brindley Ford, G. J. V. Bemrose in *T.N.S.F.C.*, lxxvi, 159, 1932; near railway between Birmingham and Wolverhampton, R. C. L. Burges in *B.E.C. 1932 Rep.*, 104 (1933); Madeley, G. J. V. Bemrose in *T.N.S.F.C.*, lxxv, 17, 1941.
- +383/8. *S. viscosus* L. *Garner* describes this plant as common. *Bagnall* says he never saw it in Staffordshire. *Ridge* found it at Bucknall and Burslem. It is now an abundant species on waste ground in the Potteries area. [Burton, Druce and Curtis in *B.E.C. 1926 Rep.*, 118 (1927); as N.C.R.—Ed.]
- 393/1. *Arctium Lappa* L. (= *A. majus* Bernh.). Kingston and Wren's Nest, *Bagnall, 1901* [in *Top. Bot., Suppl. I*, 1905.—Ed.]; [*B.E.C. 1918 Rep.*, 384 (1919), "*Ridge Rep.*, 1917."—Ed.]; Kidsgrove and Manifold Valley, *Ridge, 1929*.
- +395/3(2). *Carduus tenuiflorus* Curt. Railway embankment at Oakmoor, *Berrisford and Walker, 1906*; Burton, Druce in *B.E.C. 1928 Rep.*, 743 (1929).
- +399/1. *Silybum Marianum* (L.) Gaertn. Alton, Stone, Burton, *Garner, 1844*; Walton, Shobnall, *Brown, 1868*; railway cutting near Rugeley in 1897, *Bagnall, 1901*; Burton, Druce in *B.E.C. 1928 Rep.*, 744 (1929).
- +405/15. *Gentaurea Calcitrapa* L. Burton, *Curtis, 1930*.
- +419/8. *Hieracium brunneocroceum* Pugsl. Lichfield, Druce and Sir R. Curtis in *B.E.C. 1923 Rep.*, 193 (1924). There are several records for *H. aurantiacum* L. The plant

- is well established on the railway embankment between Rndon and Stockton Brook, where it was first recorded by *Ridge*, 1929. Specimens from this and other Staffordshire localities appear to be *H. brunneocroceum*.
- 466/1. *Glauca maritima* L. Salt-marsh near Tixall, *Shaw*, 1798. Re-discovered by Reader in 1923, *Reader*, 1924.
- 468/1. *Centunculus minimus* L. A mile from Stafford, note in Garner's interleaved copy of the *Natural History of the County of Stafford*; Balterley, Writtle in *Garner*, 1878; Blithfield, quoted by *Bagnall*, 1901 [in *Top. Bot., Suppl. I*, 1905.—Ed.]
- 482/1. *Nymphoides orbiculata* Gilib. Pool at Alton, *Garner*, 1844.
- +503/1. *Pulmonaria officinalis* L. Needwood Forest, Hewgill in *Garner*, 1844; as an escape from cultivation at Consall, *Ridge*, 1929.
- +503/2. *P. longifolia* Boreau. Railway embankment at Oakamoor, *Berrisford and Walker*, 1906; *Consall, Ridge*, 1929.
- +507/2. *Ithospermum purpureo-caeruleum* L. Burton, *Curtis*, 1930; rubbish tip, Burton, Burges in *B.E.C. 1933 Rep.*, 534 (1934).
- +527/5. *Verbascum Blattaria* L. Near Quinton's Orchard Farm (Mrs Reynolds, 1848), *Reader*, 1923; Hill Ridware, *Shaw*, 1798; Durnsley and Kinver, Scott in *Purton's Midland Flora*, 1820.
- +542/17. *Veronica triphyllos* L. Railway embankment at Oakamoor, *Berrisford and Walker*, 1906.
- 558/1. *Mentha rotundifolia* (L.) Huds. Hedge near Sudbury station, *Ridge* in *T.N.S.F.C.*, li, 108, 1917 (*B.E.C. 1918 Rep.*, 393 (1919)); roadside between Froghall and Cheadle, Blake in *T.N.S.F.C.*, liv, 108, 1920.
- 558/4. *M. spicata* Huds. Heleigh Castle, *Garner*, 1844; near Needwood Forest, *Ridge*, 1929.
- 558/10. *M. gentilis* L. Lane from Blithbury towards Bentley Farm, *Reader*, 1923.
- 588/5. *Plantago maritima* L. Fairly plentiful near Tixall, *Reader*, 1924.
- +600/12. *Chenopodium ficifolium* Sm. Burton, *Curtis*, 1930.
- +613/1. *Salsola Kali* L. Burton, Druce in *B.E.C. 1928 Rep.*, 756 (1929).
- +618/2. *Rumex longifolius* DC. Railway embankment at Oakamoor, *Berrisford and Walker*, 1906; Burton, Druce in *B.E.C. 1932 Rep.*, 109 (1933).
- +622/1. *Aristolochia Clematidis* L. Wolstanton, *Garner*, 1878.
- +631/1. *Buxus sempervirens* L. Plantations, *Brown*, 1863; occurs occasionally as an escape, *Ridge*, 1929.

- †632/2. *Mercurialis annua* L. Burton, Druce in *B.E.C. 1927 Rep.*, 417 (1928), *Curtis, 1930*.
- 642/2. *Betula pubescens* Ehrh. Five records in *Bagnall, 1901*, who considers it frequent but not properly discriminated from *B. alba* L. Ridge says that both species are common.
- †647/1. *Castanea sativa* Mill. Frequent as a planted tree.
- 651/3. *Populus nigra* L. There are several records in *Bagnall, 1901*, but this tree has not been distinguished in Staffordshire from *P. deltoidea* Marsh. var. *serotina* (Hartig) except by *Reader, 1923*, who gives "near the Blithe, Hamstall Ridware" for *P. nigra* and "introduced and abundant" for *P. monilifera* [near Harford, Druce, *B.E.C. 1919 Rep.*, 680 (1920).—Ed.]
- 669/6. *Orchis latifolia* L. var. *pulchella* (Druce) Pugsl. Stanton, E. S. Eedes in *T.N.S.F.C.*, lxxiii, 52, 1939. Det. P. M. Hall.
- 672/5. *Ophrys muscifera* Huds. Denstone, *Edwardes, 1876*; Dove-dale, very sparingly, *Purchas, 1885*. I once found a few plants in the Hamps Valley, but have not seen them there since (*T.N.S.F.C.*, lxxiii, 53, 1939).
- †675/1. *Cypripedium Calceolus* L. Found in a field growing wild near Hoar Cross; doubtless planted there, Sir R. Curtis in *B.E.C. 1928 Rep.*, 761 (1929).
- †678/2. *Crocus vernus* (L.) All. Occasionally in the Trent meadows near Burton, *Brown, 1863*; Alton, Goodall in *T.N.S.F.C.*, xvi, 77, 1882.
- 707/2. *Ornithogalum umbellatum* L. Tixall, Bostock in *T.N.S.F.C.*, xxxv, 69, 1901.
- †710/1. *Tulipa sylvestris* L. Near Statfold Hall, *Garner, 1844*; near Alton in a place once used as a marl pit, Ridge in *T.N.S.F.C.*, lix, 159, 1925 (*B.E.C. 1925 Rep.*, 898 (1926)), "The tenant of an adjacent cottage has known of the existence of this plant here for the last fifty years, so that it seems well established."
- 718/14. *Juncus compressus* Jacq. Garner describes this as common, but gives no localities. Canal bank, Shobnall, and roadside between Tutbury and Burton, *Brown, 1863*.
- 718/15. *J. Gerardii* Lois. Branston, near the Trent, *Brown, 1863*; Branston Salt Marsh, J. E. Nowers and J. G. Wells in *Burton Flora, 1901*; re-discovered in a salt marsh at Kingston by *Reader* in 1923. "Also very fine by ditches near Tixall, with long bracts recalling *compressus*, but with the characteristic oblong capsules almost or quite enclosed in the perianth," *Reader, 1924*. The Kingston record was confirmed by Druce.

- 722/4. *Sparganium angustifolium* Michx. Aqualate, Shaw, 1798; Whitmore, Garner, 1844; Codsall, Fraser in Bagnall, 1901.
- 746/4. *Scirpus Tabernaemontani* Gmel. Shirleywich, Garner, 1844, confirmed by Reader, 1924; Branston Meadows, Brown, 1863; Branston Salt Marsh, J. E. Nowers and J. G. Wells in *Burton Flora*, 1901; Oulton, abundant, Bagnall, 1901; pool in wood, King's Bromley, Reader, 1923; Aqualate, Druce in *B.E.C. 1925 Rep.*, 900 (1926).
- 753/17. *Carex distans* L. Weaver Hills, Blymhill, Shaw, 1798. These two records are probably errors, but there is a safe record for Shirleywich, Reader, 1924. "Very fine in a marshy hollow."
- 753/22. *C. viridula* Michx. Byrkley Park and Moira, Coleman in Brown, 1863; Needwood Forest, Brown, 1863; Tixall Heath and Oulton, Bagnall, 1901.
- †780/1. *Agrostis verticillata* Vill. Burton, Druce in *B.E.C. 1928 Rep.*, 765 (1929).
- 826/3. *Festuca arundinacea* Schreb. There are two records in Brown, 1863, but these may be for what we now call *F. elatior* L. A specimen gathered from the canal side at Milton in the Potteries area in 1936 was determined by Dr W. O. Howarth as *F. elatior* L. subsp. *arundinacea* var. *genuina* subvar. *vulgaris*. See *B.E.C. 1936 Rep.*, 416 (1937).
- †827/20. *Bromus molliformis* Lloyd. Burton, J. P. M. Brenan and J. F. G. Chapple in *B.E.C. 1937 Rep.*, 520 (1938). Det. C. E. Hubbard.
- †827/22. *B. arvensis* L. Denstone, Edwardes, 1876. Burton, Druce and Sir R. Curtis in *B.E.C. 1926 Rep.*, 142 (1927).
- 827/19(2). *B. lepidus* Holmberg. Near Cresswell, E. S. Edees in *T.N.S.F.C.*, lxxiv, 45, 1940. Det. W. O. Howarth.
- †835/3. *Hordeum marinum* Huds. Burton, Druce and Sir R. Curtis in *B.E.C. 1926 Rep.*, 143 (1927).
- †839/1. *Juniperus communis* L. Old trees frequent about very ancient houses, Garner, 1844. Ridge approves this statement.
- 856/5. *Dryopteris aemula* Kuntze. Cheadle, Blagg in *T.N.S.F.C.*, xliii, 106, 1909.
- 876/5. *Chara hispida* L. Betley and Aqualate, plentiful, Garner, 1844.

APPENDIX OF SUPPOSED ERRORS.

The following plants have also been recorded for Staffordshire, but all the records are old and unconfirmed. Some of these plants may have occurred as aliens, but most of them have probably been wrongly named.

- 87/4. *Helianthemum canum* (L.) Baumg. Weaver Hills, Shaw in Garner, 1844. "Probably *H. vulgare* was intended," Garner, 1878.
- 96/6. *Silene quinquevulnera* L. Garner, 1878.
- 115/1. *Althaea officinalis* L. Denstone, Edwardes, 1876.
- 147/2. *Genista pilosa* L. Pendeford, Shaw in Garner, 1844.
- 155/19. *Trifolium agrarium* L. Denstone, Edwardes, 1876.
- 178/5. *Lathyrus palustris* L. Denstone, Edwardes, 1876.
- 183/4. *Prunus Cerasus* L. There are several records for this species, but it has probably been confused with *P. avium* L. Garner and others who record *P. Cerasus* in lists make no mention of *P. avium*, which is certainly our common wild cherry.
- 199/2. *Saxifraga oppositifolia* L. Railway embankment at Oakamoor, Berrisford and Walker, 1906.
- 211/7. *Sedum album* L. Yoxall, Hewgill in Garner, 1844.
- 250/5. *Carum Bulbocastanum* (L.) Koch. Denstone, Edwardes, 1876.
- 265/4. *Oenanthe pimpinelloides* L. Denstone, Edwardes, 1876.
- 296/1. *Galium boreale* L. Cheddleton, Edwardes, quoted by Goodall in *T.N.S.F.C.*, xvi, 77, 1882.
- 296/3. *G. erectum* Huds. Quoted for Lichfield and Burton by Garner, 1844.
- 304/2. *Valerianella eriocarpa* Desv. Dovedale, Cheadle, Lichfield, quoted by Garner, 1844.
- 320/1. *Erigeron borealis* (Vierh.) Druce. Cheddleton Heath, Miss Wardle in *T.N.S.F.C.*, xl, 172, 1906. A specimen in the herbarium of the Darlington and Teesdale Naturalists' Field Club proves this to have been *E. acer* L.
- 405/1. *Centaurea Jacea* L. Cradley Park, quoted by Garner, 1844.
- 427/1. *Sonchus palustris* L. Stafford, Garner, 1844. Bagnall thought that a large form of *S. arvensis* L. was mistaken for this plant, Bagnall, 1901.
- 435/1. *Campanula glomerata* L. Denstone, Edwardes, 1876.
- 503/2. *Pulmonaria longifolia* Boreau. Railway embankment at Oakamoor, Berrisford and Walker, 1906; Consall, Ridge, 1929.
- 509/2. *Echium plantagineum* L. Stoke, Garner in *T.N.S.F.C.*, xiii, 89, 1879.
- 590/1. *Illecebrum verticillatum* L. Near Ranton, Garner, 1878. The same locality or one near to it is mentioned by Withering in his *Systematic Arrangement of British Plants*, "On the road side betwixt Elnal and Ranton Abbey."
- 606/17. *Atriplex portulacoides* L. Railway embankment at Oakamoor, Berrisford and Walker, 1906.
- 671/1. *Aceras anthropophora* (L.) Br. Madeley, Stanway in *T.N.S.F.C.*, xlii, 88, 1908.

- 674/3. *Habenaria albida* (L.) R. Br. Hollington, Edwardes, quoted by Goodall in *T.N.S.F.C.*, xvi, 77, 1882.
- 686/1. *Leucojum vernum* L. Dovedale, quoted by Garner, 1878.
- 718/22. *Juncus biglumis* L. Yarnfield, Massey in Garner, 1878.
- 733/1. *Damasonium Alisma* Mill. Yarnfield, Garner, *Supplement to the Natural History*, 1860.
- 737/30. *Potamogeton filiformis* Pers. Copmere, Masefield and Bostock in *T.N.S.F.C.*, xxvi, 94, 1892.
- 753/23. *Carex extensa* Good. Moreton Marsh, Shaw in Bagnall, 1901.
- 753/38. *C. limosa* L. There are several records quoted by Garner, 1844, and requoted by Bagnall, 1901, But Bagnall considers them "probably a variety of *C. flacca*."
- 836/3. *Elymus europaeus* L. Denstone, Edwardes, 1876.
- 863/1. *Hymenophyllum tunbridgense* (L.) Sm. Gradbatch, quoted by Garner, 1844, from *The Botanist's Guide*.
- 876/6. *Chara tomentosa* L. Needwood, Shaw, 1798.

A VISIT TO SCALPAY (HARRIS), V.-C. 110.

M. S. CAMPBELL.

In July 1939 I took an expedition to the Outer Hebrides for the purpose of exploring that part of south-west Lewis hitherto more or less unknown botanically. At the conclusion of the visit to Lewis, A. J. Wilmott and E. B. Bangarter accompanied me to Tarbert, to continue investigations in the Isle of Harris. We were joined at Tarbert by my brother, James W. Campbell.

A good deal of our time was spent in the Forest of Harris through the kindness of the late Sir Samuel Scott, but one afternoon we visited the island of Scalpay, which is situated at the entrance to East Loch Tarbert.

The island measures $1\frac{1}{2}$ miles by $2\frac{3}{4}$ miles and forms a part of the extensive parish (123,752 acres) of Harris. It has a population of about 630, possesses a small sheltered harbour, one or two shops, and is visited once each fortnight by the Bank of Scotland. We gladly accepted the opportunity given us of accompanying the Bank to Scalpay.

Our visit was limited by the banking hours and it was not possible for us to cover much ground in the hour and three-quarters at our disposal. The fact that I have so far failed to find any mention of the Scalpay flora in any of the Outer Hebridean literature that I have investigated prompts me to give our complete list, which, though far from exhaustive, may serve as an introduction to the flora of this delightful little island.

Messrs Wilmott, Bangarter and I gradually wended our way up from the shore, hurriedly collecting "voucher" specimens, now all deposited in Herb. Mus. Brit. As we moved inland we found quite luxuriant patches of cultivation gay with such weeds as *Chrysanthemum segetum* and *Stachys palustris*. Further on we came upon moor and marsh, and Bangarter and I reached the edge of Loch an Duin, where we fished out *Sparganium affine* in fine flower, and on a bank above the loch we got *Polypodium vulgare*, by no means common in the Outer Hebrides, *Lonicera Periclymenum* and *Sorbus Aucuparia*. On our way back to the quay we collected a *Hieracium* from a steep cliff. J. W. Campbell also devoted some of his time to flowering plants and found a number of species that we had not seen, including *Hedera Helix*, a rarity in this part of Scotland, and *Osmunda regalis*. As we left, A. J. Wilmott picked *Spergularia rubra* from between the setts of the landing place.

I would like to thank the following for their determinations:—J. E. Lousley (*Rumex domesticus*); H. W. Pugsley (*Euphrasia*, see *Journ. Bot.*, lxxviii; *Hieracium*); A. E. Wade (*Myosotis*); A. J. Wilmott (*Rhinanthus* and others).

LIST OF VASCULAR PLANTS FROM SCALPAY.

- Ranunculus repens* L.
R. acer L.
R. Flammula L.
Callitha radicans Forster.
Nymphaea occidentalis (Ostenf.) Moss.
Cardamine pratensis L.
Cochlearia scotica Druce.
Capsella Bursa-pastoris (L.) Medik.
Raphanus Raphanistrum L. var.
 aureus Wilmott.
Viola Riviniana Rchb.
Polygala serpyllifolia Hose.
Cerastium vulgatum L. (C.-triviale Link).
C. viscosum L.
Stellaria media (L.) Vill.
S. utignosa Murr.
Spergula arvensis L. em., Rchb.
Spergularia salina J. & C. Presl.
S. rubra (L.) J. & C. Presl.
Hypericum pulchrum L.
Oxalis Acetosella L.
Trifolium pratense L.
T. repens L.
Lotus corniculatus L. *
Vicia Cracca L.
Spiraea Ulmaria L.
Potentilla Anserina L.
P. erecta (L.) Hampe.
Rosa sp.
Sorbus Aucuparia L.
Sedum anglicum Huds.
Drosera rotundifolia L.
Myriophyllum alterniflorum DC.
Callitriche stagnalis Scop.
Epilobium obscurum Schreb.
E. palustre L.
Angelica sylvestris L.
Hedera Helix L.
 [Sambucus nigra L.; bushes in cottage garden by North Harbour.]
Lonicera Periclymenum L.
Galium saxatile L.
Scabiosa Succisa L.
Solidago Virgaurea L.
Bellis perennis L.
Antennaria dioica (L.) Gaertn.
Achillea Millefolium L.
A. Ptarmica L.
Matricaria inodora L.
M. discoidea DC.
Senecio Jacobaea L.
S. vulgaris L.
Cirsium arvense (L.) Scop.
Centaurea nigra L.
Hieracium Schmidti Tausch var.
 crinigerum Fr.
Hypochoeris radicata L.
Leontodon autumnalis L.
- Sonchus asper* Hill.
Lobelia Dortmanna L.
Vaccinium Myrtillus L.
Calluna vulgaris Hull.
Erica cinerea L.
E. Tetralix L.
Armeria maritima Willd.
Primula vulgaris Huds.
Glaux maritima L.
Menyanthes trifoliata L.
Myosotis cespitosa F. Schultz.
M. arvensis (L.) Hill.
M. vericolor Sm.
Euphrasia nemorosa (Pers.) Löhr
 var. *collina* Pugsl.
E. micrantha Rchb.
Odontites verna Bell.
Pedicularis palustris L.
P. sylvatica L.
Rhinanthus stenophyllus (Schur) Druce.
Pinguicula vulgaris L.
Prunella vulgaris L.
Stachys palustris L.
Galeopsis Tetrahit L.
Lamium purpureum L.
Plantago maritima L.
P. lanceolata L.
P. major L.
Littorella uniflora (L.) Asch.
Atriplex glabriuscula Edmondst.
Polygonum Persicaria L.
P. aviculare L. (sensu lato).
Rumex domesticus Hartm.
R. crispus L.
R. obtusifolius L.
R. Acetosa L.
R. Acetosella L.
Urtica dioica L.
Salix aurita L.
S. repens L. (sensu lato).
Iris Pseudacorus L.
Narthecium ossifragum Huds.
Juncus conglomeratus L. em., Koch.
J. bulbosus L.
J. squarrosus L.
J. Gerardi Lois.
J. bufonius L.
Luzula sylvatica (Huds.) Gaud.
L. multiflora Lej.
Sparganium angustifolium Michx.
 (S. affine Schnitzl.).
Triglochin palustre L.
Potamogeton polygonifolius Pourr.
Eleocharis multicaulis (Sm.) Sm.
Eriophorum angustifolium Honck.
Carex binervis L.
C. panicea L.
C. ovalis Good.
C. stellulata Good.

- Anthoxanthum odoratum* L.
Alopecurus geniculatus L.
Phleum pratense L.
Agrostis stolonifera L. var. *stolonifera* (L.) Koch.
A. canina L. var. *arida* Schlecht.
Aira praecoë L.
Deschampsia flexuosa (L.) Trin.
Holcus lanatus L.
Arrhenatherum elatius (L.) M. & K.
Sieglingia decumbens (L.) Bernh.
Phragmites communis Trin.
Cynosurus cristatus L.
Molinia caerulea (L.) Moench.
Poa pratensis L.
P. trivialis L.
- P. annua* L.
Glyceria fluitans (L.) R. Br.
Puccinellia maritima (Huds.) Parl.
Festuca rubra L. var. *vulgaris* Gaud.
F. vivipara (L.) Sm.
Bromus hordeaceus L. sec. Fries.
Lolium perenne L.
Nardus stricta L.
Pteridium aquilinum (L.) Newm.
Blechnum Spicant With.
Athyrium Filix-foemina (L.) Roth.
Dryopteris aristata (Vill.) Druce.
D. dilatata (Hoffm.) Gray.
Polypodium vulgare L.
Osmunda regalis L.

AN APETALOUS MEADOWSWEET.

H. K. AIRY-SHAW, B.A., F.L.S.

Whilst returning from an excursion of the Entomological Section of the Cotteswold Naturalists' Field Club along the "Golden Valley" between Chalford and Sapperton, Glos., on the 26th June last, my companion, Mr E. G. Neal, of Rendcomb College, Cirencester, remarked on the very creamy-yellow colour of a patch of meadowsweet that we happened to be passing. Upon investigation it transpired that the unusual colour was due to the almost complete absence of the white petals normally possessed by *Filipendula Ulmaria* [B.P.L., 184/11], leaving only the ochre-yellow stamens (filaments as well as anthers) to provide the general hue for the entire inflorescence. Here and there an occasional flower could be seen which had one, or very rarely two, greatly reduced petals. There was no question of the petals having fallen exceptionally early, since none of the large proportion of flowers then still in "bud" had anything approaching the usual complement of petals. Many of the anthers in the "buds" showed signs of the development of anthocyanin on their exposed sides, similar to that often seen on the apices of the sepals. The flowers were otherwise perfectly normal, and by mid-July appeared to be setting normal fruit.

The plant in other respects represented the form, with leaves green below, which has been passing in this country for the var. *denuadata* (Presl) Beck. I am indebted to my colleague, Mr N. Y. Sandwith, for the information that the true *denuadata* is a very distinct plant, with the veins long-pilose beneath,* confined to Central Europe and the Balkans. The British form, therefore, is without a name (even if it merits one), unless it can be identified with anything in, e.g., the French flora. On this occasion no further plants of "denuadata" were seen, and only the one small patch of 20-30 stems (possibly all one plant) of the apetalous form, growing amongst large quantities of the normal petaliferous var. *tomentosa*. Nothing, of course, can yet be said concerning the genetic basis, or possible ontological or seasonal fluctuation, of this aberrant form, but the colony will as far as possible be kept under observation.

No reference to any apetalous form of meadowsweet having so far been traced in the literature, the Gloucestershire plant may be distinguished as:—

Filipendula Ulmaria (L.) Maxim. forma *apetalata* Airy-Shaw f. nov., floribus omnino apetalis vel hinc inde petalum unicum (rarissime duo) valde redactum gerentibus; foliis subtus viridibus nec niveis; petiolis, costis venulisque subtus brevissime viridulo-tomentellis.

V.-c. 34, W. Glos.; bank of stream (R. Frome) below Oakridge Lynch, near Frampton Mansell, 26 June and 15 July 1943, H. K. Airy-Shaw (Herb. Kew. et Mus Brit.).

*See Hayek, *Fl. Steterm.* i. 871 (1906); *Prodr. Fl. Balcan.* i. 658 (1925).

NOTES ON BRITISH RUMICES:* II.

J. EDWARD LOUSLEY.

The present war with its demands on restricted leisure and difficulties in consulting herbaria and the scarcer books has delayed until now continuation of the series of "Notes on British Rumices" commenced in the *B.E.C. Report* for 1938. The delay has had some advantages in revealing sources of information of which I was formerly unaware, and in allowing time for the more leisurely consideration of various difficult problems, but nevertheless solution of a number of questions remains impossible while present conditions prevail. This is especially the case where it is desirable to consult continental herbaria, but it is equally aggravating where copies of rare works are known to be normally accessible but at present dispersed for safety to places where access is unobtainable.

