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THE GARDENER'S YEAR BOOK

1930

EDITED BY

D. H. MOUTRAY READ
F.R.H.S.

Habeo opus magnum in manibus



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EDITOR'S NOTES

IN response to requests from various sources we have again altered the arrangement of contents. Matters of permanent interest in tabular form are collected at the beginning. Miscellaneous articles and cultural articles, with appendices complete Part I. All chronological and reference matter, directories, etc., will be found together in Part II. A tree, as it grows, needs training and pruning; so with a Year Book. The ideal reference book does not change the arrangement of its subject-matter, and with our fourth issue we trust that a finally satisfactory arrangement has, through experience, been reached.

The suggestion of Mr. Taylor, Hort. Com., Ministry of Agriculture, that we should include reports from experimental stations last year, proved of such practical interest that we hope to make it a yearly feature. Many people are still unaware of the mass of horticultural investigations in progress, and it is hoped that these abbreviated accounts of the work being done may not only be helpful to many, but arouse among a wider public increased interest in this work of national—and imperial—importance.

While the Editor takes general responsibility for the Year Book contents, the papers by contributors may express individual opinions.

As in a book of this kind it is desirable to have a uniform standard of spelling, the rule adopted has been mainly to follow the *Index Kewensis* and *Johnson's Gardeners' Dictionary*.

The colour question is a difficulty. Undoubtedly it adds to the value and interest of lists of flowers if the colours in every case are given. When possible the general colour is noted, but apart from the point of space, necessarily limited, the same flower will be found sometimes in half a dozen catalogues with varying descriptions of its colour. To take a concrete example, the National Sweet Pea Society classed *Mary Pickford* "cream-pink (pale)," the Scottish National Sweet Pea and Rose Society classified it as "cream-pink (deep)."

We can only make the Year Book what we wish it to be, and what it ought to be, by the kindly help and co-operation of all who take any interest in gardens and the very many subjects that are connected with horticulture in all its branches. It could never have been attempted had we not received the greatest help and encouragement from the Ministry of Agriculture, the authorities at Kew,

the Royal Horticultural Society, the National Rose Society, the National Gardens Guild, and others.

We have again to record our gratitude and our thanks for generous help to the Ministry of Agriculture, the R.H.S., to *The Gardeners' Chronicle*, Mr. F. Kingdon Ward, Messrs. Williams & Norgate, Messrs. Martin Hopkinson, and Mr. W. E. Shewell-Cooper for permission to use blocks for illustrations; to the Bishop of Gloucester, Mr. Lionel de Rothschild, Prof. E. J. Salisbury, Prof. Patrick Abercrombie, Major Vaughan Wardell, Mr. H. C. Long, the Editor of the *Journal of the Ministry of Agriculture*, Dr. Kate Barrett, Principal of Swanley Horticultural College, Mr. W. B. Cranfield, B. Hunt, A. W. Silver, Mr. Geoffrey Roper, Mrs. Rawnsley, Mrs. Allhusen, Lady St. John, Mrs. Wardell, Mrs. Howard Vyse, V. Sackville West, M. M. Sydenham, Miss Pearson, Mr. Kingdon Ward, Mr. W. E. Shewell-Cooper, Mr. Gordon W. Gibson, Mr. E. Speyer, Mr. C. J. Gleed, Mr. A. Edwards, Mr. B. Cant, Mr. Stuart Boardman, Mr. Richard Sudell, for reviews, articles, photographs, and miscellaneous help; also to all the Secretaries of Institutes and Societies who have sent information about their work.

We shall continue to welcome any help for future issues in the way of suggestions likely to be helpful, corrections to keep our matter up-to-date, or fresh information.

D. H. MOUTRAY READ.

QUALITY HOUSE,
December 31, 1929.

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SOME HORTICULTURAL ABBREVIATIONS

A. = Annual.
A.Brier = (Roses) Austrian Brier.
aff. = affinity.
A.G.M. = Award of Garden Merit (Wisley Trials).
Alp. = Alpine.
A.M. = Award of Merit.
ang. = angular.
aq. = aquatic.
axill. = axillary.
Ayr. = (Roses) Ayrshire.
B. = Biennial.
B. = (Roses) Bourbon.
b. = (colour) blue.
Bh. = Bush.
bk. = (colour) black.
bks. = banks.
blk. = (colour) black.
Bour. = (Roses) Bourbon.
br. = (colour) brown.
bus. = bushy.
C. = Commended.
C. = (Roses) China.
c. = (colour) cream.
calc. = calcareous.
C-h. = Cool house.
ch. = chalk.
cl. = climber.
Cl.Bour. = (Roses) Climbing Bourbon.
cop. = copse.
Cor. = Corolla.
cr. = creeper.
D. = (Roses) Damask.
decid. = deciduous.
decumb. = decumbent.
dit. = ditch.
dp. = damp.
ent. = entire.
f. = form.
F.L.S. = Fellow Linnean Society.
fl. = flower.
fl.pl. = flora plena = double blossom.
fol. = foliage.
F.R.H.S. = Fellow Royal Horticultural Society.
Gall. = (Roses) Gallica.
g. = (colour) green.
glab. = glabrous.
glauc. = glaucous.
gl. / grav. } = gravelly.
H. = herbaceous.
H.A. = Hardy Annual.
H.B. = Hardy Biennial.
H.B. = (Roses) Hybrid Bourbon.
H. Brac. = (Roses) Hybrid Bracteata.
H.Bour. = (Roses) Hybrid Bourbon.
H.Brier = (Roses) Hybrid Brier
H.C. = Highly Commended.
herb. = herbaceous.
H.H. = Half Hardy.
H.H.A. = Half Hardy Annual.
H.Musk. (Roses) Hybrid Musk.
H.N. = (Roses) Hybrid Noisette.
H. of sp. = Hybrid of species.
Hort. = Horticultural.
H.P. = Hardy Perennial.
H.P. = (Roses) Hybrid Perpetual.
H.rug. = (Roses) Hybrid rugosa.
H.T. = (Roses) Hybrid Tea.
I.-h. = Intermediate house.
imbric. = imbricated.
int. = introduced.
L. *or* l. = Leaf.
l. = (colour) lilac.
m. = (colour) magenta.
marg. = margin.
min. = miniature.
Min.Prov. = (Roses) Miniature Provence.
mult. ramb. = (Roses) multiflora rambler, climbing polyantha.
mult.scan. = multiflora scandens.
N. = (Roses) Noisette.

nat.=native.
Nat. ord.=Natural order.
N.D.H.=National Diploma in Horticulture.
N.R.S.=National Rose Society.
o.=(colour) orange.
Ord.=Order.
orn.=ornamental.
p.=(colour) purple.
P.=Perennial.
Pern.=(Roses) Pernetiana.
Perp.Moss = (Roses) Perpetual Moss.
Perp. Scotch = (Roses) Perpetual Scotch.
pi. } =(colour) pink.
pk. }
poly.pom.=(Roses) Dwarf Polyantha or pompon.
Prov.=(Roses) Provence.
pu.=(colour) purple.
R.=Rock garden plant.
r.=(colour) red.
ramb.=(Roses) rambler.
R.G.=Rock Garden.
R.H.S.=Royal Horticultural Society.
riv.=river.
rt.=root.
rug.=(Roses) rugosa.
S.=Shrub.
s.=(colour) silver.
s-aq.=semi-aquatic.
S.Brier=(Roses) Sweet Brier.
sc.=scented.
seg.=segment.
sep.=sepal.
sh.=shrubby.
sha.=shade.
shb.=shrubby.
Shb.=Shrubbery.
si.=(colour) silvery.
S.H.P.=(Roses) Single-flowered H.P.
S.H.T.=(Roses) Single-flowered H.T.
Sp.=Species.
sp.=(after genetic name) species unknown.
spp.=ditto, plural.
st.=stove.
st.=stem.
S.T.=(Roses) Single-flowered Tea.
sta.=stamen.
stig.=stigma.
syn.=synonym.
T.=(Roses) Tea.
T.=Tree.
Temp.=Temperature.
ten.=tender.
tend.=tendril.
Tr.=Tree.
v.=(colour) violet.
v. or var.=variety.
V.M.H.=Victoria Medal of Honour.
w.=(colour) white.
wds.=woods.
Wich.=(Roses) wichuraiana.
Wich. pom. = (Roses) wichuariana pompon.
W.R.A.=Wisley Rose Award.
y.=(colour) yellow.

GARDEN CALENDAR

NOTE.—Dates for garden operations are approximate only, and must be considered dependent on weather, soil, and locality (earlier in warm and sheltered districts).

JANUARY.

GENERAL WORK.—Seeds and implements needed for the year should be ordered as early as possible. In open weather trench any vacant ground. Get as much planting done as possible. Clean turf, edgings, and walks. Collect leaves for leaf-mould and hot-beds. In bad weather clean up where possible, put tools in order, wash pots, prepare sticks, labels, and composts. Remove and burn dead wood and rubbish. FLOWER GARDEN.—Renovating a lawn may be done now. Rake thoroughly, then dress with finely sifted mixture of manure, loam, or old potting soil, charred garden refuse and soot, three or four barrowfuls per square rod. Dig over and manure beds when weather permits. Clear away dead growths and all litter. Divide and replant herbaceous stuff as required. Climbers (except roses) on walls and pergolas may be trained; first cut out dead wood and weak or crowded shoots. In the shrubbery cut out dead wood, overcrowded branches, etc. Protect tender subjects with fern, evergreen branches, ashes, or mats, and cover roots with litter. After snowfall shake snow from evergreens. VEGETABLE GARDEN.—Finish digging, to allow frost and weather to work the soil before spring planting. *Sow:*—Broad Beans. *Plant:*—Shallots. Early Potatoes (under a south wall) [South]. ORCHARD.—Finish pruning and burn prunings. Clean wall fruit trees, examine and renew trees, top-dress roots. Examine grease-bands and renew where required. Spray. Finish tar spraying. Prepare ground for planting. Plant fruit trees. Examine stakes and replace where needed. FRAMES AND PITS.—Ventilate when weather permits. Keep bedding plants as dry as possible, cover with mats during frost. *Plant for forcing:*—Asparagus crowns, early Potatoes, Rhubarb, Seakale (with light excluded). *Sow:*—Early Carrots, Cauliflower, Kidney Beans (in pots or boxes), Onions, Lettuce, Mustard and Cress, Radishes. GLASS-HOUSES.—Keep clean and free from blight. Water with care when needed early in the day. Give air when possible. Take cuttings of Carnations, Chrysanthemums, etc. Top-dress Cucumbers. *Sow:*—Alonsoa, Begonias, Clarkia, Collinsia, Gloxinias, Helipterum, Ipomoea, Meconopsis, Mignonette, Nemesia, Primulas, Schizanthus, Sweet Peas, Cucumbers, French Beans.

FEBRUARY.

GENERAL WORK.—Weed and roll paths. Attend to drains. Finish digging and trenching ground for crops. Press plants lifted by frost firmly into soil. Clear up all débris. FLOWER GARDEN.—Sweep and roll lawns. Fork over borders carefully. Top-dress with leaf mould where required. Mulch rose beds. Top-dress Rock Garden with grit and firm in plants lifted by frost. Continue work with herbaceous plants. Lift and divide Montbretias where necessary. Plant out Primroses, etc. Finish planting trees, shrubs; also hardy plants so far as possible. Prepare stocks for grafting Rhododendrons. VEGETABLE GARDEN.—Finish cleaning and nailing wall fruit, and pruning all small fruits. *Sow:*—Beet, Broad Beans, Carrots, Onions, Dwarf Peas, Parsnips, Spinach. *Plant:*—Cabbage seedlings, Chives, Garlic, Jerusalem Artichokes, Onion sets and autumn-sown Onions, early Potatoes in sheltered border, Shallots. ORCHARD.—Finish spraying Feb. 14th. Spray mossy trees with caustic alkali. Renew grease on grease bands. FRAMES AND PITS.—Cover in severe weather. Ventilate freely when weather permits. Make up extra hot beds. *Sow:*—Broccoli, Brussels Sprouts, Cabbage, Carrots, Cauliflower, Celery, Cos and Cabbage Lettuce, French Beans, Marrows, Onions, Parsley, Ridge Cucumbers, and Radishes. Also Canterbury Bells, Pansies, Violas, Wallflower, etc. *Plant:*—Strawberries, Seakale. GLASS-HOUSES.—Ventilate, as weather permits. Examine and clean generally. Keep down blight. Pot up ferns and repot Begonias, Gloriosa tubers, Gloxinias, etc. Cut back as required Fuchsias, Zonal Pelargoniums, and Plumbago capense, shake the soil from the roots and repot into slightly larger pots when an inch of new growth has been made. Take cuttings of Chrysanthemums, Dahlias, Fuchsias, Heliotrope. *Sow:*—Lobelia, Pyrethrum, Leeks, Tomatoes, Cucumbers. Put vine borders in order.

MARCH.

GENERAL WORK.—Weed, clean, and finish up all winter work. FLOWER GARDEN.—Roll paths and lawn. Lay turf if required, or sow new lawns. Transplant evergreen shrubs. Trim Ivy. Finish pruning, training, and tying up all climbers. Prune hardy Roses after St. Patrick's Day. Top-Dress and finish planting R.G. *Sow:*—Calendulas, Annual Chrysanthemums, Coreopsis, Eschscholtzias, Annual Lupins, Linums, Mallows, Nemophila, Nigella, Phacelia campanulata, Poppies, Salvias, Sweet Peas (for late flowering), etc. *Plant:*—Layered Carnations and Pinks, Galtonia candicans, Gladiolus, Schizostylis, etc. VEGETABLE GARDEN.—Weed borders and paths. Prepare ground for French Beans and Scarlet Runners. Sow vegetables which do not require fresh manure in soil manured for a previous crop: Carrots, Parsnips, and Beet in soil manured the previous year; Peas, French Beans, and

Runners on old Celery trenches. Get nets and wire guards ready. Mulch wall fruit. *Sow :*—Broad Beans, Beet, Carrots, Cauliflower, Kale, Onions, Parsnips, Parsley, Peas, Radishes, Spinach, Turnips, Winter Greens. *Plant :*—Autumn-sown Cauliflowers, Herbs, Lettuces on warm border, Early Peas (raised in boxes) on warm border, Potatoes on warm border, Seakale. ORCHARD.—Finish all nailing up, planting, and training. Keep ground clean. Mulch newly-planted trees. Treat trees attacked by American Blight with paraffin emulsion or methylated spirit. Graft in suitable weather. Spray against aphis at end of the month. FRAMES AND PITS.—Ventilate freely, as weather allows. Harden off bedding plants in cold frames. Prick out Cauliflower and Lettuce seedlings in cold frames. *Sow:*—Annuals (H. and H.H.), Brussels Sprouts, Celeriac, Celery, Cos and Cabbage Lettuce, Marrows, Mustard and Cress, Radishes, Tomatoes, etc. *Plant:*—Asparagus, French Beans, Seakale, Strawberries. GLASS-HOUSES.—Ventilate freely when possible, but guard against sudden variations of temperature. Keep plants sufficiently watered. Economise firing in sunny weather. Get shade blinds ready for use when and where needed. *Sow :*—Asters, Campanula pyramidalis, Capsicums, Carnations, Cinerarias, Clarkias, Cosmos, Annual Larkspurs, Ipomoea, Malope, French and African Marigolds, Nemesia, Petunias, Phlox Drummondii, Stocks, etc. Take cuttings and box up Begonia and Dahlia tubers. Syringe fruit trees in fine weather.

APRIL.

FLOWER GARDEN.—Mow and roll lawns. Trim edges. Sweep, roll, and clean paths. Relay box edgings where required. Hoe shrub borders. Clean fernery, divide and plant ferns, and top-dress with leaf mould. Finish Rose pruning, and keep young growth free from maggots and blight. Stake Hyacinths. Divide and replant Snowdrops where too crowded. Divide Kniphofias if necessary. *Sow :*—All Hardy Annuals as Aethionema, Annual Chrysanthemums, Clarkia, Godetias, Shirley Poppies, Tropaeolums, etc., where they are to flower. Finish sowing Sweet Peas for late flowering. *Plant :*—Agapanthus, Carnations, Crinums, Gladioli, Phlox, Penstemons, Pinks, Sweet Peas, Violas, Yuccas. At end of month plant out H.H.A. seedlings and tender Shrubs wintered under cover. Finish planting evergreens. Transplant Bamboos. Divide and plant Water Lilies. VEGETABLE GARDEN.—Keep paths in order. Weed assiduously. Finish cropping. Keep the hoe going. Dress Asparagus beds with salt, and make new ones. Make mushroom beds. Mulch rows of early Peas. Guard wall fruit against late frosts, and disbud as needed. *Sow:*—Asparagus, Dwarf Beans (shelter), Beet, White Broccoli, Brussels Sprouts, Cabbage and Red Cabbage, Carrots, Cauliflower, Leeks, Lettuce, Kale, Mustard and Cress, Onions, Parsnips, Peas, Radishes,

Salsify, Savoy Cabbage, Scarlet Runners (shelter), Scorzonera, Seakale, Turnips. *Plant:*—Cauliflowers (water in dry weather),Onions (raised in heat), Peas, finish planting Potatoes. Prick out seedlings. ORCHARD.—Attend to grafted trees. FRAMES AND PITS.—Air freely and keep sufficiently watered. Pot cuttings of bedding plants and put on bottom heat to root quickly. Pot or prick off seedlings as ready. Remove Seakale to open ground after cutting. *Sow:*—Cucumbers, Marrows, Tomatoes. Finish sowing Annuals. GLASS-HOUSES.—Keep clean everywhere and guard against blight. Ventilate freely but cautiously. Water regularly. Repot hard-wooded plants where needed. Pot Humeas. Take cuttings of Geraniums (for late flowering), Fuchsias, etc. *Sow:*—Balsam, Celosia, Gloxinia, Lobelia, Petunia, Verbena, Zinnia, etc. Tie and pinch back Vine shoots. Rub unrequired or weak shoots off fruit trees. Thin fruit as needed. Pot plants of *Azalea mollis*, Lilac, Guelder Rose, Andromeda, etc., water carefully and regularly.

MAY.

FLOWER GARDEN.—Keep hoe going, and weed thoroughly. Use weed-killer on paths in dry weather. Clip Box edgings. Remove seed pods from Azaleas and Rhododendrons. Stake herbaceous plants. Prepare borders for bedding plants, and bed out as weather and aspect permit. Divide and replant in reserve Aubrietia, Daisies, Primroses, Polyanthus, etc. Lift Hyacinths, Narcissus, Tulips as foliage withers, or as required. Mulch Hollyhocks and late-planted Shrubs. *Sow:*—Biennials and Hardy Perennials. *Plant:*—Chrysanthemums, H.H. Annuals, Stocks, etc. Spray Roses to prevent blight. VEGETABLE GARDEN.—Hoe freely and weed everywhere. Take preventative measures against blight. Spray bush fruit if affected. Keep Asparagus beds clean, give manure, and thin shoots thoroughly. Hoe up early Potatoes. Mulch Beet, Carrots, Onions, Turnips. Thin out seedlings. Prepare Marrow beds and plant under handlights. Remove protection from fruit trees, stop and pinch back shoots, water if required. *Sow:*—French Beans, Broccoli, Cardoons, Coleworts, Dandelion (winter salads), Lettuce, Kale, Mustard and Cress, Peas, Radishes, Scarlet Runners, Spinach, Spinach-Beet, Turnips. *Plant:*—Brussels Sprouts, Cauliflowers, Celery, Leeks, Lettuce, Scarlet Runners, Tomatoes. ORCHARD.—Remove grease bands. Attend to grafts. Commence summer pruning. FRAMES AND PITS.—Ventilate freely, but guard against night frosts. Make Melon and Cucumber beds. Finish hardening off bedding plants. Use frames as emptied for plants from glass-houses. *Sow:*—Cucumbers and Melons. GLASS-HOUSES.—Water and ventilate according to weather conditions. Wage war on all insect pests. Syringe in hot weather. Pot up winter flowering subjects as needful, and offshoots of Primula sinensis. Repot, as needed, Fuchsias, Geraniums, Helio-

trope, etc. Take cuttings of winter-flowering Begonias, Coleus, etc. Take cuttings of most greenhouse plants in small pots of sandy soil and place in a glass-covered box in greenhouse or warm frame. Top-dress Cucumbers with rich compost and give manure water. *Sow:*—Calceolaria, Cineraria, Indian Corn (Maize), Primulas.