Lack of time has prevented completion of publication of the preliminary consideration of all the species and varieties recorded from Britain, but all those of the subgenus *Lapathium* with the exception of *R. obovatus* and *R. dentatus* are included in the present and earlier paper. These two species, with the addition of *R. Acetososa*, *R. Acetosella*, *R. scutatus* and the alleged "*R. arifolius*" to be reviewed in my next paper, will complete the British List.

As in the earlier paper the sequence of species is that of the *Plant List* though great revision will ultimately be necessary. The arrangement of material and abbreviations (with a few additions given later) remain as before. Descriptions are given only where the plants are not adequately described in easily accessible British works, and they are deliberately omitted in the case of adventives which have only occurred once or twice in Britain.

618/1. *R. HYDROLAPATHUM* Hudson, *Fl. Angl.*, ed. 2, 154, 1778.

Icones. Eng. Bot., t. 2104 (poor—lower leaves not illustrated); Fitch & Smith, *Illustr. Brit. Fl.*, t. 861 (fruit poor); Moss, *Camb. Br. Fl.*, 2, t. 142, 1914 (good).

Ersicc. 14, E. Sussex; Landport near Lewes, Lousley (145); 17, Surrey; Thames' bank, Mortlake, Lousley (57).

From the description and synonymy given by Hudson (*loc. cit.*) there can be no doubt that he had in mind the plant which we now know under this name. He spelled the name as "*Hydrolapathum*" and some writers still include the "e," but it seems that the original spelling was an "unintentional orthographic error" in the sense of Article 70 of the International Rules and should therefore be corrected. Hudson uses "*Hydrolapathum*" four times in his synonymy, and the fact that the single orthographical error is repeated in the third edition

*For the first paper of this series see *B.E.C. 1938 Rep.*, 118-157, 1939.

of *Flora Anglica* in 1798 is no evidence that the author wished to perpetuate the error as the so-called third "edition" is apparently only a reprint of the second.

R. Hydrolapathum is a handsome well-defined species which cannot well be confused with any other British Dock, and it is perhaps for this reason that descriptions in our Floras are often inaccurate. The size of all parts is greater than that of any other native species—in height it often attains 2 metres, the leaves may have a length of as much as 11 dm. with a lamina of 7 dm. long, the fruiting valves are 6 to 8 mm. in length, the nuts about 4 mm. long, and the cotyledons at 12 mm. exceed in length those of any other British Dock.

The coriaceous texture of the somewhat glaucous dull green leaves is distinctive, and an important character in the determination of hybrids. They are usually described as gradually attenuated or tapering at the base, but this is by no means always the case. Observation in the field shows that leaves with cuneate, truncate or even sub-cordate bases are not infrequent. Plants with attenuate leaf-bases from stream-sides produce broad-based leaves when transplanted into gardens—perhaps because of drier conditions. In his herbarium Borrer labelled a number of broad truncate or subcordate-based leaves as var. *latifolius* (sometimes as var. *latifolia*). The plants so labelled are a mixture, some being variants of *R. Hydrolapathum* while others, perhaps the majority, are the hybrid with *R. obtusifolius*. Trimen (*Journ. Bot.*, 12, 35, 1874) published Borrer's name, applying it to the hybrid plant. A number of British botanists have been aware that pure *Hydrolapathum* sometimes produced these broad leaves. Thus Watson collected a good series from Surrey in 1874 which is preserved in Herb. Boswell-Syme (see *B.E.C. 1872/4 Rep.*, 37, 1875). W. H. Beeby recognised a Lincolnshire plant with subcordate leaves which was not the hybrid (*Naturalist*, 1896, 185; 1897, 170/1), and Salmon made the same distinction (*Fl. Surrey*, 571, 1931). It appears to be the *R. Hydrolapathum* forma *latifolius* of Zapalowicz (*Consp. Fl. Galic. crit.*, 2, 689, 1908, where the hybrid is clearly differentiated), but I am very doubtful whether the variation is worthy of a name.

The fruiting valves are described by some British authors as "entire" (e.g. Druce in Hayward's *Botanist's Pocket-Book*, ed. 19, 169, 1930) or as "nearly entire" (e.g. Babington, *Manual*, ed. 10, 359, 1922). Actually they usually have a few short (less than $\frac{1}{2}$ mm. long) denticulations towards the base, and failure to indicate this has led to many otherwise typical specimens of the species being incorrectly assigned to the hybrid with *obtusifolius*.

It is proposed to deal with *Rumex* hybrids separately in a later paper but it seems advisable to indicate here that *R. Hydrolapathum* \times *R. obtusifolius* L. subsp. *agrestis* (Fries) Danser (*R. maximus* auct. angl. non Schreb.; *R. heterophyllus* Babington non Schultz) may be distinguished from *R. Hydrolapathum* by the usually broader, less acute, subcordate, much thinner leaves, less congested panicle usually with numer-

ous infertile flowers, and valves with a more rounded base and often rather prominent acute denticulations towards the base.

Life History. The fruits are undoubtedly distributed through the agency of water and owing to the buoyancy of the tubercles they may float for a considerable period. Thus a number which were placed in a dish of water on September 7th, 1938, were all still floating on April 1st, 1939, and 10 fruits placed in a tube of water on November 19th, 1938, all remained floating after 147 days (April 15th, 1939) and continued to do so until they germinated about a month later.

Germination normally occurs in May or June, but may take place in late March or April if the temperature is exceptionally high. It is retarded in the absence of light, when the etiolated seedlings grow to a length of about 11 cm. before they die. The nuts germinate freely when floating in their perianths, and on June 14th, 1932, vast numbers of seedlings with the first three leaves well developed occurred on the masses of green algae (? *Enteromorpha* sp.) which choked a brackish dyke near Higham, West Kent. From a sowing of 10 fruits gathered at East Mersea in 1938 six seedlings were raised in May and June 1942, and of these one had three cotyledons. The production of an additional cotyledon is extremely rare in the Rumices and I know of no other similar instance though from a sowing of the hybrid *R. obtusifolius* × *palustris* I once obtained a seedling with a forked cotyledon. Seed gathered in the autumn germinates freely the following spring, only the winter resting period being necessary.

The leaves become tattered and decay early in the autumn and well before the first frosts; they reappear in early April—which is rather later than most British Docks.

Distribution. *R. Hydrolopathum* has been recorded from all the vice-counties of England and Wales with the exception of 42, 43, 46, 67, and 71. The only record for v.-c. 4 appears to be the entry in *Comital Flora*. In Scotland there are many vice-counties for which records or confirmation are desirable—I have only seen specimens from v.-c.'s 88, 89, and 102. For Ireland the plant is unrecorded for v.-c.'s H2, H26, H35 and H37 only, though credit for H16 rests solely on *Comital Flora*.

618/1 bis. *R. AQUATICUS* L., *Sp. Pl.*, 336, 1753, emend. Murbeck, *Bot. Not.*, 7, 1899—non auct. angl.

For further synonymy, citation of type specimen, *Icones*, and foreign *exsiccata*, description and distribution abroad—see *Journ. Bot.*, 78, 149-152, 1939.

British Exsicc. 86, Stirling; Shore of Loch Lomond at Balmaha, Lousley (236). 99, Dumbarton; Shore of Loch Lomond near Gartocharn, Lousley (232).

On August 6th, 1939, I was able to visit the locality whence Mr R. Mackechnie had first collected *R. aquaticus* in 1935. Here I found it extending for about 200 yards on sand-banks and along the alder-fringed shore. Later the same day I was pleased to find it again about two miles away, and in another county. At both places the plant grows

in extremely aquatic conditions—in fact, although the level of Loch Lomond was low some individuals had their rootstocks nearly half a metre below the surface of the water. The most usual habitat in both stations was the loch-side margin of alder-swamps. It is undoubtedly native.

At Balmaha the following other Rumices grew nearby:—*R. crispus* L. (common), *R. obtusifolius* L. ssp. *agrestis* (Fries) Danser (common), *R. crispus* L. × *R. obtusifolius* (frequent), *R. domesticus* Hartm. (1 plant only), *R. sanguineus* L. var. *viridis* Sibth., and 2 fine large plants of *R. aquaticus* L. × *R. obtusifolius* L. ssp. *agrestis* (Fries) Danser.

R. aquaticus is a most distinct species, not readily confused with any other British species when once authentic material has been seen. In the field the resemblance is perhaps rather to *R. Hydrolapathum*, from which it may be immediately known by the absence of tubercles on the valves, and the broad-based triangular leaves which have a similar thick, leathery texture. The outline of the leaves also distinguishes it from *R. domesticus*, from which it also differs in the less congested panicle, the pointed valves, and the almost imperceptible articulation of the pedicels.

Germination. Seeds germinated in May, June, July and August in my southern garden, and evidently only a short resting period is necessary, for nuts germinated freely the summer after they had ripened. Great difficulty was found in keeping the plants alive, and it was found necessary to grow the plants in pots kept continuously standing in water. It proved even more exacting in water requirements than *R. Hydrolapathum*.

618/2. *R. DOMESTICUS* Hartman, *Handb. Skand. Fl.*, ed. 1, 148, 1820; *R. longifolius* auct. angl., & ? DC. *Fl. France*, 5 (*Suppl.* 6), 368, 1815; *R. aquaticus* Hooker, *Fl. Brit.*, 168, 1830 (non L.).

Icones. *Eng. Bot. Suppl.*, t. 2698 (excellent); Moss, *Camb. Br. Fl.*, 2, t. 143, 1914 (valve outlines inaccurate).

Essicc. 66, Durham; Near Middleton-in-Teesdale, Lousley (101). 85, Kinross; Crook of Devon, Lousley (266). 77, Lanark; Strathaven, Lousley (231). 104, Skye; Broadford, Lousley (81).

This species is readily recognised by the very dense compact fusiform panicle, which is so very characteristic that the plant is easily detected even from a fast moving car. Unfortunately this feature is not illustrated in any British work. The valves are thin, membranous, reniform with entire margins and devoid of tubercles (though occasionally there may be a very slight thickening of the mid-rib).

There is still considerable doubt as to whether De Candolle's name should not be adopted in place of that of Hartman. The description given by the latter is brief, but there seems no doubt that it refers to our plant, and its use is preferred by Murbeck (*Bat. Not.*, 1899, 13) and by Rechinger (*Field Mus. of Nat. Hist.*, 17, 100, 1937). De Candolle's description published five years earlier might well describe a slightly abnormal or hybrid plant of the species now under consideration, but

there are several features in his account which are not quite convincing. Thus he says of the leaves "rétrécies à leurs deux extrémités" whereas the lower leaves (which he had just specifically mentioned) are truncate or even cordate at the base. He states that the flowers are "ordinairement géminés à l'aisselle des feuilles" which does not suggest the plant we have known under his name.

De Candolle based his *R. longifolius* on a specimen sent to him by Coder from the "environs de Prades, en Roussillon" (a district in which *R. domesticus* still occurs), and in an attempt to settle the question the authorities at Kew very kindly wrote to Geneva asking if De Candolle's type might be borrowed for examination. B. P. G. Hochreutiner of the Conservatoire et Jardin Botaniques replied on January 10th, 1939, as follows:—

"We have no specimen of *Rumex longifolius* from France. De Candolle remarks that Coder has sent him that specimen, but it is likely that De Candolle sent the plant back to him without keeping a duplicate.

According to Roumegnère (*Correspondances scient. inédites*, p. 164, 1876), Coder sold his herbarium to an English botanist whose name is not mentioned. Therefore we do not know where the plants from Coder are.

There was no specimen of *Rumex longifolius* in Herb. Boissier (as in Herb. Delessert)."

It thus appears likely that Coder's type specimen of De Candolle's *R. longifolius* was sent to this country, and may still be in a British Herbarium. If it can be found a very vexed question of nomenclature may be solved, but so far all my enquiries have been in vain.

R. domesticus varies extremely little in this country. Very rarely individuals may have an interrupted panicle (possible as a result of secondary growth after mutilation), and occasionally plants are seen with a looser panicle than I have described.

Distribution in Britain. *R. domesticus* occurs in Derbyshire, and in nearly all the vice-counties north of a line from the Ribble to the Humber. It attains its maximum abundance in Central Scotland, becoming less frequent (like several other Docks) in Northern Scotland where cultivated or disturbed ground is more restricted. Material has been seen from the following v.cc.—60, 62, 64, 65, 66!, 69, 70, 75, 77!, 79!, 81!, 83!, 85!, 86!, 87!, 88!, 89!, 90!, 91!, 92!, 93!, 94!, 95!, 96!, 97!, 99!, 104!, 105, 106, 107, 108, 111, 112. (! indicates that I have also seen the plant growing in the vice-county.)

The species is also recorded from the following, but voucher material has not yet been seen:—v.cc.: 57, 67, 68, 72, 73, 74, 76, 78, 80, 84, 98, 102, 109, 110.

Search for *R. domesticus* should be made in v.cc.: 61 (e.g. on banks of R. Ouse below York), 63, 71, 82, 100, 101, and 103, from which it is not yet recorded although known in adjoining vice-counties.

Life History. The thin papery texture of the valves and the absence of tubercles suggests that the fruits are dispersed primarily by wind-agency. When placed in water they soon sink—for example, of 10 fruits

placed in water on November 19th, 1938, one sunk on the third day, 6 had sunk at the end of the week, and all by the 15th day. Thus they may well be moved short distances by streams or lochs.

Germination has occurred in my cultures in the south of England in April, May, August, September and October. No resting period appears to be necessary, as seed sown in the autumn a few weeks after it had ripened gave some immediate germination, although the majority of the seedlings did not appear until the following spring.

[618/2 bis. *R. AQUITANICUS* Rechinger fil. in *Fedde Repert.*, 26, 177, 1929.

This species was described by Rechinger as very similar to *R. domesticus* in habit, but distinguished from that species by the cauline leaves, which are one and a half to twice as long as broad with their greatest width near the base and rather rough on their lower surface (radical leaves not seen), by the slightly crisped leaf margins, and especially by the much larger perianth-divisions which are toothed. It was based on three gatherings from the Western Pyrenees in the herbarium of the Musée d'Histoire Naturelle in Paris.

In November 1938 Dr Rechinger wrote to me as follows:—" May I call your attention to a plant very closely allied to *R. domesticus* which I described in 1929 in *Fedde Repertorium*, Bd. 26, p. 177, probably rather prematurely, as *R. aquitanicus* from the West Pyrenees. It is distinguished from *R. domesticus* chiefly by larger, irregularly toothed valves, of which one bears a tubercle. Some years ago I saw specimens very similar to the type (Herb. Paris) in Herb. Lund, Sweden, with the following labels: Shetland, Scalloway, Mainland, W. H. Beeby, Nos. 1027, 1028, 1030, 1031, 1032. It would be interesting to know whether this critical plant occurs there in the company of typical *R. domesticus*, or replaces it, and which other species are to be found there. The specimens in question in any case do not give the impression of being hybrids." (translation).

Beeby's valuable collection from the Shetlands is at the South London Botanical Institute, where it is kept apart from the general herbarium, and it contains all but one of the exsiccata mentioned by Rechinger. From the same locality Beeby collected *R. crispus* L. (No. 1035) and good *R. domesticus* Hartm. (No. 1033) and *R. obtusifolius* L. (No. 1024). No. 1032 is immature, and may well be only *R. domesticus*. Nos. 1028 and 1030 (with the addition of 1029) I should accept without hesitation as hybrids involving *R. domesticus* and *R. obtusifolius*, in spite of their apparent fertility. It is true that a partially infertile hybrid between these two species occurs freely, and I have selected such examples for distribution in my Exsiccata (Nos. 85, 86, 99, 102, 243, 247) as being good intermediates and beyond doubt. But whatever I have found *R. domesticus* growing in the company of *R. crispus* and *R. obtusifolius* there have also occurred a few plants which were very near to *R. domesticus* in most of their characters but showed evidence of the influence of *R. obtusifolius* and/or *R. crispus*, and yet appeared

fully fertile (e.g. at Broadford, Skye; shores of Loch Leven, Kinross; and about Pitlochry, E. Perth.). Such plants I have supposed to be back-crosses of hybrids with *R. domesticus*, and I believe that Nos. 1027, 1028, and 1030 of Beeby's *exsiccata* cited by Rechinger have this origin. In any case I am convinced that they do not justify the addition of a new name to the British list. It should be added that Beeby's material was collected on various dates in 1887 and 1888, and that the consecutive reference numbers must have been added later as they have no connection with the sequence of the dates on the labels.]

618/3. *R. CRISPUS* L., *Sp. Pl.*, 335, 1753.

Icones. Eng. Bot., t. 1998; Fitch & Smith, *Illustr. Br. Fl.*, t. 859 (fruit poor); Moss, *Camb. Br. Fl.*, 2, t. 144, 1914.

Exsicc. 17, Surrey; Mitcham Junction, Lousley (24).

Type. Hb. Linn., No. 7, labelled "*R. crispus*, *Fl. Suec.*" in the handwriting of Linnaeus. This is a good specimen in fruit. The valves are rather small (c. 4 mm. in length), and all conspicuously tubercled. Unfortunately I omitted to note whether the tubercles were equal or unequal.

R. crispus is the most common of all the *Lapathum* Docks in Britain and unlikely to be confused with any other native species with the possible exception of *R. domesticus*, from which it is easily distinguished by the usually smaller (3.5 × 2.5 mm.) thicker valves, at least one of which bears a tubercle. Within the well defined specific limits there is perhaps more intra-specific variation than occurs in any other British Dock. The classification of this variation has proved extremely difficult.

The most common form in this country has lanceolate leaves with moderately crisped margins, neither very thin nor very fleshy, of approximately "Spinach Green" colour (R.H.S., 0960/2); the panicle is moderately dense with a few leafy bracts; the valves are sub-rotund, orbicular-deltoid in outline, about 4.5 × 4 mm., with a repand margin; all three bear slightly elongate or subglobular tubercles, of which one is much larger than the other two.

This approximates very closely to the position in Holland—the only other country in which the variations of the species appear to have been studied in detail. Of Holland Danser (*Ned. Kruid. Arch.*, 1921, 184/5, 1922) wrote:—"The usual type of *R. crispus* in our country is an average strong plant of usually not quite a metre in height, with one or more main stems, with erect or slightly spreading branches. The root leaves are lanceolate, undulate and crisped, their base moderately rounded varying between cuneate and weakly cordate. The whorls are not leafy or only moderately so, interrupted only below, congested above. The fruiting panicle is dense. The ripe perianth is of medium size compared with other Rumices, about 4 mm. long, roundish and entire . . . , all the valves bear a round tubercle, the lateral ones being smaller than the primary. The longest peduncles are scarcely a centimetre long" (free translation from Dutch).

From Central Europe, Beck (*Fl. Nied. Österr.*, 1, 320, 1890) describes the common form as var. (a) *typicus* with fruiting inner perianth segments 5 mm. long, all bearing tubercles which are unequal in size. From the examination of dried material I believe that throughout Europe the most common form of the species is the same as in this country, and most probably the plant represented in the Linnean Herbarium, and as described above by Beck and Danser.

At a meeting of the Botanical Society of Edinburgh on March 8, 1849, James Hardy described two British varieties of *R. crispus*. (*Botanical Gazette*, 1, 133, May 1849) as follows:—

- “*Rumex crispus* var. *littoreus*—All the divisions of the perianth tuberculated, tubercles subequal.
 — var. *arvensis*—All the divisions tuberculated, one tubercle only perfectly developed.”

The earliest name for the most common and widespread British form appears to be var. *arvensis* Hardy, while his *littoreus* includes the plant later described by Syme as var. *trigranulatus*.

Before discussion of the other varieties which have been said to occur in Britain, it seems desirable to summarise the wide range of variation which occurs. In the following table the common form (var. *arvensis* Hardy) as represented in my Exsiccata from 17, Surrey; Mitcham Junction, Lousley (24), in all cases illustrates the second (usually middle) character lettered “b.” The specimens are all in my herbarium unless otherwise stated.

LEAVES.

1. OUTLINE.

- a. Narrow lanceolate.
16, W. Kent.; Tidal Medway below Aylesford Bridge, 1934, Lousley.
35, Monmouth; Tidal Banks of R. Wye near Tintern Abbey, 1933, Lousley.
- b. Lanceolate.
- c. Broad lanceolate.
34, W. Glouc.; Avonmouth Docks, Lousley (160).

2. MARGIN.

- a. Very strongly crisped.
9, Dorset; Allotments near Corfe, 1942, Dunston (L.10.42).
- b. Moderately crisped.
- c. Plane, or very nearly so.
28, W. Norfolk; Hockham Fen, 1934, Lousley.
35, Monmouth; Tintern, and 16, W. Kent; Aylesford—as above.

3. TEXTURE.

- a. Very thin.
28, W. Norfolk; Hockham Fen, 1934, Lousley.
- b. Of medium thickness.
- c. Very thick and coarse.
15, E. Kent; Shingle E. of Hythe, 1933, Lousley.
21, Middlesex; Brentford, Lousley (143).
34, W. Glouc., Avonmouth Dock, Lousley (160).

PANICLE.

4. *DENSITY*.
 - a. Very dense, branches strict.
85, Fife; Seafield, Lousley (96).
 - b. Rather dense.
 - c. Interrupted, branches often rather spreading.
16, W. Kent; Tidal Medway below Aylesford Bridge, 1934, Lousley.
28, W. Norfolk; Hockham Fen, 1934, Lousley.
5. *LEAFINESS*.
 - b. With few leafy bracts.
 - c. With numerous prominent leafy bracts.
21, Middlesex; Hort. ex Brentford, Lousley (143/a).
28, W. Norfolk; Hockham Fen, 1934, Lousley.

FRUITING VALVES (in all cases there is usually slight variation between the valves in individual panicles).

6. *OUTLINE*.
 - b. Orbicular-deltoid.
 - c. Elongate-deltoid—apex sub-acute.
28, W. Norfolk; Hockham Fen, 1934, Lousley.
7. *SIZE*.
 - a. Small (c. 3.5×3 mm.)—Uncommon.
9, Dorset; Near Corfe in allotments, Dunston (K.18.42).
 - b. Intermediate (c. 4.5×4 mm.).
 - c. Large (c. 6×6 mm.)—rare and often adventive.
29, Cambs.; Sandpit between Chatteris and Mepal, Lousley (132).
34, W. Glouc.; Avonmouth Docks, Lousley (160).
8. *MARGIN*.
 - a. Entire.
17, Surrey; Thames bank at Walton-on-Thames, Lousley (289).
 - b. Repand—occasionally with a few minute teeth near the base.
 - c. Denticulate—i.e. with definite teeth near the base.
14, E. Sussex; Lewes, August 1872, J. L. Warren (Hb. Mus. Brit.—especially the sheet *not* marked “Petals toothed below.”).
9. *TUBERCLES—PRESENCE OR ABSENCE*.
 - a. With 3 large more or less equally well-developed tubercles.
85, Fife; Seafield, Lousley (96).
 - b. With 3 tubercles, of which one is much larger than the others.
 - c. With 1 tubercle only—the other two valves naked—rare.
9, Dorset; By R. Corfe near Corfe, Dunston (K.18.42).
17, Surrey; Punchbowl Lane, Dorking, 1914, Wilmott (534d) (Hb. Mus. Brit.).

The variations set out in the above table by no means exhaust those which I have observed in *R. crispus* in Britain. Variations in height and vegetative robustness are often striking. The colour of the leaves, normally a mid-green, is sometimes exceptionally dark-green, or rather bluish (sea-green), or even somewhat glaucous. The valves, normally light-brown when mature, may be bright green, rose or carmine. The tubercles vary greatly in size, may be brown or red of various shades, and vary in shape from sub-globular to very elongate. Moreover, in compiling the table I have deliberately excluded all plants to which the slightest suspicion of hybrid origin is attached, and especially the curious plants which occur in the presence of *rupestris* in Scilly and Glamorgan.

Most of the variations given in the table are inherited. Owing to limited opportunities of cultivating such a rampant pest I have only been able to prove this for myself in the cases of leaf outline and plane margin, and development of tubercles. Danser, however, cultivated 11 different divergent plants and his results reported in detail in *Ned. Kruid. Arch.*, 1921, 182-195, 1922, showed that most of the deviations came true from seed sown in garden soil. Various comments by Syme and others scattered through British literature (e.g. *B.E.C. 1872/4 Rep.*, 36 and 37, 1875) tend to confirm this conclusion.

The difficulty is that few of the variations are constantly associated with one another, and hence a purely artificial classification such as that adopted by Ascherson & Graebner (*Syn. Mitteleur. Fl.*, 4, 723/5, 1912) is unconvincing. Danser (*loc. cit.*) gave up the task in despair with the comment, "For the moment a natural classification of *R. crispus* seems to me impossible and an artificial superfluity." In this country some of the variations are better defined than most of those discussed by Danser, and moreover several of them have considerable ecological importance. It therefore seems desirable that names should be available for those which are most marked and permanent, always bearing in mind that a vast field of genetical and ecological work remains open for the confirmation or rejection of the conclusions to be set out below.

The following varieties and forms of *R. crispus* have been recorded for Britain, those given in Druce's *Brit. Pl. List*, ed. 2, being considered first.

Var. b. TRIGRANULATUS J. T. Boswell (=Boswell-Syme) in *B.E.C. 1872/4 Rep.*, 37, 1875 (reprinted in *Journ. Bot.*, 13, 373, 1875).

Boswell in his original description stressed four characters in which his plant differed from the common form of *crispus* as follows:—(1) the littoral habit, (2) the very dense panicle—recalling that of *domesticus*, (3) the triangular-ovate valves, and (4) the presence of conspicuous tubercles on all three valves. He cited three gatherings, for which I give the herbaria in which I have seen material:—(1) Swanbister, Orphir, Orkney, 1874 (Hb. Syme and Hb. Mus. Brit. contain specimens dated 1873—a misprint in the original account is probable). (2) Brodick, Arran, 1873 (no material seen), and (3) Seafield, near Kirkcaldy, Fife, 1874 (Hb. Mus. Brit.). The last mentioned specimen may be regarded as the type, and agrees with Syme's description. I visited Seafield on July 29, 1938, and found a similar plant abundant on the upper sea-shore, and of this I distributed specimens in my exsiccata (No. 96). From this gathering I sowed fruits in my garden, and confirmed Syme's statement that the characters of the variation are reproduced from seed.