JUNE.

FLOWER GARDEN.—Roll, mow, and water (when required) lawns. Keep edges trimmed. Tie up climbers. Finish bedding. Cut off all dead blossom. Attend to Carnations, stake, tie, and water as required. Stake Dahlias, Hollyhocks, etc. Stick and tie Sweet Peas as required. Keep Roses clean of blight. *Sow* :—Biennials and Perennials for next year. Remove seed heads from Laburnum and Lilac. *Plant :*—Mignonette, all tender plants, cuttings of Violas, Double Wallflower, etc., pipings of Pinks. Tulips can be lifted carefully and laid in soil till the foliage dies. VEGETABLE GARDEN.—Hoe continually. Mulch generally with lawn mowings. Prepare Celery trenches. Make up Mushroom beds. Earth up all Potatoes. Mulch Globe Artichoke, or give manure water. Thin Beet, etc. Cut no Asparagus after 24th; manure beds, or dress with 1 oz. nitrate of soda per sq. yard. Cut off and burn tops of Broad Beans if blighted. Spray aphis-infested trees with nicotine wash. Stake Peas and Scarlet Runners. *Sow:*—Beans (late), Cauliflower, Endive, Lettuce, Parsley (winter stock), Peas (late), Spinach, Radishes (Turnip), Turnips. *Plant :*—Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Celeriac, Celery (dust with soot or spray), Cucumbers, Kale, Leeks, Marrows, Savoys, etc. Plant Tomatoes against a sunny wall or fence, or in a sunny sheltered corner, in prepared ground. Tie plants to a stout 4-foot stake. ORCHARD.—Summer-prune. Thin fruits. Spray if blight begins. FRAMES AND PITS.—Shade from noon sun and keep well watered. Get seedlings of winter-flowering plants on in pots. Keep Cucumbers, etc., clean and thoroughly watered. "When the foliage of Nerines begins to turn yellow lay the plants on their sides in a sunny frame to ripen the bulbs. Give no water until the flower stems begin to appear." (R.H.S.D.) GLASS-HOUSES.—Give plenty of air. Attend to watering and syringing. Take precautions against blight. Shade when required. Tie up climbers. Pot up Chrysanthemums, perpetual-flowering Carnations, etc. Repot Azaleas if needful. Layer Malmaison Carnations. *Sow:*—Cinerarias, Hippeastrums, Tomatoes (winter crop).

JULY.

FLOWER GARDEN.—Cut off blossoms as they fade. Thin out Annuals. Prick out Biennials and Perennials in shady border. *Plant :*—Colchicums. Attend to Chrysanthemums, tie, disbud, etc. Mulch Dahlias. Bud Roses. *Sow :*—Primulas and Meconopsis. Take pipings of Pinks. Layer Carnations. Water as necessary.

Give Roses dilute manure water. Layer Rhododendrons. VEGETABLE GARDEN.—Keep the hoe going. Dig waste green stuff into beds where vacant. Water and earth up early Celery. Train Tomatoes and pinch out side shoots. Cut and dry herbs. Thin seedlings. *Plant :*—Winter Greens, Broccoli, Cauliflower, Colewort, and Potatoes for late crop of "new." *Sow :*—Dwarf Beans, Globe Beet, Short-horn Carrots, Early Cabbage, Endive, Winter Lettuce, Onions, Parsley, late Peas, Radishes, Winter Spinach. Mulch and water fruit trees. Spray with paraffin emulsion trees attacked by pests. ORCHARD.—Protect fruit from birds. Bud fruit trees. Thin fruits where required. FRAMES AND PITS.—Give air and water freely. Shade as required. Attend to Cucumbers and Melons, remove weak fruits and shoots. Take cuttings of Geraniums and greenhouse Shrubs. Pot up young stuff for winter flowering. Sow Cucumbers and Melons for late crop. GLASS-HOUSES.—Do all repairs. Give as much air as possible. Water and syringe as required. Keep down greenfly. Put out all H.H. pot plants. Repot hard-wooded spring-flowering plants where necessary. Give full sun to Succulents. Keep climbers trained. Take cuttings of Pelargonium, Hydrangea, etc. Bud and graft Citrus, Camellias, Azaleas, etc. *Sow:*—Cinerarias, Cyclamen, Mignonette.

AUGUST.

FLOWER GARDEN.—Hoe beds. Cut off dead flowers and seed pods. *Sow :*—Forget-me-not, Lilium seeds when ripe. Transplant Amaryllis Belladonna, and Tulips if necessary. *Plant :*—Lilium candidum. Prune Ramblers after flowering. Layer Shrubs. Take cuttings of bedding stock, Pansies, and Violas. VEGETABLE GARDEN.—Weed, hoe, and water when required, clear crops when finished. Thin seedling Asparagus and dress with salt. Cut herbs for drying. Earth up Celery, dust with soot and keep well watered. Water and manure Cucumbers and Marrows. Mulch Runner Beans. Lift early Potatoes and Beet. *Sow :*—Cabbage Colewort, Cauliflower, Winter Lettuce and Onions, Spinach, Turnips. *Plant :*—Broccoli, Colewort, Endive. Protect fruit from birds and wasps. Prune wall fruit trees after fruit is gathered and mulch as required. ORCHARD.—Gather early Pears and Apples. Finish summer pruning. FRAMES AND PITS.—Ventilate and water freely, shade as required. Top-dress Cucumbers. *Sow :*—French Beans, Early Cauliflowers, Spring Cabbage, Turnips. Take cuttings of Alpines and root in shaded frame. Cuttings of Calceolaria, Heliotrope, Salvia, Verbena, in closed frames. Remove Hippeastrums to cold frame in full sun. *Plant :*—Violet roots for early winter flowering. GLASS-HOUSES.—Reduce shading as required. Ventilate and water. *Plant :*—Friesias, Lilium candidum (for pot flowering), early Hyacinths, Narcissus, and Tulips. *Sow :*—Cucumbers, Hippeastrums, Tomatoes. Pot up Arums, Lachenalias, Carnation layers. Gradually dry off Gloriosa tubers.

SEPTEMBER.

FLOWER GARDEN.—Sow lawns where needed. Remove all seed pods and dead flowers. Trim hedges. Lift and divide Alpines where needed. *Plant :*—Bulbs. Take Viola cuttings. Lift tender subjects to winter under glass before early frosts catch them. VEGETABLE GARDEN.—Hoe and rake. Weed and clear off crops as finished. Dust Brussels Sprouts with soot. Tie up Cardoons for blanching when ready. Keep Leeks well watered. Lift and store Beet, Carrots, Onions, and main crop Potatoes. *Sow :*—Lettuce, Radishes. *Plant:*—Spring Cabbage, Lettuce. Fork wall borders and water wall fruit in dry weather. ORCHARD.—Gather and store ripe fruit. Prepare ground for planting. Examine budded stocks and readjust ties if needed. Begin to grease-band trees. FRAMES AND PITS.—*Sow:*—Cauliflower for spring. Take cuttings of Pentstemons and Veronicas. Fill spare frames with winter salads. GLASS-HOUSES.—Water and ventilate according to requirements and weather. See that houses are ready for winter, thoroughly cleaned, and space cleared for half hardy plants and winter flowers. Repot Cinerarias. *Sow :*—Annuals for pot flowering. Pot Roses for forcing. *Plant* bulbs for succession. Pot Cucumber and Tomato seedlings for forcing.

OCTOBER.

FLOWER GARDEN.—Clear up litter and dead flowers and leaves. Get all tender plants under cover. Lift Begonias, Cannas, and Dahlias. Transplant Anemone japonica, Delphiniums, Paeonies, Papaver orientalis, etc. All hardy perennials may be lifted and divided if required. Take cuttings of Roses and Shrubs. *Plant* bulbs, hardy spring plants, hardy biennials and perennials, rooted cuttings and layers of Carnations and Pinks, early-flowering Gladioli. Commence transplanting trees and shrubs. Prune trees. Trim and tie climbers. Set zinc rings round choice plants that need protection from slugs. Attend to Rock Garden: remove dead leaves, top-dress with compost, cut back or divide overgrown clumps, place glass over choice plants that need protection from damp. VEGETABLE GARDEN.—Collect leaves and soil for compost. Dig, clean, trench, and manure. Cut and dry herbs. Clear away bean and pea haulms. Earth up late Celery. Bring unripened Tomatoes indoors (on stems) and hang up to ripen. Cut Marrows and bring under cover. Lift Beet, Carrots, Onions, Potatoes. *Sow* Radishes. *Plant:*—Cabbage, Colewort, Endive, Lettuce, Fruit trees and bushes. ORCHARD.—Finish harvesting fruit. *Plant* fruit trees as weather permits. Root-prune where needed. FRAMES AND PITS.—Ventilate carefully and water with discretion. Keep good salad supplies in succession. *Plant* Cauliflower seedlings, and Rhubarb and Seakale crowns for forcing. GLASS-HOUSES.—Ventilate carefully. Do not overwater. Pot Spiraeas for forcing.

Keep Hippeastrums dry. *Sow:*—Sweet Peas, Tomatoes. Prune fruit trees and top-dress.

NOVEMBER.

FLOWER GARDEN.—Keep paths clean and rolled. Finish planting bulbs. Lift Dahlias and Gladioli. Protect plants of doubtful hardiness. Clear up leaves and store for leaf mould. Transplant Alströmerias if necessary. *Plant :*—Azaleas, Rhododendrons, Roses, and Shrubs. VEGETABLE GARDEN.—Dig, manure, trench, and destroy weeds and rubbish. Fork over Asparagus bed and give thick dressing of manure. Protect Globe Artichokes with fern or litter, or pot up suckers to store under glass. Ridge up Celeriac, Parsnips, Turnips. Cut leaves from Rhubarb and Seakale and cover for winter. Clean and plant herb beds. *Plant* Seakale in trenches. Lift Carrots, Chicory (for forcing), Parsnips, Jerusalem Artichokes. *Sow :*—Broad Beans on sheltered border. *Plant :*—Leeks for late supplies. Finish pruning and tying wall fruits. *Plant:*—Wall fruits. Dust under stone fruits with slaked lime. ORCHARD.—Grease-band trees. Start tar spraying. *Plant* fruit trees. FRAMES AND PITS.—Ventilate as weather permits. Give water only when needed. Cover at night if frosty. Force Asparagus, Chicory, Seakale. *Sow:*—Carrots, French Beans. *Plant:*—Endive and other salads. GLASS-HOUSES.—Ventilate according to weather. Water sparingly. Protect against damp. Attend to heating. Force Azaleas for early flowering. Pot up Tulips, etc., for late flowering, and Hippeastrums for early flowering. Pot Tomato seedlings.

DECEMBER.

FLOWER GARDEN.—Trench herbaceous borders where possible. Lift and divide Lily-of-the-Valley where overcrowded. *Plant :*—Trees, Roses, and Shrubs, as weather permits. VEGETABLE GARDEN.—Dig, manure, clean and trench ground whenever and wherever possible. Protect Celery. Cover Rhubarb and Seakale for forcing and bank up with manure and leaf mould. Lift Jerusalem Artichokes. *Sow :*—Broad Beans, Peas (round). Finish re-tying and nailing up wall trees. Clean walls with insecticide. ORCHARD.—Plant, prune, and clean. See to winter spraying. Clean walls, fences, and hedges. FRAMES AND PITS.—Ventilate as weather permits. Water only when needed and then early. Prepare forcing beds. *Sow:*—Lettuces, Radishes, Peas. *Plant:*—Potatoes. GLASS-HOUSES.—Ventilate when possible. Keep heat regulated according to weather. Water early and sparingly. Take Chrysanthemum cuttings. Keep Cacti dry. Clean fruit houses.

BULBS—PLANTING TABLE

	Best Month to Plant.	*Depth of top of Bulb below Surface. Ins.*	*Distance Apart. Ins.*
Allium	Oct.	4	4
Anemone fulgens	Oct.	2	5
,, (St. Brigid)	Oct.	2	5
Anthericum	Oct.	4	6
Belladonna Lily	Aug.	6	6
Bluebells	Aug.	6	3 to 4
Brodiaea	Oct.	4	6
Bulbocodium	Aug.	4	5
Camassia	Oct.	4	4
Chionodoxa	Aug.	3	3
Colchicum	Aug.	6	3 to 6
Crinum	Oct.	9	18
Crocosma	Oct.	4	5
Crocus	Aug.	3	3
Daffodils	Aug.	6	6
Erythronium	Aug.	4	3
Fritillaria	Aug.	4	4 to 9
Galtonia	Nov.	6	9
Gladiolus	April	4	9
,, Colvillei type	Nov.	4	6
Hyacinths	Oct.	6	7
Iris, English	Sept.	5	4 to 6
,, Spanish	Sept.	4	4
,, reticulata	Sept.	4	3
Ixia	Sept.	3	4
Leucojum	Aug.	3	4
Lily of the Valley	Nov.	2	4
Lilium auratum	Oct.	6 to 8	12
,, Henryi	Oct.	6 to 8	12
,, speciosum	Oct.	6 to 8	12
,, pardalinum	Oct.	4	12
,, tigrinum	Oct.	8	12
Montbretia	March	3	6
Muscari	Oct.	3	3
Orange Lily	Oct.	6 to 8	12
Ornithogalum	Oct.	4	4
Scilla sibirica	Aug.	3	3
Snowdrop	Aug.	3 to 4	3
Sternbergia	July	3	4
Tigridia	April	4	4
Trillium	Oct.	3	4
Tritonia	March	4	4
Tulips, long-stemmed	Nov.	6	9
,, short-stemmed	Nov.	4	6
Winter Aconite	Aug.	2 to 3	3 to 4
White Lily	Aug.	4	12

R.H.S.D

FRUIT CALENDAR OF OPERATIONS

JANUARY.

Apples : Plant. Finish pruning. Cut back trees requiring regrafting. Prepare scions in open weather. Nail up on walls. Spray with winter wash. *Apricots :* Plant with lime and old mortar. Prepare scions in open weather. *Blackberries :* Cut close back after planting. Mulch with manure. *Cherries :* Plant in open weather with lime or old mortar. *Currants : Black*—Take cuttings. Thin out old wood. *Red and White*—Prune to 2″ spurs. *Damsons :* Prune. Prepare scions. *Figs :* Sow in light soil. Take cuttings of 4″–5″ ripened tips. Plant with brick rubble. *Gooseberries :* Take cuttings. Thin out and tip shoots. Protect from birds with black cotton or syringe with soot and lime water. *Grapes :* Take cuttings of eyes. Finish pruning. Wash and tie in. Top-dress borders and keep soil moist. *Greengages :* Plant in open weather. Prepare scions. Under glass—give liquid manure. *Loganberries :* See Blackberries. *Medlars :* Plant in open weather. *Melons :* Sow in warm compost, plunge pots in bottom heat and cover with glass. *Mulberry :* Plant in open weather. *Nectarines :* Plant in open weather. Under glass—top-dress borders and keep soil moist. *Peaches :* Plant in open weather. Under glass—top-dress borders, keep soil moist, syringe. *Pears :* Plant. Prune. Cut scions in mild weather. Nail up on walls. Prune. *Plums :* Plant, with lime or old mortar. Prune. Prepare scions. Nail up on walls. *Quinces :* Plant in open weather. *Raspberries :* Pull out suckers. Cut close back after planting. Shorten shoots. *Strawberries :* Firm in young plants. Fork in manure on surface. Under glass—bring in for forcing, clean pots and remove dead foliage. Water with restriction. Use sulphur wash for mildew or red spider. *Veitchberry, Wineberry, etc.* See Blackberry.

FEBRUARY.

Apples : Finish planting. Mulch new planted with manure. Prepare scions and head back stock for grafting in open weather. *Apricots :* Manure, clean, prune, and nail up. *Blackberries :* Finish planting. *Cherries :* Spray with nicotine wash. Under glass—clean and prune. Water with tepid water. *Currants :* Finish planting. Manure. Prune. *Black*—Examine for big bud. *Figs :* Take cuttings

of eyes. Thin out weak wood. Train out shoots. *Gooseberries:* Finish planting. Sow in pots or open bed. Take cuttings. Prune. *Grapes:* Take cuttings of eyes. Renovate outside borders. Make new borders. *Loganberries:* Finish planting. *Melons:* Under glass—sow and plant seedlings in prepared borders. *Nectarines:* Prune, clean and tie in. Top-dress borders. *Nuts:* Sow. Graft. *Peaches:* Prune, clean, and tie in. Spray before buds open to prevent Leaf Curl. Top-dress borders. Syringe under glass. Prepare protection for early bloom. *Pears:* Plant. Mulch newly planted. Head back for grafting. Cut scions. Finish cutting back horizontal trained. Clean and prune under glass. *Plums:* Plant. Mulch newly planted. Clean and prune under glass. *Raspberries:* Finish planting. Tip old canes. Cut newly planted down to 6". Prune and train. Cut down for autumn fruiting. Top-dress with manure. *Strawberries:* Finish planting. Top dress with leaf-mould. *Veitchberries, Wineberries, etc.* See Loganberries. *Walnuts:* Sow.

MARCH.

Apples: Finish planting. Mulch new planted. Hoe round. Graft. *Apricots:* Prune. Manure. Protect blossom and pollinate. *Blackberries:* Mulch. *Cherries:* Graft. Top-dress. Tie in and stop. Protect early blossom and pollinate. Spray. Under glass—shade trees when flowering, keep ventilated, and syringe. *Currants:* Take cuttings. Give salt on light soils. Spray or dust with lime for blight. Hoe. *Figs:* Plant. Remove protection where used. Thin old branches, remove dead wood and long sappy shoots. Tie in. Under glass—pinch shoots and thin fruit, give liquid manure, syringe. *Gooseberries:* Take cuttings. Hoe. Spray for Red Spider and Scale. *Grapes:* Plant. Disbud as needed. Give liquid manure. Syringe with tepid rain water. Prune laterals to 2 buds beyond bunches. Thin berries. Outside, trim, nail up, and prune to one good bud. *Loganberries:* Mulch. *Melons:* Top-dress. Thin fruits if crowded. *Nectarines:* Winter prune. Disbud. Protect blossom and pollinate. See also Peaches. *Nuts:* Sow. Graft. Prune. Remove suckers. *Peaches:* Winter prune. Thin shoots. Disbud. Protect blossom and pollinate. Under glass—water and feed pot trees; stop growths at 8th joint; syringe. *Pears:* Graft. Finish planting. Mulch newly planted. Finish cutting back fan trained. Prune. Hoe. Graft. Protect early blossom and pollinate. Under glass—thin crowded bloom. *Plums:* Hoe. Graft. Protect early blossom and pollinate. Spray for Leaf-Curl Aphis. Under glass—spray, give dilute manure water. *Quinces:* Graft. *Raspberries:* Cut down autumn fruiting. Hoe. Spray for caterpillar. *Strawberries:* Clean. Top-dress with leaf-mould. Hoe when dry. Sow Alpine Strawberries in gentle heat. Under glass—give fruiting plants liquid manure. *Walnuts:* Sow.

APRIL.

Apples: Graft. Hoe. Mulch. Spray for Aphis. Disbud. Thin young growths. *Apricots:* Water newly planted. Thin shoots. Disbud if needed. Protect blossom. *Cherries:* Graft. Syringe for Aphis. Spray for Leaf-scorch. *Currants:* Syringe for Aphis. *Black*—remove and burn infected buds. Spray. *Figs:* Plant pot trees. Prune. Cut damaged growth to sound wood. Under glass—reduce syringing as fruit ripens and give liquid manure. *Gooseberries:* Remove caterpillars. Dust with lime for blight. *Grapes:* Layer. Repot cuttings. Shake to scatter pollen. Thin laterals. Remove old mulch and work top-soil. Syringe if not in flower. Keep floor damp. Give manure water. *Loganberries:* Spray for Raspberry beetle. *Medlars:* Graft. *Melons:* Sow on hot beds. Prepare beds in frames for seedlings. *Nectarines:* Water newly planted. Disbud if needed. Protect blossom. Under glass—remove unrequired young growth, keep border moist. In pots—water and feed roots. Keep atmosphere drier. *Nuts:* Prune. *Peaches:* Water newly planted. Disbud if needed. Protect blossom. Under glass—see Nectarines. *Pears:* Plant. Graft. *Plums:* Spray for Aphis. Syringe with cold water for Red Spider. *Quinces:* Graft. *Raspberries:* Spray for Raspberry beetle. *Strawberries:* Replace defective plants. Hoe. Mulch. Give liquid manure. Under glass—water twice daily and give manure water. *Veitchberries, Wineberries, etc.* See Loganberries.

MAY.

Apples: Mulch. Thin crowded shoots. Manure heavy croppers. Spray for blight. *Apricots:* Give liquid manure. Pinch shoots to form spurs. Tie in long shoots. Thin fruit if needed. *Blackberries:* Layer young shoots. *Currants:* Remove suckers. Spray for blight. *Damsons:* Spray for Aphis. *Gooseberries:* Mulch. Thin fruit. Remove suckers. Spray for blight. *Grapes:* Thin and shorten laterals and tie down. Dress with lime and water in if needed. Spray occasionally. Thin berries on early vines. Remove faulty or decayed berries. Keep floor damp. Ventilate. Outside, disbud young shoots. *Greengages:* Give liquid manure. Stop young growths on walls. *Loganberries:* as Blackberries. *Melons:* Prepare beds. Sow on heat. Water carefully. Keep atmosphere drier. Ventilate. *Mulberries:* Sow. *Nectarines:* Mulch. Remove foregrights. Disbud. Under glass in pots—harden off after fruiting. *Peaches:* See Nectarines. *Pears:* Thin crowded shoots. Manure heavy croppers. *Plums:* Give liquid manure. Thin crowded shoots. Spray for Aphis. Stop young growths on walls. *Raspberries:* Hoe. Mulch. Pull up weak and unrequired suckers. *Strawberries:* Mulch with straw and lawn clippings. Dress with superphosphates. Prepare nets. Remove runners. Water freely

in dry weather. Plant out Alpine Strawberry seedlings. In pots—water frequently and give liquid manure. *Veitchberries, Wineberries, etc:* See Blackberries.

JUNE.

Apples: Mulch. Cut suckers. Remove ties from March grafts. Pinch shoots on seedlings, and remove irregular growths. Thin if overcrowded. Remove defective fruit. *Apricots:* Dress borders with lime and water in. Give liquid manure. Prune side shoots to 6″, leave leaders. Thin fruit. Syringe. Net. *Blackberries:* Cut away all weak canes. Tie up young shoots. Mulch. *Cherries:* Summer prune Desert to 4″ and burn cuttings. Syringe for Black fly. Mulch Morellos, thin shoots if crowded, and dust ground with lime and water in. *Currants:* Net. *Red*—top side shoots to 3″ and burn cuttings. *Figs:* Give liquid manure and mulch. Thin fruit. Under glass—keep well watered, pinch back rank growth, and remove weak or crowded shoots. *Gooseberries:* Summer prune. Thin fruit. *Grapes:* Mulch borders. Thin bunches to 1 per foot of rod's length. Thin berries. Spray with sulphur and water for mildew. Rub off weak and poor shoots on outdoor vines. Stop growths if crowded. *Greengages:* Give liquid manure and mulch. Thin if crowded. *Loganberries:* Cut away weak shoots. Tie up young shoots. Give dilute manure water. *Melons:* Plant outside under handlights. Keep watered. Sow in frames. Remove male flowers till required for pollen. Syringe. *Nectarines:* Thin fruit. Give liquid manure. Syringe if dry. Stand out pot trees after fruiting. Under glass—remove fruited wood. Water well after fruiting. See also Peaches. *Peaches:* Thin shoots on outdoor trees by degrees. Syringe daily after noon till fruit ripens. Thin fruit. Dress borders with lime and water in. Stand out pot trees after fruiting. Under glass—remove fruited wood, water well after fruiting. *Pears:* Summer prune. Pinch side growths. Cut suckers. Remove ties from March grafts. Fasten up on walls. Mulch. *Plums:* Prune side shoots on walls to 6″, leaving leaders. Cut suckers. Fasten up on walls. Remove ties from March grafts. Thin fruit if crowded. Net. *Raspberries:* Cut out suckers, leaving strongest only. Thin canes for autumn fruiting and tie up. Hoe. *Strawberries:* Hoe. Dust ground with lime and lay straw between rows. Layer runners. Select runners and layer in pots for forcing. *Veitchberries, etc:* See Loganberries. *Walnuts:* Gather green for pickle.

JULY.

Apples: Bud in wet weather. Summer prune cordons and wall trees. Prune side shoots to 5 leaves, leave leaders. Remove windfalls. Finish thinning. *Apricots:* Bud in wet weather. Give

liquid manure. *Cherries:* Bud in wet weather. Summer prune. Tie in Morellos, thin shoots, and give dilute manure water. Clean trees after fruiting with insecticide. *Currants:* Finish summer pruning. *Damsons:* Bud in wet weather. *Figs:* Top-dress pot trees or repot if needed. Keep borders moist. *Gooseberries:* Protect exhibition fruit from rain. Summer prune. *Grapes:* Plant young vines. Manure and syringe pot vines. *Greengages:* Bud in wet weather. *Loganberries:* Layer points of young shoots. *Melons:* Sow for late fruiting under glass. Remove weak shoots and poor fruits. Shorten shoots without fruit. Pollinate. Syringe with tepid water. *Mulberries:* Bud in wet weather. *Nectarines:* Bud in wet weather. Give liquid manure. Remove old fruited wood and tie up shoots. *Peaches:* as Nectarines. *Pears:* Bud in wet weather. Summer prune. Finish thinning. Give liquid manure. *Plums:* Bud in wet weather. Summer prune. *Quinces:* Bud in wet weather. *Raspberries:* Hoe. Cut away unneeded canes and fruited canes. *Strawberries:* Layer runners. Clean beds. Remove old leaves and surplus runners. Pot runners for forcing. Plant. *Veitchberries, etc.:* as Loganberries.

AUGUST.

Apples: Bud in wet weather. Finish summer pruning. *Apricots:* Bud in wet weather. Trench round trees for lifting. *Cherries:* Bud in wet weather. Give liquid manure when dry. *Currants:* *Black*—thin old wood. *Gooseberries:* Thin old wood. *Grapes:* Thin late fruit. Keep drier as fruit ripens. After fruiting syringe freely and moisten borders. Give old vines liquid manure. *Greengages:* Bud in wet weather. *Loganberries:* Cut out fruited canes. Mulch. Tie in young shoots. *Melons:* Raise fruits on inverted pots. Give less water as fruit ripens. Remove laterals. *Mulberries:* Bud in wet weather. *Nectarines:* Bud in wet weather. Repot pot trees if needed. Spray and keep watered. Protect fruit from wasps. *Peaches:* as Nectarines. Mulch. *Pears:* Bud in wet weather. Finish summer pruning. Give manure water. Tie up heavy fruit. Protect fruit from birds and wasps. *Plums:* Bud in wet weather. *Raspberries:* Cut out old canes. Hoe. Mulch. Pinch tops of summer shoots. Thin young canes. *Strawberries:* Plant. Pot for forcing. Cut off runners. Dig up old beds (4 years). Make new beds with July layered runners.

SEPTEMBER.

Apples: Remove irregular growths on seedlings. Pinch side shoots to 5 leaves on maiden standards. *Apricots:* Plant. Transplant maidens and cut back roots for fan or cordon. *Blackberries:* Cut out old canes. *Cherries:* Shorten side shoots on standards. Give liquid manure if dry. *Currants:* Spray for caterpillar. *Black*—

thin old bushes. *Red and White*—finish summer pruning. *Gooseberries :* Spray for caterpillar. Finish summer pruning. *Grapes :* Remove useless growths. Keep well fastened up. Overhaul borders. Guard against red spider, mildew, and wasps. *Loganberries :* Cut out fruited canes and weak shoots. *Melons :* Give liquid manure if needed. *Nectarines :* Prune after fruit is gathered. Root prune if needed. *Peaches :* as Nectarines. *Pears :* Shorten side shoots on low standards. *Plums :* Cover with doubled net to retard on north walls for late fruit. *Raspberries :* as Loganberries. *Strawberries :* Plant. Hoe beds. Pot for forcing. *Walnuts :* Bud in wet weather. Gather as fruit falls.

OCTOBER.

Apples : Plant. Sow. Root prune if needed. Transplant seedlings. Grease band. *Apricots :* Plant. Lift and replant maidens for fan and cordon. Mulch with straw manure against walls. *Cherries :* Root prune if needed and give old mortar. *Currants :* Plant. Take cuttings. *Black*—remove old and weak wood. *Red and White*—prune. *Damsons :* Plant. *Gooseberries :* Take cuttings. Plant. Start pruning and transplanting. *Grapes :* Plant. Cut back when leaves fall. Prepare for early forcing. Prune laterals on early vines in borders. Keep clean. *Greengages :* Plant. Root prune if needed. *Loganberries :* Plant. Train out shoots. *Medlars :* Plant. Leave fruit till ready to fall. *Mulberries :* Plant. *Nectarines :* Plant. Dress ground lightly with salt. *Nuts :* Plant. *Peaches :* Plant. Dress ground with salt. Root prune late varieties if needed. *Pears :* Plant. Sow. Take cuttings. Root prune if needed. *Plums :* Plant. Root prune if needed and give old mortar. *Quinces :* Plant. Pick before ripe for jam, matured for keeping. *Raspberries :* Plant. Finish thinning young canes. *Strawberries :* Clean beds. Top-dress. Remove side crowns from pot plants. *Veitchberries, etc. :* Plant. Train. Remove old canes. *Walnut :* Plant. Sow.

NOVEMBER.

Apples : Plant. Transplant seedlings. Prune. Root prune if needed. *Apricots :* Plant against walls. *Blackberries :* Plant. Prune. *Cherries :* Plant. Dress ground with lime. Prune for spurs. Remove useless shoots. Tie in Morello shoots. *Currants :* Plant. Take cuttings. *Black*—cut away old wood. *Red and White*—prune. *Damsons :* Plant. Dress ground with lime. *Figs :* Plant and mulch with straw. Bring in pot trees. *Gooseberries :* Plant. Take cuttings. Prune. Cut back young bushes to 3 shoots. *Grapes :* Plant. Remove and plant rooted layers. Finish pruning. Top-dress. *Greengages :* Plant. *Loganberries :* Plant. Prune. *Medlars :* Gather fruit when fully ripe. Plant. *Mulberries :* Plant. *Nectarines :* Plant. Finish pruning under glass. Top-dress. Dress

ground with lime. *Nuts:* Plant. *Peaches:* as Nectarines. *Pears:* Plant against walls, and in open. Root prune if needed. *Plums:* Plant against walls. Dress ground with lime. *Quinces:* Plant. *Raspberries:* Plant. Prune. *Strawberries:* Pot for forcing. Top-dress beds with dry manure. *Veitchberries, etc.:* Plant. Prune. Cut out old wood.

DECEMBER.

Apples: Plant. Prune. Cut back for regrafting. *Apricots:* Plant. Mulch with dung. *Blackberries:* Plant. *Cherries:* Plant. Prune. Cut back for regrafting. *Currants:* Plant. Finish pruning. *Damsons:* Plant. Prepare scions. *Figs:* Plant. *Goooseberries:* Plant. Take cuttings. Finish pruning. Protect buds with black cotton. *Grapes:* Mulch with dung. *Greengages:* Plant. Prepare scions. *Loganberries:* Plant. *Medlars:* Plant. Cut back for regrafting. *Mulberries:* Plant. *Nectarines:* Plant. Mulch with dung. *Nuts:* Plant. *Peaches:* Plant. Mulch with dung. Bring in pot trees. *Pears:* Plant. Prune. Prepare scions. *Plums:* Plant. Prune. Prepare scions. *Quinces:* Plant. Cut back for regrafting. *Raspberries:* Plant. *Veitchberries, etc.:* Plant.

NOTE.—All dates for operations are approximate only, the exact dates must be determined by locality, weather conditions, and individual peculiarities. When pruning, etc., is mentioned in two or more consecutive months this does not imply that the work is to be repeated.

IRIS CALENDAR

JANUARY.—*In flower :* I. alata, I. bakeriana, I. Danfordiae, I. Histrio, I. palestina, I. unguicularis (stylosa), I. histrioides. *To be planted :* None.

FEBRUARY.—*In flower :* I. bakeriana, I. caucasica, I. Danfordiae, I. persica, I. reticulata, I. sindjarensis, I. unguicularis, I. Winkleri. *To be planted :* None.

MARCH.—*In flower :* I. Aitchisoni, I. caucasica, I. orchioides, I. reticulata, I. rosenbachiana, I. sindjarensis, I. tubergeniana, I. tuberosa (Hermodactylus tuberosus), I. unguicularis, I. warleyensis, I. willmottiana, I. Winkleri. *To be planted :* I. Collettii, I. minuta, I. nepalensis, I. verna.

APRIL.—*In flower :* I. Aitchisoni, I. aphylla, I. Bloudowii, I. bucharica, I. Chamaeiris, I. darwasica, I. ensata, I. fosteriana, I. Grant-Duffii, I. Griffithii, I. imbricata, I. japonica, I. mellita, I. minuta, I. orchioides, I. pseudopumila, I. pumila, I. Reichenbachii, I. Stocksii, I. subbiflora, I. tigrida, I. tingitana, I. Urumovii, I. verna, I. warleyensis, I. Wattii, I. willmottiana. *To be planted :* I. Wattii.

MAY.—*In flower :* I. acutiloba, I. Alberti, I. albicans, I. aphylla, I. arizonica, I. atrofusca, I. atropurpurea, I. Barnumae, I. Biliotti, I. bismarckiana, I. bracteata, I. bulleyana, I. Chamaeiris, I. chrysographes, I. Clarkei, I. cristata, I. darwasica, I. douglasiana, I. ensata, I. Farreri, I. flavissima, I. Fontanesii, I. Forrestii, I. Gatesii, I. germanica, I. goniocarpa, I. gracilipes, I. graminea, I. Grant-Duffii, I. Griffithii, I. hoogiana, I. hookeriana, I. humilis, I. iberica, I. imbricata, I. Korolkowi, I. kumaonensis, I. lacustris, I. longipetala, I. Lortetii, I. macrosiphon, I. Madonna, I. Meda, I. mellita, I. minuta, I. missouriensis, I. montana, I. orientalis, I. pallida, I. paradoxa, I. pavonia (Morea Pavonia and M. tricupis), I. prismatica, I. Pseudacorus, I. pseudopumila, I. Purdyi, I. Reichenbachii, I. ruthenica, I. Sari, I. scariosa, I. sikkimensis, I. Sintenisii, I. Sisyrhinchium, I. sofarana, I. stolonifera, I. susiana, I. tectorum, I. tenax, I. tenuis, I. tenuissima, I. tingitana, I. trojana, I. Urimovii, I. verna, I. versicolor, I. Xiphium. *To be planted :* I. bracteata, I. cristata, I. dichotoma, I. douglasiana, I. flavissima, I. Griffithii, I. japonica, I. lacustris, I. macrosiphon, I. mellita, I. Purdyi, I. ruthenica, I. tenax, I. tenuis, I. tenuissima, I. Wattii.

JUNE.—*In flower :* I. arizonica, I. aurea, I. Biliotti, I. Boissieri, I. bulleyana, I. cypriana, I. Delavayi, I. filifolia, I. foetidissima, I. foliosa, I. Fontanesii, I. fulva, I. graminea, I. halophila, I. hexagona, I. juncea, I. junonia, I. Kaempferi, I. kashmiriana, I. laevigata, I. longipetala, I. mesopotamica, I. Milesii, I. missouriensis, I. montana, I. ochroleuca, I. orientalis, I. pallida, I. Pseudacorus, I. setosa, I. sibirica, I. Sintenisii, I. Sisyrhinchium, I. spuria, I. tripetala, I. trojana, I. variegata, I. versicolor, I. Wilsonii, I. xiphioides, I. Xiphium. *To*

be planted: I. bracteata, I. cristata, I. dichotoma, I. douglasiana, I. gracilipes, I. lacustris, I. macrosiphon, I. Purdyi, I. ruthenica, I. tenax, I. tenuis, I. tenuissima, I. verna.

JULY.—*In flower:* I. aurea, I. Collettii, I. dichotoma, I. foliosa, I. fulva, I. hexagona, I. Kaempferi, I. Milesii, I. ochroleuca, I. tripetala, I. xiphioides, I. Xiphium. *To be planted:* None.

AUGUST.—*In flower:* I. dichotoma. *To be planted:* I. Alberti, I. albicans, I. aphylla, I. Biliotti, I. Chamaeiris, I. cypriana, I. foliosa, I. fulva, I. germanica, I. Griffithii, I. halophila, I. hexagona, I. imbricata, I. junonia, I. Kaempferi, I. kashmiriana, I. laevigata, I. longipetala, I. Madonna, I. mesopotamica, I. Milesii, I. palestina, I. pallida, I. pseudopumila, I. pumila, I. Reichenbachii, I. scariosa, I. tectorum, I. tigrida, I. trojana, I. variegata.

SEPTEMBER.—*In flower:* I. aphylla. *To be planted:* I. Aitchisoni, I. alata, I. Alberti, I. albicans, I. aphylla, I. arizonica, I. aurea, I. bakeriana, I. Biliotti, I. Bloudowii, I. Boissieri, I. bucharica, I. bulleyana, I. caucasica, I. Chamaeiris, I. chrysographes, I. Clarkei, I. cypriana, I. Danfordiae, I. Delavayi, I. ensata, I. Farreri, I. filifolia, I. flavissima, I. foetidissima, I. Fontanesii, I. Forrestii, I. fosteriana, I. germanica, I. geniocarpa, I. graminea, I. Grant-Duffii, I. Histrio, I. histrioides, I. hookeriana, I. humilis, I. imbricata, I. japonica, I. juncea, I, junonia, I. kashmiriana, I. kumaonensis, I. laevigata, I. Madonna, I. mellita, I. mesopotamica, I. minuta, I. missouriensis, I. montana, I. ochroleuca, I. orchioides, I. orientalis, I. palestina, I. pallida, I. persica, I. prismatica, I. Pseudacorus, I. pseudopumila, I. pumila, I. Reichenbachii, I. reticulata, I. rosenbachiana, I. scariosa, I. setosa, I. sibirica, I. sikkimensis, I. sindjarensis, I. Sintensii, I. Sisyrhinchium, I. spuria, I. Stocksii, I. subbiflora, I. tigrida, I. tripetala, I. trojana, I. tubergeniana, I. tuberosa, I. unguicularis, I. Urumovii, I. variegata, I. Vartani, I. versicolor, I. warleyensis, I. willmottiana, I. Wilsonii, I. Winkleri, I. xiphioides, I. Xiphium.

OCTOBER.—*In flower:* I. aphylla. *To be planted:* I. acutiloba, I. Aitchisoni, I. atrofusca, I. atropurpurea, I. aurea, I. bakeriana, I. Barnumae, I. bismarckiana, I. Bloudowii, I. Boissieri, I. bucharica, I. Bungei, I. caucasica, I. Danfordiae, I. darwasica, I ensata, I. Farreri, I. filifolia, I. foetidissima, I. Fontanesii, I. fosteriana, I. Gatesii, I. goniocarpa, I. Grant-Duffii, I. Histrio, I. histrioides, I. hoogiana, I. hookeriana, I. iberica, I. juncea, I. Korolkowi, I. kumaonensis, I. Lortetii, I. Meda, I. ochroleuca, I. orchioides, I. orientalis, I. paradoxa, I. persica, I. Pseudacorus, I. reticulata, I. rosenbachiana, I. Sari, I. sikkimensis, I. sindjarensis, I. Sisyrhinchium, I. Stocksii, I. stolonifera, I. susiana, I. tingitana, I. tubergeniana, I. Vartani, I. versicolor, I. warleyensis, I. willmottiana, I. Winkleri, I. xiphioides.