The trigranulate *R. crispus* of the south coast of England differs slightly from the Scottish material, and the panicle, although often dense, can seldom be said to be sufficiently large and dense to "have the appearance of *domesticus*." Nevertheless Syme later determined specimens from southern England as belonging to his variety.

Inland plants of *R. crispus* may sometimes have conspicuous tubercles on all three valves (e.g. 8, S. Wilts.; Near Donhead St Mary, 1941, A. Dunston in Hb. Lousley), but in such cases the panicle is seldom dense, and the leaves are not fleshy as in the maritime plant.

It seems that var. *trigranulatus* Syme *sensu latissimo* must be regarded as a synonym of the earlier var. *littoreus* Hardy (see below). In the restricted sense it may be kept up as a form of *littoreus* to be applied to plants similar to those from Seafield.

Var. c. *LITTOREUS* Hardy in *Botanical Gazette*, I, 133, 1849.

Hardy's original description has been quoted above—I have not traced a specimen collected or named by the describer. The littoral habit is implied in the choice of name.

Var. *littoreus* is a maritime plant common on shingle and dunes all round the British coast, and has been frequently recorded as var. *trigranulatus* Syme.

Var. d. *PLANIFOLIUS* Schur, *Enum. Pl. Transs.*, 580, 1866.

Schur described this variety as follows:—"Foliis latioribus planis viridibus longius acuminatis crenatis; verticillis ab invicem remotis in spicam aphyllam dispositis; floribus minimus. Auf nassen Weisen bei Kronstadt. Aug." It was thus a plant of wet upland meadows remote from the sea.

Moss (*Camb. Br. Fl.*, 2, 139, 1914) applied Schur's name to a plant which had been collected by Augustin Ley on estuarine mud of the Wye at Tintern, Monmouthshire, on July 30, 1870 (Hb. Syme), July 30, 1878 (Hb. Kew) (*B.E.C. 1877/8 Rep.*, 18, 1879), September 13, 1879 (Hb. Syme) (*B.E.C. 1879 Rep.*, 18, 1880), July 26, 1880 (Hb. Syme & Hb. Kew) (*B.E.C. 1880 Rep.*, 34/5, 1881), and August 6, 1884 (*B.E.C. 1884 Rep.*, 109, 1885).

I have studied this plant growing on the banks of the Wye by Tintern Abbey on several occasions between July 1933 and August 1938. It grows on oozing estuarine mud where in spite of its height—the plant is often over 2 metres tall—it is often completely covered at high tide. Thus all the parts are usually coated with a greyish deposit which makes the leaves appear glaucous and obscures the details of the valves. The leaves are narrow-lanceolate, often tapering at both ends, flat (not crisped), with the lamina usually over 30 cms. long. The panicle is lax with remote rather leafy whorls. The valves are deltoid, subacute at the apex, very unequally trigonulate, or unigranulate with rather long (c. 8 mm.) filiform peduncles.

It will be seen that this plant disagrees with Schur's description in the width and margin of the leaves, in the presence of leaves in the panicles, and probably in the size of the flowers. It agrees better with var. *viliginosus* Le Gall, which was described in the *Flore du Morbihan*, 500, 1852, as follows:—

"Feuilles allongées-lancéolées, très atténuées à la base, planes ou presque planes, au moins les inférieures. Faux verticilles médiocrement

fournis et la plupart écartés; les inférieurs munis d'une feuille, les supérieurs nus. Calice pourvu d'un seul grain et parfois non granifère. —Lieux limoneux souvent couvert par le flux de la mer. AR. Tré-Auray, près d'Auray, bords du Blavet à Hennebont." It will be seen that the two localities given by Le Gall are on tidal mud near the mouths of rivers on the Atlantic coast of Brittany, a type of habitat very similar to those in which the British plant occurs.

Trimen, Briggs and others have considered that Ley's plant was the same as the Thames-side plant which has been called *R. elongatus* (see below), and I agree that the differences between the plants are insufficient to justify giving them different names. The plant from the Thames is less robust, with a more leafy, less lax panicle, and the leaves may taper a little more at the base, but I can only regard it as a slightly more extreme example of the same variation, possibly exaggerated by longer submergence at high tide.

I have not so far succeeded in growing the Tintern plant to maturity in garden soil, but year old seedlings had thin pale-green leaves which were quite plane, about 20 cm. in length and narrow lanceolate. It appears therefore that the leaf characters are reproduced from seed.

Material of var. *uliginosus* has been seen as follows:—

- 16, W. Kent; Tidal Medway below Aylesford Bridge, 1934, Lousley (Hb. Lousley).
- 17, Surrey; Estuarine mud of R. Thames from Putney to Kew Bridge—various collectors—see below under "*R. elongatus*."
- 35, Monmouth; Tidal banks of R. Wye by Tintern Abbey, A. Ley (see above); 1933 and 1938, Lousley (Hb. Lousley).
- H.8, Limerick; Estuarine mud of Shannon below Limerick, 1937, Lousley (Hb. Lousley).

Miss E. Vachell has sent me specimens of an interesting Dock which she collected in the company of Hon. Guy Charteris and Miss Wilkinson on estuarine mud near the mouth of the River Thaw, Aberthaw, Glamorgan, v.-c. 41. This plant has leaves which are flatter than those of var. *arvensis*, and they have a pseudo-glaucous appearance owing to a thin coating of mud. The panicle is very robust and much branched, with elongate deltoid valves. It is not var. *uliginosus*, and at present I prefer not to give it a name.

The "*R. crispus* var. *elongatus*" from tidal banks of the Itchen near Southampton collected by Augustin Ley on August 11, 1882 (Hb. Mus. Brit.) is *R. Hydrolapathum* (*B.E.C. 1882 Rep.*, 76, 1884).

Var. e. UNICALLOSUS Petermann, *Fl. Lips.*, 266, 1838.

This was described by the author as "petelium unicum calliferum," and small colonies of plants on which only one valve of the three in the perianth bears a tubercle may occasionally be found in populations of normal var. *arvensis*: I prefer to regard the variation as a form rather than a variety.

The earliest use of the name in Britain appears to be on sheets collected by G. C. Druce from v.-c. 23, Oxon.; Godstow, June 1893. There are two sheets of this gathering in Hb. Mus. Brit., one is said to be "teste Freyn," the other which is not so marked is more mature and more convincing. On the two valves which should be completely naked in each perianth, traces of small tubercles can often be seen.

The following specimens of this form have been seen:—

- 9, Dorset; By River Corfe, near Corfe, 1942, A. Dunston (K.18.42) (Hb. Lousley).
 17, Surrey; Punchbowl Lane, Dorking, 1914, A. J. Wilmott (5334d) (Hb. Mus. Brit.); Thames-bank at Walton-on-Thames, Lousley (289).
 96, Easternness; Near Nairn, 1898, E. S. Marshall (2182) (Hb. Mus. Brit.).

Var. f. *SUBCORDATUS* Warren in *B.E.C. 1872/4 Rep.*, 36 1875 (var. *dentatus* Warren ex Boswell, *loc. cit.*; var. *serratus* Warren ex Boswell, *loc. cit.*—the last two names withdrawn on publication).

The publication of this name is contained in a single paragraph which contains so many contradictions and inaccuracies—to say nothing of a material misprint—that it is almost the perfect example of how *not* to introduce a new name!

Warren described his new variety as follows:—"It differs from ordinary *crispus* by its great size (five or six feet) and by the shape of its enlarged sepals, most of which are more or less toothed." He thus relies on three characters:—(1) "Great size (five or six feet);" (2) the shape of the valves (later evidence suggests that he intended to indicate that they were subcordate and/or broader than ordinary *crispus*), and (3) valves "more or less toothed." He cites two gatherings:—

(1) "Teffont, Wilts., October 1872," of which I have seen the following sheets:—(a) Hb. Syme—2 sheets as "var. *dentatus* Warren," (b) Hb. Watson—as "var. *serratus* Warren, 1870," (c) Hb. Kew—as var. *subcordatus*, and (d) Hb. Mus. Brit.—as var. *subcordatus* (Herb. Trimen). These plants are all very luxuriant with leaves broader (up to 8 cm.) than normal *crispus*. They vary a little, but the valves are usually large (c. 5 × 4.5 mm.), rather deltoid, and slightly toothed near the base, but the latter character is very inconstant even in single panicles.

(2) "Lewes, Sussex, July 1872." Of this there are two sheets in Hb. Mus. Brit. as "The Lewes Dock." One has rather small valves (c. 4.5 × 4.5 mm.), unequally trigonulate, their outline rotund-deltoid and denticulation extremely slight. The second has larger valves (c. 5 × 4.5 mm.), definitely denticulate, with a large shining tubercle on one valve only. There is a third sheet dated 1871.

These gatherings are therefore not homogeneous, and the only noteworthy character common to them all is the robustness of most of their parts.

Boswell (better known as Syme) then proceeded to elaborate the new variety, stating that the panicle was lax with spreading branches, the valves "larger and broader than in the common form, being deltoid or subrotund-deltoid," and that only one of the three bore a tubercle. These additional characters do not help to give a clear picture of the way in which the variety differed, and the specimens sent by Syme from Fife and Kinross are quite different from Warren's material. Specimens collected in August 1874 from Balwearie, Fife (Hb. Mus. Brit.) are undoubtedly of hybrid origin, while three gatherings made by Syme in the same month from Balmuto, Fife (Hb. Mus. Brit.) represent three different plants, two of them being very near to normal *crispus*.

Boswell stated that Warren proposed "to apply to the variety the name *subcordatus* instead of 'dentatus' or 'serratus'," but the omission of three essential words (cf. reprint in *Journ. Bot.*, 13, 347, 1875) caused Bennett to believe that "*subcordatus*" was the name to be withdrawn (*B.E.C. 1892 Rep.*, 385, 1893).

Material collected by Brotherston from Tweedside, Kelso, August 1876 (Hb. Mus. Brit.), was said by Warren to be "the exact thing" (*B.E.C. 1876 Rep.*, 32, 1878), and it certainly more closely resembles the Telfont material than do the Scottish plants of Syme.

Warren's *subcordatus* is best disregarded as a *nomen confusum*. I have dealt with it in some detail because it has been taken up by Ascherson & Graebner and other continental writers who have probably not had access to the material on which it was based.

Var. f. **ROBUSTUS** Rechinger pater, *O.B.Z.*, 12, 1891, No. 12, 17, 1892.

This was described by the senior Rechinger as follows:—"Differt a typo statura elatiori, foliis latioribus, praecipue valvarum magnitudine et forma, eis *R. Patientiae* simillimis minime quidem stirps hybrida." He adds that this variety is easily mistaken for the hybrid of *R. crispus* with *R. Patientia*, but occurs in places where the latter is absent. All three valves carry tubercles, but one tubercle is larger than the other two. Rechinger states that it resembles certain forms of *R. crispus* found in Southern Europe, but has rather less distinct teeth on the even larger valves.

Dr K. H. Rechinger, Jnr., has informed me that, in his opinion, his father would have applied his varietal name to the following plants distributed in my Exsiccata:—

21, Middlesex; Brentford, Lousley (143).

29, Cambs.; Sandpit between Chatteris and Mepal, Lousley (132).

34, W. Glouc.; Avonmouth Docks, Lousley (160).

The Avonmouth plant was undoubtedly adventive—the other two most probably so. All agree in the strong superficial resemblance to *R. Patientia*. Warren's plants from v.-c. 8, S. Wilts.; Telfont, and v.-c. 14, E. Sussex; Lewes, cited in the discussion of var. *subcordatus* (above), also belong here.

Var. g. STRICTISSIMUS Rechinger pater in *Ann. Naturhist. Mus. Wien*, 36, 153, 1923.

This was described as "Differt a *R. crispus* typico statura strictissima (*R. fennico* Murb. simili) ramis paniculae brevibus ± axi principali adpressis. Foliis omnibus (inclus. radicalibus) angustioribus acutissimis, margine haud crispatis. Valvis integerrimis, callis tribus tumescens magnitudine varia (pro specie bene et distinctissime evolutis)".

In November 1938 I sent Dr Rechinger, Jr., specimens of my gathering of var. *trigranulatus* from Seafield (No. 96), drawing his attention to the characteristically dense and fastigate panicle. He replied "*R. crispus* L. var. *strictissimus* Rech. pat. is apparently a synonym of true var. *trigranulatus*." The leaves of the Scotch plant I should not have regarded as exceptionally narrow, and there is no good reason to add var. *strictissimus* to the British list.

The British varieties of this species may be tentatively summarised as follows:—

R. crispus Linn.

Var. a. *arvensis* Hardy (var. *typicus* Beck). Leaves lanceolate with undulate, usually crisped, margin. Panicle with a few leafy bracts; valves not large (c. 4.5 × 4 mm.), all three bearing tubercles, one of which is larger than the others. Very common, in fields, roadsides, etc.

Forma *unicallosus* (Petermann) comb. nov. Only one valve bearing a tubercle—the other two naked.

Var. b. *littoreus* Hardy. All three valves with large subequal tubercles. Leaves often rather fleshy. Panicle often dense. Frequent on maritime dunes and shingle all round the coast.

Forma *trigranulatus* (Syme) comb. nov. Panicle fastigate, very dense.—Northern coasts.

Var. c. *uliginosus* Le Gall (var. *planifolius* Moss non Schur; *R. elongatus* Trimen & Ley, non Gussone). Leaves narrow lanceolate, often tapering at both ends, flat (not crisped). Panicle lax with ± leafy whorls which are remote below. Valves elongate, deltoid, subacute. Rare, on estuarine mud by Thames, Wye, Medway and Shannon.

Var. d. *robustus* Rech. pat. Plant very robust, simulating *R. Patientia*. Leaves broad lanceolate, coarse. Panicle very large. Valves very large (c. 6 × 6 mm.), thick, margin often repand or denticulate. Rare, probably always adventive.

Life History. *R. crispus* probably germinates in any month of the year unless conditions are very cold or very dry. In my cultures this has taken place in February, March, April, May, June and August. It seems usual for germination from any batch of seed to be intermittent, and this feature is more marked with autumn sowings than with seed sown in the spring. No resting period appears to be necessary,

and I have had seedlings appear from fruits which had been gathered from the parent plant only 12 days earlier. Vitality is said to be retained for very long periods under natural conditions; for at least 40 years (Darlington, *Amer. Journ. Bot.*, 9, 266) or 60 years (Salisbury, *Nature*, 149, 596, May 30, 1942). Using fruits from my Herbarium of three different gatherings only 15 and 17 years old, I have been unable to induce any germination, but seeds 10 years old germinated freely. It is stated by Skene (*Biology of Flowering Plants*, 426, 1926) that *R. crispus* is amongst the plants with seeds which "can germinate only in light or have their germination promoted by illumination." Of three of my experiments this was true, the results being as follows:—

				Germinated in	
				(a) Light.	(b) Dark.
Experiment 1	...	...	...	10	None
do. 2	...	...	...	10	1
do. 3	...	...	...	9	1

(10 fruits were used in all cases.)

Two other experiments gave very different results. In both cases the material used was var. *littoreus*. The results were as follows:—

				Germinated in	
				Light.	Dark.
Experiment 4	...	...	...	9	9
do. 5	...	...	...	10	9

The results were not influenced by age of the seed or any other factor that I have been able to deduce, and I think it very probable that dependence on light for germination varies in the different ecotypes of the species.

In my rather crowded garden cultures it took the plants about a year to reach maturity, but the period is undoubtedly shorter under favourable natural conditions. For example a piece of ground at Streatham Fire Station was thoroughly dug over and cleared in October 1938. Seedlings were noticed in May, and had leaves 30 cm. long by the end of June; by September they had flowered and fruited.

In normal years fresh green leaves appear during the third week of March, and die off at the time the plants pass into fruit. About half the plants in most populations die after fruiting, the remainder put forth occasional ill-formed small leaves during mild spells in the winter, and fully formed ones arise laterally from the crown the following spring.

It is stated by Ridley (*The Dispersal of Plants throughout the World*, 224, 1930) that according to Guppy the fruits of *R. crispus* float for one to six months, and according to Praeger for as long as 15 months. In my own experiments germination has usually occurred at much shorter intervals and only the empty valves have been left floating. In two cases fruits of the conspicuously trigonulate var. *littoreus* remained

100% floating for 2 and 5 months respectively, but the smaller tubercled inland plants have always started to sink much sooner. In any case the period for which they float is long enough for the plant to be dispersed a considerable distance by water. The fruits of *R. crispus* are probably dispersed by wind, water and by animals.

Flowering usually commences in the first week of June in the south of England and continues until severe frosts set in. Most fruit matures in July and August, but it continues until November.

Distribution. Native; in grass- and water-meadows, pond- and stream-sides, waste places and roadsides, cultivated ground including temporary leys, on estuarine mud (as var. *uliginosus* Le Gall) and dune-slacks, beaches and sub-maritime embankments (as var. *littoreus* Hardy). Abundant throughout the British Isles, and recorded for every vice-county. The most ubiquitous of all British Docks, and scheduled as a weed injurious to agriculture.

Distribution abroad. Native throughout Europe and most of Asia, and now well established in most other parts of the world.

618/4. *R. ELONGATUS* Trimen, *Journ. Bot.*, 11, 237, 1873, non Gussone.

Specimen typical of the plant intended by Trimen: 17, Surrey; Thames-bank between Putney and Hammersmith Bridges, July 7, 1873, marked "conf. *R. elongatus* Gussone" in Trimen's handwriting, H. Trimen (Hb. Mus. Brit.).

Exsicc. 17, Surrey; Thames-side between Putney and Hammersmith, July 28, 1875—not good examples (Hb. Syme); cultivated by H. C. Watson, July 1874, from root of plant named by Warren and Newbould brought from Thames-side above Putney in autumn of 1873 (Hb. Syme); cultivated by H. C. Watson from seed of Putney Dock sown in 1874, root-leaf September 2, 1874, fruiting panicles 1875 (Hb. Watson); by the Thames between Putney and Hammersmith Bridge, June 29, 1920—(immature), C. E. Britton (Ref. 2199) (Hb. Mus. Brit.); estuarine mud near Mortlake, July 1, 1933—(immature), Lousley (Hb. Lousley); estuarine mud above Kew Bridge, July 1 and August 17, 1933, Lousley (Hb. Lousley).

Trimen's plant differs from *R. crispus* var. *arvensis* Hardy in the linear-lanceolate radical leaves which are plane and entire, not crisped, and attenuated at the base into a long petiole. The panicle is lax, with the whorls distant and leafy below, and the valves are rather elongate, one with a tubercle, the other two naked or with minute tubercles which are little more than a thickening of the mid-rib. The foliage has been said to be "markedly glaucous" (*B.E.C. 1920 Rep.*, 247, 1921), but this I believe to be due to the thin film of fine mud which when dry gives a pseudo-glaucous appearance. In ripe fruit the characteristics of the plant largely disappear, and hence mature material has very seldom been collected. C. E. Salmon (*Fl. Surrey*, 569, 1931) states that "The acutely triquetrous angles of the nuts appear to be distinct from the trigonous angles in *crispus*," and also that they are

reddish-brown instead of dark-brown. Careful examination of my own material fails to reveal the slightest difference between the nuts of the two plants.

Trimen's *elongatus* has been found during the last eighty years at intervals from Putney to just above Kew Bridge. As Pugsley remarks (*Watson B.E.C. 1923/4 Rep.*, 259, 1924) it is confined to the tidal mud-banks and does not grow on the waste-ground above the river-wall. At the three places where I have seen it the plant grew on the inner side of clumps of *Scirpus carinatus* (Smith). Reconstruction of the river-wall destroyed the colonies known to me, and I have not seen it since 1938.

The Thames-side plant remains substantially unchanged by cultivation, both from root and from seed. Watson's results were preserved as dried material (see above), and I have grown the plant in garden soil for over two years without much change occurring (*Journ. Bot.*, 73, 259, 1935). So many variations of *R. crispus*, including even comparatively trivial ones, are now known to come true from seed and to remain constant in garden soil, that I now attach far less importance to this fact than I did formerly (*loc. cit.*).

With evident caution Trimen (*loc. cit.*) said that his Thames specimens "seem referable" to the plant described as *Rumex elongatus* by Gussone. Four years later, when discussing plants collected by Ley from Tintern in 1878 (cited above under var. "*planifolius*"), he wrote ". . . . Quite the same as the Thames plant. Whatever may be its proper name, it cannot be separated as a species from *R. crispus*" (*B.E.C., 1877/8 Rep.*, 18, 1879). Nevertheless, subsequent British writers including Druce (*Brit. Pl. List, ed. 2*, 101, 1928), Moss (*Camb. Br. Fl.*, 2, 139, 1914), Salmon (*Fl. Surrey*, 569, 1931), and the compilers of the *London Catalogue, ed. 11* (39, 1925), appear to have been quite satisfied with the identity of the British Plant with that of Gussone and with its specific grade. In earlier editions of the *London Catalogue* (*Ed. 8*, 1886; *Ed. 9*, 1895, and *Ed. 10*, 1908) and of Druce's *British Plant List* (*Ed. 1*, 1908) it was reduced to a variety of *R. crispus* L.

Gussone (*Plantae variores*, 150, t. 28, 1826) described *R. elongatus* as having root-leaves 4 to 6 inches long and scarcely one inch broad, oblong-lanceolate, sub-undulate, oblique at the base, long petioled. The stem leaves were sublinear, the lower whorls were leafy and remote, the valves cordate-ovate, only one of them tubercled, pale-green. His plant grew in marshes in southern Italy. The excellent plate depicts a plant rather similar to a form of *R. crispus* which occasionally occurs in marshes in this country (e.g. 28, W. Norfolk; Hockham Fen, July 7, 1934; Lousley (Hb. Lousley)). There is considerable resemblance to our Thames-side plant, which however is not identical.

*This work is variously cited as *Pl. Rar. Adriat.* (Moss), and *Pl. rar. Neapol.* (Ascherson & Graebner; Salmon). There is no reference in the title to Naples, which is the place of publication. Owing to the war I have been unable to refer again to this valuable book, and depend on my notes made some years ago.

In the following year Gussone described his plant again (*Fl. Sic. Prodr.*, 1, 443, 1827), and this time he also described *R. crispus*, which he said had tubercles on all the valves, and lanceolate instead of linear-lanceolate leaves. He cites Ddingoli as a station for his *R. elongatus*, and a specimen so labelled by Gussone in the Botanical Museum at Palermo has been examined by Murbeck. The latter discusses this specimen, which must apparently be regarded as the type of Gussone's species, in *Botaniska Notiser*, 1913, 227, where he points out, *inter alia*, that one of the leaves is not only finely crinkled on the margin but also distinctly undulate in the lower third. He concludes that he has no doubt that *R. elongatus* Guss. is identical with *R. crispus* L. No other specimen collected by Gussone appears to exist.

Later Gussone described his plant again (*Fl. Sic. Syn.*, 1, 431, 1842). He no longer gave *R. crispus* from Sicily, but said *elongatus* differed from it in having ovate and not cordate-obicular valves, only one of which is tubercled. Gussone's plant is kept up as a variety of *R. crispus* by Fiori (*N. Fl. Anal. Ital.*, 1, 402, 1923). Italian botanists are best able to judge whether *elongatus* is worth retaining as a variety in their own Floras, but I am convinced that this plant of mountain marshes in the Central Mediterranean area is not to be identified with our plant of tidal estuarine mud.

Neither is our plant *R. Turcicus* Boissier & Balansa ex Boissier (*Diagn.*, Ser. 2, No. 4, 79, 1859) if one can judge from the dense panicles and larger fruits of specimens grown from Balansa's seed (Hb. Kew).

I sent Thames-side material to Dr Rechinger in 1933 and he replied "*R. elongatus* Guss. is a synonym of *R. crispus* L.; your specimens belong perhaps to an alien type of this species which I do not know exactly." Specimens of the same gathering were also sent to Dr Danser who wrote "*R. crispus* L. (mud forms often have little crisped leaves)" (*Watson B.E.C. 1933/4 Rep.*, 232, 1934).

The Thames "*elongatus*" appears to be correctly identified with *R. crispus* L. var. *uliginosus* Le Gall (*Fl. Morb.*, 500, 1852) of which I have quoted the original description above. As already stated I think the Tintern plants which Trimen and Ley called *elongatus*, although less convincing, should also be assigned to var. *uliginosus* Le Gall. There seems no valid reason to regard the plant of either locality as adventive.

618/5. *R. ALPINUS* L., *Sp. Pl.*, 334, 1753.

Icones. Eng. Bot. Suppl., t. 2694; Moss, *Camb. Br. Fl.*, 2, t. 141, 1914; Butcher & Strudwick, *Furth. Ill.*, t. 320, 1930 (panicle too lax, marginal undulation of valves exaggerated).

Esicc. 89, E. Perth.; Kirkmichael, Lousley (245). 90, Angus; Afflochie near Brechin, Lousley (91).

Linnean specimen. Hb. Linn., No. 35, labelled "*alpinus*" in the handwriting of Linnaeus and "H.U." (Hort. Upsala). This sheet bears one small leaf, and a small spike of flowers, and is undoubtedly our plant.

R. alpinus is well known under the popular name of Monk's Rhubarb, and should present no difficulty in identification. The extensively creeping rootstock at once distinguishes it from all other Docks (Lapatha) found in Britain with the exception of the very thick-leaved *R. cuneifolius*. The very dense and fusiform panicle, and thin, ovate entire valves devoid of tubercles might lead to confusion with *R. domesticus*, but the valves are truncate rather than subcordate at the base, and the leaves are very different.