NOVEMBER.—*In flower:* I. alata, I. palestina, I. unguicularis. *To be planted:* I. tingitana.

DECEMBER.—*In flower:* I. alata, I. Histrio, I. palestina, I. unguicularis, I. Vartani. *To be planted:* None.

PRUNING CALENDAR (ORNAMENTAL TREES AND SHRUBS AND CLIMBERS)

FEBRUARY.—*Actinidia* (Thin out and shorten if needed); *Ailanthus glandulosa* (Cut down nearly to ground, retain only one shoot); *Artemisia* (Cut out old wood when needful, shorten previous year's growth); *Buddleia variabilis* (Cut back previous year's growth, thin out shoots); *Bupleurum fruticosum* (when against walls); *Caesalpina japonica; Cassinia* (Shorten if straggling); *Ceanothus* (Cut back previous year's shoots of deciduous species); *Celastrus* (Thin out and shorten if needed); *Cestrum; Clematis davidiana, Flammula, Jackmanni, lanuginosa, Viticella* (Cut back previous year's shoots); *Colutea* (Thin and shorten if needed); *Coriaria* (Thin out, shorten dead shoots); *Cyrilla* (Cut off dead flower heads); *Desmodium* (Cut out previous year's shoots); *Eccremocarpus scaber* (Cut back dead stems); *Elsholtzia* (Cut back shoots); *Ercilla volubilis* (Shorten and thin if needed); *Ficus* (Thin occasionally); *Fuchsia* (Cut to near main branches, remove dead wood); *Hedera* (Cut back close on walls); *Hedysarum multijugum* (Shorten shoots); *Hydrangea arborescens* (Cut out old shoots, shorten last year's wood), *H. grandiflora, H. paniculata* (Remove old flower heads, cut weak shoots); *Hypericum* (Thin old wood, shorten young), *H. calycinum* (Cut right back), *H. moserianum* (Thin and shorten shoots half back); *Indigofera gerardiana* (Cut well back on walls, remove dead wood on bushes); *Itea virginica* (Thin old shoots, shorten young), *I. ilicifolia* (Shorten shoots); *Lespedeza* (Cut back young shoots); *Lippia* (Shorten long shoots); *Lupinus arboreus* (Thin old wood, shorten shoots half back); *Marsdenia* (Thin and shorten if needed); *Menispermum* (Cut unneeded growth); *Microglossa* (Thin old wood, shorten shoots half back); *Myricaria* (Thin old wood, shorten young shoots); *Paulownia imperialis* (Cut down for large leaves); *Penstemon* (Remove dead growth and thin); *Periploca graeca* (Cut if needed); *Pipanthus* (Remove old and dead wood, shorten long shoots half back); *Polygonum baldschuanicum* (Cut back on walls); *Rhus* (Cut back for large leaves); *Rosa* (Prune Ayrshire, Boursault, *rugosa, sempervirens,* Wich. Ramb.); *Romneya* (Cut dead or oldest shoots, trim back long branches); *Sambucus* (Cut down for foliage); *Schizandra* (Thin and shorten if needed); *Spiraea* (Prune hard all species flowering on young wood); *Stauntonia* (Thin and shorten if needed); *Tamarix pentandra* (Cut young shoots hard back); *Tecoma* (Cut back secondary shoots); *Teucrium* (Cut back secondary shoots); *Vitex* (Cut back secondary shoots on walls); *Vitis* (Prune closely if needed).

MARCH. See also Spring.—*Clematis florida, C. lanuginosa, C.*

montana, C. patens (Cut dead and overcrowded shoots); *Hedera*—Ivy—(Clip against walls); *Lavendula* (Cut back if needed); *Rhododendron* (Old bushes can be cut back); *Rosa* (Prune Bourbon, Brier, China, Damask, H.P., H.T., Moss, Noisette, Pern., Poly. pom., Provence); *Salix* (Cut back hard for coloured bark).

APRIL. See also Spring.—*Arbutus* (Cut if overgrown); *Arundinaria* (Trim, cut out worn old shoots); *Arundo* (Cut out old shoots); *Aucuba* (Cut back if needed); *Bamboo* (Cut out weak old shoots and trim); *Choisya ternata* (Trim if needed); *Laurus* (Cut back if overgrown); *Olearia Haastii* (Cut back if overgrown); *Prunus Laurocerasus, P. lusitanica* (Finish cutting back); *Rosa* (Prune Banksia, Dwarf and standard Teas, Noisettes); *Salix* (Cut back for peeling rods); *Syringa*—Lilac—(Thin out, remove weak shoots).

SPRING.—*Clerodendron fallax* (Cut to ground); *Cornus* (Cut back if overgrown, or for coloured bark); *Diostea* (Shorten shoots); *Fremontia californica* (Shorten only longest branches); *Hedera* (Cut back straggling plants); *Magnolia grandiflora* (Cut back and tie); *Rhus* (Cut back on walls); *Pyracantha* (Shorten shoots); *Rosa* (Finish pruning); *Ruscus* (Thin old shoots).

MAY.—*Magnolia conspicua* (Trim); *Salix* (Cut back for peeling rods); *Syringa*—Lilac—(Remove weak shoots).

JUNE. See also Summer.—*Hedera* (Remove long shoots on walls); *Syringa*—Lilac—(Remove weak shoots).

JULY. See also Summer.—*Hedera* (Remove long shoots on walls).

SUMMER.—*Azara* (Shorten if needed); *Buxus* (Clip box-edging and topiary work); *Carpinus* (Trim hedges); *Deutzia* (Remove old wood occasionally, prune back for forcing); *Discaria* (Shorten shoots if needed); *Eleagnus* (Shorten straggling shoots); *Euonymus japonicus* (Clip hedges); *Evodia* (Trim if needed); *Griseliniu* (Trim if needed); *Kadsura* (Cut back if needed); *Laurus* (Trim); *Ligustrum* (Clip hedges as required); *Lonicera* (Thin and cut back bushes occasionally); *Magnolia* (Trim if needed); *Michelia* (Trim if needed); *Osmanthus* (Trim if needed); *Robinia hispida* (Shorten shoots); *Tilia* (Cut back shoots in pleached walks).

AFTER FLOWERING.—*Abelia* (Remove flower heads, thin if needed); *Akebia* (Thin and shorten if needed); *Azalea; Berberidopsis corallina* (Shorten shoots, tip branches); *Berberis Aquifolium*—Mahonia—(Cut over); *Bruckenthalia spiculaefolia* (Cut flower heads); *Bryanthus* (Cut flower heads); *Calluna vulgaris* (Cut flower heads); *Caryopteris Mastacanthus* (Tip shoots); *Cassandra* (Cut flower heads); *Cassiope* (Cut flower heads); *Ceanothus* (Cut back against walls); *Ceratostigma* (Cut flower heads); *Chimonanthus fragrans* (Cut back secondary shoots against walls); *Choisya ternata* (Cut back against walls); *Cistus* (Cut flower heads); *Clematis* (Remove dead ends); *Coronilla* (Cut back if needed); *Crataegus* (Cut out straggling branches); *Cydonia* (Cut back hedges); *Cytisus* (Cut back); *Daboëcia* (Cut dead flower heads); *Diervilla*

(Cut back flowering branches); *Dipelta* (Cut back flowering branches); *Dorycnium* (Tip shoots); *Erica* (Trim tall, cut flower heads off dwarf species); *Escallonia* (Cut back against walls); *Fabiana* (Tip shoots); *Forsythia* (Thin out and cut back), *F. suspensa* (Cut back); *Halimodendron argenteum* (Tip longest shoots); *Helianthemum* (Cut dead flower heads); *Hydrangea* (Cut dead flowers); *H. petiolaris* (Cut back); *Jasminum nudiflorum, J. primulinum* (Cut back flowering shoots), *J. officinalis* (Thin); *Kerria* (Cut out old wood or shorten); *Kolkwitzia* (Thin if needed); *Lavendula* (Cut off flower stalks); *Leptospermum* (Shorten branches if needed); *Leucothoë* (Thin old shoots if needed); *Linum arboreum* (Cut dead flower heads); *Lonicera* (Cut back if needed); *Neviusia* (Thin old wood); *Olearia Haastii* (Prune lightly); *Oxydendron* (Cut dead flower heads); *Philadelphus* (Thin and cut back flowering wood); *Pieris* (Cut dead flower heads); *Plagianthus* (Cut back against walls); *Prunus triloba fl. pl., P. japonica fl. pl.* (Cut back flowering branches); *Psoralea* (Shorten branches); *Raphiolepis* (Cut back slightly against walls); *Rosa* (Cut out old wood from Ramblers, prune Weeping Standards); *Ruta* (Shorten leading shoots); *Santolina* (Cut to below flower stalks); *Schizophragma* (Cut back against walls); *Spartium* (Cut dead flower heads); *Tamarix* (Prune hedges); *Trachelospermum* (Cut back shoots against walls); *Ulex* (Trim); *Zenobia* (Cut dead flower heads).

When Young to Train.—*Caragana; Cercis; Hamamelis; Notospartium junceum.*

No Regular Pruning—Shorten straggling shoots.—*Actinidia chinensis; Ampelopsis; Aristolochia; Camellia japonica; Celastrus; Escallonia; Fallugia; Hydrangea scandans; Pittosporum; Vinca major, V. minor.*

No Regular Pruning.—*Acer; Adenocarpus; Amelanchier; Andromeda; Aralia; Arctostaphylos; Aristotelia Macqui; Asimina triloba; Astragalus; Berberis; Bursaria spinosa; Buxus* (bushes and trees, except in topiary work); *Calophaca wolgarica; Calycanthus; Carmichaelia; Carpenteria californica; Cephalanthus; Cercidiphyllum japonicum; Cercocarpus; Chiogenes; Chloranthus; Cladrastis tinctoria; Clerodendron Fargesii, C. trichotomum; Clethra; Cleyera; Cliftonia; Cneorum; Colletia; Coprosma; Corema; Corokia; Corylopsis; Cotoneaster; Cudrania; Cydonia; Daphne; Daphniphyllum; Dendropanax; Desfontainia spinosa; Dichotomanthes tristaniaecarpa; Dirca; Disanthus cercidifolius; Distylium; Drimys; Echinopanax; Edgeworthia; Empetrum; Enkianthus; Ephedra; Erinacea pungens; Eucryphia; Euonymus japonicus; Eurya; Fatsia; Fendlera rupicola; Fontanesia; Forestiera; Fothergilla; Garrya; Gaultheria; Gaylussacia; Genista; Gordonia; Grevillea; Halesia; Heteromeles; Hibiscus syriacus; Hippophaë; Hymenanthera; Illicium; Jamesia americana; Kalmia; Koelreuteria; Laburnum; Ledum; Leiophyllum; Ligustrum* (bushes); *Lindera; Lithospermum; Loropetalum; Lyonia; Margy-*

ricarpus setosus; Medicago arborea; Meliosma; Menziesia; Metaplexis; Muehlenbeckia; Myrica; Myrsine; Myrtus; Neillia; Nuttallia; Ononis; Pachistima; Pachysandra; Parrotia; Pernettya mucronata; Petteria; Philadelphus coronarius, P. grandiflorus, P. Lewisii; Phillyrea; Photinia; Poliothyrsis; Potentilla; Ptelea; Pyracantha; Rhamnus; Rhodotypos; Ribes; Rosmarinus officinalis; Rubus deliciosus; Sambucus (bushes); *Sarcococca; Shepherdia; Skimmia; Smilax; Sophora; Spiraea; Stachyurus; Staphylea; Stranvaesia; Stuartia; Styrax; Symphoricarpus; Syringa* (Lilac); *Tamarix* (bushes); *Umbellularia californica; Vaccinium; Veronica; Viburnum; Vinca; Vitis; Xanthoceras; Zanthoxylum.*

PRUNING

WHEN a branch is being removed the cut should be made parallel with the bark of the main branch, and when branches are being shortened they should be severed to a branchlet or to a bud. As soon as wounds are made they should be pared smooth at the margins and be coated with coal tar or some other preservative.

In pruning ornamental trees, and particularly those that grow to considerable dimensions, care should be taken to restrict the trees to single trunks. Theoretically all that the cultivator has to do is to keep removing lower branches as they appear and direct all vigour into the main stem. From a practical point of view this is not possible. Therefore he removes two or three lower branches with caution and shortens others.

Cavities in trees are due to decaying wood and their neglect may hasten the death of a tree. To deal with them, remove as much as possible of the dead wood, paint the decayed surface with a strong solution of carbolic acid; when dry, coat with tar, then fill up with cement, concrete, asphalt, or hard tamped clay. Finish with a surface that will throw off water and coat with tar or some colouring matter that is near the colour of the bark.

All trees cannot be pruned alike, and this is particularly noticeable in the case of fruit trees. It is a good practice to keep the centres of fruit trees and bushes open and to remove cross branches, but it is not always advisable to shorten branches very much. In some kinds of apple tree flowers are borne freely from the points of the previous year's shoots, and it is only by leaving them intact that full crops of fruits are procured. In other cases rather severe pruning can be practised without much loss of flowering wood. Then the object for which, or the manner in which, trees are grown has a very distinct bearing upon the manner in which pruning should be conducted. With garden Roses again the different types and even different varieties often require separate consideration. Among hardy shrubs there are some kinds that require pruning during late winter and others that must be left until the flowers are over.

VEGETABLE SOWING AND PLANTING

s = depth to sow or set. p = distance to plant or thin out.
w = width between rows. Measurement in inches.

	S.	Date.	P.	Date.	W.
Asparagus ..	1	Ap.	12	Ap.	12
Beans, Broad ..	2–3½	Mar.–Ap. Nov.	6		24
,, Dwarf ..	1½–2	Ap.–Jy.	9–12		24
,, Runner ..	2–3	Ap.–Ju.	9–12		72
Beet, Globe ..	1–1½	Jan.–May	8		12
,, Long ..	1–1½	Jan.–May	8		18
,, Spinach ..	1½	Mar.–Ap.	15		18
Borecole, Kale ..	¾	Ap.	18–30		24–30
Broccoli	¾	Ap.–May	24–30		24–30
Brussels Sprouts .	¾	Mar.–Ap.	30–36		30–36
Cabbage, Autumn	¾	Mar.	12–20	Ap.	18
,, Colewt.	¾	Ju.	12		12
,, Spring .	¾	Jy.–Aug.	12–20		12–20
Cardoons ..	1½	Ap.–May	20	May	60
Carrots	¾–1	Jan.–Aug.	5–8		18–20
Cauliflowers ..	¾–1	Dec.–Ap. Sep.	24–30		24–30
Celeriac	¼	Mar.	18	May	24
Celery	¼	Feb.–Mar.	10–14		48–60
Chicory	¼	Ap.–May	9–12		12
Corn Salad (Lambs Lettuce) ..	¼	Aug.–Oct.			6
Cucumbers ..	½	Jan.–Sep.			
Endive	¼	May–Oct.	12–15		12–15
Fennel	¼	Ap.–May	12		
Kohl Rabi ..	¼	Ap.	18		24
Leeks	¼	Feb.–Ap.	9–12	Ap.–May	18–36
Lettuce	¼	Feb.–Sep.	9–12		15
Maize	½	Ap.	24	May–Ju.	36
Marrows ..	¾–1	Feb.–May	24–36	May–Ju.	36
Mint	¼		6		6
Onions, Autumn .	¾–1	Aug.	6–8		12
,, Spring ..	¼–1	Jan.–Mar.	6–8		12
Parsley	½	Mar.–Aug.	6–12	Ap.	6–12
Parsnips ..	¾–1	Feb.	9–12		12–18
Peas	2–4	Nov.–Jy.	2–12		36–72
Potatoes.. ..	4	Jan.–May	12–18		24–36
Radishes ..	¼	Jan.–Sep.	3–6		12
Salsify	½	Ap.	4–12		12
Savoys	¾	Ap.–May	18–24		24–36
Scorzonera ..	½	May	8–12		12
Seakale	3	Ap.	12	Ap.	18
Shallots			6–10	Feb.	12
Spinach	½	Jan.–Sep.	6–10		12
,, New Zealand .	½	May	6–9		12
,, Perpetual	½	Mar.	6–9		12
Tomatoes ..	½		18–20	May–Ju.	36–40
Turnips	½–¾	Feb.–Sep.	6–9		12

INDEX EXPURGATORIUS

Some Plants which should not be Grown in the Garden, or which should be Used with Caution.

There are two kinds of unsuitable plants for any kind of garden: those that will not grow, and those that grow too much. The latter divide themselves into two sections: the ones which increase by vegetative growth, and the ones which increase by seeds or bulbils. Some of them spread by means of underground stems, often miscalled roots, while others usually spread along the surface, sometimes rooting as they go. The underground spreaders are the source of most trouble. Most of the worst weeds—the almost ineradicable ones—belong to this group with underground stems, usually brittle and jointed, and capable of sending out roots and shoots from each joint, so that every small piece left in the ground can form a new plant. There are a few bulbous plants, too, especially Alliums, which can give great trouble, due to the numerous small bulbs, which the parent bulbs throw off underground every year. Some of these garlics are pretty plants, but the more reproductive ones, like *roseum*, *neapolitanum*, and *triquetrum*, should have plenty of room. Subterranean spreading is by no means confined to herbaceous plants and rock plants. It is this that makes the Snowberry, *Symphoricarpus racemosus*, and the suckers which Cherries and Plums, and some kinds of Elm, Poplar, etc., throw up such a bother. Water-plants also mostly increase rapidly by means of horizontal stems which push through the mud—*Typha*, *Sparganium*, *Potamogeton*, *Acorus*, *Scirpus*, *Iris*, etc., and this makes the care of the small water garden difficult unless such plants are excluded.

The plants which spread along the surface of the ground are more easy to control. These are mostly rock-garden subjects, and it is in the rock garden that they can do most harm. The more rampant are best placed outside the rock garden altogether. The rest are best planted with their kindred at a safe distance from the Kabschia Saxifrages and other little treasures of the rock garden. There are smaller things, too, which, while quite harmless among strong-growing plants, are highly dangerous among small or low-growing treasures. *Helxine Soleirolii* can be an absolute pest. Even the very tiniest of the rock plants, the dainty *Arenaria balearica* and the peppermint-scented *Mentha Requieni*, can be a great trouble among the small high-alpine cushion-plants.

PLANTS PUT ON THE INDEX

Acaena Buchananii. Spreads rapidly.
Acer Pseudo-platanus. Seeds profusely.
Ajuga reptans. Bugle, with varieties, except in wild garden.
Allium roseum, neapolitanum, triquetrum. Use with caution.
Alnus glutinosa. Seeds freely.
Anchusa sempervirens. Seeds freely.
Anemone japonica. Spreads rapidly when once established.
Arenaria balearica. Dangerous among choice plants in R.G.
Aster. Michaelmas Daisies seed profusely if permitted.
Betula alba. Seeds freely.
Campanula pusilla. Spreads in R.G.
Cerastium tomentosum. Roots and spreads rapidly.
Clerodendron foetidum. Suckers.
Convolvulus tenuissimus (althaeoides). Troublesome in R.G.
Crucianella stylosa. Roots and seeds, very troublesome.
Epilobium, in variety. Seeds freely.
Euphorbia capitata. Spreads underground.
Gaultheria Shallon. Spreads underground.
Helxine Soleirolii. Devastating ramper.
Hieracium aurantiacum, rubrum. Spreads and seeds.
Hypericum calycinum. Spreads rapidly.
Linaria pallida, repens. Spreads underground.
Mentha, in variety. Spreads underground. *Requieni.* Troublesome among choice rock plants.
Myosotis. Common forms seed profusely.
Petasites fragrans. Spreads underground.
Physalis Alkekengi. Spreads underground.
Potamogeton. Spreads in ponds.
Potentilla ambigua and several others. Spreads rapidly.
Sambucus nigra. Seeds.
Scirpus. Spreads in ponds.
Sedum acre, album, reflexum, rupestre, sexangulare, spurium.
Solidago virgaurea. Spreads and seeds.
Sparganium. Spreads in ponds.
Spiraea. (Some of the common shrubs.) Suckers.
Symphoricarpus racemosus. Spreads underground.
Tiarella cordifolia. Spreads quickly.
Typha. Spreads in ponds.
Veronica filiformis. Spreads rapidly.
Vinca major, minor. Spreads rapidly
Waldsteinia trifolia. Spreads underground.