The considerable size of the radical leaves (20-40 × 20-35 cm.) is seldom revealed in the small specimens selected for the Herbarium, which, however, usually illustrate the thin texture, orbicular or broad-ovate outline, deep cordate base, obtuse apex and entire margins. They may thus be distinguished from the less rotund, less obtuse basal leaves of *R. confertus* Willd. (cf. *B.E.C. 1938 Rep.*, 149, 1939). On one occasion I was taken to see the thicker, more pointed, coarser-veined leaves of a Garden Rhubarb (*Rheum* sp.) which two botanists had collected as *R. alpinus*.

Life History. From the membranous nature of the valves the fruits would appear to be wind-distributed, but in this country new plants perhaps seldom arise from seed, and very rarely at any distance from the parent. In water the fruits soon sink; of 10 which were placed in water on November 19th, 1938, only one remained floating on the third day, and that one sunk on the fifth day. Germination has occurred in my southern garden in April and September. No resting period is necessary since seed gathered on July 28th, 1938, germinated just over a month later, but germination is slightly intermittent, for some of this same sowing did not sprout until the following spring. Owing to shading, competition between the seedlings was very keen. Hegi (1913, 173) states that the seeds remain viable up to 13 years.

Monk's Rhubarb is undoubtedly always a relic of cultivation in Britain, but it often persists for very long periods. Several writers agree in stating that it has been introduced in order to obtain the large leaves for the purpose of wrapping round butter, but its presence at several localities connected with monasteries suggests that it may also have been planted for medicinal purposes, and Dunn (*Alien Fl. Brit.*, 166, 1905) states that it was formerly cultivated in Britain for its roots, which were apparently used medicinally. On the continent the young leaves have been used as salading or spinach, the larger leaves as fodder or pig-food, and medical uses include the application of fresh leaves to body-sores. Once *R. alpinus* is established the creeping rootstock makes it most difficult to eradicate. Thus, while it is most often found near farms and cottages, some of its stations are on stream-sides or roadsides at some distance from human habitation. At such places it is sometimes accompanied by other introduced species.

Distribution. *R. alpinus* occurs in hilly districts from Staffordshire and Derbyshire northwards. It has also been recorded from a few southern vice-counties. I have seen voucher Herbarium material as

follows, the vice-counties in which I have seen the plant growing being marked with an exclamation mark:—

- 39, Staffs; Near Cheadle, 1923, Masefield (Hb. Kew).
 57, Derby; One Ash Grange near Money Ash, 1832 (Hb. Syme).
 64, Mid-West Yorks.; Adel, Leeds, 1896, Wheldon (Hb. Wales).
 70!, Cumberland; Mossdike Farm, Mungrisdale, 1937, Lousley (Hb. Lousley).
 72, Dumfries; Grierson (Hb. Syme).
 85!, Fife; Newhaven to Inverkeithing, 1839, Graham (Hb. Cantab.).
 87!, W. Perth; Near Callandar, 1844, Babington (Hb. Cantab.).
 88!, Mid-Perth; Methven Hill, 1888, Hanbury (Hb. Hanbury).
 89!, E. Perth; Kinnaird Burn, Moulin, Brebner (Hb. B.-W.).
 90!, Angus; Roadside on the highway from Forfar to Montrose, 1915, Marshall (Hb. Marshall).
 92 or 93, Aberdeen; Garden near Stricken, 1917, H. M. Fraser (Hb. Kew).
 94, Banff; Near Portsoy, 1865, Bisset (Hb. Cantab.).
 95!, Moray; Brodieshill near Forres, Lousley (89).
 98, Argyll; Roadside near Glen Lane (doubtless Glenlean, Clachaig, intended), 1862, Hooker (Hb. Kew).
 99, Dumbarton; Near Helensburgh, Hooker (Hb. Kew).

In my experience the plant has its headquarters in East-, Mid- and West-Perthshire and Kinross, in which vice-counties it has been seen in numerous places. In altitude it ranges from 200 ft. at Leitchhill, Mid-Perth., to 1100 ft. near the Spital of Glenshee, East Perth. On roadsides it is seldom seen in flower, perhaps owing to the cutting of roadside vegetation, but more probably owing to lack of moisture since many Scottish roadsides are uncut, and it flowers and fruits freely enough by streamsides. Hegi (*l.c.*) says that it is an ammonia-loving plant, but it shows no great affinity for muck heaps in Britain.

618/6. *R. obtusifolius* L., *Sp. Pl.*, 335, 1753.

This species is discussed in some detail in my previous paper (*B.E.C. 1938 Rep.*, 123/8, 1939). There is an important correction to the illustration of the valves there given, of which I did not see a proof. This was reduced from my original drawings, and the actual magnification is about $\times 6$, not $\times 10$ as labelled—the scale in millimetres is correctly reduced.

Life History (of subsp. *agrestis* (Fries) Danser).

Germination has occurred in my cultures from the end of April until mid-June, and again in September. It seems to occur most freely in May. Seeds which have remained on the parent plants throughout the winter germinate almost immediately when sown in spring. Plants take a year to reach maturity, and live to fruit for several years. After fruiting the crowns often produce large leaves in the autumn, and some leaves are to be seen almost throughout the winter months, fresh

leaves appearing in abundance about the end of March or beginning of April. Flowering commences in mid-June and continues until late autumn.

Fruits placed in water soon sink and may germinate when sunk, as indeed they will also in the dark. The teeth on the margins of the fruits are probably useful in attaching them to mud adhering to animals or the boots of man.

R. obtusifolius is an agricultural pest like *R. crispus*, but its life-history differs considerably. Whereas *R. crispus* is a short-lived perennial germinating freely in most months of the year, *R. obtusifolius* is a much longer-lived perennial with germination occurring mainly in the spring.

618/7 & 8. *R. SANGUINEUS* L., *Sp. Pl.*, 334, 1753.

See *B.E.C. 1938 Rep.*, 128-132, 1939, for synonymy, exsiccata and discussion of subspecies.

Var. a. *PURPUREUS* Stokes.

Icones. Eng. Bot., t. 1533. Moss, *Camb. Br. Fl.*, 2, t. 148, 1914.

I am now convinced that the Witley plant discussed in the first part of these *Notes* (*loc. cit.*, 130) belongs to this variety, and that in cultivation the purple colouring of the veins becomes as well marked as in the Clifton, Guernsey and South London Botanical Institute plants. Material collected by myself and W. H. Spreadbury in April 1938 has been grown in our respective gardens through several generations and has remained constant apart from some intensification of the colour of the veins. As a final check on the constancy, seed from Spreadbury's plants were sown by me on April 16th, 1942, and immediately on germination, a month later, purple lines and blotches were conspicuous on the hypocotyls, cotyledons and young leaves. Moreover, one of my plants transplanted to the garden of the South London Botanical Institute soon became indistinguishable from the *purpureus* which has long been cultivated there.

Life History. Of 10 fruits placed in water on November 19th, 1938, 8 had sunk within eight hours, and the other 2 within four days. It therefore appears improbable that the plant is distributed by the agency of water. Germination probably occurs at any time when conditions are mild and moist—I have noted it in February, March, April, August and September—and no resting period is necessary. Seed 13 years old failed to germinate at all.

Var. b. *VIRIDIS* Sibthorp.

Icones. Moss, *Camb. Br. Fl.*, 2, t. 150, 1914 (*ut R. condylodes*).

As stated in my earlier paper (*loc. cit.*, 133) this plant is very easily distinguished from the normal form of *R. conglomeratus*, but immature or intermediate forms are frequently difficult to name. The following comparison should therefore prove useful:—

R. sanguineus L. var. *viridis* Sibth.

Stem usually almost straight.

Lower leaves usually rather bright green when young.

Panicle rather strict with branches making an angle of less than 20° (-45°) with the main stem.

Only the lowest whorls subtended by leafy bracts.

One fruiting valve bearing a light brown or reddish globular tubercle about 1.5 mm. in diameter, the other two valves devoid of tubercles or with them less developed than the primary one. The primary tubercle occupying almost the whole width of the valve, but less than $\frac{1}{2}$ its length.

Nuts 1.25-1.75 × c. 1 mm., dark brown.

R. conglomeratus Murr.

Stem usually distinctly flexuous.

Lower leaves usually rather dull green when young, often panduriform.

Panicle open with usually numerous branches making an angle of 30°-90° with the main stem.

Whorls subtended by leafy bracts for about $\frac{2}{3}$ of the length of the branches.

All three fruiting valves bearing a large (1.25-1.75 × .5-.75 mm.) oblong swollen tubercle, which is usually more than twice as long as broad and at maturity often exceeds $\frac{1}{2}$ the length of the valves.

Nuts larger (1.75-2 × 1-1.25 mm.), reddish brown.

Life History. The fruits float rather longer in water than those of *purpureus*. For example, 10 fruits were placed in water on November 19th, 1938; 5 of them were still floating eight days later, all but one had sunk at the end of thirty days, but one remained floating until the following June 3rd. Germination has occurred in my garden in March, April, May, June, August and September, but probably occurs in nature in the largest numbers towards the end of April. Thus on May 10th, 1942, young seedlings were seen in myriads in the rides of the London Clay woodlands of Bookham Common, Surrey, and three weeks later they were numerous by a damp track on Buckland Hills. I have only once noticed wild seedlings in autumn. No waiting period is necessary before germination occurs.

618/9. *R. CONGLOMERATUS* Murray.

For synonymy, varieties, etc., see *B.E.C. 1938 Rep.*, 192, 1939.

Icones. Eng. Bot., t. 724; Moss, *Camb. Br. Fl.*, 2, t. 147, 1914 (as *R. glomeratus* subvar. *divaricatus*).

Additional Exsicc. 15, E. Kent; Hythe (283). 17, Surrey; Littleworth Common. 26, W. Suffolk; Risby (140).

Life History. There can be no doubt that the fruits are distributed by the agency of water, in which they are able to float for very long periods. For example, of 10 fruits placed in water on November 19th, 1938, all were still floating when the first two germinated on the following June 10th. Round the margin of ponds *R. conglomeratus* may often be seen to form a definite strand-line on one side—this presumably being the side and horizon to which the floating fruits are drifted by the prevailing winds or currents in autumn and winter. Light appears to be essential for germination which takes place in May and June.

618/10. *R. RUPESTRIS* Le Gall.

This species was discussed in *B.E.C. 1938 Rep.*, 134/6, 1939. To the distribution there given must now be added:—

9, Dorset; West of Lyme Regis, but just within the county boundary, 1923, A. W. Graveson (Hb Graveson). The specimen is rather young, but there is no doubt that it is *R. rupestris*. Mr Graveson took me in 1939 to the place where he had collected the plant, but building was taking place and we were unable to refind it.

The entry for v.-c. 9 in *Comital Flora* is probably based on the record for Ringstead Bay, Dorset, Green, teste Linton in *B.E.C. 1917 Rep.*, 126, 1918.

Life History. As might be expected from the size of the tubercles, the bouyancy of the fruits is very great. It is extremely rare for a fruit to sink in water, and repeated experiments have shown that it is usual for every fruit to remain floating until germination occurs. When the species occurs in dune-slacks which fill with water during the winter it commonly grows in "crescent-shaped communities" on the side of the slack to which the floating fruits are driven by the prevailing winter winds (Gilmour, *Journ. Bot.*, 71, 16, 1933; Rilstone, *Ibid.*, 107; Lousley, *Journ. Bot.*, 73, 259, 1935).

R. rupestris occurs frequently on rocky shores and at the base of cliffs, and since water-distribution in such cases would be by salt-water, some experiments were undertaken to ascertain whether contact with sea-water destroyed the viability of the fruits. For this purpose fruits collected at Kenfig during the previous summer were sown in pots on November 12th, 1938, after 10 of them had been shaken up with sea-water for 68 days, and another 10 shaken up with fresh water for a similar period to act as a control. Of the 10 which had been in sea-water, 2 germinated the following May, while 3 of those which had been in fresh water germinated about six weeks earlier. On March 5th, 1939, I planted 18 fruits which had been floating on sea-water for 181 days, and 10 germinated during the summer. On the same day I planted 36 fruits which had spent the same time floating on fresh water, and of these no less than 32 eventually germinated. From these limited experiments it appears that sea-water has some effect in destroying viability, but that even after six months over 50% of the seeds germinated. It therefore seems probable that *R. rupestris* is distributed by the fruits floating on the sea—a conclusion which is confirmed by the distribution of the plant on the uninhabited islands of the Scillies.

Germination has occurred in my London garden at various times from April 1st to early June. It can occur in darkness, but is greatly stimulated by light. The characteristic glaucous hue of the leaves is developed when they are very young.

618/11. *R. PULCHER* L.

This species was discussed in *B.E.C. 1938 Rep.*, 136/9, 1939, to which the following notes are supplementary.

Subsp. EU-PULCHER Reehinger fil.

In this, the common form of the species in Britain, leaves which are not constricted into the panduriform shape are more frequent than I formerly supposed. Plants grown in garden soil both at Streatham and at the South London Botanical Institute, from seed of wild plants with well marked panduriform leaves, produced leaves which showed only the slightest constrictions. It seems that in nature the panduriform leaves are best marked on dry sandy or chalky soils, and less evident when the plant grows in moister habitats.

Life History. In water the fruits sink within a very short time, and they are therefore most unlikely to depend on water-carriage for dispersal. For example, of 10 fruits placed in water on November 19th, 1938, 5 had sunk within 8 hours, 4 more 15 hours later, and the last one sunk on the third day. As this species possesses tubercles the result was rather surprising, but repeated experiments produced similar results. Germination takes place in the absence of light but is delayed.

Subsp. EU-PULCHER Reehinger fil.

I have seen material from the following v.-cc. in addition to those given in *B.E.C. 1938 Rep.*, 137, 1939:—v.-cc. 5, 7, 13, 28.

Subsp. DIVARICATUS (L.) Murbeck.

Additional material has been seen as follows:—

34, W. Gloucester; Wapping Wharf, Bristol, 1940, Brenan (6360) (Hb. Brenan).

61, E. Yorks.; King George Dock, Hull, 1937, Sledge (Hb. Sledge).

618/12. *R. PALUSTRIS* Smith. See *B.E.C. 1938 Rep.*, 139/142, 1939.

As this species is very frequently confused with *R. maritimus* the following translation of the excellent table of contrasting characters given by Murbeck (*Bot. Not.*, 1913, 211/2) should prove useful.

R. palustris.

Fruit-stalks rather thick and rigid; most of them not longer than the fruit valves.

Outer perianth-segments herbaceous, somewhat coarse, longer than $\frac{1}{2}$ the diameter of the inner and with claw-shaped forward-curved apices.

Inner perianth-segments with narrower, but blunter, almost ligulate apices; their teeth rigidly setaceous and shorter than the segments; tubercle rather strongly elevated, ovate, obtuse in the front.

Anther-length 900-1300 μ .

R. maritimus.

Fruit-stalks fine and weak; most of them longer than the fruit-valves.

Outer perianth-segments thin, almost membranous, not longer than $\frac{1}{2}$ the diameter of the inner, horizontally spreading or weakly reflexed.

Inner perianth-segments with more triangular, sharper apices; their teeth delicate, of almost hair-fineness, all or at least some of them longer than the segment; tubercle less elevated, narrow lanceolate, acute in front.

Anther-length 450-620 μ .

All these characters have been tested by application to British plants and confirmed. Those referring to the outer perianth-segments and

length of the anthers are less easy of application than the others. Murbeck gave the measurements of anthers from dried material; they would probably be rather greater in each case if fresh anthers were measured.

Life History. The bouyancy of the fruits of *R. palustris* is very great, and on two separate occasions ten fruits all remained floating for over a year. Water-carriage must play a great part in their dispersal. In my garden germination has occurred in April, May, June, August and September. It occurs, but is greatly retarded, in the absence of light. Plants from seed sown in March 1938 flowered in 1939 and again in 1940: those from seed sown in August 1938 did not flower until 1940, and died immediately afterwards. On April 16th, 1939, at Southease, East Sussex, I saw fresh leaves on a crown which had fruited the previous season, and therefore feel convinced that in nature as in cultivation *R. palustris* may behave as a rather short-lived perennial, though the biennial state is more frequent.

Distribution. In addition to the v.-cc. already given I have seen material from v.-cc. 20, 26, 53, and 56.

618/13. *R. MARITIMUS* L. See *B.E.C. 1938 Rep.*, 142/5, 1939.

Life History. The fruits are certainly dispersed through the agency of water, and almost certainly also with the assistance of animals and man. In water they remain floating for a considerable time. Thus of 10 which were placed in water on November 19th, 1938, 2 sank after 35 days, and another on the 132nd day; the remainder continued floating for over a year. Germination has been observed in April, May, June, July, August and September: it occurs freely when the fruits are floating in tap-water, and is not affected by the absence of light. It is very intermittent, as one might expect of a plant which lives on such places as pond-margins which are not exposed throughout the summer every year. Thus of 60 seeds sown in March 1938, 20 had germinated by April 28th, about another 25 germinated in June after the pot which had dried up had been stood in water, and another 10 appeared in 1939. Under favourable conditions plants can undoubtedly persist through the winter: I have photographed the colony at Wennington embedded in thick ice on December 18th, 1938, and fresh and vigorous the following March 12th. In my garden a plant lived through the severe winter of 1939-1940 when it was subjected to a temperature almost continuously below freezing point from mid-December to February 4th. This ordeal did not prevent it from fruiting the following August. Germination can occur a few days after the fruits are removed from the parent plant.

Distribution. Pending publication of the full list of voucher material I have seen for the vice-comital distribution, it is desirable that the following should be put on record:—

*19, N. Essex; Dovercourt, 1877, Babington (Hb. Cantab.), and 1905, Sherrin (Hb. S.L.B.I.)—N.C.R.

20, Herts.; Totteridge, 1912, C. S. Nicholson (Hb. London)—to substantiate N.C.R. in *B.E.C. 1938 Rep.*, 145, 1939.

22, Berks., or 12, N. Hants.; Silchester Amphitheatre, Woods (Hb. Borrer), thus confirming Bicheno's record which is bracketed in Druce's *Fl. Berks.*, 430, 1897. The locality is well within the present boundary of Hampshire, but as it is consistently claimed for Berkshire by Druce it is likely that the county boundary here has been revised since Watson established his vice-counties.

618/18. R. BROWNII Campdera, *Mon. Rumex*, 64, 81, 1819.

Icones. Hayward & Druce, *Adv. Fl. Tweedside*, 210, fig. 64, 1919; Dammer in Engler-Prantl, *Naturl. Pflanzenfam.*, 3, 1a, 17, t. 8, fig. R, 1892; Rechinger, in *O.B.Z.*, 84, 49, t. 2, fig. 2, 1935.

Essicc. R. Brown, No. 3007 (Hb. Kew)—teste Rechinger.

Perennial. Stem 25-60 cm., thin, rather flexuous, simple or slightly branched. Lower leaves narrow ovate or lanceolate, usually strongly constricted a little above the cuneate or cordate base, 5-17 cm. long, apex acute or obtuse, margin finely crisped. Upper cauline leaves much narrower and acute, often linear-lanceolate, sometimes hastate. Whorls remote, few (-6) flowered. Valves (2.3-3.5 × c. 2 mm.), deltoid, reticulated, often reddish, not tubercled, with 3-5 hooked teeth on each side usually exceeding half the width of the valve, the mid-nerve drawn out into an excurrent hooked apex.

R. Brownii is the only Australian species which belongs to the section *Axillares*, characterised by habitually producing secondary inflorescences from the axils of the primary shoot (see below under *R. salicifolius* aggr.).

The following material has been seen from Britain:—

- 63, S.-W. Yorks.; Waste ground, Bradford, September 11, 1917, J. Cryer (Hb. Druce)—*B.E.C. 1917 Rep.*, 246, 1918, and September 1921, G. C. Druce (Hb. Druce).
- 64, Mid-West Yorks.; Waste ground at Gibson's Tannery, Meanwood, Leeds, September 14, 1915, September 1916, August 3, 1918, E. C. Horrell (Hb. Sledge and Hb. Druce)—*B.E.C. 1916 Rep.*, 501, 1917; 1917, J. Cryer (Hb. Druce)—*B.E.C. 1917 Rep.*, 246, 1918; September 1921, G. C. Druce (Hb. Druce). See also Lees, Cheetham & Sledge, *Suppl. Yorks. Fl.*, 94, 1941.
- 79, Selkirk; Galafoot, near Galashiels, August 26, 1908 (Marked plentiful, 1908-1909-1910-1911-1912-1913), I. M. Hayward (Hb. Hayward & Hb. Druce); Galashiels, August 19, 1908, Jas. Fraser (Hb. S.L.B.I.).
- 80, Roxburgh; On the banks of the Tweed from the junction of the Gala to Melrose, "plentiful 1908, September 1909, 1910, 1911-12," I. M. Hayward (Hb. Hayward).
- 79, Selkirk, and 80, Roxburgh; Banks of Gala and Tweed, August-September 1911, "noticed 4 successive years," I. M. Hayward (Hb. Druce)—*B.E.C. 1911 Rep.*, 120, 1912. First recorded from Galashiels by Miss Hayward in *B.E.C. 1908 Rep.*, 350, 1909; but apparently found a few days earlier by J. Fraser (see above)..

An account of its distribution will be found in Hayward & Druce, *Adv. Fl. Tweedside*, 211, 1919; I have failed to find it in searches in two recent years.

R. Brownii was thus found on Tweedside for at least six seasons (1908-1913), at Bradford in 1917 and 1921, and at Meanwood it probably persisted for at least seven seasons (1915-1921). The deep, horizontal root facilitated its spread and persistence.

On Tweed-side it was introduced in imported wool to which the hooked fruits had clung while the wool was still on the sheep's back. In Hb. Hayward there is a packet containing wool with masses of embedded fruits. Another sheet is marked "Found in New Zealand wool a piece of this *Rumex*," a statement which is of interest as the species is probably rare in New Zealand (cf. Rechinger, *loc. cit.*, 37).

In April 1912 Miss Hayward planted fruits extracted from the 1911 wool-clip, and dried one of the seedlings and mature plants which resulted. She found fruits in wool from Queensland and Adelaide, and the species flowered on Tweedside from September to November. The width and shape of the leaves varies considerably in British material, and indeed they do so in specimens from countries where it is native.

Distribution abroad. Native in Australia, Tasmania, Java, and probably New Zealand. Adventive in Germany and Switzerland, probably introduced in wool in all cases.

618/19. *R. SALICIFOLIUS* Weinmann in *Flora* 4, 28, 1821.

This species was recorded as new to Britain by J. A. Wheldon in *Journ. Bot.*, 51, 280, 1913, and since that date the name has frequently appeared in our literature. Weinmann's name was used until recently to cover a considerable number of species which have recently been clearly defined, illustrated and arranged by Rechinger fil. (*Field Mus. of Nat. Hist., Bot. Series*, 17, No. 1, 1-151, 1937). None of the British material appears to be conspecific with *R. salicifolius* Weinm. sensu Rech. (of which Rechinger has examined the type specimen in Copenhagen Herbarium), and probably all, or almost all, of it belongs to *R. triangulivalvis* (Danser) Rech. fil. (see below). A third segregate, *R. altissimus* Wood, has been recorded, but probably in error (see below).

The three plants may be distinguished by the following key:—

1. Leaves ovate-lanceolate, broadest below the middle; valves more than 4.5 mm. long *R. altissimus* Wood.
1. Leaves usually narrower, lanceolate or linear-lanceolate; valves smaller, usually less than 3 mm. long.
 2. One valve only bearing a tubercle which occupies nearly the whole breadth of the valve; valves only 2.3-3 mm. long *R. salicifolius* Weinm. (restr.).
 2. Valves usually all bearing tubercles which are much smaller (the margin of the valve on both sides of the tubercle at least as broad as the tubercle; valves about 3 mm. long *R. triangulivalvis* (Danser) Rech.

618/19. (Substituted name.) *R. TRIANGULIVALVIS* (Danser, *Nederl. Kruid. Arch.*, 1925, 415, 1926) Rechinger fil.; *Fedde Repert.*, 40, 297, 1936, and *Field Mus. Nat. Hist., Bot. Ser.*, 17, No. 1, 58, 1937; *R. salicifolius auct. mult.*—non Weinm.

Icones. Danser, *loc. cit.*, 415, t. 1, fig. 1 and 2; Rechinger, *loc. cit.*, t. 10.

Esicc. 17, Surrey; Eastfields, Mitcham, 1928, Lousley (F.22) (Hb. Mus. Brit.; Hb. S.L.B.I.; Hb. Lousley, teste Rechinger; etc.).

Perennial, 30-50 cm., with several erect flexuous stems which are often decumbent at the base. Leaves all of a characteristic pale green colour, of papery texture when dried, linear-lanceolate, gradually narrowed to both ends, acute, shortly petioled or sessile. Panicle with a few simple arcuate-ascending branches; as each panicle passes into fruit a fresh flowering shoot grows up from a lower axil and eventually exceeds the primary panicle, only to be exceeded in turn by a third panicle—and so on. Whorls congested above, distant below, the lower subtended by long linear leafy bracts. Fruiting valves c. 3×2 mm., rather thin, olive, deltoid, entire or finely denticulate, reticulate; all three valves bearing an elongate muricate tubercle, which occupies only about one quarter of the total width of the valve.

The production of secondary panicles from the axils of leaves below the primary panicle is a very conspicuous feature of this species which does not occur in any of our native Docks. The character is typical of section *Axillares* Rechinger, *loc. cit.*, 6, one of the two primary sections into which he divides the subgenus *Lapathum*, and which is mainly represented by North American species. Unlike most Docks, *R. triangulivalvis* does not develop radical leaves after the seedling stage.

Life History. In my garden the species germinates freely in April and May, and fruits in August and September of the same year. It then continues as a perennial—one culture has fruited annually for four seasons and is still alive. Ten fruits from my Eastfields gathering all germinated when sown five years after collection.

Occurrence in Britain. I give below all the specimens and records which I have seen, but it is possible, though unlikely, that the list may include segregates of *R. salicifolius* aggr. other than *R. triangulivalvis*. Specimens have been seen only from those localities for which herbaria are cited.

1a, Scilly; Tresco (Hb. D.-S.), unlocalised, 1926, Miss Dorrien-Smith (Hb. Kew).

3, S. Devon; Plymouth Dockyard, 1930, German (Hb. Kew); Sampford Spiney (Huckworthy), German—*Fl. Devon*, 571, 1939.

9, Dorset; Swanage Camp, 1917, Green (Hb. Druce)—*B.E.C. 1917 Rep.*, 126, 1918.

10, Isle of Wight; Newport, 1929, Long (†Hb. Druce and †Hb. Lousley, teste Rechinger)—*B.E.C. 1927 Rep.*, 416, 1928; *1929 Rep.*, 239, 1930; and *1931 Rep.*, 759, 1932); Hort. ex Newport, 1929, Drabble (Hb. Druce & Hb. Mus. Brit.).

- 11, S. Hants.; Swaythling, 1918, Rayner (†Hb. Druce)—a forage introduction, *B.E.C. 1918 Rep.*, 398, 1919.
- 17, Surrey; Eastfields, Mitcham, Lousley (F.22) (†see above)—*B.E.C. 1934 Rep.*, 985, 1936; Thameside near Hammersmith, Brown—*B.E.C. 1922 Rep.*, 746, 1923; By Thames, Mortlake, 1932, Woodhead (†Hb. Woodhead).
- 18, S. Essex; Dagenham & Grays, Melville & Smith—*B.E.C. 1927 Rep.*, 453, 1928; Dagenham, 1937, Brenan (4078) (†Hb. Brenan); Tilbury, 1926, Melville (Hb. Wales).
- 19, N. Essex; Colchester, 1923, Brown (Hb. Druce & Hb. S.L.B.I.), the specimens are immature, and the leaves rather broad—*B.E.C. 1923 Rep.*, 403, 1924; Colchester, Druce—*B.E.C. 1924 Rep.*, 595, 1925.
- 20, Herts.; Hertford, Graveson (Hb. Druce)—*B.E.C. 1920 Rep.*, 146, 1921; Ware, 1928, Druce (†Hb. Druce)—*B.E.C. 1928 Rep.*, 757, 1929.
- 21, Middlesex; Temple Fortune, 1910, Cooper (Hb. Cantab.—as *R. elongatus* teste Moss); Uxbridge, Lady Davy—*B.E.C. 1921 Rep.*, 396, 1922.
- 22, Berks.; Twyford, 1924, Evans (Hb. Wales); Twyford Mill, 1925, Mrs Wedgwood (†Hb. Druce)—*B.E.C. 1925 Rep.*, 893, 1926; Didcot, 1927, Druce (Hb. Druce)—*B.E.C. 1927 Rep.*, 587, 1928, and *1929 Rep.*, 135, 1930.
- 23, Oxon.; Waste ground, Ifley Road, Oxford, 1900, Druce (Hb. Druce); Chipping Norton, 1921, Druce (Hb. Druce)—*B.E.C. 1921 Rep.*, 396, 1922; Port Meadow, Oxford, Gambier Parry—*B.E.C. 1925 Rep.*, 893, 1926.
- 25, E. Suffolk; Woodbridge, Shaw (†Hb. Druce)—*B.E.C. 1924 Rep.*, 595, 1925.
- 34, W. Gloucester; Baptist Mills, 1917, Sandwith—*B.E.C. 1932 Rep.*, 356, 1933; St Phillips, 1918, Miss Todd (Hb. Druce)—*B.E.C. 1918 Rep.*, 398, 1919; St Phillips, Sandwith—*B.E.C. 1919 Rep.*, 678, 1920; Avonmouth, Sandwith—*B.E.C. 1928 Rep.*, 757, 1929; Ashley Hill, 1936, Brenan (2825) (†Hb. Brenan).
- 39, Staffs.; Burton-on-Trent, Druce & Curtis—*B.E.C. 1926 Rep.*, 131, 1927; [but Burton-on-Trent, 1929, Druce (Hb. Druce)—*B.E.C. 1929 Rep.*, 135, 1930, is immature and certainly incorrectly named].
- 41, Glamorgan; Splott, Cardiff Docks, introduced with grain siftings, *B.E.C. 1925 Rep.*, 1023, 1926, and *1933 Rep.*, 725, 1934; Rubbish-heap, Cardiff E., Smith & Woodhead (†Hb. Woodhead)—*B.E.C. 1939/40 Rep.*, 293, 1942.
- 58, Cheshire; Ridge Hill, Stalybridge, 1914, Collier (Hb. Druce); By Mill, Birkenhead Docks, 1939, Miss Todd (Hb. Todd & Hb. Lousley).
- 59, S. Lancs.; Walton, Wheldon, collected 1912 (Hb. Mus. Brit.), 1913 (Hb. Mus. Brit. & Hb. Druce), and 1914 (Hb. Mus. Brit. & †Hb.

- Druce)—*Journ. Bot.*, 51, 280, 1914; *B.E.C. 1913 Rep.*, 335 and 495, 1914, and *1914 Rep.*, 159, 1915.
- 61, S.E. Yorks.; Hull Docks, 1922, Miss M. Cobbe—*B.E.C. 1922 Rep.*, 746, 1923.
- 69, Walney Isle, Miss M. Cobbe—*B.E.C. 1924 Rep.*, 595, 1925.
- 76, Renfrew; 77, Lanark; 99, Dumbarton; Recorded for these three v.-cc. by Grierson in *Glasgow Nat.*, 9, 44, 1931. There are specimens collected by Grierson in 1919 and 1920 in Hb. Druce—*B.E.C. 1920 Rep.*, 146, 1921. Glasgow, no collector given (†Hb. Druce). Grierson's specimens are likely to have come from Possil (v.-c. 77) or Bowling (v.-c. 99).
- 76, Renfrew; Newlands, Glasgow, J. R. Lee (Hb. Lee, teste Lee).
- 77, Lanark; Possilpark, J. R. Lee (Hb. Lee—immature, teste Lee).
- 83, Mid-Lothian; Slateford, 1920, Fraser (Hb. Druce)—*B.E.C. 1921 Rep.*, 396, 1922.
- H.21, Dublin; Dublin, Grierson—*B.E.C. 1919 Rep.*, 678, 1920.

Nearly all the published records included in the above appeared under the aggregate name *R. salicifolius*, and those which I am quite certain are *R. triangulivalvis* are marked "†" against the herbarium in which I have seen specimens. Of the North American species included in the aggregate name, only one other has appeared in Europe as an adventive—*R. albissimus* Wood, which has been found a very few times in Denmark and Sweden, whereas *R. triangulivalvis* has frequently been found in Sweden and Denmark, and less often in Norway, Holland, Switzerland, Germany, etc. In Britain the latter has occurred as an adventive about docks, railways, rubbish dumps, and once in a clover field. It is usually introduced with grain.

Distribution abroad. North America, throughout most of Canada and U.S.A. with the exception of the extreme north and south. Adventive in Europe (as above).

- 618/20. *R. PATIENTIA* L., *Sp. Pl.*, 333, 1753 (correcting citation in *B.E.C. 1938 Rep.*, 145, 1939).

This species is discussed in some detail in the first part of these *Notes*, to which the following records are additional:—

Subsp. *EU-PATIENTIA* Rech. fil.

- 5, S. Somerset; Well established in waste ground between Minehead and the Warren and also growing on the adjacent stony shore, June 17, 1942, Lousley (Hb. Lousley).

Subsp. *ORIENTALIS* (Bernh.) Danser.

- 17, Surrey; Ham Gravel Pits (where it has been known to Mr N. Y. Sandwith for several years), July 1942 (Lousley 120). It is possible that the plant has spread from here to the localities at Chiswick and Mortlake further down the Thames.

Life History. *R. Patientia* has germinated in April, May and August in my garden, and takes a year to attain the flowering state. Individual plants can live for at least five seasons (1938-1942), and may well have a much longer life.

Use. This species has long been used as a vegetable, the leaves being grown as an alternative to Spinach. The war having revived an interest in uncommon vegetables, the seed of *R. Patientia* is now (February 1943) being widely advertised for sale as "Herb Patience." It is not unlikely that an increase in its distribution in Britain may result!

618/21. *R. BUCEPHALOPHORUS* L., *Sp. Pl.*, 336, 1753.

Icones. Beck in Rohb., *Icones*, 14, t. 187, 1904; Coste, *Fl. France*, 3, fig. 3126, 1906; Heukels, *Plantenatlas*, 109, fig. 1, 1925.

Type Specimen. Herb: Linn. No. 21 marked "13. *bucephalophorus*" in the handwriting of Linnaeus.

Annual. Stems thin, ascending, often spreading at the base. Ground leaves spatulate; cauline leaves small, ovate or lanceolate, cuneate or attenuate at the base. Inflorescence a simple raceme, pedicels reflexed, much thickened towards the base of the fruiting perianth. Valves (2-4 × 1-1.5 mm.), with 2-3 teeth on each side, each with a minute swelling which is scarcely a tubercle.

Life History. In my garden seed germinated freely in April and May for several years, fruit appeared in June and July, and the plants died in early autumn. Three generations appeared from seed ripened by the earlier plants, and even the exceptionally cold winters experienced did not kill the seeds which remained in the soil.

Distribution. I have seen the following material:—

- 10, Isle of Wight; Newport, J. W. Long (Hb. Druce)—see *B.E.C. 1927 Rep.*, 416, 1928, and 1931, 759, 1932. Mr Long informs me that it appeared on two occasions.
- 20, Herts.; Ware, Druce (Hb. Druce)—see *B.E.C. 1917 Rep.*, 126, 1918.
- 41, Glamorgan; Barry, 1927, Druce (Hb. Druce) and R. L. Smith (Hb. Wales)—see *B.E.C. 1927 Rep.*, 416, 1928, and 1938, 81, 1939.

It has also been recorded from:—

- 76, Renfrew; Bishopston Coup, Grierson, *Glasgow Nat.*, 9, 44, 1931.
- 83, Mid-Lothian; Leith Docks, Fraser ex Grierson, *loc. cit.*

Material from Elland, v.-c. 63, September 1916, leg. E. C. Horrell (Hb. Sledge) so labelled, is not this species, but is insufficient for certain determination.

In this country *R. bucephalophorus* is a rare adventive.

Distribution Abroad. All round the Mediterranean coast, Canaries and Azores.

Dr Reehinger was working on the segregates of this very variable species in 1939, and after the war it may be possible to name the British material more precisely.

618/23. *R. HALOPHILUS* F. von Mueller, *Fragm. Phytogeogr. Austral.*, 4, 48, 1863-4.

This species is regarded by Reehinger as a synonym of *R. crystallinus* Lange. All the British material formerly referred to *R. halophilus* is undoubtedly *R. tenax* Rech. fil., which is discussed below.)

618/23. (substituted name) *R. TENAX* Reehinger fil., in *O.B.Z.*, 84, 40, 1935; *R. halophilus* auct. austral. p.p.

Icones. Reehinger *loc. cit.*, 49, t. 2, fig. 5 (from Roxburgh material collected by Miss Hayward in Hb. Kew).

This species has probably only been found once in Britain:—

80, Roxburgh: On an embankment by the side of the Tweed below Galashiels, August to September 1911, I. M. Hayward (Hb. Hayward, Hb. Druce, Hb. Kew). Fruits ripened well, and the material is very good. Thellung examined material in January 1914 and wrote, "*Rumex* cf. *halophilus* F. Muell. species mihi ex descr. tantum nota." The record as *R. halophilus* F. Muell. appeared in the *B.E.C. 1913 Rep.*, 335, 1914, where the county of origin is erroneously given as Selkirk. A description is given with the record in Hayward & Druce, *Adv. Fl. Tweedside*, 211, 1919.

R. halophilus is also recorded from Gibson's Tanyard, Meanwood in Lees, Cheetham & Sledge, *Suppl. Yorks. Floras*, 94, 1941, but I have seen no material and confusion with the very narrowed leaved form of *R. Brownii* which occurred there is to be suspected.

R. tenax bears some slight resemblance to *R. maritimus* L., but the remote whorls (internodes 3-4 cms.), the much fewer shorter teeth on the fruiting valves, and the elongated bright orange-coloured tubercles should prevent confusion.

Distribution Abroad. Known only from Australia (New South Wales and Victoria), whence it was doubtless introduced to Tweedside in wool.

618/24. *R. CUNEIFOLIUS* Campdera, *Mon. Rumex*, 95, 1819; *R. magellanicus* auct. angl. non Campdera, non Grisebach.

Icones. Reehinger fil., in *Arkiv f. Bot.*, 26a, 20, fig. 8 and t. 5, 1933.

Esicc. 41, Glamorgan; Kenfig Dunes (Lonsley 155).

Perennial with a long (> 1 metre) woody rhizome, which in sand spreads horizontally at about 35 cms. below ground level, at intervals sending up shoots which attain a height of (15-) 25 (-30) cms. Leaves obovate, obtuse, often cuneate at the base, margins finely crisped and crenate, all very coarse and leathery. Panicle congested with a few short simple branches, secondary panicles sometimes arising from lower axils after the primary one has passed in fruit. Valves 4.5 × 2.5-3 mm., ovate-deltoid, rather acute, entire, coriaceous, all bearing a large elongate tubercle, the surface of which is finely punctate.

R. cuneifolius was first recorded for Britain in *B.E.C. 1913 Rep.*, 335, 1914, from v.-c. 58, Cheshire; Wallasey, 1913, where it is incorrectly stated to have been found by Dr J. W. Ellis. (See below.) In 1919 it was found near Glasgow by R. Grierson and reported as *R. magellanicus* Grisebach "named at Kew" (*B.E.C. 1919 Rep.*, 574, 1920). From this date it was frequently mentioned in British literature as *R. magellanicus* even after Danser had corrected the identification. As shown below, *R. magellanicus* Campdera (with which Grisebach's plant is synonymous) apparently does not occur in this country.

Distribution in Britain. Recorded for the following v.-cc.:—

- 1, W. Cornwall; Phillack Towans, 1921, Thurston (Hb. Druce)—*B.E.C. 1921 Rep.*, 396, 1922 (near a mule camp), *1922 Rep.*, 621, 1923; 1934 and 1936, Lousley (Hb. Lousley); Thurston & Vigurs, *Suppl. Fl. Cornwall.*, 121, 1922.
- 4, N. Devon; Braunton Burrows, 1929, F. R. E. Wright (Hb. Mus. Brit.); 1929, W. D. Miller (Hb. Druce)—*B.E.C. 1929 Rep.*, 135, 1930; 1931, Edmonds (Hb. Kew); 1932, "abundant for c. 300 yards at bottom of a deep hollow (from which it has not yet escaped) in middle of dunes," R. Meinertzhagen (Hb. Mus. Brit.); 1936, Lousley (Hb. Lousley); Keble Martin & Fraser, *Fl. Devon.*, 25 and 571, 1939.
- 34, W. Gloucester: Avonmouth Dock, Sandwith (Hb. Druce)—*B.E.C. 1923 Rep.*, 210, 1924, and *1932 Rep.*, 357, 1933.
- 41, Glamorgan: Cardiff, 1925, Sandwith (Hb. Druce)—*B.E.C. 1925 Rep.*, 894 and 1023, 1926; *1926 Rep.*, 183, 1927. It was again collected by Mrs Sandwith from here in 1927, *B.E.C. 1928*, 81, 1939; Kenfig Sand-dunes, 1934, E. M. Thomas (Hb. Mus. Brit.)—*Journ. Bot.*, 74, 56, 1936, and *B.E.C. 1936 Rep.*, 277, 1937.
- 58, Cheshire: On the sandhills at Wallasey, 1913, Snow & Barker (Hb. Kew). This record is given in *B.E.C. 1913 Rep.*, 335, 1914, on the authority of "Dr J. W. Ellis, ex W. G. Travis." Mr Travis informs me that he has no recollection of seeing a specimen and believes he was not connected with the record, his name having been added by Dr Druce in error. He has very kindly supplied references which explain how Dr J. W. Ellis' name was connected with the record although the plant was discovered by G. E. Barker. Dr Ellis exhibited specimens of *Rumex cuneifolius* as "new to Britain" at a meeting of the Liverpool Botanical Society on October 22nd, 1913 (*Proc. Liverpool Bot. Soc.*, 1913, and *Lancs. Nat.*, 6, 305, Report for 1913-14), only three weeks after Dr W. B. Turrill had named Barker's specimens at Kew. J. A. Wheldon attributed the discovery to Dr Ellis in a paper on "*Some Alien Plants of the Mersey Province*" (*Lancs. Nat.*, 6, 375), but corrected the name of the discoverer and the locality shortly afterwards (*Lancs. Nat.*, 6, 402).
- 77, Lanark; Glasgow, 1919, Grierson (Hb. Druce)—*B.E.C. 1919 Rep.*, 574, 721, 1920. The locality was Gartcosh, where "hardly any"

was left in 1928 (Grierson in *Glasgow Nat.*, 1919-30 *Rep.*, 45, 1931). J. R. Lee informs me that he has a specimen collected in 1919, and that he believes it disappeared shortly after 1928. It occurred at Gartcosh for about 10 years. The determination was corrected to *R. cuneifolius* in *B.E.C.* 1923 *Rep.*, 62, 1924.

83, Mid-Lothian; Leith Docks, 1921, Jas. Fraser (Hb. Druce). There is a note on the sheet that it has existed for 20 years—*B.E.C.* 1921 *Rep.*, 396, 1922, and 1922 *Rep.*, 621, 1923.

R. cuneifolius in its native habitats in South America has various habitats but especially favours maritime sand-dunes. In this country four of the stations (Phillack Towans near Hayle, Braunton Burrows, Kenfig dunes, and Wallasey sand-hills) are on coastal dunes, and at the first three of these localities the plant is very well established. As I showed in *B.E.C.* 1936 *Rep.*, 277, 1937, the plant may well have been introduced at Hayle with mule-fodder during the 1914-18 War, but the Braunton and Kenfig localities are so remote that it is very difficult to explain their origin. At these places *R. cuneifolius* may well have escaped notice for a very long period, and the dune-slacks now occupied may not have been so far from the sea when the plant first arrived.

In order to ascertain whether carriage by sea-water is likely I conducted a simple experiment. Having already ascertained that the fruits were able to float for a considerable period in fresh water, I placed 6 of them in a tube containing tap-water on March 21st, 1938. Of these 4 sunk in about three weeks, but the other two continued to float, and one of them is still floating at the time of writing—a little over 5 years later. The buoyancy in salt-water is almost certainly greater than that in fresh. On September 5th, 1938, I placed 10 fruits collected at Kenfig a few weeks earlier in sea-water, and another 10 fruits of the same gathering in tap-water. On November 12th, 1938 (after 68 days in water during which they were shaken up at frequent intervals), they were sown in pots in the garden. Of the 10 fruits which had been in sea-water, 7 germinated in May 1939, and 2 in May 1940. Of the 10 which had been in fresh water, 8 germinated in May 1939 and no further germination took place. It thus seems that viability is not reduced by immersion in sea-water, and that introduction of the plant by sea is possible.

At four other localities (Avonmouth, Cardiff, Glasgow, and Leith) *R. cuneifolius* has occurred in the company of many other adventives on well-known hunting grounds for aliens. Nevertheless, it persisted at Glasgow for about 10 years, and at Leith for over 20 years.

Life History. In my garden germination has occurred freely in May and again in September. No resting period is necessary. I have not succeeded in raising plants to maturity. On the dunes at Kenfig it appears to increase mainly by vegetative means. The stems beneath each rosette descend vertically for 35 cms. or more, and then throw out long horizontal rhizomes a metre or more in length which produce fresh rosettes at their extremities. It is not known to what depth the roots

descend in search of water, but it is likely to be considerable, as also may be the power of vertical elongation in the event of submersion by blown sand. The tough leathery leaves suggest that the plant is well adapted to a xerophytic existence.

Distribution Abroad. *R. cuneifolius* Campd. is a native of Argentine, Chile, Peru, Bolivia and Uruguay. It has been recorded as adventive from U.S.A., Denmark, Holland and Germany.

(618/25. *R. FLEXUOSUS* [Solander] Forst. ex Sprengel, *Syst.*, 2, 162, 1825.

Icones. Rechinger fil., in *O.B.Z.*, 84, 49, t. 2 and fig. 8, 1935.

This species was recorded from Galashiels, Selkirk, by Miss I. M. Hayward in *B.E.C. 1914 Rep.*, 20, 1915, and in Hayward & Druce, *Adv. Fl. Tweedside*, 211, 1919. The name was cited as of Solander ex Forster, *Flor. ins. Austral. prodr.*, 90, No. 515, 1786, but Rechinger has shown (*loc. cit.*, 45) that this was a *nomen nudum*.

The only specimen I have seen is the one in Herb. Hayward, which is immature. It is impossible to be certain on the evidence of the available material but I feel confident that Miss Hayward's plant is not the New Zealand *R. flexuosus* but rather the closely allied Australian *R. flexuosiformis* Rechinger fil.; *O.B.Z.*, 84, 46, and t. 2, fig. 9, 1935. This is distinguished from the former mainly by the much larger, longer stalked, fruiting perianths and larger nuts.

R. flexuosus "Solander" is also recorded from Gibson's Tanyard, Meanwood in Lees, Cheetham, and Sledge, *Suppl. Yorks. Floras*, 94, 1941. As there is a specimen of *R. Brownii* collected by F. A. Lees from the same locality in 1912 and originally labelled "*Rumex flexuosus* Soland." (Hb. Mus. Brit.) it is highly probable that the record is erroneous.)

(618/26. *R. ALTISSIMUS* Wood, *Class Book*, ed. 2, 477, 1847 (fide Rech.).

Icones. Britten & Brown, *Illustr. Fl. North. United States*, 1, 549, 1896 (teste Rech.); Rech. fil., *Field Mus. Nat. Hist.*, 17, 46, fig. 6, 1937.

This species is allied to *R. triangulivalvis* (Danser) Rech. fil., and has been distinguished from this species above. Material from v.-c. 58, Cheshire; Ridge Hill, Stalybridge, collected by F. Collier in 1914 (Hb. Druce) is immature, but the leaf outline is similar to that of *R. altissimus* and was so recorded in *B.E.C. 1914 Rep.*, 84, 1915. Material collected by G. C. Brown at Colchester in 1923 also has broad leaves, but until adequate material is available the species cannot be confidently included in the *British Plant List*.)

618/27. *R. NEPALENSIS* Sprengel, *Syst.*, 2, 159, 1825.

Icones. Dammer in Engler-Prantl, *Naturl. Pflanzenfam.*, 3, 1a, t. 8, fig. S, 1893; Rechinger fil., *B.B.C.*, 49, t. 3, 1932.

I have seen only one undoubted specimen of this adventive from Britain:—

79, Selkirk; Tweedside, 1914, I. M. Hayward (Hb. Hayward). This material, which is well grown but not quite mature, was determined by Thellung in December 1915 and recorded in *B.E.C. 1915 Rep.*, 208, 1916, and in Hayward & Druce, *Adv. Fl. Tweedside*, 212, 1915.

R. nepalensis is remarkable for the hooked teeth which occur along almost the whole margin of the valves. This character is limited to very few species of *Rumex*, and *R. Brownii* is the only other Dock with hooked teeth which has occurred in Britain. In general habit *R. nepalensis* recalls *R. obtusifolius* and should not be confused with occasional specimens of that species having a few slightly hooked teeth on the valves.

Distribution abroad. From S.-W. China through Tibet, India, Persia and Syria to Asia-Minor. It also occurs in Java, N. Africa, the Balkans and Italy.

(618/30. *R. MAGELLANICUS* Campdera, *Mon. Rumex*, 71, 144, 1819; *R. magellanicus* Grisebach in *Abh. Kgl. Wiss. Göttingen*, 6, 118, 1854 (teste Rechinger).

Icones. Rechinger fil., *Arkiv. f. Bot.*, 26a, fig. 6, and t. 3, 1933.

This species is a native of South America like *R. cuneifolius*, from which it may be distinguished by the narrower and much more crisped leaves.

The name was misapplied to most of the early gatherings of *R. cuneifolius* from Glasgow, Leith and Cardiff, but corrected by Danser later (*B.E.C. 1923 Rep.*, 62, 1924, and *1936 Rep.*, 228, 1937). Gatherings made by Grierson at Glasgow in 1919, and by Mrs Sandwith at Cardiff in 1925, still remain in the *magellanicus* cover in *Herb. Druce*, but both are certainly *R. cuneifolius* Campd.

The species appears to be rare even in its native Argentine and Chile and is not very likely to occur as an adventive in Britain. Unless further evidence can be produced *R. magellanicus* should be deleted from the *British Plant List*.)

HYBRIDS.

Records of the hybrids collected prior to 1939 and distributed in my *Rumices Britannicae Exsiccatae* have already been published (*B.E.C. 1938 Report*, 152-5, 1939). Those listed below were mostly collected in the years 1939 to 1942 and have been distributed in the same series. Additions to *British Plant List*, ed. 2, are printed in heavy black type as before.

R. DOMESTICUS Hartm.

× *obtusifolius* L. ssp. *agrestis* (Fries) Danser. 85, Kinross; Kinross (247). 88, Mid-Perth.; Fortingall (243).

R. AQUATICUS Linn.

× *obtusifolius* L. ssp. *agrestis* (Fries) Danser. 86, Stirling; Shore of Loch Lomond, Balmaha (234).