The Editor will be glad to receive notes of any plants that should be included in this list. Notes should include some details beyond names, for plants rampant in one garden may be difficult in another.

Additional plants put on the Index :—*Calestegia pubescens;* running roots. *Helianthus "Miss Mellish";* running roots. *Polygonum cupsidatum;* running roots. *Laburnum vulgare;* seeds profusely.

C. N. (Cornwall).

THE PRESERVATION OF THE COUNTRYSIDE

EVERY gardener ought to be interested in keeping the countryside as beautiful as possible, as each garden is only one plot in the larger garden which Nature has planted.

His first duty is to refrain from doing anything to diminish the floral beauty of the country. Many gardeners require briers for grafting roses. They must not pillage the hedges; it would be quite easy for them to grow them from seed and have a continuous succession. Sometimes we want whole beds of common primroses for wild gardens. It is a stupid and wasteful way to go out into woods and take them up by the root. They can be grown far better from seed. A single packet of seed will produce plants which can be established easily and successfully.

I have known people transplant wild orchids—they always die. If you are to grow the hardy orchids you must grow them from seed.

The gardener is one who knows how to propagate, and he ought to be increasing the number of wild flowers and not decreasing, and what we do at home we ought to do abroad. The collector who brings home packets of seed does no harm to the country he has left and beautifies our gardens; but I am told that the *Lilium Henryi* is extinct in the valley where it was first found, for great masses of bulbs were sent to this country. I remember seeing a statement of a nurseryman that he had brought 50,000 bulbs from the neighbourhood of Smyrna. No countryside will stand depletion in that way.

Then there is work that a gardener can do. Everyone should take their part in planting trees, flowering shrubs, ornamental trees in suitable places. A person driving through the country ought to feel that he is always driving through a country park. There are many village greens where the planting of a few trees would change the whole aspect, and we

should think of the outside of our houses and the view of them from the road as well as the seclusion of our own garden.

Our country is naturally beautiful, but if everyone having a cottage garden or vicarage garden or a park considers his neighbours as well as himself, its beauty may easily be increased. I think, too, something might be done in restoring to the places for which they were famous our rarer wild flowers. It is easy to get the seed from abroad without damage to the country from where we get it. The sowing of a few seed pods will restore plants which are almost lost.

A. C. GLOUCESTER.

SAFEGUARDING OUR HERITAGE OF BEAUTY

MR. BELLOC has somewhere said that in his opinion the only contribution of the landowning class to Society has been the Landscape of Rural England, " the character of the Paradise," as he calls it. It is not given to many people to have the creation of a Paradise to their credit, or even to have been prime contributor towards its formation and maintenance. But only at the moment when our countryside is threatened with dissolution do we awake to the fact that what the landowners have bequeathed us is a commercial asset worth exploitation.

That this grudging acknowledgment is literally true is no question. Up to the end of the middle ages, though each succeeding possessor of this island had left his mark—Iberian, Celt, Roman, Saxon, Dane, and Norman—and glorious marks many of them were, tumuli, roads, market towns, villages, castles and cathedrals—nevertheless, the agricultural countryside to our eyes must have appeared bare and cheerless. As the wastes receded, the land was divided into common fields and narrow strips of private cultivation; the countryside outside villages and towns must have resembled large collections of allotment gardens, utilitarian but hardly beautiful. There would be no hedges and few trees outside the forests. During the seventeenth and eighteenth centuries, however, a profound change must have come over the appearance of the country:

the formation of great estates and the building of country-houses surrounded by their parks gave a richness to the landscape; the allotment fields were absorbed into farms, the wastes separating the villages reclaimed and enclosed. Whether this was sound on social lines or no, it increased the efficiency of farming and altered the general appearance of the countryside. The owner of a large estate wished to draw attention to its extent by a boundary, hedge or trees. The larger and permanent fields showed their divisions by stone walls and hedges, whichever was most appropriate, in place of the temporary dividing off of parts of the common field with hurdles. Isolated trees in fields and hedgerows enclosed and enriched the picture, and under the system of tenant farming they were not cut down. This park-like effect of the country (which always astonishes foreign visitors) was evidently the result of a desire to irradiate the influences of the private garden and park surrounding the country house: the need of coverts and belts of trees for sporting purposes also added its quota.

Some early examples have fortunately been preserved. In the seventeenth century French influence was in the ascendant, and an attempt was made to classify our landscape after the Continental model: the Duke of Beaufort thrust his radiating avenues in all directions round Badminton, obtaining permission from neighbouring landowners to traverse their property in order to focus his vista upon some church tower. The surroundings of Ragley are even more formal, but the avenues are swallowed up by wooded hills. The attempt was defeated by the invincible undulation of the greater part of English scenery, and because we had a less extravagant nobility and kings who spent their money on other things. But the desire persisted, and Mr. Christopher Hussey, in his delightful book on the Picturesque, has shown how the landowners' energy was turned into the more feasible channel of Landscape Design. This new school accepted the natural informality of the country and aimed at emphasising it. Kent and Capability Brown, the gardener, were the protagonists of this new method, and like all reformers they swept away much that was beautiful in the formal gardens surrounding the houses. But their parks were superb, as may be seen at Blenheim and Chatsworth. Every country squire became an amateur of planting

and a disputant in the art of the Picturesque. It is by no means realised, if it can even be definitely known, how much of England was consciously laid out during this time, far beyond the boundary of the home park. For example, in the Thames Valley, in the neighbourhood of the Goring Gap, the downs were nearly bare 150 years ago; there is evidence here of the careful work of landscape planting which gives that characteristic appearance to this beautiful stretch of the river. The regularising hand of man has thus been softened into heightening an effect here, opening a prospect there, planting out an unseemly object, framing a lovely view.

Moreover, though like M. Jourdain, he did not know it, the landowner was practising the modern mystery of zoning; he decided where the houses were to go, grouped into a village; what land was reserved for agricultural use and what for recreation, both public and private. There was no litter, no advertisements, and the grass verges and hedges were trim and neat.

The countryside withstood the great nineteenth-century ravage of the railways: their scars remain, but they are largely healed, because there was the same quiet influence at work, and indeed it remains to-day where the estates are not broken up. But these areas grow smaller every year, and so in place of the landowners as guardians of England's Beauty, we have The Council for the Preservation of Rural England.* No fewer than 29 different organisations and a host of affiliated societies are now necessary; and so far the spoliation of the countryside has only been partially checked. I would suggest that we ask ourselves what it is that we really need to keep in the country, for so much of the damage is done by people misguidedly making use of it for their imagined pleasures. Bungalows and houses in strings along the road—new main roads "opening up" remote patches or ploughing through existing villages—petrol stations: these are all provided to make the country more accessible. A new approach to the study of Landscape Design is necessary; the break up of the old estates must mean change; more people can get into the country for permanent or occasional residence. Do not let us be so foolish as to try to stop the change as Ruskin tried to stop the rail-

* See Societies.

ways, but let us all agree to adapt the changes to the genius of our countryside. It can be done, but it must be done quickly if we are to continue to enjoy it.

PATRICK ABERCROMBIE,
Hon. Sec., C.P.R.E.

GOOD TURNS TO TREES.—Under this title the Men of the Trees Society published a useful pamphlet for Girl Guides. Among the hints given some of the "don'ts" should be generally remembered:—

Don't build a fire close to a tree; even though not set on fire its roots may be injured.
Don't start cutting a stick and then leave it.
Don't cut a sapling.
Don't cut the bark of a tree. .
Don't tie up a horse near a tree. . .
Don't run along snapping off twigs. . .

COMMANDMENTS OF THE FLOWERS.—Under this title Lena Scott Harris published in Los Angeles ten commandments. These included:—

"Thou shalt learn to know the Wild Flowers of thy State."
"Thou shalt consider the places where they grow as thy great garden, and make it thy aim to protect it."
"Thou shalt remember the seedtime of another year, and the joy of others who are to look upon the flowers"
"Thou shalt not destroy, but shalt use thy best knowledge to bring two blossoms to the coming year where last year counted one."

GARDENS

THE GARDEN AT DOVE COTTAGE, GRASMERE

IT is doubtful whether any plot of land has been more ardently loved than the little garden-orchard which lies behind Dove Cottage, known all over the world as the home to which Wordsworth and his sister Dorothy came in December 1799. Few gardens can have a more enduring place in our literature, for almost everything in this nook of ground has been written about, delicately and beautifully, by Wordsworth in his poems, and by Dorothy in her journal.

Here the poet spent hours wrestling with the difficulties of verse making, or lying in the orchard watching the birds, the butterflies, the leaves, and flowers; or talking with Coleridge; and at all hours of the day and night walking backwards and forwards on the tiny terrace with Dorothy. They both laboured in the garden. "My trees they are, my sister's flowers." William stuck peas, Dorothy sowed beans; together they built the walls, cleared the rocks and the little well, and planted flowers brought back from the lakeside and fells, and from the gardens of their village neighbours. From the seat in the orchard Dorothy drank in "the overwhelming beauty of the vale below." She sat on the wall making her shifts, read Boswell and Spenser, and noted "all the goings-on" of life around her. "The blackbird sate quietly on its nest, rocked by the wind and beaten by the rain." She watched "the little birds busy making love, and picking the blossom and bits of moss off the trees. They flutter about and about beneath the trees as I lie under them——"

Both brother and sister were poets, both had not only sympathetic imagination and the power of intense enjoyment in natural beauty, but also such rare gifts of delicate and sure expression that we are admitted in a very special way to share their experiences in "their life of observation and emotion." Dorothy could condense the deep calm of her happiness, her

ecstasy of feeling, into a few words. She stepped outside for a last look at the lake in the evening, and wrote, "Grasmere very solemn in the last glimpse of twilight. It calls home the heart to quietness." And "Grasmere looked so beautiful that my heart was almost melted away." Or, again, "What a beautiful spot this is—the greenest in all the earth, the softest green covers the mountains to the very top—Silverhow is before my eyes, and I forget I have ever seen it so beautiful."

We know that for her this little home, shared with her brother, was the perfect fulfilment of her earlier dreams. In 1792 she had written with longing desire: "If we could erect a little cottage and call it our own, we should be the happiest of human beings. I see my brother fired with the idea of leading his sister to such a retreat. Our parlour is in a moment furnished, our garden adorned by magic, the roses and honeysuckles spring at our command, the wood behind the house lifts its head and furnishes us with a winter's shelter and a summer's noon-day shade."

Here in Grasmere eight years later the dream was realised, and in entire contentment she wrote, in 1800, to a friend: "We have a boat on the lake, and a small orchard and a smaller garden, which, as it is the work of our own hands, we regard with pride and partiality. The garden we enclosed from the road, and pulled down a fence which formerly divided it from the orchard. The orchard is very small, but it is a delightful one from its retirement and the prospect from it. Our cottage is quite large enough for us, though very small. We have made it nice and comfortable within doors, and it looks very nice on the outside, for though the roses and honeysuckles which we have planted are only of this year's growth, yet it is covered all over with green leaves and scarlet flowers, for we have trained scarlet beans up on threads, which are not only exceedingly beautiful but very useful, as their produce is immense. We sit a great part of our time under the apple trees."

Wordsworth tells us in *The Waggoner* that the house was once an inn, "The Dove, and Olive Bough." From this came its present name, which, however, was never used by the Wordsworths. They wrote "Town-end" at the head of their letters—the name still used for the southern end of the village. Formerly there was an uninterrupted view from the house over



Photograph by Miss J. Pearson]

DOVE COTTAGE

[*To face p.* 34

fields to the lake and fells beyond, but soon after the Wordsworths moved from the cottage the present main road was constructed, and beside it, later, buildings were erected which block the outlook from the windows; though from the seat in the orchard a view can still be had, over the tops of the buildings, of the lake and valley and fells beyond. In the poet's time the turnpike road passed the cottage, and Dorothy constantly made mention of the foot-travellers who went by. There can have been but little traffic, for she noted, as if it were a rare event, "To-day, a chaise passed."

In front of the cottage are "the two yew trees still breaking the glare of the white walls," and a little strip of garden between the windows and the road. Behind the house the ground slopes steeply upward. Stepping-stones in the grass, laid by the poet and one of his cottage neighbours, John Fisher, lead to steps cut in the rock, and on to a short terrace which curves beneath a few apple trees. Above, again, is a grassy bank, and a seat sheltered beneath a wall. Beyond the wall a wood rises to the open fell and crags. Below the terrace is a little rocky well.

> If you listen, all is still
> Save a little neighbouring rill
> That from out the rocky ground
> Strikes a solitary sound.

In the spring, clustering in the rocks about the well, are scores of little wild daffodils, children of the flowers planted by Wordsworth and Dorothy, descendants perhaps of the "jocund company" that fluttered and danced beside Ullswater, which both brother and sister have commemorated for all time. Half-way up the bank is the rock which Coleridge discovered and formed into a seat.

The whole place is haunted with memories, made vivid for us by the simplicity and perfect naturalness of Dorothy's writing. Everything, as she describes it, seems to take on life.

"A sweet morning, we have put the finishing stroke to our bower, and here we are sitting in the orchard. It is one o'clock. We are sitting upon a seat under the wall which I found my brother building up when I came to him. He had intended it should be done before I came. It is a nice cool, shady spot. The small birds are singing, lambs bleating, cuckoos calling,

the thrush sings by fits, Thomas Ashburner's axe is going quietly (without passion) in the orchard, hens are cackling, flies humming, the women talking together at their doors, plum and pear trees are in blossom, apple trees greenish, the opposite woods green, the crows are cawing, we have heard ravens, the ash trees are in blossom, birds flying about us, the stitchwort is coming out, there is one budding lychnis, the primroses are passing."

In *The Recluse, The Green Linnet, The Daisy, The Butterfly, The Kitten and the Falling Leaves,* and other poems, Wordsworth has described and praised the gardening and the joy he had in it.

In 1802 Wordsworth and Dorothy left the cottage for some months in order to go to France, and later to Yorkshire for Wordsworth's marriage. This departure marked for Dorothy the end of her time spent as "sole companion" in perfect sympathy with her beloved brother. As elsewhere in her journal her few spontaneous words show the necessity she felt of giving expression to the beauty and poignancy of those brief years in which her happiness had been exquisite. "O beautiful place, the hour is come, I must prepare to go. The swallows I must leave them, the wall, the garden, the roses, all——" And no record of Wordsworth's love for his home is more complete and tender than the *Farewell* he wrote at this time:

> Farewell, thou little Nook of mountain ground,
> Thou rocky corner in the lowest stair
> Of that magnificent temple which doth bound
> One side of our whole vale with grandeur rare;
> Sweet garden-orchard, eminently fair,
> The loveliest spot that man hath ever found,
> Farewell! we leave thee to Heaven's peaceful care,
> Thee, and the cottage that thou dost surround.
>
> . . . . . .
>
> O happy garden! whose seclusion deep
> Hath been so friendly to industrious hours;
> And to soft slumbers, that did gently steep
> Our spirits, carrying with them dreams of flowers,
> And wild notes warbled among leafy bowers;
> Two burning months let summer overleap,
> And, coming back with Her who will be ours,
> **Into thy bosom we again shall creep.**

Nowadays, during the summer months, the cottage and garden are often thronged with visitors. Most of them do not stay long.

> They see all sights from pole to pole
> And glance and nod and bustle by——.

But there are some who care to linger and who climb to the seat beneath the orchard wall and look out over the meadows and the shining levels of the lake to Silverhow and Easedale. And perhaps these find in the outlook from this little walled space, in "the blended holiness of earth and sky," that there is still something here, known of old to Wordsworth and to Dorothy, which "calls home the heart to quietness——"

ELEANOR F. RAWNSLEY.

FORDE ABBEY

I HAVE been asked to write a description of my garden, and although I have loved it and worked in it all my life, I find the task of describing it a difficult one. I cannot tell you of its beginnings—the monks must have started many hundreds of years ago to make the Abbey garden. We have their stew ponds still, and very beautiful these are, and the yew trees that they planted. After all, a garden that has unlimited water and trees is already half made. Our great difficulty is the shallow light loam which lies on top of gravel, but even this has its advantages, for we can work the ground immediately after rain, which gardeners with richer soil find impossible.

The herbaceous border is backed by an old brick wall about 7′ high and faces south. It is 8′ wide and is divided into five 60′ sections by Irish yews. These divisions we keep strictly to the following colour scheme: red and white in the centre block; yellow and orange on either side; and blue and white at both ends. It is surprising how much more effective this simple massing of colour proves rather than the usual "Joseph's coat" of the ordinary border. We make no attempt to have a show of flowers here before the middle of July, and in this way blank spaces are avoided, which is inevitable if you are too ambitious. The red section is the most difficult. We have

been defeated in our attempt to keep it truly perennial. It has been particularly good this summer with large groups of *Salvia splendens, Fuchsia fulgens, Impatiens Holstii,* American Zinnias planted with *Lobelia cardinalis*: with a background of scarlet and white Dahlias. There are also two big groups of Tritomas. In the yellow division *Aster lutea* promises to supply a long-felt want as a foreground plant. We find that Asters Edith Gibbs and Ideal are useful in the blue section, as with their feathery growth they can be pulled over plants which flowered earlier. Before leaving the border I should like to say that now, in the middle of October, it is still looking beautiful.

Beyond the border was once a neglected shrubbery of Laurels and tall Elms, the latter becoming dangerous with old age. As the rest of the garden had no suitable soil for growing the better Rhododendrons, we cleared this piece of ground, which gave us about a quarter of an acre of good leaf-mould. Rhododendrons, Kalmias, and Escallonias are all doing well here.

From here you cross a large mown lawn bordered on one side by a nut walk carpeted in the spring by Snowdrops and Lent Lilies. There are two large beds with flowering shrubs and small trees in the centre, including *Laburnum Adami,* a tricoloured graft-hybrid which one rarely sees. And growing into a really fine specimen is a shrub which ought to have a place in every garden, *Berberis Bealei,* a pearl among plants, for it flowers continuously from December to March. It has long racemes of golden flowers which smell like Lilies of the Valley and it even braved the frost and snow of last winter. Another midwinter joy is *Rhododendron nobleanum,* which flowers unfailingly at Christmas. Here, too, there is a group of conifers, Libocedrus, *Cupressus pisifera squarrosa,* Montezuma Pine, *Cryptomeria japonica,* and *C. elegans.* Among them Daffodils run riot in April and Martagon Lilies in July.

At the furthermost limit of the garden is a sunken corner surrounded by old gnarled willows. The alluvial soil is perfect for the growing of all the water-loving Primulas—*pulverulenta, japonica, Florindae, helodoxa, bulleana, rosea,* and the Microdonta Hybrids seed themselves here in wild profusion. Two streams drain this one-time swamp, and along their banks grow spiraeas, Osmunda ferns, and Iris. *Meconopsis Baileyi*

and Bartley Hybrid Primulas made a lovely picture this summer in a shady corner. Bamboos and Gunneras do almost too well, for they are ever encroaching on their smaller neighbours.

One of the lower ponds is rather a feature. It is surrounded at one end by old yew trees, which make a background for a large group of *Iris sibirica* Perry's Blue, and *Hemerocallis flava*, a happy combination. Long stretches of white *Iris laevigata* and *Iris Kaempferi* still flower freely every summer, though they were imported from Japan twenty years ago. We have another young planting near here, a mixture of Azaleas and Lilies. We grew the latter from seed and they flowered well this year. Making a background and shelter for them is a belt of flowering shrubs and brooms.

Crossing the top of the lawn in front of the Abbey, where there are two fine specimens of *Pinus insignis*, you enter one of the most interesting parts of the garden. Gravel was once quarried in this corner and the ground having been left uneven it is a perfect site for a rock garden and for heaths. Ericas are a joyful addition to any garden as there is seldom a month without at least one variety in flower. We grow Gentians here also. These, too, have nearly as long a flowering season, from *acaulis* in the spring to *sino-ornata* which now in October is a carpet of blue. Two other good blue flowers growing on the same bank are *Lithospermum graminifolium* and *Ceratostigma Wilmottii*, the latter to my mind being one of the most satisfying of autumn flowers. Crowning the rock garden is a little old Umbrella Pine, and round it Chinese Berberis are growing. We raised these from seed and their berries have been a glory since they were three years old. We are also rather proud of two bushes of *Crataegus orientalis* grown from haws given to us by Sir Henry Peto from his garden at Cheddington.