R. CRISPUS L.

× *obtusifolius* L. ssp. *agrestis* (Fries) Danser. 1a, Scilly: "The Town," Bryher (332). 86, Stirling; Shore of Loch Lomond, Balmaha (237, 238).

× *sanguineus* L. var. *viridis* Sibthorp. 17, Surrey; Thames bank at Walton-on-Thames (290); Border of Holt Wood, Chelsham (293).

R. OBTUSIFOLIUS L.

× *Patientia* L. 21, Middlesex; Chiswick (203, 291).

R. OBTUSIFOLIUS L. ssp. AGRESTIS (Fries) Danser.

× **pulcher** L. ssp. **eu-pulcher** Rech. fil. 1a, Scilly; Middle Town, St Martin's (425). 17, Surrey; Barnes Common (114).

× *sanguineus* L. var. *viridis* Sibthorp. 17, Surrey; Warlingham (294); Chelsham (292).

R. CONGLOMERATUS Murray.

× *pulcher* L. ssp. *eu-pulcher* Rech. fil. 15, E. Kent; Hythe (201, 220, 281, 282). 17, Surrey; Shalford Common (216, 217).

R. PULCHER L. ssp. EU-PULCHER Rech. fil.

× **rupestris** Le Gall. 1a, Scilly; Samson (272). 2, E. Cornwall; Whitsand Bay (228). 17, Surrey; As natural hybrid in garden of South London Botanical Institute (112).

× *sanguineus* L. var. **purpureus** Stokes. 17, Surrey; As natural hybrid in garden of South London Botanical Institute (113, 277).

HERBARIA CONSULTED.

The herbaria cited in *B.E.C. 1938 Rep.*, 154-5, 1939, with the addition of the following:—

- Herb. B.-W. Perth Natural History Museum—the collection of Francis Buchanan White (1842-1894), who is usually referred to as Buchanan White.
- Hb. Babington. The Botany School, Cambridge—the collection of C. C. Babington, to which many additions have since been made (1808-1895).
- Hb. Brenan. Private collection of J. P. M. Brenan, Oxford.
- Hb. Cantab. The Botany School, Cambridge, including Hb. Babington (see above).
- Hb. D.-S. The private collection at Tresco Abbey, Scilly, maintained by Major Dorrien-Smith.
- Hb. Ellis. Private collection of A. E. Ellis, Epsom, of which the Rumices were shown to me by Mr E. C. Wallace.
- Hb. Glasgow. The herbarium of Glasgow University. The material has not been seen by me, but is occasionally cited for voucher specimens for vice-county records on the authority of Mr J. R. Lee, who sent me detailed notes.
- Hb. Sandwith. The private collections of Mrs C. Sandwith, Bristol, and Mr N. Y. Sandwith, Kew.

- Hb. Sledge. The private collection of Dr W. A. Sledge, Leeds, in which is incorporated the herbarium of E. C. Horrell.
- Hb. Todd. Material from the private collection of Miss E. S. Todd, Aldbourne, Wilts.
- Hb. Woodhead. The private collection of J. E. Woodhead, Tulse Hill, S.E.
- Hb. Yorks. The herbarium of the Yorkshire Philosophical Society, York. The material has not been seen by me, but is cited for a few vouchers for vice-county records on the authority of Mr E. C. Wallace, who kindly supplied me with notes.

Finally, I wish to acknowledge my great indebtedness to the owners and custodians of the numerous herbaria cited, and especially to the authorities at the British Museum (Natural History), the Royal Botanic Gardens, Kew, and the Druce collection of the University of Oxford, for the facilities they have placed at my disposal in these difficult times. Of the numerous correspondents who have assisted me with specimens, notes and references, special thanks are due to Capt. A. E. A. Dunston, Dr W. A. Sledge and Messrs John R. Lee, R. Mackechnie, W. G. Travis, and E. C. Wallace. To Mr A. J. Wilmott I am indebted for many suggestions and much help in preparing this paper for the printers. Communication with Dr Rechinger has, of course, been impossible, but the help which he gave so freely right up to the outbreak of war has been invaluable in the preparation of this paper. It is to be hoped that the co-operation of Continental botanists may be available again in the not too distant future.

ORNITHOGALUM UMBELLATUM L.

C. E. BRITTON, A.L.S.

The plant-forms included under the above specific name have received little attention from critical botanists in Great Britain, perhaps from the view that in localities where seen the Star of Bethlehem is of obvious or suspected garden origin. There are localities, however, where this plant has appeared to observers to be a genuine native of Britain, where conditions have not supported the view that it was derived from garden escapes or "throw-outs." Thus, Druce in *The Flora of Berkshire* recorded *O. umbellatum* L. as growing in great quantity in an upland meadow between Watchfield and Shrivenham, where it had the appearance of an indigenous plant. Even if it is assumed that the species has no claim to the status of a native plant, yet it must be admitted that it has been long present in the land, the first record dating from the 16th century, when the species was noted growing by the river Thames near Shene in Surrey. Shene is, of course, the present-day Richmond, and whether it still grows there is unknown, but there are records of it in more modern, and indeed present, times at localities by the R. Thames above Richmond. An earlier generation of British botanists set great value on the works of the leading French botanists of the middle of the 19th century, in whose works appeared several species derived from the splitting-up of the Linnean *O. umbellatum*. Thus, in the *Flore du Centre de la France*, 3rd edition, 1857, of A. Boreau, appeared descriptions of *O. umbellatum* L., *O. angustifolium* Bor.; *O. affine* Bor.; and *O. divergens* Bor. In the *Flore de France*, vol. iii, of Godron and Grenier, was a description of another species, *O. pater-familias* Godron. Many new species allied to *O. umbellatum* L. were described by Jordan and Fourreau in the *Breviarum Plantarum Novarum*, published in 1866. Ignoring those species not of French citizenship and others considered by later botanists to be allied to species other than *O. umbellatum* L., the following species remain: *hortense*, *Boreanum*, *rusticum*, *cespitiolum*, *parviflorum*, *tardans*, *proliferum*, and *declinatum*. These species were founded by Jordan and Fourreau on aggregations of minute characters derived from all parts of the plants. None of the species enumerated have been maintained by later botanists. In the *Flore de France*, vol. xii, of Rouy, whilst some are given varietal rank, others are cited as synonyms. The arrangement of the French forms by Rouy is as follows: Subspecies 1—*campestre* Rouy with var. *hortense* = *O. hortense* Jord. & Fourn.; var. *angustifolium* = *O. angustifolium* Bor. = *O. parviflorum* Jord. & Fourn.; var. *affine* = *O. affine* Bor.; var. *tardans* = *O. tardans* Jord. & Fourn. Subspecies 2—*divergens* Bor. (pro. sp.); var. *declinatum* = *O. declinatum* Jord. & Fourn. Between the two subspecies is placed the "Race" *O. paterfamilias* Godr. (pro. sp.).

In studying the descriptions of the French authors, a term is encountered for which an exact equivalent can not be found in British botany. Thus the bulbs may produce "cayeux" or alternatively "bulbilles" (Boreau; Grenier and Godron), or, both "caïeux" and "bulbilles" (Rouy). We do not appear to possess a term corresponding to Cayeux (or caïeux)* but the word seems to indicate bulbils which remain attached to the parent bulb and develop both leaves and flowering stems (scapes). The existence of caïeux does not seem to have been recognised in British *O. umbellatum* L. It had not escaped notice that plants occurred with wide or narrow leaves, for Babington in the first issue of the *Manual of British Botany* described the leaves as "linear and longer than the stem or filiform and shorter than it," and Bromfield in the *Flora Vectensis* (1856) recognised a var. β distinguished by "leaves very slender, linear-filiform, flowers few, 3-5." In the 3rd edition of *English Botany* Syme recognised two varieties, α *genuinum* = *O. umbellatum* of Boreau *Fl. du Centre*, ed. iii, vol. 2, p. 624, with the characters "leaves broadly linear spreading—recurved when young, flowers 5-12," and β *angustifolium* = *O. angustifolium* Bor., l.c., 625, "leaves very narrowly linear, erect when young (Boreau), flowers 3-5 var. β in the Isle of Wight in several places (?)"—(see *Fl. Vect.*, p. 501). It is uncertain what value may be placed upon the terms in which Bromfield characterised the Isle of Wight plant, as no French author credits any form of *O. umbellatum* L. with possessing leaves that could be described as equivalent to linear-filiform. If the plant of the *Flora Vectensis* was correctly described, then it was probably a form that nowadays would not come within the limits of *O. umbellatum* L.

A summary is given of the chief characters of the species described by Boreau. *O. umbellatum* L.—Caespitose, bulbs producing "cayeux" which bear leaves and scapes. Leaves linear, broadly channelled, with a white band down the middle, longer than the scapes, prostrate. Upper bracts longer than pedicels and flower-buds, the lower bracts rather shorter than pedicels. Pedicels at first erect-spreading, later ascending or slightly curved. Perianth-leaves lanceolate sub-obtuse. Capsule with six prominent angles. Flowers in May. *O. angustifolium* Bor.—Caespitose bulbs producing "cayeux" which bear leaves and scapes. Leaves linear, narrowly channelled, with a whitish furrow at the centre, erect when young, equalling or exceeding the scapes. Bracts at first longer than pedicels, later less than half as long. Pedicels ascending. Perianth-leaves oblong. Flowers May to June. *O. affine* Bor.—Related to *O. angustifolium* Bor. but not identical. Caespitose, bulbs producing "cayeux" bearing tufts of linear narrowly channelled leaves, slightly curved and always spreading in a rosette, as long or shorter than scape, appearing later than in *O. angustifolium* Bor. Bracts longer than pedicels and sometimes exceeding flowers, finally not half as long as pedicels. Flowers 2-3 weeks later than *O. angustifolium*, at the end of May and in June. *O. divergens* Bor.—Plant not caespitose, bulbils not

*The English equivalent is "clove"—cf. cloves of garlic, etc.—ED.

producing leaves whilst attached to parent-bulb. Leaves linear elongated, with a broad central white band. Bracts much shorter than pedicels. Pedicels elongated, erect at first, finally divaricate and declining, curved at the apex. Flowers large, 4 to 5 cm. in diameter, perianth-leaves elliptical. Capsules with 6 prominent angles. Flowers April to May. No measurements of the organs appear in the descriptions of Boreau. Those given by Rouy for his two subspecies are transcribed for comparison with the measurements given later for British plants. *O. umbellatum* subsp. *campestre* Rouy = *O. umbellatum* auct. mult.—Leaves 3-4 mm. broad, pedicels 3-4 cm. long, perianth-leaves 16-20 mm. long. *O. umbellatum* subsp. *divergens* (Bor.) Rouy—Leaves 4-5 mm. broad, pedicels 5-6 cm. long, perianth-leaves 20-25 mm. long.

It is by no means unlikely that most of the foregoing segregates of *O. umbellatum* L. occur in Britain and that intensive study would reveal their presence. Plants from a few localities have been cultivated for some years past and some interesting points have become apparent regarding the times of leaf-appearance and opening of the flowers. That the period of flowering differed in the various forms was made known by Boreau, but I am unacquainted with any observations concerning the seasons at which the leaves appear above the soil. In plants from more than one locality the leaf-points appear at the surface of the soil from December to February, and the leaves develop in the spring; in another form the leaves appear in the previous autumn and after attaining a certain length in that season further growth ceases, the leaves persist through the winter and growth is renewed in the following spring, when maximum length is attained. The forms hitherto under observation appear to belong to *O. umbellatum* L. emend. Bor. and to *O. angustifolium* Bor. Detailed descriptions of both forms follow.

O. UMBELLATUM L. emend. Bor.

Bulbs ovoid, 25 × 16-19 mm., with 2-3 leafless bulbils enclosed within tunic. Leaves linear, 18-25 cm. long, 4-6 mm. wide with a central white stripe 1-1½ mm. wide, shallowly canaliculate. Scape 13-17 cm. long, inflorescence 4-flowered; bracts three-quarters as long as pedicels when flowers first expand; pedicels erect-ascending never becoming divaricate, 20-25 mm. long, lengthening, and finally attaining a length of 40 mm. Flowers when fully expanded 46 mm. in diameter, outer perianth-leaves elliptical-lanceolate, 25 × 8 mm., green externally with white marginal bands 2 mm. wide, inner perianth-leaves 23½ × 7 mm. externally with a central green stripe 1 mm. wide and white marginal bands 3 mm. wide. Filaments oblong-lanceolate acuminate. Ovary 6-lobed, lobes equidistant, later becoming arranged in three pairs.

Growing in compact masses. At a Surrey locality a colony has been seen 4½ feet in diameter. During the resting season the leafless bulbils still adhere to the parent-bulb. In the growing season that follows, the bulbils are free from the tunic, bear one radial leaf, but are still at-

tached to parent-bulb. The leaves pierce the soil from late December to early February according to the mildness or severity of the weather and make little growth until the winter is past. They are usually prostrate and exhibit signs of withering before the first flowers expand. Flowers very sparingly produced, first opening in the second or third week of May or at beginning of June. Fruit unknown. After flowering, the ovary grows to some extent, but fails to produce seed.

This form does not appear identical with any of the species described by Jordan and Fourreau.

O. ANGUSTIFOLIUM Bor.

Bulbs oval-ovoid, with leafless bulbils enclosed within tunic. Leaves narrowly linear, 20 cm. long, 2-3 $\frac{1}{2}$ mm. wide with a central rather indistinct whitish stripe, canaliculate-plicate. Scape 12 cm. long, inflorescence 5-6-flowered or up to 10-flowered (in cultivation); bracts all less than half as long as pedicels when flowers first expand; pedicels erect at first, then spreading-erect, later becoming widely-spreading, and, after flowering, divaricate, but not declining, 55-65 mm. long. Flowers when fully expanded 53-58 mm. in diameter, perianth-leaves striated, pale-green externally, outer perianth-leaves elliptical-oblong, 30 \times 8 mm., white marginal bands 1 mm. wide, inner perianth-leaves oblong, 28 \times 7 mm., white marginal bands 2 mm. wide. Filaments oblong, later becoming triangular, attenuate towards the apex. Ovary 6-lobed, lobes equidistant, finally arranged in three pairs.

Plants scattered. The leaves pierce the soil in the month of October and continue to grow during the autumn. After attaining a length of about 10 cm. growth ceases before the arrival of winter, and is renewed again during the spring. The leaves are oblique-erect at first, curving outwards above. At the commencement of the flowering period they are still fresh, erect or more or less prostrate. The flowers expand in the period commencing the last week of April to the second week of May and are usually faded before the flowers of *O. umbellatum* L. expand. Bor. expand. In cultivation fruit is not matured, the ovary enlarges but eventually withers. Differs from *O. angustifolium* Bor. in habit and in larger flowers but appears not distinguishable otherwise. Cannot be identified with any one of the species described by Jordan and Fourreau.

REVIEW.

John Ray, Naturalist, His Life and Works. By CHARLES E. RAVEN, D.D. Cambridge: The University Press, pp. xix + 502, 1942; 30s net.

The name of John Ray should be familiar enough to British amateur botanists, for few men have been responsible for so many important "first records" in our County and Local Floras. Many authors of these books have recognised the value of Ray's work by the inclusion of biographical notes and the more important of these include those in the Floras of Essex (Gibson, 444/6, 1862), Middlesex (Trimen & Dyer, 373/4, 1869), Bristol (White, 57/60, 1912), Berkshire (Druce, cxvii/cxxi, 1897), Kent (Hanbury & Marshall, lxii/lxiii, 1899), Cambridgeshire (Babington, vii/ix, 1860, and Evans, 9/10, 1939) and there are shorter notices in the Floras of Cornwall (Davey, xxxi, 1909), Westmorland (Wilson, 70, 1938), and Devon (Keble Martin & Fraser, 770, 1939). Ray was author of the first British local flora (*Catalogus Plantarum circa Cantabrigiam nascentium*, 1660), and his production of the first systematic Flora of Great Britain (*Synopsis Methodica Stirpium Britannicarum*, 1690) is a further claim to our interest and respect. But, as Dr Raven so clearly shows, Ray's influence on the course of botanical study was far wider than these examples indicate.

For various reasons the work of John Ray (1627 to 1705) has long failed to receive the recognition which is its due, and the first work to do full justice to him has taken 237 years from the date of his death to appear. The reasons for the neglect of Ray are several, and perhaps the most important so far as recognition in his own country is concerned is the fact that his principal works were written in Latin just at the time when it was becoming fashionable to write in English. Dr Raven's volume, giving the essence of them all, will remove the obstacle of language to obtaining a knowledge of Ray for those who know little Latin, but it cannot give them the joy of reading the wonderful composition of the original.

Another reason for the neglect of John Ray undoubtedly lies in the introduction of the binomial system by Linnaeus only 48 years after his death, an innovation which almost immediately led to the eclipse of the cumbersome names employed by Ray. In a useful note comparing the merits of these two great botanists (pp. 306/7), Dr Raven suggests that "Ray had the truer appreciation of the real task of a scientist," and later in his book (p. 453) he again stresses the point that the whole emphasis of Linnaeus' work was on nomenclature. Ray's wider view resulted in a less artificial classification than that of the renowned Swede and it is to be remembered that his publications were used as a quarry by the later worker. If only Ray had thought of the advantages of a simple binomial system the progress of British Botany would have been greatly accelerated.

Whatever the reason for the neglect of Ray—and neglect there has been, for an audience of experienced naturalists fairly gasped when his name was put forward as perhaps the greatest English naturalist at a “Natural History Brains Trust” only a year ago—there can be no doubt that Canon Raven has made amends. He clearly reverences Ray as a hero and an infectious enthusiasm runs right through the book. With a fine working knowledge of plants, birds, insects, fishes, mammals, and of geology, with an intimate contact with Cambridge, its University, town and surrounding country, and following the same profession of divinity, there is no doubt that Dr Raven had unique qualifications for writing a book on John Ray, and that he has made the best of his opportunities.

The book opens with a masterly Preface followed by a list of “main sources,” an “Epitome of Ray’s Life,” and dates of the publication of posthumous works. A separate list of publications giving full titles and brief bibliographical details might well have been added here. The first chapter is headed “Boyhood and Youth” and the original research done by the author is at once apparent and a number of corrections to previous biographies are given. With the aid of a 1” Ordnance map the reader will derive a very clear picture of the little hamlet of Black Notley, both as it is to-day and as it appeared in Ray’s time. A plan of the district would have been useful but this perhaps would not be permitted during the war. There is not very much to see at Black Notley now in the way of buildings connected with John Ray, but there is clearly sufficient of interest to justify a B.E.C. visit when excursions are resumed after the war.

The second chapter describes Ray’s early life at Cambridge while his studies were still of the general nature usual at the time, and the third unfolds the development of his interest in Natural Science. We then come to the *Cambridge Catalogue* published in 1660, the first British local Flora and the foundation of Relhan’s, Babington’s, and Evans’ Floras of the county, with entries of some species from adjacent counties, for Ray did not define his boundaries as modern writers do. Many entries such as *Caucalis daucoides* and *C. latifolia*, *Roemeria hybrida*, *Senecio paludosus* and *S. palustris* will raise envy in the hearts of modern flower hunters. Other good plants may still be found in the old localities. *Veronica spicata* was rediscovered recently “probably on the self-same spot” as that known to Ray (p. 93). The *Cambridge Catalogue* clearly showed in its incipient stages the important characteristic which distinguished all Ray’s work from that of most of his predecessors, so many of whom were content merely to copy and to accept hearsay with the utmost credulity. Ray’s later works are full of his own observations, his highly developed scientific acumen leading him to rely on his own observations and to challenge, or at least examine with a critical eye, the statements which had previously been copied from book to book, however manifestly absurd or superstitious they might be.

It was this spirit of original research which inspired the "Years of Travel," in Britain and on the continent, which are described in Dr Raven's fifth chapter. Here field botanists will find much to interest them and they will follow Ray in his itineraries with understanding and his researches with interest. He found *Lithospermum purpureo-caeruleum* near Denbigh, where our member Mr J. A. Whellan has recently seen it; near Bristol he saw *Trinia glauca*; on the beach "near Pensance" there were *Diotis maritima* and *Euphorbia Peplis*, and *Eryngium campestre*, was noticed near Plymouth at the spot where I saw it in 1938. In the following chapter later journeys in England are described, and we may still see many of the plants he enjoyed in Craven, the Lakes, and elsewhere. One wonders whether the *Hieracium* with beautifully marked leaves which Ray noted at Cuckfield (p. 143) may not be the *H. Roffeyanum* recently described by Pugsley (*Journ. Bot.*, lxxix, 197, 1942) which was collected by Mr Wallace and myself in 1933 less than four miles from that place. The first fruits of these excursions appeared in the *Catalogus Angliæ* published in 1670. Widening experience led to dissatisfaction with the chaotic lack of system which characterised existing works on Botany, and Ray's earlier attempts at classification were followed by *Methodus Plantarum* in 1682, which is carefully analysed by Dr Raven (pp. 192 to 200).

Chapter IX opens with a further description of Black Notley and of the life there, which Ray had resumed in 1679. In 1686 and 1688 he published his largest work, the monumental *Historia Plantarum*, which described over 6100 different plants, besides giving much general information. In such a veritable encyclopaedia of the flora of the known world it is only to be expected that native British plants should play a somewhat secondary rôle, but only two years after the publication of the second volume Ray produced the first systematic British Flora.

His *Synopsis Methodica Stirpium Britannicarum* was preceded by a small 32-page *Fasciculus* to the earlier *Catalogus Angliæ* and this included early notices of many well-known rarities such as *Helianthemum polifolium* from Brean Down, *Geranium lancastriense* from Walney Island, and some of the treasures of Snowdon, St Vincent's rocks, and Breidden Hill. To the *Synopsis* itself one wishes that Dr Raven had devoted a little more space, though perhaps he is wise in dwelling throughout his book more especially on Ray's rarer works, which his readers are less likely to possess. Unfortunately, the edition of the *Synopsis* which can most often be bought is the third, which was edited by Dillenius after Ray's death and contains some additions which were not made by the great naturalist.

Examination of the *Synopsis* soon reveals the genius of its author, and one example of this is seen in the skill with which he distinguishes between plants which are genuine natives and introductions. *Tordylium maximum* he suspected of being a reject from gardens; *Erigeron canadensis*, which was frequent about London; he thought certainly not indigenous; while *Rumex sanguineus* var. *purpureus* he noted as

"*hortorum rejectamentis originem suam debere suspicor.*" Ray gives popular names as known to him and it may be wondered why some of them have become changed or ignored by subsequent writers. Surely "Ducks-meat" is more expressive than the modern "Duck-weed."

The final botanical chapter in Dr Raven's book is entitled "Last Work in Botany" (pp. 271-307), and includes Ray's "Six Rules for Classification," most of which, and especially the first, still ring true to-day. The remaining chapters contain little Botany and are devoted to Ray's other widespread interests, but nevertheless the botanist should read and enjoy them. There is one illustration of the limitless enthusiasm of the great naturalist which field botanists who have stayed at a famous inn in Newmarket will miss in these pages. But perhaps this story relating apparently to the *Hemiptera-Heteroptera* is untrue; reference to the *Historia Insectorum* would decide.

Many of Ray's friends and correspondents are discussed in the course of the book and readers will find much interesting information about those who assisted him to make this what Linnaeus called "the Golden Age of Botany." Of these Thomas Willisel, the "tramping plant-collector," an unlettered man who could live upon oatcake and buttermilk like his successor Don; Petiver, that curious character who has earned everlasting fame as an example of how boundless energy in collecting can lead only to indifferent results if not coupled with a true scientific spirit; and Lhwyd, whose extensive searches in the Welsh mountains led to such rich discoveries, are some of the most interesting.

Dr Raven has used Ray's botanical publications (only the most important of which can be mentioned here) as a framework around which to write his life. The result is that the unfolding of his botanical ideas is clearly revealed and fresh light is thrown on his works; the experiment is thus well justified. It must be admitted, however, that the mass of detail introduced into the narrative on the appearance of each publication rather obscures the actual life of the naturalist. The size and price of the book will prevent many of the less affluent naturalists from owning it, and it is felt that Canon Raven has left room for another book on his hero. With the life considered first as a shorter, less rambling story, followed by the works considered individually, with plans of Black Notley and of the route taken on the various itineraries, and a few illustrations, a book would be produced which would have a very wide appeal, and it is hoped that Dr Raven will find time to write it.

In any case *John Ray, Naturalist, His Life and Works* will long remain a standard work. It will send its readers hastening to the original volumes on which it is based, and students of Ray's works will hasten to that of Canon Raven for elucidation. No higher praise can be given than to say that the book does justice to its subject and that its production in time of war reflects the highest credit on author and publisher alike.

J. E. LOUSLEY.

ABSTRACTS FROM LITERATURE.

[Those responsible for these Abstracts are indicated as follows:—
[H.]=H. A. Hyde; [Wa.]=A. E. Wade; [Wi.]=A. J. Wilmott.

When only one entry is made in this Report from a single paper, the full reference is given with the entry, in order to avoid both unnecessary printing and cross-reference: the usual method of citation by reference to the Bibliography is retained when more than one reference is made to the same paper.

Note to contributors. It would be a great convenience to the Editors if contributors would send in their Abstracts, and any necessary References for the Bibliography, on slips of uniform size, the size desired being 8 inches by 4 inches, the long edge to be treated as the top of the page. A separate slip for each item permits the easy sorting of the MS. without the transcription which is otherwise too often necessary in the preparation of copy for the printer. The uniform slips can be easily filed and will be available for future reference, thus enabling the Editors to avoid repetition and to make helpful references to previous notes.—Ed.]

GENERAL.

(A) BIOLOGY.

GERMINATION.—Wattam (1941) records some observations on the germination of the seeds of *Lupinus polyphyllus* L. and on the seedlings of *Echinum vulgare* L. and *Juncus effusus* L. In the lupin he found that seed stored for two or three years showed a higher percentage of germination than that sown in the season following their production.—[Wa.]

SEEDLING MORTALITY AND SURVIVAL.—Salisbury, E. J. (1942: *Trans. Herts. Nat. Hist. Soc.*, xxi, 311-313) discusses "Some Observations on Seedling Mortality in the Winter of 1940-41." *Helianthemum Breweri* only survived because of its intermittent germination; the seeds germinated in batches, some in late autumn, some in early spring and others in late spring. Simultaneously germinating species, such as *Erodium moschatum*, may be completely exterminated by the direct or indirect action of frost. Survival of the less hardy winter annuals may occur owing to the enforced dormancy of seeds that have been buried and subsequently brought to the surface. The mortality of such a hardy species as *Trifolium minus* amounted to over 25 per cent.—[Wa.]

POLLINATION.—Dallman (1941B) records some observations on the pollination of, and insect visitors to, *Epilobium angustifolium* L., *Gagea lutea* (L.) Ker-Gawler and *Hydrocotyle vulgaris* L. In the latter species there was a distinct lack of insect visitors and effective autogamy is doubtless frequent.—[Wa.]

LIGHT AND GROWTH.—From a study of "The Effect of Light on Growth Habit of Plants," Langham, D. G. (1941: *Amer. J.B.*, xxviii,

951-956) concludes that the probable major cause of prostrate growth habit is aversion to light of high intensity (negative phototropism); all the common prostrate plants used in the study were negatively geotropic [i.e. tending to be erect] in darkness.—[Wi.]

(B) ECOLOGY.

ROOT SYSTEMS.—The root habits of several British species—*Rumex crispus*, *Plantago major*, *Solanum nigrum*, *Medicago lupulina*, *Chenopodium album*, *Taraxacum officinale*, *Sonchus asper* (also the aliens *Lepidium virginicum* and *Amaranthus retroflexus*) are figured by Cole, H. E., and Holch, A. E. (1941: The Root Habits of certain Weeds of South-eastern Nebraska; in *Ecology*, xxii, 141-147). The root habits of *Polygonus viviparum* and *Silene acaulis* are described and figured by Daubenmire, R. F. (1941: Some Ecologic Features of the Subterranean Organs of Alpine Plants; in *Ecology*, xxii, 370-378).—[Wi.] Holch *et al.* (1941) describe the root habits of certain plants of the Rocky Mountain National Park. Among the plants dealt with are *Dryas octopetala* L., *Epilobium angustifolium* L., *Achillea Millefolium* L., *Veronica alpina* L., and *Stachys palustris* L. Muller (1941) describes the rhizomes of some prairie plants, including *Phalaris arundinacea* L. and *Poa pratensis*.—[Wa.]

WOODLANDS.—Tansley, A. G. (1940: *Forestry*, xiv, 1-21) discusses the "Natural and Semi-natural British Woodlands."—[Wa.]

OAK WOODS.—Fenton, E. Wyllie (1941: The Oak in Scotland, and two semi-natural Oak Woods in the south-east of Scotland; *Forestry*, xv, 76-85) describes, with an account of the vegetation, the Dalkeith Palace Oak Wood, Edinburgh, and the Elibank Castle Oak Wood, Peebles.—[Wa.]

BEECH WOODS.—Examples of the survival of regeneration and of normal development of beech woods are few. Survival depends primarily on the ground and soil conditions prevailing at the time of seed fall. Beech seedlings are very sensitive to drought and survival only takes place if the primary roots are able to penetrate through the leaf litter and humus to the mineral soil below. The existence of any depth of undecomposed leaves results in the seedling radicles developing laterally in the moist litter and in the seedlings dying in the first summer drought. Secondly, survival depends on sufficient light and moisture for effective physiological activity.—Bourne, R. (1942: A Note on Beech Regeneration in Southern England; *Journ. Forestry*, xxxvi, 42-49).—[Wa.]

PINE FORESTS.—Penistan, M. J. (1942: *Journ. Forestry*, xxxvi, 59-69) discusses the prehistory, recent history and present condition of "The Caledonian Pine Forest."—[Wa.]

GRASS HEATH.—Watt, A. S. (1940: Studies in the Ecology of Breckland; IV, The Grass Heath; *J. Ecol.*, xxviii, 42-70) discusses the vegetation of the so-called "grass heath" of Breckland in relation to the seven soil types recognized. Variation in floristic composition is shown to be primarily related to the soil and secondly to other factors (e.g. grazing by rabbits).—[Wa.]

HILL PASTURES (*Festuca-Agrostis* and *Molinia* associations).—"The Effect of Manuring, Grazing and Cutting on the Yield, Botanical and Chemical Composition of natural Hill Pastures: II, Chemical Section," is discussed by Davies, R. O. (1941: *J. Ecol.*, xxix, 49-61): the chemical effects of the soil which result from the application of fertilisers and from controlled sheep grazing are set out, but not the effects on the associations themselves.—[Wi.]

CHALK GRASSLAND.—Hope-Simpson, J. F. (1940: Studies of the Vegetation of the English Chalk; VI, Late Stages in Succession leading to Chalk Grassland; *J. Ecol.*, xxviii, 386-402) gives an account of the late stages of succession on spoil banks of a quarry on War Down, formed 40-55 years ago on old arable land, and at Coulter's Dean, abandoned for the last 50 years; both on the Hampshire-Sussex border. He (1941: Studies of the Vegetation of the English Chalk; VIII, A Second Survey of the Chalk Grasslands of the South Downs; *J. Ecol.*, xxix, 217-267) also discusses the results of a second survey, in 1935 and 1936, of forty-seven areas of Chalk-grassland of the South Downs, where records were made by Tansley and Adamson in 1920 and 1921.—[Wa.]

OVERGRAZING.—The effects on the soil of overgrazing of prairie are set out by Daubenmire, R. F., and Colwell, W. E. (1942: "Some Edaphic Changes due to Overgrazing in the Agropyron-Poa Prairie of South-eastern Washington; in *Ecology*, xxiii, 32-40). The tall perennial grasses become replaced by dwarf annuals, resulting in increased water-accumulation in winter, decreased soil aeration, decreased ability of soil to absorb water, and changes in the soil organisms and soil chemistry.—[Wi.]

FEN.—Wicken Fen (29, Cambs.). H. Godwin (1941: *J. Ecol.*, xxix, 83-106) continues his "Studies in the Ecology of Wicken Fen" with an account of "IV. Crop-taking Experiments": the *Molinietum* and the *Cladio-Molinietum* which afford the crops appear to have been themselves produced (or stabilised as a "deflected succession") by the yearly and 3- or 4-yearly cuttings respectively.—[Wi.]

Bog.—"The 'Mosses' (Sphagneta) of the Stainmore District" are described by W. H. Pearsall (1941: *J. Ecol.*, xxix, 161-175): they occur on gentle slopes (less than 1 in 30) of the Pennines, in an annual rainfall of about 55 inches, and have normally a soil pH of between 3.8 and 4.0; burning and grazing lead to the production of *Callunetum* and *Eriophoretum*.—[Wi.] A comparison of six bog areas at Nacarrigeen, Kylemore (three phases), Shinanagh, and Duo Lough (burnt) is given by Pearsall, W. H., and Lind, E. M. (1941: "A Note on a Connemara Bog Type; in *J. Ecol.*, xxix, 62-63).—[Wi.]

SALT-MARSH.—Chapman, V. J. (1941: Studies in Salt-marsh Ecology, Section VIII; *J. Ecol.*, xxix, 69-82) describes succession to be observed on the salt-marshes of Norfolk and the British Isles generally. The general vegetation is controlled primarily by the character of the soil, the east coast marshes possessing a more or less firm clay, the south coast a soft silt, the west coast much sand and the Irish marshes forming a kind of peat. There is evidence that under suitable conditions

there is development to reed swamp and hence a woodland or other climatic climax is potentially possible.—[Wa.]

SAND DUNES AND SALT MARSH.—Lambert, J. M., and Davies, M. R. (1940: *J. Ecol.*, xxviii, 453-464) describe the vegetation of "A Sandy Area in the Dovey Estuary," Cardiganshire.—[Wa.]

ARABLE LAND.—Wattam (1941) records some observations made on the weed flora of new ploughed land in the Huddersfield district (v.-c. 63).—[Wa.]

QUARRIES.—Hepburn, I. (1942: The Vegetation of the Barnack Stone Quarries; *J. Ecol.*, xxx, 57-64) describes the vegetation of Oolitic Limestone quarries in Northamptonshire: a complete list of species observed is given.—[Wa.]

COAL DUMPS.—Pugsley, D. J. (1941: *Proc. Swansea Sci. and Field Nat. Soc.*, ii, 159-177) discusses the colonization and subsequent flora of the coal dumps at Cwmbach, Aberdare, Glamorgan.—[Wa.]

BOMBED SITES.—Shove, R. F. (1942A: *School Nature Study*, xxxvii, 58-59) gives an account of the flora in August 1942 on the site of four adjacent houses in the Kew area destroyed by bombing in the autumn of 1940 and cleared a few months later, and (1942B: *Nature*, cl, 463) reports the occurrence of *Buddleia variabilis* on the site of bombed houses at Kew.—[Wa.]

BRECONSHIRE: Cribarth Mountain.—Watkins, H. (1941: Some Ecological Problems on the Limestone of Cribarth Mountain; *Proc. Swansea Sci. and Field Nat. Soc.*, ii, 141-159) deals especially with the limestone dump, the quarry, and the distribution of *Molinia caerulea* on the north-west slope. Notes are given on several species emphasizing the characters of particular importance in relation to conditions in the area.—[Wa.]

(C) TOPOGRAPHICAL.

SOMERSET.—*The Proceedings of the Somerset Archaeological and Natural History Society for 1939-1941 (1940-1942)* contain a number of additional records. (1940: lxxxv, 230-5; lxxxvi, 139-144; 1942, lxxxvii, 118-124.—[Wa.]

WILTSHIRE.—*The Reports of the Marlborough College Natural History Society for 1939, 1940 and 1941* contain the usual "Flower List" of interesting records and phenological observations; pp. 16-17, 10-12 and 11-12 respectively. Welch and Grose (1942) contribute a large number of new localities for Wiltshire plants.—[Wa.]

ESSEX.—Brown, G. C. (1940: Additional Records of Essex Plants; *Essex Nat.*, xxvi, 184-193, 248-255) includes a considerable number of adventives. Graddon, W. D. (1941: Stray Notes on Some Essex Plants; *Essex Nat.*, xxvii, 114-115) adds a few records. Ross, J. (1942: *Essex Nat.*, xxvii, 164-166) contributes notes on "Some Interesting Plants of Epping Forest." Lister, G. (1942: The Flora of Wanstead Park District; *Essex Nat.*, xxvii, 121-138) deals with changes in the district and its flora, and lists the plants now found there.—[Wa.]

HERTFORDSHIRE.—Salisbury, E. J. (1940: The Phanerogamic Flora of Bricket Wood; *Trans. Herts. N.H.S.*, xxi, 159-161) gives a brief de-

scription, with a list of plants, of the scrub community of Bricket Wood. Harrold (1942) records the occurrence of four segregates of *Viola arvensis* L. and *V. tricolor* L. in arable land under grass until the end of 1940. Pugsley, H. W. (1941B: *Arable Weeds in East Herts.*; *J.B.*, lxxix, 105-109) discusses and enumerates weeds near Sawbridgeworth, East Herts.—[Wa.]

OXFORDSHIRE.—Britton (1942) publishes some plant notes; *Rhinanthus calcareus* Wilmott is recorded from Watlington Hill, and from Pyrton.—[Wa.]

BUCKINGHAMSHIRE.—Britton (1942) publishes some plant notes. *Valerianella carinata* Loisel, from Fingest and between Fingest and Turville, is recorded as new to the county.—[Wa.]

NORTHAMPTONSHIRE.—Allen, H. G. (1940, 1941: *Botanical Notes; J. Northants. N.H. Soc.*, xxix, 171; xxx, 26-27) gives some new records for the county.—[Wa.]

WEST GLOUCESTERSHIRE AND NORTH SOMERSET.—Sandwith, C. I. (1940, 1941, 1942: *Bristol Botany in 1939, 1940, 1941; Proc. Bristol N.S.*, ix, 21-26, 89-92, 287-291) reports on the progress of botany in the Bristol district and gives details of a large number of interesting new records.—[Wa.]

STAFFORDSHIRE.—Boydton Ridge, W. T. (1940, 1941: *Report of the Botanical Section; Trans. N. Staffs. F.C.*, lxxiv, 44-45; lxxv, 16-17) and Edees, E. S. (1942B: *Report of the Botanical Section; Trans. N. Staffs. F.C.*, lxxvi, 24-26) in their reports for the N. Staffs. Field Club, publish a number of new records for the county. Edees contributes some plant notes and records for 1941. Edees also (1942A) gives an account of the species of *Euphrasia* in the northern part of the county.—[Wa.]

SHROPSHIRE.—L. C. Lloyd (1940A) gives the history of the occurrence of *Scheuchzeria palustris* L., and (1940B) contributes some notes on the status and distribution of the orchids. Dallman (1940A: *Botany (of Shropshire); Caradoc and Severn Valley F.C.*, Record of Bare Facts; No. 49, 4-13) and E. R. Lloyd (1942: *Botany (of Shropshire); op. cit.*, No. 51, 3-5) enumerate new records made during 1939 and 1941 respectively.—[Wa.]

CARMARTHENSHIRE AND PEMBROKESHIRE.—For records, including some new to the county, see Whellan (1942A).

CARDIGANSHIRE.—For records, some new to the county, see Whellan (1942A). Stephenson (1942A) gives a note on the Dactylorhichids.—[Wa.]

CHESHIRE.—Dallman and Williams (1940) discuss the occurrence of *Azolla filiculoides* Lam. Ecological notes, together with a complete list of plants observed, are given by Britten, H., Newton, P., and Wild, S. V. (1941: *The Natural History of the Ballast Hole, Sinderland, Cheshire; N.W. Nat.*, xvi, 40-56).—[Wa.]

ANGLESEY.—Wilson, A. (1940B: *Some Plants of Anglesey; N.W. Nat.*, xv, 104-109) gives a brief account of the flora.—[Wa.]

S. LANCASHIRE.—Stansfield (1940) deals with the occurrence of *Brassica juncea* (L.) Coss. in the Liverpool and Martin Mere district, S. Lancashire.—[Wa.]

NORTH-EAST YORKSHIRE.—Flintoff, R. J. (1941-3: The Natural History of Goathland; III, The Flowering Plants and Ferns. An Ecological Study; *N.W. Nat.*, xvi, 57-75, 164-182, 287-304; xvii, 229-244, 366-380; xviii, 87-102, 194-204) gives an ecological study of the flowering plants and ferns of Goathland. The treatment is ecological—the species being arranged under habitat headings, with notes on frequency, soil preferences, status, etc.—[Wa.]

SOUTH-WEST YORKSHIRE.—Sledge, W. A. (1941: Thorne Waste Plants; *Naturalist*, No. 796, 266-268) gives a brief account of the present state of Thorne Waste, once the richest locality for marsh plants in the north of England, with references to some of the rare plants which grow or grew there. The disappearance of the rarer species from the area is attributed to former peat-cutting.—[Wa.]

MID-WEST YORKSHIRE.—Pickard, J. F. (1941: *N.W. Nat.*, xvi, 319-321) gives "Comments, with Addenda and Corrigena on the Vegetation of Craven in Wharfedale," by the late Dr F. Arnold Lees.—[Wa.]

CUMBERLAND.—Muirhead, C. W. (1940B: Aliens and Adventives at Silloth; *N.W. Nat.*, xv, 70) records several adventive species, the presence of which is due to the spreading of ballast from cargoes of grain.—[Wa.]

MID EBULES.—Harrison (1941) details the distribution of the American element in Coll, which he describes as the headquarters of this element in the Hebrides.—[H.] Harrison *et al.* (1941C) publish "The Flora of the Isles of Coll, Tiree and Gunna . . ." in which a considerable number of new records for the vice-county are made, including **Viola canina* L. and *V. canina* × *Riviniana*, which as records for 1941 should have been deferred, see *1939-40 Rep.*, p. 269, in which records "coll." should read "Coll," **Saxifraga hypnoides* L. (cf. our *1939-40 Rep.*, p. 245), and **Lycopus europaeus* L. (from which the * should be removed in the account of our excursion to Mull—*1939-40 Rep.*, p. 246).

N. EBULES.—Rhum. For further records see Harrison, J. W. H. *et al.* (1941A).

OUTER HEBRIDES.—Atkinson (1940: *Trans. Bot. Soc. Edin.*, xxxiii, 52-60) contributes "Notes on the Botany of North Rona and Sula Sgeir," the results of a visit in July to August 1936. Twelve new records for North Rona are added to the thirty-five species observed by R. M. Barrington in 1885, and two to the five observed by Malcolm Stewart in 1933. J. W. H. & H. H. Harrison and Clark (1941B) publish some notes on the flora of the Isle of Harris. The new varieties, *Rubus incurvatus* Bab. var. *minor* W. Wats., *Rosa glaucophylla* Winch var. *rupicola* Heslop Harrison, and *Anthemis nobilis* var. *discoidalis* Heslop Harrison, are described.—[Wa.] Harrison (1941) reports the discovery of a new "focus" of arctic-alpine species in South Uist and records additional localities for "southern" species.—[H.] "The Preliminary Flora

of the Outer Hebrides" (see 1939-40 *Rep.*; 411) was not published till 1941.

(D) DISTRIBUTION.

POST-GLACIAL HISTORY OF BRITISH VEGETATION. [H.]

- (a) POLLEN ANALYSES and other data are recorded from the following areas:—

SOMERSET.—Godwin, H.; 1941: Studies of the Post-Glacial History of British Vegetation; IV, Correlations in the Somerset Levels; *New Phyt.*, xl, 108-132.

HAMPSHIRE.—Godwin, H., and Godwin, M. E.; 1940: Submerged Peat at Southampton. Data for the Study of Post-Glacial History, V; *New Phyt.*, xxxix, 303-307.

HUNTINGDONSHIRE.—Godwin, H.; 1942: A Middle Bronze Age Palstave from buried forest at Woodwalton Fen, Hants. Data for the Study of Post-Glacial History, VIII; *New Phyt.*, xli, 165-170.

GLAMORGAN.—Fox, Sir Cyril, and Hyde, H. A.; 1939: A second Cauldron and an Iron Sword from the Llyn Fawr Hoard, Rhigos, Glamorganshire; *Antiq. J.*, xix. Hyde, H. A.; 1940: On a Peat Bog at Craig-y-llyn, Glam. Data for the Study of Post-Glacial History, IV; *New Phyt.*, xxxix, 226-233. Godwin, H.; 1940A: A Boreal Transgression of the sea in Swansea Bay. Data for Study of Post-Glacial History, VI; *New Phyt.*, xxxix, 308-321.

DENBIGHSHIRE.—Bibby, H. C.; 1940: The Submerged Forests at Rhyl and Abergele, North Wales. Data for the Study of Post-Glacial History, III; *New Phyt.*, xxxix, 220-225.

MEATH.—Mitchell, G. F.; 1942: A Composite Pollen Diagram from Co. Meath, Ireland; *New Phyt.*, xli, 257-261.

ENGLAND AND WALES.—Godwin, H. (1940B): Pollen Analysis and Forest History of England and Wales; *New Phyt.*, xxxix, 370-400) shows that the pollen zonation established in the Fenland is applicable to the whole country. The following zones are distinguished:—VIII, Alder-oak-elm-birch-(beech) zone; VII, (a and b) Alder-oak-elm-lime zone; VI, (a, b, and c) Pine-hazel zone; V, Pine zone; IV, Birch-pine zone.

(b) FRUITS AND SEEDS:—

KENT.—Conolly, A. P. (1941: A Report of Plant Remains from Minnis Bay, Kent; VII, Data for the Study of Post-Glacial History; *New Phyt.*, xl, 299-303) lists 37 kinds of seeds (largely ruderal species) from a Late Bronze Age site in Minnis Bay, Kent. [*Coriandrum sativum* L., of which a single fruit (figured) was found, is the most interesting of the species.]

ALTITUDINAL RANGE.—Wilson, A. (1940A: *N.W. Nat.*, xv, 41-50) contributes "Further Notes on the Altitudinal Range of British Plants."—[Wa.]

WILD PLANT CONSERVATION.—Ramsbottom, J. (1941: Preservation of the British Flora; *Nature*, cxlviii, 554-7) discusses plant conservation in Britain in the light of broad ecological principles.—[H.]

(E) GENETICS.

Lewis, D. (1941: Male Sterility in Natural Populations of Hermaphrodite Plants. The equilibrium to be expected between females and hermaphrodites with different types of inheritance; *New Phyt.*, **xl**, 56-63) discusses the possible mechanisms whereby equilibrium might be established between females and hermaphrodites in "gynodioecious" species: cytoplasmic male sterility, which occurs in all such species fully investigated, only requires a slight advantage of the females to be effective.—[H.]

(F) CYTOLOGY.

CHROMOSOME NUMBERS.—Maude, P. H. (1940: Chromosome numbers in some British Plants; *New Phyt.*; **xxxix**, 17-32) has made chromosome counts of 55 species of British plants previously uncounted; she has confirmed the counts made by earlier authors in 10 species and has obtained in 7 species counts which differ therefrom. A Supplement to the Merton Catalogue (Rutland, J. P., 1941: The Merton Catalogue. A List of Chromosome Numbers of British Plants. Supplement No. 1; *New Phyt.*, **xl**, 210-214) records chromosome counts of 37 species, newly counted by the author, and of 54 compiled from various sources.—[H.]

(G) NOMENCLATURE.

POPULAR NAMES.—A. W. Johnston (1939: Derivation of some Orkney Plant-Names; reprinted (pp. 1-11) from *Miscellany of the Viking Society*, **x**) deals with 20 names. Usages of interest to the general British botanist are "Blackberry" for fruit of *Empetrum*, and "Dochen" for the Dock [the latter more widespread as "Docken"].—[Wi.]

(H) TAXONOMY.

CLASSIFICATION.—Matthews, J. R. (1941: *Trans. Bot. Soc. Edin.*, **xxxiii**, 69-81) in his Presidential Address to the Botanical Society of Edinburgh dealt with "Floral Morphology and its Bearing on the Classification of Angiosperms."—[Wa.]

"SUBSPECIES" AND "VARIETY."—The meaning of these terms is discussed at length by Clausen, R. T. (1941: *Rhodora*, **xliii**, 157-167), and the discussion is continued by Fosberg, F. R., and Weatherby, C. A. (1942: *Rhodora*, **xliv**, 153-167).—[Wi.]

SYSTEMATIC.

6. RANUNCULUS. Parkin (1940A: *N.W. Nat.*, **xv**, 3-12) discusses "The Glossy Petal of the Buttercup," dealing with the British yellow-flowered species.—[Wa.]
- 6/9. RANUNCULUS ARVENSIS L. Burkill, I. H. (1941: An Ontogenetic Analysis of *Ranunculus arvensis* Linn.; *J.B.*, **lxxix**, 121-131) finds that the phyllotaxy throughout this species is on a $2/5$ ths spiral, which is continuous through the cotyledons, leaves, sepals, petals, stamens and carpels. In a spring-sown crop it

- was usually the ninth of these emergencies which was the first sepal, but if there were nine leaves (the cotyledons counting as leaves) then the tenth became the first sepal. In an autumn-sown crop from the same lot of pure-line seed the leaves varied from seven to thirteen. Much information is given concerning the development of the leaves, and their areas are tabulated. The effects of mutilations are set out, and malformations of sepals and stamens are described.—[Wi.]
- 6/25. *RANUNCULUS PELTATUS* Schrank. The method of nectar secretion from the petal nectary is described by Cubitt, R. (1942: *Naturalist*, Nos. 802-805, 113-116).—[Wa.]
- RHOEADALES*. A study of the origins of vascular bundles in the torus, and of nectary characteristics, appears to indicate criteria useful in the phylogenetic study of the genera and families. It seems that *Resedaceae* and *Capparidaceae* are the most primitive, probably derived on parallel lines from an ancestral stock, the *Papaveraceae*, *Fumariaceae* and *Cruciferae* being developed later, again on parallel lines, from a stock somewhat resembling existing *Resedaceae* and *Capparidaceae*. Norris, T. (1941: *Torus Anatomy and Nectary Characteristics as Phylogenetic Criteria in the Rhaeadales*; *Amer. J.B.*, xxviii, 101-113).—[Wi.]
- 21/1. *PAPAVER SOMNIFERUM* L. Melville, R. (1941: *Gard. Chron.*, cix, 54) suggests that the Opium Poppy might be cultivated in Britain as a source of oil, and (1942: *Gard. Chron.*, cxi, 187-188) gives a report of cultivation experiments at Kew and Twickenham. Warne, L. G. G. (1941: *Gard. Chron.*, cx, 229-230) reports the results of growing seeds obtained from a chemist. Owing to drought 36 instead of the expected 50 reached maturity. The yield of seed from 25 square feet was only 3.8 oz., equivalent to 446 lbs. per acre, but this compares favourably with that obtained by native cultivators in India.—[Wa.]
- 35/1. *NASTURTIUM OFFICINALE* R. Br. Howard, H. W., and Manton, I. (1940: *Nature*, cxlvi, 303) show that wild tetraploid watercress is not an auto- but an allo-polyloid and submit that it be treated as a new species.—[H.]
54. *BRASSICA*. Thomas, P. T., and Crane, M. B. (1942: *Genetic Classification of Brassica crops*; *Nature*, cl, 431) show that cultivated kales may be classified genetically under the cabbage type ($2n = 18$) and the swede type ($2n = 38$).—[H.] Howard (1942) discusses self incompatibility in polyploid forms.—[H.]
- 54/2. *BRASSICA CAMPESTRIS* L. Ramanujam, S. (1940: *Nature*, cxlv, 552-3) describes an apetalous mutation in Turnip observed in India.—[H.]
- 54/16. *BRASSICA JUNCEA* (L.) Coss. Stansfield (1940) deals with the occurrence of this plant in the "four-foot" on the L.M.S. Rly. in the Liverpool district and beyond, and in

- the Martin Mere district, S. Lancashire. The plant is described and the probability of its binding the "bed of the rail" into a solid matrix and so interfering with the resiliency of the "road" dealt with.—[Wa.]
- 68/1. *ISATIS TINCTORIA* L. Redgrove, H. S. (1942: *Gard. Chron.*, cxi, 84-85) considers woad native near Tewkesbury.—[Wa.]
80. *RAPHANUS*. Howard (1942) discusses self incompatibility in polyploid forms.—[H.]
85. *RESEDA*. Arber, A. (1942: *Studies in Flower Structure*; VII, On the Gynaeceum of Reseda, with a consideration of Paracarp; *Ann. Bot.*, N.S., vi, 43-48) shows that the gynoeceum in its system of pollen tube conveyance is typically angiospermous.—[H.]
- 88/1. *VIOLA STAGNINA* Kit. apud Schultes. Dallman, A. A. (1942: *N.W. Nat.*, xvii, 255-256) reports the discovery of this violet near Doncaster, v.-c. 63, S.W. Yorkshire. The high probability of the record for Thorne Waste, in the same county, having been correct is suggested.—[Wa.]
- 88/4. *VIOLA RIVINIANA* Rchb. The variation of this species is described by Valentine, D. H. (1941: *New Phytol.*, xl, 189-209), who finds it possible to separate two subspecies, which he names. "subsp. *nemorosa* N.W. & M. emend. Valentine" and "subsp. *minor* (Murbeck) Valentine" respectively.—[Wi.]
- 88/20. *VIOLA* § *MELANUM*. Harrold (1942) records the occurrence of *Viola agrestis* Jord., *V. Deseglisei* Jord., and *V. Lloydii* Jord. in a field which had been under grass since 1918 but was ploughed in 1940 and planted with potatoes. It is suggested that the seeds reached the land in the mud caked on the blades of the plough, and on the boots of the men who carried out the ploughing.—[Wa.]
- 88/[?31]×33. *VIOLA LUTEA* Huds. × *TRICOLOR* L. Fothergill, P. G. (1941: *Studies in Viola*; III, An account of the Inheritance of certain characters in the Progeny of Plants of a Wild Population of *Viola* hybrids; *New Phyt.*, xl, 139-151) discusses the progeny of a wild population of hybrids between this species and *V. tricolor*. Neither of the original parents was recovered among the progeny. The plants obtained by chance crossings tend to be intermediates or to resemble *V. lutea* to a greater extent: their chromosome number (2n) varies from 24 to 58 with a peak at 48 (the somatic number of *V. lutea*). There is no connexion between the chromosome number of any plant and the possession by it of any combinations of morphological characters. Hairiness of leaves, spatulate middle lobe of stipule, long and slender petaloid spur and dentate sepaline appendages are all produced by specific dominant genes. Other characters are controlled by several polymeric genes.—[H.]