Returning to the Abbey on an autumn day there is a blaze of colour from *Vitis Coignetiae, Vitis rubra*, and both the old and new Virginia creepers. We take full advantage of the buttresses, between the cloister windows, for here we grow all manner of creepers: *Ceanothus papillosus* and *dentatus, Akebia quinata, Clematis tangutica, Lonicera sempervirens, Buddleia auriculata* and *Tecoma grandiflora*.

The kitchen garden is mostly utilitarian, with a wide herbaceous border down the centre. On the back wall of the

carnation house are our two greenhouse treasures. The first is *Phaseolus caracalla*, grown from seed given to us from the Orange Free State. This is its second year, and flowering for the first time it won an Award of Merit at the R.H.S. October show. It is growing rampantly up the 12′ wall and the flowers are both strange and beautiful and smell of Orange blossom. Our second treasure is a perennial blue pea, *Lathyrus pubescens*, which grows from 10′ to 12′ high and flowers freely.

GEOFFREY D. ROPER.

GARDEN DESIGN

THE plot of land attached to every house has its own particular problem. He is a lucky gardener who possesses a stream meandering across the bottom of his plot, where the land slopes gently down from the house. Environed with woods and hills, with a house lifted a little above the common plateau, I can imagine no more ideal site for a garden. But too often the plot of land is not at all to our heart's desire. It is usually a rectangular piece varying from ten rods to ten acres, and may be a flat field, so that whatever is introduced in the way of landscape architecture has to be created, as it were, on a bare canvas. But Nature and Art are not lacking in materials to effect a prompt transformation. There are trees of speedy growth, shrubs whose luxuriance can be hastened with proper treatment, and climbers that quickly cover up walls and fences. Materials are obtainable from a distance in these days of rapid transport, and whether a rock garden of natural formation, a dry stone wall, a sunk garden, or a paved path is our desire, modern industry will enable the landscape architect to obtain what is necessary for construction.

A site might be entirely unsuitable for certain types of garden. It is costly and heartbreaking to try and grow Rhododendrons where there is a chalky subsoil. In some gardens thirsty plants, like Dahlias and Phlox, only thrive in very wet seasons. So, when designing a garden and preparing a planting scheme, knowledge is required of what the soil is capable of producing.

End in View.—It has been finely said that " the beautiful is as useful as the useful." It is equally true that beauty in design and form is only truly beautiful in its relation to the end in view. In the garden this is emphatically the case. If the owner of the garden is keen on rock plants, then he must have provision in his garden design for that feature. If his interest runs to fruit, space must be allotted for this type of

garden, and if to games, turfing and levelling create problems at once. The first principle of good garden design should be to study the owner's end in view. This is also governed by locality, finance, interests of owner, and other conditions.

The next important consideration is the style of house and its relation to the garden. Here the architect joins hands with the horticulturist, and the garden designer must be a person who has a knowledge of horticulture as applied to the garden of the home. The true art of landscape architecture can only come by practice and experience, and should take its place alongside other great branches of art.

Object of Lay-Out.—In setting out a garden, the third essential is to secure adequate footpaths. Without convenient and clean access to the garden on all possible occasions, the opportunities for the full enjoyment of the garden are lost. The direction of the paths is governed by the position of doorways and entrances, and their object by the features of the garden. There is one certain necessity about footpaths, they should be in proportion to the house and garden. But even in a small garden there is no need to make single-file Indian tracks. These are bad relics of the Victorian era. Let us have good wide paths.

Whether the design is to be strictly formal or informal is a matter of choice. But formality is essential near the house. It is here that architecture meets the garden, and both the design and planting need careful consideration to secure the best effect. It is very rarely that one sees a good example of planting and planning the garden close to the house. There are objects around the house which are best hidden, and the most effective method is by proper planting, or by climber-covered screens.

Objects in the garden, such as flower-beds and ornaments, should bear a symmetrical relationship to each other. Proportion is also needed in the relation of features in the garden to the actual size of the garden and the house itself. Glaring examples of badly proportioned features are tiny vases on a substantially built wall.

The formation of a British Institute of Landscape Architects is a sign of the times. The vast increase of interest in the cultivation of gardens is not without its effect upon the basic

problem of all good gardening—the lay-out and planting schemes involved. When we build a house, we call in an architect to prepare a plan, incorporating our own ideas and wishes with all that is known to be best in modern architecture. And it is the same with the garden. If we would get the most from a garden in the way of beauty of lay-out and design, the problem is one for an expert, and I am glad that an Association has been formed to spread a knowledge of the principles of good Garden Design.

Summarising the features in garden design, I would say that the following are important:—

1. For gardens of moderate size, the design should be simple and of straight lines. Spottiness and fussiness should be avoided; by this I mean the dotting about of specimen trees and shrubs in lawns and borders.

2. It is desirable to continue the lines of the house into the garden design itself, and into the planting of the garden.

3. Garden ornaments should harmonise with the architectural style. If flower tubs or receptacles are employed near the modern flat-roofed house, these should be of rectangular pattern in preference to round or ornamental tubs.

4. Views should be considered as seen from the windows. Remember that we live mostly indoors, in the winter-time especially, and the garden as seen from the house is of great importance. Across the breadth of garden there should be some object to catch the eye from a window and form, as it were, a central motive for the picture.

5. Trees in and around the garden need to be considered when planting is done. They can very often be brought into the picture with a little thought in planting. Nothing emphasises the beauty of a flower border so much as a background of trees.

6. The paths should be of sufficient width to allow at least two persons to walk abreast comfortably.

7. Material employed for the paths should harmonise with the walls of the house.

RICHARD SUDELL,
Landscape Architect.

ROCK GARDENS FOR BEGINNERS

SPEAKING generally, rock garden plants are found on the mountain ranges throughout the world. If the beginner will review in his mind the conditions he would expect to find there, he will be on the way to learn something of the way in which these beautiful plants live, the extremes of weather they have to withstand, and the wonderful manner in which nature protects them. They are covered through the winter months with a thick blanket of frozen snow that is a great protection to the foliage against cutting winds and severe frost. In the summer they have to withstand the evaporating heat of almost tropical suns. To meet this condition nature has blessed them with a tufted habit, often dense with thickened leaves covered with down or waxy scale-like excretions, plus a root system one would think out of all comparison with their needs. Their roots, however, must penetrate often a yard or more down some crevice, or through the shingle of the scree bed, to obtain anchorage and the moisture which, in spring and summer, percolates its way through from the melting snows above to the small rivulets and streams below.

Compare this with our climate, with a tolerably cool summer, which does not always ripen the foliage. How best can the gardener meet these conditions and give his rock plants a position to withstand the elements for which they were never intended? This question may lead him to thoughts of a rock garden in which his plants may obtain a cool root run, quick drainage, yet sufficient moisture during summer; and, at the same time, a place where the foliage will be reasonably dry during winter.

Types of Stone.—There are two types of stone generally used, sandstone and limestone. Some thought must be given to district before either be employed. If very dry and with a small annual rainfall, a rough porous sandstone would be best. With a heavy annual rainfall, a limestone of the Westmorland weatherworn type might be more suitable. The latter is certainly much more picturesque in effect, also easier to arrange to give pleasure to the eye. Rocks ought to harmonise one with another, and, where possible, with their surroundings.

Situation and Soil.—The position should be as far as possible from the shadows cast by high walls, tall buildings and trees. The roots of the latter would sap the life-blood of the plants in summer, while drip from the boughs would rot the small plants in

winter. There are plants that like these conditions, but they are few, and in the main ferns or plants with little beauty except in foliage. If the ground be heavy and wet, some form of drainage will be found necessary if constructing on a level piece of ground. A natural bank is ideal. Excavate to a depth of 15 inches, saving all soil if fit for further use, fill up the excavation with brick-bats, clinker-burs, etc., and roll in to prevent sinking. Then cover this with a layer of turfs grass side down.* Over this, heap up the soil excavated, though before doing so it ought to be mixed with its own quantity of sand and half-inch chips to provide drainage.

Many alpines prefer soil of a limy nature. The following compost is as near their requirements as possible—one-sixth sand, one-third loam, one-sixth limestone chips or old mortar rubble, one-third peat and leaf-mould. A section should be left in order that the pockets may be filled with soil containing granite chips instead of limestone for those plants which prefer it. This compost should be added to the required height and tramped firmly before commencing the actual construction of the rock garden.

Construction.—Lay the stones on their broad sides two-thirds sunk in the ground, with the weathered side exposed to view. Link them together here and there so that they resemble small hills and valleys, making sure the natural lines of the rock harmonise one with another, but not so severely as to suggest an ideal base for a monument. Tilt the rocks slightly towards the bank so that all water may be trapped; also that soil may not be washed away from the base of the plants. Pack the soil firmly round each stone, when placed, for air pockets spell death to plants, and also allow the upper stones to sink. A small stream and waterfall may be incorporated in the design. One may picture mentally a natural stream and work to it, making the pools and waterfalls harmonise with the rest of the rockwork by well-placed smaller stones.

Plants and Shrubs.—Most rock plants are raised easily from seeds or cuttings, but the owner of the small garden very often has neither room nor time to do more than divide large clumps, which is perhaps the best and easiest of ways once stock has been secured. For effect, half a dozen or more ought to be planted in a pocket together, as patches of colour are more effective than odd plants dotted here and there without reason. Dwarf flowering and evergreen shrubs are desirable, as they give height and distance to the garden if planted judiciously. The broad-leaved shrubs, where possible, should be kept to the front and the narrow-leaved ones towards the back. Light colours are best planted towards the back, of course with care that the patches are sufficiently mixed to give a natural effect, and also that each plant has a suitable home. The shrubs should be grouped in twos and threes on knolls

[* Use only good turf. If couch, nettle, or creeping buttercup is in the sods these may prove a source of future mischief.—Ed.]

and high places, whilst an odd, very dwarf, and compact evergreen often gives a most pleasing effect.

Planting is best done in spring and autumn, spring preferably in and around our larger towns. At these times of the year also the rock garden should be overhauled, deaths replaced by division, or new plants added. All plants should be pressed in firmly after the winter's frost, and a top-dressing of good gritty soil to a depth of half an inch forked in with a small hand fork over the surface.

Rock Garden Bulbs.—Bulbs may be added with great effect, and should be planted in August or September some 3 or 4 inches below the surface, care being taken to surround them with a thin layer of sand. Bulbocodium, Chionodoxa, Colchicum, Crocus, Galanthus (Snowdrop), Hyacinthus, Iris, Leucojum, Muscari, Narcissus (dwarf), Scilla, Zephyranthes, and, of course Lily-of-the Valley in some shady place, are all excellent genera from which to pick desired species.

A. EDWARDS
(*In charge of Rock Garden, Kew*).

WALL GARDENS

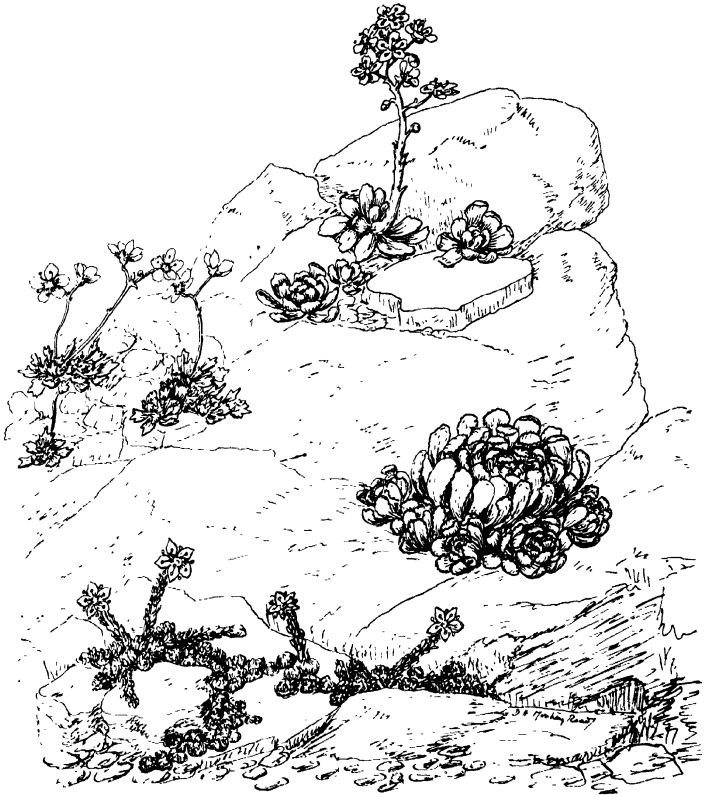
POINTS TO NOTE.—(1) The wall should be built on a firm foundation in order to prevent settlement and subsidence.

(2) It should be backed by a bank of good earth, to allow thorough root-run in good soil.

(3) The wall should not be true to plumb, but at a tilt backwards, of not less than 3 inches in 6 feet.

(4) The stones of the wall should slope slightly inwards.

(5) The plants should be put in place as the wall is built, not pushed between the stones afterwards.



SOME COMMON WILD SAXIFRAGES AT HOME

[*To face p.* 46

THE SOCIAL LIFE OF PLANTS AND THE GARDENER'S CRAFT

THE most superficial observer is aware that Buttercups and Ox-eye-daisies, the glory of our meadows in May and June, will be vainly sought in woodlands or on heather-moors; that Anemone, Cuckoo-Pint, and Honeysuckle are denizens of the woodland; and that to cull Reed-mace, Goats-rue, or the fragrant leaves of the Sweet-Flag we must search river banks. Yet the significance of this is less commonly appreciated, namely, that not only has every wild plant its appropriate habitat or habitats, but that certain kinds of plants commonly grow together. It would be comparatively easy to make lists of wild flowers that would be almost all met with in any salt-marsh, chalk pasture, beech-wood, or oak-wood in England. In other words, wild plants are naturally grouped in communities comparable to the social assemblages of human individuals, inasmuch that each type of individual occupies a definite niche in the social organisation. Some communities are so well defined that they have received popular appellations and it is quite unnecessary to be an ecologist, a trained student of the relation of live organisms to their surroundings and to one another, in order to be able to distinguish a woodland or a salt-marsh. But if we look at woodlands more closely it becomes apparent that the constituent trees may be all of one kind or several species intermingled, and with these differences in the trees there are correlated differences in the accompanying shrubs and herbs. So while we may recognise grassland, desert, or forest by the general appearance because, despite these differences in constitution, there is a common physiognomy, yet the communities that can be distinguished are very numerous and differ not only in the kinds of plants present and their relative frequencies, but also in their structure. In a vague way we can recognise also that the " sort of place " in which one kind of community grows is different from the " sort of place " which bears another kind of vegetation. But we shall have to look much more closely if we would detect the distinctions that make them different.

The nature of these wild communities depends on a number of influences or, to borrow a simile from the realm of mechanics, they are the resultant of a number of interacting forces. Of these the chief are in general, the climatic conditions, the soil conditions, the relations between plant and plant, and between plant and animal population. Modification of soil conditions will entail an altered

demand for water; change in the drainage conditions may enable a plant to persist upon a soil where previously it perished. Many species which the gardener cultivates are nearly at their geographical limit of climatic tolerance. In consequence a slight change in their conditions of growth profoundly modifies their well-being. It is in harmony with this fact that many a plant in the wild state will be found, in the north of Europe, growing in situations and on soils quite different to those with which it is associated in the centre of its range of distribution.

If we delve beneath the surface in a wild community the mechanism of nature's profusion and the seasonal kaleidoscope of floral display are in part revealed. The root systems of the associated species often occupy different levels and exploit different strata of the soil. Their shoot systems perhaps develop at the same season of the year, in which case they will compete with one another for light and air. If their foliage develops at different seasons, species of very diverse height may flourish in juxtaposition without conflict. Such a dovetailing of the requirements of plants makes possible a large population upon a small area. This principle is clearly of the first importance in cultivation if we would attain the maximum display throughout the growing season.

Of all the features of plant life which the pursuit of gardening emphasises, perhaps the most striking is the possibility of growing species under conditions of cultivation in soils quite other than those in which they ever occur in the wild state. The wild species, it must be remembered, is subject to the competition of its neighbours, and these may suppress its growth by their greater vigour, by excessive shading, by their demands on the supplies of water and mineral salts, or in other ways. Under natural conditions a plant flourishes best where the pressure of competition is least; it grows where it must rather than where it will. The Scarlet Pimpernel which we find wild on sand-dunes and shingle-beaches will form much larger plants and flower much more profusely on rich soils, but the latter are occupied by dense vegetation of grassland or woodland, and the annual Pimpernel cannot survive amidst the perennials. As a cornfield weed it is common because the processes of agriculture maintain a relatively sparse vegetation in which such a cornfield annual can persist. Many a plant which appears naturally to be associated with a particular type of soil, characterised it may be by some feature usually detrimental to plant growth, is found there because the conditions though somewhat adverse to its growth are still more inimical to the vigour of its natural competitors. So we are confronted with the apparent anomaly of the complete absence of some kinds of plants from habitat conditions which are extremely favourable to their growth, and with the presence of others in situations that can most aptly be described as plant slums.

It would be quite impossible here even to outline the features which characterise the social aggregates of wild plants, but atten-

tion may be drawn to a few aspects which have a more direct bearing on the establishment and maintenance of an artificial assemblage as exemplified by an herbaceous border. Here our aim is to attain a pleasing display of bloom either at particular seasons or more or less continuously throughout the summer and autumn. We are trying to obtain effects beyond what Nature usually attempts, but, in so far as our aims are not inconsistent, the more closely we imitate what Nature herself presents, the more completely we can subordinate the artificial to the natural, the more likely are we to accomplish a pleasing ensemble.

Natural communities of plants are not stable but change with the passage of time, a feature which is well illustrated by the fact that grassland left to itself, unmown and ungrazed, will eventually become woodland. The intermediate phase which we term open scrub probably has more features in common than any other wild community with the herbaceous border, which we artificially create and by continued attention maintain in apparent stability. Open scrub is rich in species and, unlike the grassland from which it came and the woodland towards which it is trending, is composed of plants having a great diversity of habit. In consequence the profile is extraordinarily irregular and the distribution is notably patchy. It is this irregularity that constitutes its chief charm. It is a feature that we cannot do better than imitate, and is the antithesis of the type of herbaceous border which is regularly graded in height from front to back. The border with recurrent bays is a nearer approach but lacks that suggestion of spontaneity which a less formal irregularity confers. The variety of species though great is not a uniform mixture, but with the arrival of each successful immigrant into the original grassland the scrub vegetation gradually accretes by the growth of colonies from each. It has long been empirically recognised that large clumps, and not continued repetition, should be accorded to one's favourite flowers, a maxim that not only ensures the most pleasing effects but is also good horticulture. The large clump of one species is the counterpart of the growing colony. Moreover, the scrub presents us with species of varied height and enables us to see how these can grow together in conditions of mutual tolerance. Adequate width is essential for the establishment of a successful border, but provided space be available a study of the natural community combined with imagination in the use of cultivated species will go far to ensure its achievement.

The gardener is in the position of an experimenter who, while he can judge from the wild habitat of a species as to the conditions which a particular kind of plant will tolerate, must empirically determine whether or no other, perhaps quite different, conditions may not suit it even better. Unconsciously the gardener is necessarily a student of competition, but a conscious appreciation of the fact will add much to the intellectual enjoyment of his pursuit and will, moreover, make him a better craftsman. One of the most vexed

questions which confronts the experimenter in the higher branches of the gardener's art is, what species can be successfully and effectively grown together? An acquaintance with the structure of wild communities, with the nature of the species which associate together, will materially help towards an appreciation of what the problem involves and towards the method of its solution.

The nearest approach to the conditions of a natural community are attained in the rock garden where the minimum disturbance is essential, not merely for the well-being of the plants themselves, but also to achieve the verisimilitude of untended freedom. Here especially is indispensable a recognition of the characteristics which enable species to live together without undue aggression on the part of any. A study of vegetation in the wild state emphasises that some of the most important of these characteristics are—the depth and extent of the rooting system; the average height and density of the foliage canopy; the period of foliage formation and its duration; and by no means least the mode and rate of vegetative spread and the normal output and viability of seeds.