13. CARYOPHYLLACEAE. "The Floral Morphology of the Caryophyllaceae" has been investigated by Thomson (1942: *Amer. J.B.*, xxix, 333-349) in 29 species of 10 genera: it is concluded that the petal is probably a modified stamen, and that the Alsineae are more reduced and anatomically more advanced than the Sileneae: relationship to the Primulaceae is upheld, but none directly with Geraniaceae, and only remotely to Polemoniaceae.—[Wi.]
96. SILENE. Marsden-Jones, E. M., and Turrill, W. B. (1940: *Kew Bull.*, xxv, 66-73) have continued their researches on *S. maritima* and *S. vulgaris* and gives an account of plants grown from seed collected at Fearnan, Loch Tay. Characters which showed segregation were concerned with habit, sex, calyx shape, anthocyanin in calyx, possibly anthocyanin blotch in petals, corona, petal colour, filament colour, stigma colour, and flowering. The presence of a gene (or genes) more or less preventing proper development of flowering stems is strongly suggested in two families derived from one stock plant.—[Wa.]
- 96/8. SILENE ACAULIS L. Muirhead, C. W. (1942: *Gard. Chron.*, cxii, 108) contributes a short note on the distribution in Scotland.—[Wa.]
- 98/8. LYCHNIS ALPINA L. Muirhead, C. W. (1940A: *N.W. Nat.*, xv, 69-70) records a white-flowered plant from its classic Cumberland station.—[Wa.]
- 142/1. ACER PSEUDO-PLATANUS L. Parkin, J. (1940B: Variation in the Cotyledons of the Sycamore; *N.W. Nat.*, xv, 261-262) records the occurrence of seedlings with apparently three or four instead of two cotyledons, due to the complete splitting of one or both cotyledons. Scott, L. I. (1941: Flowering Sycamore Shoots; *Naturalist*, 25-27) records the persistence on trees for several years of old inflorescence axes.—[Wa.]
- 155/16. TRIFOLIUM REPENS L. This species contains a series of genetic factors which produce sterility due to cytological incompatibility, the study of which is continued by Atwood, S. S. (1941: *Amer. J.B.*, xxviii, 551-557).—[Wi.]
- 176/14. VICIA LATHYROIDES L. This species has been found on a sandy spit in Virginia between two rivers emptying into Chesapeake Bay, and, in the herbarium, from Nantucket Island, Massachusetts: not previously known in N. America. A. B. Massey (1941: *Rhodora*, xliii, 207-208).—[Wi.]
- 186/1. DRYAS OCTOPETALA L. The root-habit is described by Holch *et al.* (1941).—[Wi.]
- 219/1. LYTHRUM SALICARIA L. Fisher, R. A., and Mather, K. (1940: Non-lethality of the Mid Factor in *Lythrum Salicaria*; *Nature*, cxlvi, 521) conclude from breeding experiments that the Mid style length factor is not lethal when homozygous, as had been previously suggested. The same authors (1942: Polyploid

- Inheritance in *Lythrum Salicaria*; *Nature*, cl, 430) discuss polyploid inheritance in this species in the light of further experiments.—[H.]
- 220/1. *EPILOBIUM ANGUSTIFOLIUM* L. For observations on pollination and insect visitors see Dallman (1941B).—[Wi.] The root-habit is described by Holch *et al.* (1941).—[Wi.]
- 237/1. *HYDROCOTYLE VULGARIS* L. For observations on pollination and insect visitors see Dallman (1941B).—[Wi.]
239. *ERYNGIUM*. Mathias, M. E., and Lincoln, C. (1941: *Amer. Midland Nat.*, xxv, 361-387) give a synopsis of the North American species. Sixty-four species and several varieties are given, including *E. maritimum* L., *E. campestre* L. and *E. planum* L.; all as introduced from Europe.—[Wa.]
- 277/2. *HERACLEUM SPHONDYLIIUM* L. Majumdar, G. P. (1942: *The Organisation of the Shoot of Heracleum in the Light of Development*; *Ann. Bot.*, N.S., vi, 49-81) has made an intensive study of the anatomy and development.—[H.] He also (1940: *Proc. Leeds Phil. and Lit. Soc., Sci. Sect.*, iii, 642-651) describes the development and structure of the protoxylem vessels.—[Wa.]
- 318/19. *ASTER TRIPOLIUM* L. Clapham, A. R., Pearsall, W. H., and Richards, P. W. (1942: *Biological Flora of the British Isles*; *J. Ecol.*, xxx, 385-395) give a biological and ecological account.—[Wa.]
- 320/3. *ERIGERON CANADENSIS* L. Smith, L. (1942: *N.W. Nat.*, xvii, 257) records this plant from waste land near Bridge Terrace, Doncaster, v.-c. 63, S.W. Yorkshire, where it was introduced with sand used in sand-bags.—[Wa.]
- 365/1. *ACHILLEA MILLEFOLIUM* L. The root-habit is described by Holch *et al.* (1941).—[Wi.]
- 391/1. *CARLINA VULGARIS* L. Green, H. E. (1941: *N.W. Nat.*, xvi, 37-39) deals with the morphology of the fruit and its dispersal.—[Wa.]
- 393/1. *ARCTIUM LAPPA* L. The bristles which form a tuft (pappus) on the summit of each fruit are sharply pointed and their sides armed with numerous sharp spikes. It is suggested that these bristles, which break off, irritate the skin of any animal to which the burr has become attached, causing the creature to scratch at the burr and in so doing knock it to pieces and scatter the fruits.—Latter, O. H. (1941: *A Factor in the Dispersal of Burdock (Arctium Lappa L.)*; *Nature*, cxlviii, 726).—[Wa.]
- 416/10. *CREPIS TARAXACIFOLIA* Thuill. Dallman, A. A. (1941A: *N.W. Nat.*, xvi, 203-206) discusses the occurrence of this species in Cheshire and elsewhere in Britain.—[Wa.]
419. *HIERACIUM*. Pugsley, H. W. (1942: *J.B.*, lxxix, 177-183, 193-197), in connection with his preparation of a monograph of the British species, gives diagnoses of a number of new species and brief explanations of other new specific names.—[Wa.]

460. PRIMULA. Saunders, E. R. (1941: The significance of certain morphological variations of common occurrence in flowers of *Primula*; *New Phyt.*, xi, 64) describes numerous morphological departures from type occurring sporadically in flowers of *Primula* together with the anatomical adjustments accompanying them.—[H.] Mather, K., and de Winton, D. (1941: Adaptation and Counter-Adaptation of the Breeding System in *Primula*; *Ann. Bot.*, N.S., v, 297-311) arguing from the results of breeding experiments on *P. sinensis* put forward a hypothesis to explain the origin and significance of heterostyly in this and other species of *Primula*.—[H.]
- 467/2. ANAGALLIS ARVENSIS L. Dallman, A. A. (1940B: *N.W. Nat.*, xv, 167-168) records some observations on the pollination and enumerates several insect visitors.—[Wa.]
- 480/1. GENTIANA PNEUMONANTHE L. The occurrence in Sussex is dealt with, with some ecological notes, by Wood, F. C. (1942: *Gard. Chron.*, cxii, 107-108).—[Wa.]
- 513/1. CONVULVULUS ARVENSIS L. Accidental injury to a finger in preparing roots for chemical and physiological study disclosed that they contained an anti-haemorrhagic substance which immediately stopped the bleeding, the bad cuts healing readily—Bakke, A. L., and Render, A. D. (1942: *Amer. J.B.*, xxix, 353-4).—[Wi.]
- 532/1. LINARIA VULGARIS Mill. The variation in the peloric flowers of a single plant occurring in New York is described and figured by Camp, W. H., and Gilly, C. (1941: *Torreya*, xli, 33-42, pls. 1-2).—[Wi.]
- 543/10. VERONICA ALPINA L. The root habit is described by Holch *et al.* (1941).—[Wi.]
545. EUPHRASIA. Callen, E. O. (1941) publishes some records for vice-counties 87, 89 and 104, and describes two new varieties; *E. confusa* Pugsl. var. *maciana* and *E. nemorosa* Löhr var. *imbri-cata*. Edees (1942A) gives an account of the species met with in North Staffordshire.—[Wa.]
552. UTRICULARIA. Thompson, J. W., jr. (1940: *Trans. Wisconsin Acad.*, xxxii, 85-89) gives a key to the species of *Utricularia* in Wisconsin, U.S.A. Eight species are recorded, including *U. intermedia* Hayne, common throughout the States; *U. minor* L., rare; and *U. vulgaris* L. var. *americana* Gray, the commonest species.—[Wa.]
566. SALVIA. Saunders, E. R. (1940: Further observations on the Morphology and Anatomy of the Flower in *Salvia*; *Ann. Bot.*, N.S., iv, 629-633) adduces evidence for the persistence of vascular bundles after morphological form (in this instance that of stamens) has been lost.—[H.]
- 577/5. STACHYS PALUSTRIS L. The root habit is described by Holch *et al.*.—[Wi.]

- 588/5. *PLANTAGO MARITIMA* L. Earnshaw, F. (1942: Experimental Taxonomy; V, Cytological Studies in Sea Plantains allied to *Plantago maritima* L.; *New Phyt.*, xli, 151-164) finds that in this group of plantains the basic chromosome number is $x = 6$. The N. American, Greenlandic and North European populations are $2x$; those inhabiting the European alpine region are of two kinds, $2x$ and $4x$. Since the $2x$ and $4x$ populations lead an almost independent evolutionary existence it is suggested that taxonomically they should be regarded as separate *ecospecies* within one *coenospecies*.—[H.]
- 633/4. *ULMUS PLOTII* Druce. The present known distribution in Wiltshire is set out by Welch and Grose (1942: 76).—[Wi.]
- 649/1. *FAGUS SYLVATICA* L. Harley, J. L. (1940: *J. Ecol.*, xxviii, 107-117) describes the root system, in woodland soils, with special reference to mycorrhizal infection.—[Wa.]
650. *SALIX*. Wilkinson, J. (1941: *Proc. Swansea Sci. and Field Nat. Soc.*, ii, 133-141) describes the Salices of the Gower, Glamorgan, and gives an account of their ecology.—[Wa.]
- 650/3b. *SALIX ALBA* L. var. *CAERULEA* (Sm.) Koch. Var. *caerulea* may be distinguished from other *S. alba* vars. on the basis of satellite number; it is considered to be a variety not a hybrid (Wilkinson, J.; 1941: The Cytology of the Cricket Bat Willow (*Salix alba* var. *caerulea*); *Ann. Bot.*, N.S., v, 149-165).—[H.] All the forms of *S. alba* and *S. fragilis* investigated are allotetraploids ($2n = 76$).—[Wi.]
- 656/1. *ELODEA CANADENSIS* Michx. Smith, A. M. (1941: *Naturalist*, 125-127) describes the female flower with some remarks on pollination.—[Wa.]
91. ORCHIDACEAE. Downie, D. G. (1941: *Trans. Bot. Soc. Edin.*, xxxiii, 94-103) gives the results of some experimental work on the germination of seeds of some British Orchids, which show that some species germinate asymbiotically quite freely in water, some germinate freely or only sparsely in sugar solution, while others resisted all attempts to induce germination. From a few species the fungal symbionts were isolated and experiments carried out to determine the effect of these mycorrhizal fungi on the seeds of their respective host plants and on the seeds of other species of orchids.—[Wa.]
- 665/1. *GOODYERA REPENS* (L.) R. Br. Downie, D. G. (1940: *Trans. Bot. Soc. Edin.*, xxxiii, 36-51) describes some experiments on the germination and growth of this orchid which tend to support the view that endophytic fungi play a large, if not the whole, part in the germination of orchid seeds in the field.—[Wa.]
- 668/2. *EPIFACTIS HELLEBORINE* (L.) Cr. emend. Rend. & Br. A single specimen found in New Hampshire, U.S.A., has been recorded by Upham (1942: *Rhodora*, xlv, 456-7, as *E. latifolia* (L.) All.): "contrary to the usual coloration of the flowers as given

- in descriptions, these were nearly white instead of greenish and showed little madder-purple suffusion." The species has been reported from various localities in North America.—[Wi.]
669. ORCHIS. Stephenson (1942A) contributes a note on the Dactylo-orchids of Cardiganshire, v.-c. 46. He reports that there are now barely a dozen plants of *O. purpurella* in the original locality where twenty-five years ago about 600 specimens were seen. Most of the other orchids which grew there have gone. Five other localities for *O. purpurella* are given, as well as records for *O. latifolia* L. sec. Pugsley, *O. pardalina* Pugs., *O. ericetorum* (Lint.) E.S.M. and *O. praetermissa* Dr. Lloyd (1940B) gives some notes on the status and distribution of the orchids in Shropshire.—[Wa.]
- 711/1. GAGEA LUTEA (L.) Ker-Gawl. For observations on pollination and insect visitors see Dallman (1941B).—[Wi.]
- 716/1. PARIS QUADRIFOLIA L. Shown by Darlington, C. D. (1941: Polyploidy, Crossing-over, and Heterochromatin in Paris; *Ann. Bot.*, N.S., v, 203-216) to have no allocyclus and, although tetraploid, to form no quadrivalents at meiosis and to have only one nucleolar organizer in its haploid sets.—[H.]
718. JUNCUS L. Richards, P. W., and Clapham, A. R. (1941: Biological Flora of the British Isles; *J. Ecol.*, xxix, 362-391) give accounts of *J. inflexus* L., *J. effusus* L., *J. conglomeratus* L., and *J. subnodulosus* Schrank.—[Wa.]
- 718/9 and 10. JUNCUS ACUTIFLORUS Ehrh. and J. ARTICULATUS L. Timm, E. W., and Clapham, A. R. (1940: Jointed Rushes of the Oxford District; *New Phyt.*, xxxix, 1-16) describe the morphology and cytology of both species and of the sterile hybrid, which is very common near Oxford. $2n: J. acutiflorus = 40; J. articulatus = 80; J. acutiflorus \times articulatus = 60$. A plant referred to as "large 80" resembles both species in various ways; its taxonomic status awaits further investigation.—[H.]
721. TYPHA. Abnormalities in both *T. angustifolia* and *T. latifolia*, in which two or more spikes are juxtaposed (side by side), were found to be due to disturbances in the growing tissues caused by the larvae of the moth *Limnaecia phragmitella* Stainton: although "found wherever *Typha* is found," it always chooses *T. angustifolia* in preference to *T. latifolia* for laying its eggs (St John, H., 1941: "Teratologic *Typha*"; in *Rhodora*, xliii, 85-91).—[Wi.]
727. LEMNA. See White, H. L. (1940: The Interaction of Factors in the Growth of *Lemna*; XV, On a Rhythmic Growth Cycle of *Lemna* Colonies associated with Transference to a Potassium free Nutrient Solution; *Ann. Bot.*, N.S., iv, 495-504).
- 735/1. TRIGLOCHIN MARITIMUM L. Recorded by Burke, F. (1942: *Nature*, cl, 405) from an inland locality (a salt spring at Aldersey, Cheshire).—[H.]

- 736/1. SCHEUCHZERIA PALUSTRIS L. Lloyd (1940A) gives the history of the occurrence in each of its four stations in Shropshire.—[Wa.]
740. ZOSTERA L. Tutin, T. G. (1942: Biological Flora of the British Isles; *J. Ecol.*; xxx, 217-226) gives detailed biological and ecological accounts of the British species.—[Wa.]
105. CYPERACEAE. A morphological study of the flowers has been made by Blaser, H. W. (1941: *Amer. J.B.*, xxviii, 542-551, 832-838). The bristles occurring in some genera are regarded as the veins of three sepals, extra bristles representing lateral veins of ancestral foliose sepals. Stamens may be two alternating whorls of three, and when only three occur it is usually the inner whorl that is lost, and the second whorl cannot be regarded as representing the inner whorl of stamens. Any second perianth whorl is trimerous, alternating with the sepals: if they are staminodal, they must represent a third outermost whorl of stamens. The gynoeceium in most genera consists of three carpels.—[Wi.]
- 750/1. CLADIUM MARISCUS (L.) R. Br. Conway, V. M. (1940: Growth Rates and Water Loss in *Cladium Mariscus* R. Br.; *Ann. Bot.*, N.S., iv, 151-164) shows that the vascular supply to the leaves is insufficient to allow of vigorous transpiration and simultaneous cell extension. The plant is therefore an obligate holophyte.—[H.] Conway, V. M. (1942: Biological Flora of the British Isles; *J. Ecol.*, xxx, 211-216) gives a detailed biological and ecological account.—[Wa.]
753. CAREX. Several British species are mentioned by Fernald (1942: *Rhodora*, xlv, 281-331) in an article entitled "Critical Notes on Carex." *C. disticha* Huds. (as opposed to *C. Sartwelli* Dewey) does occur, possibly as an adventive, in Ontario. *C. caryophyllea* Latour. is accepted (pp. 286-8) as a valid name antedating *C. verna* Chaix in Vill. *C. aquatilis* Wahl. apparently gives trouble (pp. 295-8) by its variation in America as in Britain. *C. Bigelowii* Torr. is accepted as the correct name for the species so well known as *C. rigida* Good. (non Schrank), but the British (and European) plant is said (p. 299) to differ slightly from that of the type locality (in the White Mountains of New Hampshire, U.S.A.). *C. acuta* L. is considered (pp. 301-2) to be correctly used for *C. gracilis* Curt. The American representatives of *C. lasiocarpa* Ehrh. (pp. 304-5) and *C. pallescens* L. (pp. 306-7) are treated as varieties distinct from the European. The occurrence of typical *C. Hostiana* in Miquelon, the previous records all referring to the American var. *laurentiana*, is recorded (p. 319). The variation of *C. rostrata* Stokes in With. (under the wrongly applied name of *C. inflata* Huds.) is dealt with at some length (pp. 324-331). The article is illustrated by several good photographic plates.—[Wi.]

- 753/17. *CAREX DISTANS* L. f. Recently added to Flora of Mexico (from a valley at 4000 ft. above sea)—O'Neill (1942: *Rhodora*, xlv, 88).—[Wi.]
- 753/63×57. *CAREX BOENNINGHAUSENIANA* Weihe: Whellan, J. A. (1942B: *Carex Boenninghauseniana* Weihe in West Lancashire; *N.W. Not.*, xvii, 254-255) reports that E. Nelmes so names a sedge from near Brock, West Lancashire. It is apparently the sedge previously recorded in the supplement to Wheldon & Wilson's *Flora of West Lancs.* from this locality as *C. axillaris* Good, which should therefore be deleted from that Flora.—[Wa.] The "60" under ×*C. axillaris* in the *Comital Flora* (p. 340) should be transferred to ×*C. Boenninghauseniana* (p. 341).—[Wi.]
106. POACEAE. Dore, W. G., and Roland, A. E. (1942: *Proc. Nova Scotia Inst. Sci.*, xx, 177-288) give a systematic account of "The Grasses of Nova Scotia" with keys, notes on characteristics, nomenclature and distribution. 121 species are recorded for the province, many of which are also British and occur in Nova Scotia either as native or as introduced plants.—[Wa.]
- 765/11. PHALARIS ARUNDINACEA L. The rhizome system is described by Mueller (1941).—[Wi.]
- 824/2. POA PRATENSIS L. Brown, W. C. (1939: *Amer. J. Bot.*, xxvi, 717-723) discusses the chromosome complement of five species of *Poa* and gives an analysis of variation in *P. pratensis*. He also deals with the cytogenetics of that species (1941: *Ann. Miss. Bot. Gard.*, xxviii, 493-516). Akerberg, E. (1939: *Hereditas*, xxv, 359-370) deals with apomictic and sexual seed formation.—[Wa.] The rhizome system is described by Mueller (1941).—[Wi.] Variation in size and appearance of the spikelets in the same panicle (in Nova Scotia) was caused by an infection of a nematode worm: the infected spikelets were larger and greener, though fewer and, in heavily-infected plants, forming a much reduced panicle. *Poa costata* Schumacher may be only such a diseased state.—Dore, W. G., 1942: in *Rhodora*, xlv, 246-7.—[Wi.]
835. HORDEUM. Chin, T. C. (1941: The Cytology of some Wild Species of *Hordeum*; *Ann. Bot.*, N.S., v, 535-545), found in California material of *H. nodosum* L. from different altitudes, two diploid forms ($2n = 14$) and one tetraploid ($4n = 28$). Two distinct forms of *H. murinum* L. are described, one from Cambridge and the other from the United States of America, both of which are tetraploids ($4n = 28$).—[Wi.]
- 844/2. EQUISETUM ARVENSE L. An account of the finding of large numbers of gametophytes in Connecticut on alternately wet and sun-baked fine soil at the base of a disused pit, is given by

- Matyke (1941: *Torreyia*, xli, 181-186); it was not uncommon for one gametophyte to bear more than one sporophyte.—[Wi.]
- 844/8. *EQUISETUM TRACHYODON* Braun. Matthews, J. R. (1940: *Equisetum trachyodon* as a Scottish Plant; *Trans. Bot. Soc. Edin.*, xxxiii, 29-32) reviews its history as a British plant with special reference to its occurrence on the banks of the R. Dee, Banchory, Kincardineshire. H. C. Watson rejected the record as dubious, but there is a specimen in the Aberdeen University Herbarium labelled "banks of the River Dee at Banchory" dated 16th August 1842. No collector's name is given, but as 1842 was the year in which the Rev. J. B. Brichan published an account of the occurrence of this along with *E. hyemale* and *E. variegatum* in the parish of Banchory it is probable that he was the collector. Specimens from the locality also exist in Herb. Mus. Brit. and Herb. Kew. The plant still grows on the banks of the Dee, near the Bridge of Potarch, Aberdeenshire. It appears to have disappeared from the Banchory locality, but the Kincardineshire (v.-c. 91) record should stand in view of Brichan's original gatherings.—[Wa.]
- 847/1. *PTERIDIUM AQUILINUM* (L.) Kuhn. The morphology of the rhizome, with special reference to soil conditions and the phenomena of invasion as observed in Breckland, is described by Watt, A. S. (1940: Contributions to the Ecology of Bracken (*Pteridium aquilinum*); I, The Rhizome; *New Phyt.*, xxxix, 401-422).—[H.]
- 864/1. *OSMUNDA REGALIS* L. Payne, L. G. (1942: *London Naturalist*, 1941, 12-13) reports two recent records in West Surrey.—[Wa.]
- 868/1. *AZOLLA FILICULOIDES* Lam. Dallman and Williams (1940) and Williams, E. G. (1940 and 1941: Further Notes on *Azolla filiculoides* Lam.; *N.W. Nat.*, xv, 265-266 and xvi, 208) discuss this species with special reference to its occurrence in a pond on the Curzon Park Golf Links and in a pond near Bidston Junction Station, Wirral, Cheshire.—[Wa.]

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