Those who take an intelligent interest in their gardens could do much to advance both their own craft and our general knowledge of the biology of competition by careful observation and records of such features respecting which the available data are meagre in the extreme. By studying the growing literature of descriptive ecology we can learn the natural associates and habitat conditions of many garden species. That they will respond differently under the artificial conditions of cultivation and protection is almost certain, but these very differences will enable us to appreciate something of the warp and woof of the intricate pattern of nature's weaving. Those who agree with Bacon that the planting of a garden "is the purest of human pleasures" will not be far from discovering that the comprehension of its maintenance is one of the most exhilarating of intellectual pursuits.

E. J. SALISBURY, D.Sc., F.L.S.,
Hon. Sec. British Ecological Society.

FOLKLORE OF TREES

THERE was a child that lived in Connacht a short while ago, and he could play the fiddle, the flute, and the pipes from the day he was three years old. If any person vexed him, or hit him a slap, he would say: " Be careful now or my brother will have your life." " And how could that be, Soneen, and you an only child? " was the answer he got from his mother, his aunt, and his friends. Well there came a day when a stranger, travelling the roads, craved a drink at the door. Didn't the young child hand him his own mug of buttermilk, very civil and kind, and then he set up a dancing tune on the pipes. The stranger was footsore, so the music vexed him, and he hit the child a slap. " It's too late for you to be careful," says the boy, "my brother will take your life." With that the stranger departed, but before he went a quarter of a mile an ash branch fell on his head and cracked it in two where the soul wins out of the clay.

That is a Breffny tale I heard in childhood, and which much subsequent reading of folklore bids me refer to the Ayran myth that men are descended from trees. In his *Mythologie des Plantes* Professor de Gubernatus gives us a vast amount of information on the subject. The pages of *The Golden Bough* and of other authoritative works are full of tales on the trees and their influence on mankind. In the course of a short article it would not be possible to treat of trees in a comprehensive manner. Wherever there are woods and copses local variants of old stories, local beliefs and customs can be discovered. There are seasons for cutting, for planting, for carving and working in wood; there are good moments to gather leaves for salves and lotions, hours when it is dangerous to rest even in the shade of particular trees.

Certain ideas are very widely distributed. In most countries one is told that trees should only be cut at the waning of the moon. To plant a hedge against the course of the sun is to

invite disaster by admitting evil spirits to the enclosure. This belief, if not older, certainly goes back to the witchcraft of the Middle Ages, when sites were especially prepared for the practice of black magic and the raising of Robin Aubiron, the fiend. He, under the shade of a suitably planted tree, piped and sang to the votaries, and gave them power over man and the elements as a reward for their adoration.

It is also an ancient custom to plant the yew near the dwellings of the dead, to whom it is a good guardian, drawing unto itself the venom of the powers of darkness. On the other hand, yew is unsafe to keep near the abode of the living. On St. John's Eve it has the power of movement to a bow-shot's length, and it may peep in at the windows of a house. Should its vampire gaze rest on young and comely persons, the yew may overlook them, drawing strength from their bodies, and causing them to die of decline.

A child whipped with either broom or willow will have its growth stunted; birch and ash are the safe woods to employ. Rowan protects against witchcraft, and a plank of it in a ship guards against running on a reef or the fury of the waves. Oak is best of all for the roof-tree of a house, and ash is also kindly, but hawthorn brings fairies in its wake. The old idea was, of course, that the tree had a soul, as we have, and this spirit had to be propitiated before the timber was safe to use. Certain species were, on the whole, well disposed towards man: to our modern unbelieving minds it provokes a smile to note that the good natured trees were those of which most and best use can be made. Oak, ash, and pine, the indispensable, were not, on the whole, dangerous, though certain rites attended their cutting and employment. To sleep under an oak, the druid's tree, or on a pillow stuffed with oak leaves, gives the gift of prophecy; but to sleep in the shade of yew brings insanity; in the shade of elder an acquaintance with the fairy folk—best left alone. In Sicily it is still said by the peasants that every leaf of a fig tree harbours an evil spirit. Another curious belief is that trees can be overlooked and even killed by the evil eye. De Gubernatus gives many instances of this. Only a dozen years ago, at my old home in Ireland, I was accused by the workpeople of having spoilt our apple trees by employing a man with the evil eye to work in our orchard.

Elms are not well regarded, possibly because they have the dangerous habit of dropping rotten branches or falling on a still day. In France and Ireland it is even believed that bees cannot live in their neighbourhood, because the bee is blessed and the elm under the especial protection of the evil one who once hid from God among its boughs.

"With the flowers of holly," says Pliny, quoting from Pithagoras, "water is made ice." Our own John Parkinson, in his *Theatrum Botanicum*, adds: "And againe a staffe of the tree throwne at any beast, although it fall short by his defect that threw it, will fly to him as he lieth still, by the special property of the tree: this I here relate that you may understand the fond and vain conceits of these times, which I would to God we were not even in these days tainted withall."* He tells us many other wonders in the same book: "If one that is cured of the biting of a mad dogge shall within one twelvemonth after touch the Cornus faemina or dogge berry tree, or any part thereof, the disease will return again."

In certain families a tree acts as a death warning, by dying first or dropping a branch, the oak of the Hays of Errol being one of the most famous. At Magdeburg in Germany I was told of a lime tree that sheds its leaves, even when new grown in spring, if danger threatens the head of the house; if the leaves are not expanded, as in winter, then it drops the swollen buds where leaves should come. As a trysting-place trees have ever been a good landmark, and they thus gave rise to many legends, like that of Thomas the Rhymer, who met his fairy queen by Eildon tree. Cuchulain, the hero of Ulster, first saw Faud, the pearl of beauty, by the strand of the yew, a haunted spot this day. In one of the Breton folk-tales a giant kept his life in an ancient box tree, and he could not be killed until it was uprooted. When St. Mogue was born on Templeport Island a willow sprang up to shelter his cradle. Earth from that spot is still carried by the people of County Cavan as a protection against fire, water, and toothache. The whole island would have disappeared long since but for the unwritten law that bids each visitor bring out a handful of soil from the shore to renew the supply. At Kilronan there is a tree whereon people still hang votive offerings, and it is often

* 1649.

quite brightly decorated, but no one will go near it at night, because it is then guarded by the appearance of a wolf. The wolf also figures in Breton stories of St. Ronan, who crossed the sea from Ireland in a dish made of oak leaves pinned together with spines of hawthorn.

A quaint old saying runs: "In the gall of the oak there breedeth three small creatures which will prognosticate the course of the succeeding year. If a creeping worm be found in the gall it foretells scarcity of food; if a white worm, a murrain of beasts; but if a spider, a pestilence to man." Oak leaves were also used for divination by burning them and inhaling the smoke, the vision was supposed to appear before the closed eyes in the form of sparks or threads of coloured light.

B. HUNT.

TREES SUITABLE FOR WAYSIDE PLANTING

Acer platanoides. A. Lobelii. A. Pseudoplatanus. A. p. var. Schwedleri. A. p. var. Reitenbachii. A. rubrum. Aesculus carnea. A. Hippocrastanum fl. pl. Ailanthus glandulosa. Betula. Carpinus Betulus. Castanea vesca. Catalpa bignonioides (Southern Counties). *Crataegus cordata. C. prunifolia. C. punctata. Fagus sylvatica. Fraxinus excelsior. Ilex. Populus alba var. pyramidalis. P. Eugenei. Prunus Avium fl. pl. Pyrus Aria. P. intermedia. P. pinnatifida. P. rotundifolia. Quercus Ilex. Q. rubra. Robinia Pseudacacia. Tilia dasystyla. T. euchlora. T. petiolaris. Ulmus stricta. U. stricta var. Wheatleyi.*

POTPOURRI

COUNTRY-HOUSES ought to be impregnated with the fragrance of dried flowers. I have tried dried flowers of all kinds. These are fragrant for a time, but the scent quickly disappears. The only way to keep them fresh is to use jars with well-fitting stoppers and to remove the lids very occasionally. Rosemary mixed with lavender makes a pleasant, clean, and fresh smell. The lavender from the Dauphiné Alps is particularly good for potpourri. Verbena and the old-fashioned scented geranium are always successful. The great secret is, I am sure, never to pick the flowers after rain, and to dry them thoroughly. I find, too, that a little Eastern perfume, such as attar of roses, improves the mixture and makes the scent more permanent.

DOROTHY ALLHUSEN,
Author of "A Book of Scents and Dishes."

Take leaves of old-fashioned roses (red and pink preferred) and lay them in the sun for a few hours, also flowers of jasmine, lavender, sage, and leaves of bay and laurel, mint, thyme, rosemary, " Balm of Gilead," lemon, orange, verbena, sweet-scented geranium, sweet bergamot, stripped from their stalks. Put all into an open basin or jar and cover with bay- (or rock-) salt. When adding fresh leaves always cover over with salt, and daily stir the mixture. When a sufficient quantity has been collected, pack it into a covered jar in a damp cellar for one month, tightly covered. After 4 to 6 weeks turn it out and weigh it, and to every 4 lbs. add the following spices: 2 oz. cloves, 2 oz. cassia buds, 2 oz. crushed cinnamon, 2 oz. crushed sandalwood, 2 oz. powdered gum-storax, 2 oz. gum-benzoin and orris root. One teaspoon each of the following: oil of cedarwood, oil of violets, oil of bergamot, oil of musk, oil of carnations. To this proportion mix the leaves and spices well, and again pack into a jar and cover tightly. After another month in a cool damp cellar the potpourri is ready to put into bowls and place about my lady's house.

LADY ST. JOHN.

From the House Book of Millicent Langford, "Pot Pourri; No. 18, From the Palace Armagh. The Lady Anne Berisford, her book."—A lemon if it be not hard to come by, take out the pith, stick the skin with cloves and when dry stuff with powdered orris roote and 3 tonquin beans. Take four handfuls Apothecarys' rose petals, one handful sweet-briar leaves, one handful mixed of mint, sweet thyme, lavender plucked from the stalk, old man of Bergamotte. Four leaves of the sweet Balm, and four of verbena. Dry on a wooden platter until the moisture goes. Heat an Apothecary's jar in the sun, and pack it with dried leaves also warm, strewing bay-salt on each layer. Cover close for a month, take out and spread on platter to dry from the salt. If you have an alembic distill also from the Apothecarys' rose his scent. This takes many roses but for a few drops, but the scent is true and may be sprinkled on your sweet pot. That from the druggist may but mar it.

MRS. WARDELL.

2 lbs. bay-salt, 2 oz. cedarwood chips, sandalwood chips and coriander seeds, 1 oz. orris root, cinnamon, cloves, all spice, storax, benzoin, gum-benjamin, all powdered; dried sweet verbena leaves, and lavender, *ad lib*, to about two large tea-trays, heaped up, of the dried rose leaves. Use only really sweet-scented roses, and gather the leaves when quite dry and just ready to fall; spread out in a dry, airy room (but not in the sun), and when all are perfectly dry, turn them into a large pan or bowl, mix in the bay-salt, and leave for a day or two; then mix in all the other ingredients.

MRS. HOWARD VYSE.

From "Delights for Ladies," 1628. Another way for the drying of Roseleaves.—Dry them in the heat of a hote sunny day, upon a Leads, turning them up and downe till they be dry (as they do hay): then put them up into glasses wel stopt and luted, keeping your glasses in warme places; and thus you may keep all flowers: but herbs, after they are dried in this manner, are best kept in paper bags, placing the bags in close cupboards.

A Scottish handwater.—Pute Tyme, Lavender and Rosemary confusedly together, then make a lay of thicke wine Lees in the bottome of a stone pot, upon which make another lay of the said hearbs, and then a lay of Lees, and so forward: lute the pot well, bury it in the ground for vi weekes, distill it, and it is called Dames water in Scotland: A little thereof put into a bason of common water, maketh verie sweet washing water.

A sweet and delicate Pomander.—Take two ounces of Labdanum; of Beniamin and Storax, one ounce: musk, six graines, civet six graines: Amber grease, six graines; of Calamus Aromaticus and Lignum Aloes, of each the waight of a groat: beat all these in a hot mortar, and with an hot pestell, till they come to a paste: then wet your hand with Rose-water, and roule up the paste suddenly.

To renew the sent of a Pomander.—Take one grain of Civet, and two of Musk, or if you double the proportion, it will bee so much the sweeter: grinde them upon a stone, with a little Rose-water; and, after wetting your hands with Rose-water, you may work the same in your Pomander. This is a sleight to passse away an old Pomander: but my intention is honest.

Lady Betty Germaine's receipt, 1750.—Gather dry, Double Violets, Rose Leaves, Lavender, Myrtle flowers, Verbena, Bay leaves, Rosemary, Balm, Musk, Geranium. Pick these from the stalks and dry on paper in the sun for a day or two before putting them in a jar. This should be a large white one, well glazed, with a close-fitting cover, also a piece of card the exact size of the jar, which you must keep pressed down on the flowers. Keep a new wooden spoon to stir the salt and flowers from the bottom, before you put in a fresh layer of bay-salt above and below every layer of flowers. Have ready of spices, plenty of Cinnamon, Mace, Nutmeg, and Pepper and Lemon-peel pounded. For a large jar ½ lb. Orris root, 1 oz. Storax, 1 oz. Gum-Benjamin, 2 ozs. Calamino Aromatico,* 2 grs. Musk, and a small quantity of oil of Rhodium. The spice and gums

* The powdered dried root of Sweet Sedge (*Acorus calamus*).

to be added when you have collected all the flowers you intend to put in. Mix all well together, press it down well, and spread bay salt on the top to exclude the air until the January or February following. Keep the jar in a cool, dry, place.

V. SACKVILLE WEST.

A Fine Handsome Sweet Pot.—Put into a large China jar the following ingredients, making sure that they are thoroughly dry, as the least moisture would mould it all. Put them in layers, with bay salt strewed between each layer. Roses (the old cabbage-rose is best of all) part in buds and part blown; violets, orange flowers, jasmine, a handsome handful of each; sliced orris root, benjamin and storax, two ounces of each; a quarter of an ounce of musk; quarter of a pound of angelica root sliced; a handful of the red parts of clove gillyflowers, two handfuls of lavender flowers; half a handful of rosemary; bay and laurel leaves; three Seville oranges, stuck full of cloves, dried in a cool oven and pounded; half a handful of knotted marjoram; two of balm of Gilead dried. Leaves of lemon thyme are an improvement; while such as like them can add mint, sweet-briar, verbena, woodruff and the rind of lemons cut in strips. Cover all quite close. When the pot is uncovered the perfume is very handsome.

M. M. SYDENHAM.

WINDOW PLANTS

IT is said that the custom of pot gardening originated with the Adonis gardens of Ancient Greece. Wheat, barley, fennel, and lettuce were sown for the midsummer festival in earthen pots filled with soil. When the rites were no longer practised, the custom of planting quick-growing seeds remained as an amusement for children, to which many references can be found in classical works. The Roman ladies decorated their balconies with pots of flowering plants, and both pots and tubs formed a feature of Oriental gardens at a very early date. During the Middle Ages the custom seems to have spread all over Europe, if we are to judge by the illustrations to old romances. Perhaps the first list published in England of plants suitable for growing in a room is that of Platt, who mentions rosemary, sweet brier, bay, and germander.* Naturally the habit of keeping a few flowers indoors remained popular. People in towns often had nowhere else to put them; and the busy mother of a family in some country cottage had no time for gardening out of doors. To the infirm, and the bedridden also, a plant has ever been company, though nowadays we are brought up to know that it is not advisable to keep either cut or growing flowers in a sleeping-room at night. Readers of *Nicholas Nickleby* will remember Tim Linkinwater's box of mignonette and the four flower-pots, two at either side, which formed his horticultural estate.

The tiny and intimate garden that is in a window may often contain the most beautiful specimens of plants. Some years ago most cottages possessed a pot of musk, tended with care, covered in season with little yellow flowers and scenting the air almost too heavily. Nowadays musk has lost its savour and a plant with the authentic smell would be worth a fortune.

* *Floraes Paradise* was first published in 1608, and an enlarged edition as *The Garden of Eve* in 1653. Sir Hugh Platt's other book, *The Jewel House of Art and Nature*, was published in 1594.

It is possible that somewhere in England there lurks undiscovered a genuine " antique " musk.* If so the finder will be as pleased as was the nurseryman Lee when he saw the fuchsia that was to make his fortune flowering in the window of a sailor's wife at Wapping.† A friend of mine who collected cacti once discovered a rare kind blooming in a workman's house in a back street of a small town. She tried in vain to buy it, but finally procured a cutting, which grew, yet never in her conservatory made so fine a plant as the parent. As to its history, the owner had bought it at a rummage sale in aid of a church restoration fund; how it got there no one knew. " A bit of a withered thing, I only took it for the sake of the pot, then I forgot it awhile and it came out a-blowing and a-blowing something beautiful."

Long ago in Germany it was the custom for a young girl to tend a pot of myrtle for her own bridal wreath. In France a cutting struck from a wedding bouquet is still regarded as lucky. I have always remembered with especial interest a removal I saw in one of the poorest quarters of Paris. On a handcart were perched a few bits of furniture, some paper parcels of clothes, cooking utensils and crockery. Amongst them a flower-pot with a camellia plant, which, though quite small, bore eight or nine beautiful blooms. The leaves were clear, shining, and healthy: never in any greenhouse have I seen its equal. Every head in the street turned to look after it, and the faces of the owners beamed with pride.

Of course, all window plants are not so successful. Who has not seen dingy ferns and aspidistras that cast an air of gloom over their surroundings. One of the most beautiful of green things, the maidenhair, is a particular sufferer. It hates draughts, loaths sun, and is faddy about getting the right amount of water in the right way. I remember a huge and healthy maidenhair that lived in a lobby window facing north. Its owner would never allow anyone to touch the fronds, because she said the human hand was poison to them. She also encouraged her favourite from time to time with very weak tea, and with water in which a little seaweed had been steeped.

From the humble orange pip one can grow delightful little

* Musk was introduced in 1826 from North-West America.

† See *Year Book*, 1929, p. 92.

flowering trees. Most famous of its tribe, the Grand Bourbon, began life as a pot plant. In 1421 the Queen of Navarre gave the pip to the King of France's gardener, who grew it successfully. It lived for a time at Chantilly; in 1532 it was moved to Fontainebleau; and in 1684 Louis XIV had it taken to Versailles, where it survived until 1876. The orange is not hardy in our climate or in that of the north of France, but so long as the room is heated enough to keep out frost in winter the plants should thrive. They are very free flowering as small trees, if they are not given too much root room. Some people plant several pips together, so that they really have a collection of tiny bushes instead of one tree, and the intertwining roots check each others growth. It is better, I think, to have one in a small pot, and to repot only when absolutely necessary; but in that case great care must be taken to give the right amount of water and some fertiliser.

Campanula isophylla is an excellent plant for hanging in a high window, the long trails of bloom will completely cover the receptacle. At a Devonshire farmhouse it was grown with pink geraniums on the sill beneath it, and some quaint succulents that never seemed to flower formed a complete contrast to their comrades wealth of bloom. Geraniums and fuchsias seem to be the favourite window plants; but I have even seen little saucers of sundews growing in peat and sphagnum moss. In planting for a window it is always best to obtain roots or cuttings from plants grown under like conditions. To take specimens from a heated greenhouse is to invite failure. Many annuals that are easily raised from seed will grow into magnificent pot plants. I have seen *Schizanthus wisetonensis* looking like a lovely little tree. A collection of the smaller houseleeks made a bathroom window in a town flat quite interesting to garden lovers. In fact, there is no end to the experiments that might be tried, always bearing in mind the fact that windows are meant to give us light and air and must not be blocked unduly.

A. W. SILVER.

CLIMBING ROSES

MANY an ugly place has been converted into a vision of beauty, thanks to the Wichuraiana class of Rose. The growth is so free, the colours so various, that a transformation speedily takes place. No Rose Garden is complete without the climbing Rose to enhance its loveliness. We allude to well-known growers such as Excelsa, Dorothy Perkins, Emily Gray, Scarlet Climber, Minnehaha, White Dorothy Perkins. A bare arch, trellis, or even bank will soon be covered, the latter by pegging down—that is, bending the long shoots over and pegging them to the ground.

Climbing Teas and Perpetuals.—Nowadays we are not confined to the Wichuraiana class of climber, for many of our beautiful Hybrid Teas and Hybrid Perpetuals have come to our assistance. Here we get beauty of form and also continuity of blooms. To mention a few among many: Climbing Madame Abel Chatenay, Climbing Los Angeles, Climbing Madame Butterfly, Climbing General McArthur, Climbing Hugh Dickson, and Climbing Snow Queen. In 1853 we were instrumental in distributing the famous Gloire de Dijon, which may be found in many an old world garden and also in modern ones to-day.

How to Plant.—In planting climbers prepare the beds as for ordinary dwarf bushes, but remember the roots must have plenty of room to extend, especially the climbing Hybrid Teas, and all must be firmly planted. To make them sufficiently firm this is accomplished by spreading out the roots and covering them with a little earth. Then tread on them well, spread more earth, and repeat the process until the hole is filled and no winds can possibly cause the roots to shift. The Wichuraiana class are so hardy that they require but little attention when correctly planted. The rose loves the sun, therefore, when possible, avoid planting on the north side of a wall, arch, pergola, etc. This refers especially to the climbing Hybrid Teas.

Pruning.—The Wichuraiana class are so vigorous that they very often are overlooked as regards pruning. At the end of the flowering season these require attention. Cut out all dead wood and tie up the beautiful new shoots which have started to grow. These will produce flowers next year. The following spring keep the canes neatly tied in where determined, whether on arch, pillar, etc., on which the climber is to grow. Sometimes a new plant may appear weakly. This will need drastic pruning in the spring, so as to give

the roots less work until qualified to strengthen the new growth. Climbing Hybrid Teas should be pruned more sparingly, but all dead and weakly growth must be cut away, and new shoots trained and fastened where required. When climbers have been placed against a wall and the season is dry see that sufficient moisture reaches the roots. If not newly planted some mulching is beneficial in the spring. All climbers, such as Mermaid and Cupid, are not equally vigorous at first, but after the second year they soon make a good show, and a lovely garden is the reward of waiting.

Climbers for a North Position.—The best climbers for an unfavourable position are Bouquet d'Or, Félicité-et-Perpétue, Reine Marie Henriette, Madame Alfred Carrière.

Roses for a Chalky Soil.—The best for a chalky soil or by the seaside are J. B. Clark, Caroline Testout, Hugh Dickson, George Dickson, Lady Pirrie, Etoile de Hollande, Madame Butterfly, Snow Queen, Covent Garden, Mélanie Soupert, Madame Jules Bouché, Lady Dixon-Hartland, General McArthur, La Tosca, Madame Ravary, Red Letter Day.

BENJAMIN R. CANT.

CLIMBING AND RAMBLING ROSES

THE National Rose Society has decided that a distinction should be made between Climbers and Ramblers. Climbing Roses: those varieties that are suitable for pillars, including such varieties as *Paul's Scarlet Climber, Gloire de Dijon, Albertine, Mme. Alfred Carrière,* and the Climbing sorts of dwarf varieties. Ramblers: varieties that are suitable for covering arches, pergolas, and low roofs, such as the multiflora and wichuraiana types.

ROSES TOO MUCH ALIKE

THE National Rose Society lists the following groups as too much alike for exhibition purposes:—

(1) Coral Cluster (poly. pom.) and Juliana (poly. pom.). (2) Dorothy Perkins (wich.) and Lady Gay. (3) Lady Godiva (wich.), Dorothy Dennison, and Christian Curle. (4) Louise Crette (H.T.) and Lemon Queen (H.T.). (5) *R. lucida plena* (species) and Rose Button.

CUCUMBER CULTURE

THE culture of cucumbers (*Cucumus sativa*) is one of the oldest arts known, and this vegetable has been popular in China and Egypt for thousands of years. It has now become a very large industry and glasshouses have been put up all over England for the purpose of growing cucumbers alone. This article is a careful recording of the methods employed at the Cheshire School of Agriculture and by the leading cucumber growers of the County of Chester.

Seed Sowing.—Seeds can be sown at any time from early January onwards in 3″ pots—a seed being placed point downwards in the centre of each pot. Compost may consist of 3 parts light loam and 1 part well-decayed leaf-mould. The bottom of the pot should be well crocked and covered for 1″ with a few lumps of turf. After sowing the seeds are covered with ½″. of light compost, and then well watered with water at the same temperature as the house. The pots are placed on a cinder-covered shelf in a house where strong bottom heat can be obtained. In large commercial nurseries, however, seed sowing is often carried out in ordinary seed-boxes—usually 48 seeds to a box—¼″ of soil covering the seeds. These boxes are then placed 1″ above the flowpipes and glass placed over the boxes. The temperature of the house at this stage should never be allowed to fall below 70° F. at night-time.

Potting Up.—In ten days to a fortnight the plants should be ready to be transferred to their permanent beds, but if these are not ready shift into a 5″ pot temporarily, the soil for the compost being similar, but with more leaf-mould. This compost should be at the same temperature as the house. Cucumbers differ from most plants in that they should not be potted firmly. Each plant should be inserted up to the seed leaf. A good soaking is again necessary. Watering after need only be done when the soil appears dry. Good root development cannot take place in continually wet soil.

Staking.—After a week the plants will need support, and an 18″ piece of fine bamboo should be inserted into the soil and a loose tie made on the cucumber stem in order to allow for development.

The House.—A type of glasshouse which seems under present-day exigences necessary is 15′ wide, with 3′ rise to the gutter-board. Often these are built together with brick pieces to support the gutters. Singly, however, the house should be erected in a sunny position and protected from the north and east cold winds. Hot-water pipes will be necessary for bottom heat, and as it is wise to

have the heat as near the cucumber-bed as possible, usually 4 rows of 4" piping is used, this giving two flows and two returns. *Ventilation* is rarely necessary, and air should be admitted with great caution. Ventilators should be provided, but, if used, should be closed quite early in the afternoon at all seasons. Towards July a slight ventilation may be given to change the air in the house, particularly on the leeward side.

The Bed.—It is very important to ensure good drainage all the time, and water must be able to get away quickly. Land drain pipes may have to be laid, and these should be covered with clinkers to prevent them being sealed up. Further clinkers should be provided under the main bed. For the borders fresh stable manure is useful with turves 10" in depth cut one year beforehand, and rotted in heaps. A layer of turf should be placed 12" in depth, followed by the manure, which should always be made with straw. Over this, sterilised soil should be placed for 3". In some districts, where turves are difficult to get, old rhubarb crowns are used—those which have just been forced, or those which were forced last year, and have been stored in heaps. This year I saw very good cucumbers grown on a base of spent forced mint roots. Any organic material of an open texture which will allow for drainage to make a satisfactory base. The beds should be made 2 weeks before planting, if possible, and should be at least 1' 6" wide at the base and 1' wide at the top. If new turf cannot be purchased, old beds may be sterilised by heat and used again. On the bed mounds should be made about 2' apart consisting of a good rich compost, 3 parts good turfy loam, 1 part well-decayed manure. This soil should be sterilised, if possible, by heat. These mounds should be made moderately firm, and so arranged as to allow drips from rafters falling between the plants. The whole house should be heated for a week to ensure all the soil, etc., being warmed through before introducing the young plants.

Transferring the Plants.—When the plants are 6"–9" high they may be transferred to their permanent beds; the greatest care should be taken that they are not chilled in so doing. The pots should be immersed in the middle of each mound, and should remain in the holes thus made for 24 hours before knocking the ball of soil out, and planting it firm in the hole the pot occupied. The top of the ball of the plants should be 2" below the surface of the bed. Watering may then be carried out, a gallon being given to every 3 mounds only. A stake must now be provided for the purpose of training the new growth to the wires or trellis.

Temperature.—The atmosphere of a cucumber house must never feel dry, and a brisk temperature should be maintained at all times. *Syringing*: damping down must be done frequently, Sundays included. The night temperature should be 70° F., and in the daytime may rise to 90° F.

Routine Work.—Before planting it is a good idea to place a

bamboo in the mound in order to liberate ammonia, as if this is not done the mound is apt to get overheated and the plant dies. Syringing has to be done regularly twice a day, the usual amount of water in the mid-growing season being 1 gallon to every 3 plants. The walls and paths must also be damped down, especially in hot weather—liquid farmyard manure may be used in the afternoon for this purpose if diluted. No laterals must be left on the young plant below the first wire.

Training.—In an article of this kind general ideas can only be given. The plant may be stopped at the fifth wire; this enables the bottom fruits to swell quicker, and so gives earlier fruiting and marketing.

The rules following this practice are as follows:—(1) Do not allow a cucumber to grow on the main stem. (2) Do not allow the lateral to grow further than the second before stopping. (3) Do not take a cucumber and a growth at the same joint; the ideal should be first a cucumber, second a growth where it is stopped, and so on. (4) A good idea is to stop the main laterals at two joints, and the sub-laterals at one joint. (5) Aim at having two fruit-bearing joints on every lateral, and not more than three breaks. (6) Rub up all the male flowers.

Further than this it is difficult to say, as growers seem eventually to know by instinct what they should leave in and what to cut out. All growths must be tied in to the wires loosely, or growth will be impeded. All young fruit should be kept clear of ties and wires, and should hang cleanly downwards.

Watering.—As much harm is done to cucumbers by over-watering as underwatering; if a good deal of farmyard manure has been used the soil is apt to get sour when overwatered. Moderate waterings are of little use—soak the bed well through twice a week. The water must be at the same temperature as the house, and if the house contains no tanks for this purpose water-barrels should be wheeled in the day before and allowed to heat up.

Shading.—When the sun gets bright and scorching in May, shading must be commenced by spraying whitewash over the outside of the glass; towards July this may have to be repeated more heavily as rains will probably wash the first application off. (Some growers never shade, but this makes ventilation a more difficult problem.)

Top-Dressings.—Top-dressings and mulchings are essential, and should be given whenever required. Soil should be wheeled into the house at least 12 hours before it is required for use. The first top-dressing may be given 10 days or so after the planting date. It is usual to top-dress again as soon as the white root fibres are seen coming through the surface of the soil. Only a little soil should be put on every time. Compost for top-dressing should be: farmyard manure, half a barrow load; sandy loam,

1½ barrow loads; superphosphate, 16 ozs.; slaked lime, 1 lb. 2 ozs. This has given excellent results in trials.

Leaf Cutting.—Too often growers are fond of cutting away quantities of leaves. No drastic cutting of foliage is really necessary, what should be done is to take out enough leaves to give the cucumbers light and to cut out any leaves that are turning yellow.

Diseases and Pests.—(1) Red Spider (*Tetranychus telarius*).—It is very important to be able to spot this pest immediately. If tackled in its early stages it can be controlled by cutting out and efficient damping down. Keeping all parts of the house damp is certainly a prevention rather than a cure. Volck has proved very satisfactory at the Cheshire School of Agriculture as a control and should be sprayed on as soon as spider is seen, using a good deal of force. (2) Wood Lice (*Armadillidium speyeri*).—This insidious pest often damages the plants in the growing season. The only preventive here seems to be trapping—a good trap is a mangold cut in half and scooped out, and placed upside down on the borders. The woodlice must then be shaken out every day into a bucket of paraffin. (3) Cucumber Root Fly, (*Sciaridae*).—Can cause considerable damage in the propagating stage and in the borders. A very simple control is heavy watering. If this is done the pest is never a serious matter.

Fungus Troubles.—(1) Leaf Spot (*Cercospora melonis* and *Colletotrichum oligochaetum*).—Has in the past caused very serious damage; the introduction of a disease-resisting variety "Butchers" has, however, proved a boon to many growers. *Prevention.*—Uniform temperature, lime added at each top-dressing, thorough cleanliness, not too humid an atmosphere, perfect drainage. Spray with the following wash directly the trouble is first seen—1½ ozs. flour, 1¼ ozs. potassium sulphide, 2 gallons of water. Fourteen pints of water are placed in a bucket, and 1¼ ozs. of Liver of Sulphur added. Then mix a flour paste, water down with 2 pints water till as thin as milk. Then boil, stirring all the while, and add to the other bucket containing the Liver of Sulphur and stir. (2) *Mosaic.*—This disease, noticeable by the mottling and sometimes wrinkling of the leaves, can be transmitted by affected seed, and care should be taken to obtain seed from a nursery free from mosaic. All plants with mosaic should be left until last when trimming, as the sap from the diseased plant may be carried on the knife to a healthy plant. After trimming a mosaic plant the knife should be sterilised in formaldehyde. No effective cure for this disease has been found. But here again "Butchers Disease Resister" is found to be resistant to mosaic. (3) Foot Rot (*Bacillus carotovorus*).—Appears at the soil-level, the outer tissues turn brown and rot begins, the disease organisms enter the wood and ultimately kill the plant. *Control.*—Keep the base of the plant dry; do not water close to the stem. Dust round the base of the plant if attack is suspected with a dust

composed of 10 parts dry slaked lime, 3 parts fine copper sulphate, and 3 parts flowers of sulphur, apply by means of a tin with perforated lid. (4) Verticellium Wilt (*Verticellium albo-atrum*).—Appears usually in the lowest leaves which wilt, turning yellow, the upper leaves then gradually get affected and the whole plant may then become limp and die. *Control.*—The disease is at its work when the temperature is low, and this is bad in Autumn and Spring. Increase the boiler heat immediately the disease is first seen; close the houses for 2 hours in the middle of the day. Do not water heavily. Encourage the plant to make new roots by giving a suitable top-dressing. Soils affected with Verticellium must be sterilised before using again.

Culture in Frames.—Success may be obtained by growing cucumbers in frames if the following suggestions are carefully carried out. Beds may be made in the frames 2–3′ deep, and a suitable mixture consists of 3 parts of rotted leaves and 1 part strawy manure. The leaves and manure should be mixed together and allowed to stand for a few days before putting in the frame. The bed will be well trodden down, and a bucket full of earth placed on the bed in a mound at the back of the frame—one mound for each plant, two plants to a 6′ × 4′ light are quite sufficient. The whole bed may be covered with soil 2′ deep, and this allows for even sinking. Planting should then be done a few days afterwards when the soil has warmed up, the same routine being carried out as in the glasshouse. Ventilation will be given if necessary in the daytime to dispel condensed moisture on the frame. During the night it is advisable to cover the frame lights with sacking or good litter. Top-dressing will be carried out regularly as previously mentioned, and the growths thinned out, being careful not to overtax the plant with fruits. If the young shoots are pegged down they themselves will strike and provide fresh vigour to the plant. Regular cutting of the fruits when ready is also important.

Varieties.—We can here claim to have done some research as 20 varieties have been on trial in our nursery for three consecutive years, and the following remarks are based on these trials. There are many varieties offered by seedsmen, and we cannot claim to have tried them all, but the varieties that have been constantly successful in our trials have been: Clucas Improved Telegraph, Daniels' Lord Roberts, Dickson's and Robinson's Bounteous, Dobbie's Improved Telegraph, Kelway's Perfect Model, and Sutton's Improved Telegraph.

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THE GLADIOLUS

THE Gladiolus, Sword-flag, or Corn Lily, belongs to the Iris Family, *Iridaceae*. The genus was named from its sword-shaped leaf (Lat. *gladius*, a sword). Species have been grown in English gardens since the sixteenth century, but having no known medicinal value were not included in the older gardens of herbs. In the eighth edition of Philip Miller's *Gardener's Dictionary* only six species are recorded; three of these were from the Cape. He mentions that *G. tristis* " was formerly cultivated in English gardens, where the roots have multiplied so freely as to become a most troublesome weed." The Gladiolus is not included in a collection of lists of Popular Plants dated 1844, but in the 1929 competition for popularity it stands seventh on the list.

The genus did not for the most part provide very attractive subjects for cultivation until nineteenth-century hybridisers took the species in hand. The first hybrid is believed to be Van Houtte's *gandavensis* (*psittacinus x cardinalis*)* from Ghent in 1837. An English hybrid grown at Brenchley, hence its name, followed before the French hybrids produced by Victor Lemoine, *Lemoinei* (*gandavensis x purpureo-auratus*), in 1885, *nancieanus* (*Saundersii x Lemoinei*) in 1889. The *Childsii* hybrids *Saundersii x Gandavensis* came from Max Leichtlin, but were named in 1893 after an American grower who bought up and subsequently improved the German stock. The American A. E. Kundered grew the first distinctly American type. With the introduction of *G. primulinus* from East Africa in 1890 a new strain was brought into cultivation, providing a host of varieties of seemingly easy culture and great decorative value.

Widespread trouble was reported by Gladiolus growers during the year 1929. Investigations are in progress with a view to discover the cause, or causes, of the mischief, but have not as yet reached a stage where it is possible to give authoritative information as to means of control. To some extent abnormal weather conditions were responsible. The corms failed to make sufficient root growth, and through resultant weakness were predisposed to attack by disease. Growers can at present only be advised to destroy affected stock—as in any case this would not produce satisfactory spikes—to plant only sound and healthy corms, and, if possible, not to grow these on ground that carried Gladiolus the previous year. (For further advice, see pp. 90, 91.)

* *G. psittacinus x oppositiflorus* according to Herbert. See Nicholson.

But the weather was not entirely responsible for all the trouble. Foreign importations are accused of having brought accompanying disease, as has happened with other imported plants in the past. The disease once introduced into the soil might affect fresh and healthy corms planted in the same position subsequently. In addition to this the very popularity of the Gladiolus threatens to be its undoing. It gives quick results, is very effective, blooms in succession may be had over a long period, and it is generally considered an easy thing to grow, requiring at most staking when in bloom and lifting for the winter, and not always getting even that. Consequently the corms have been grown in some cases under most unfavourable circumstances, and in ground entirely unsuited to their needs, with the result that successive crops became more likely subjects for disease.

Generally a successful garden is one in which local features have been adapted and exploited. The increasing study of plant ecology is bringing home to gardeners the need to consider local soils and conditions before selecting subjects for cultivation; to grow for preference plants similar to those which grow naturally in the vicinage, or those associated with them. The plant associations among which Gladioli are found are certainly not those common in Great Britain. The genus is represented in the flora of this country by one species, *G. communis*, "believed to be indigenous," said Bentham and Hooker, in the New Forest. Even there it is listed as rare. South and East Africa supply the bulk of the Gladioli, with some from the Mediterranean regions and one or two outlying species in Asiatic highlands. To expect plants—whose natural habitats are so diverse to average conditions here—to do well with us, everywhere and in every way, is to expect more than is reasonable. That the genus flourishes in the humidity of Africa does not imply that it will survive on cold, wet, and heavy soil in England. Rich soil must be the substitute for hot and damp conditions, combined with thorough drainage to mitigate the evils of our uncertain climate. Its only English home is comparatively dry, and with a gravel subsoil has good drainage.

The Gladiolus requires a fine tilth to grow properly. If the corms cannot root quickly and easily the development of the plant and flower spike will be affected. A poor soil properly prepared and enriched is preferable to heavy ground however good. Prepare beds in September by thoroughly working the soil to a depth of not less than 18". Heavy ground should be trenched and left rough for winter to weather it. Unless the ground has naturally sharp drainage a layer of broken brick or stones should be put in and covered with litter before replacing the soil, which must be well mixed with manure (well rotted, never fresh) and dug over with the second spit of soil, never less than 6" below the surface, to avoid contact with the corms and new rootlets. Corms of the early-flowering hardier types may be replanted early in October. If the

winter is severe a mulch of dung is a precaution. The general, and safer, procedure is to plant in March and April—up to June for succession. Depth for planting should be not less than 4". Only perfectly sound, clean corms should be put in. Sand above and below them is advisable in soils other than light. Good drainage, good loam—no lime—and sun are the chief requirements, with clean cultivation. Where it is not possible to secure these the gardener would be wise to grow something other than Gladioli. Stakes should be supplied when the plants are a foot high, and the stems secured with one good tie of raffia. Large and heavy varieties may require a further tying. Any plant that shows signs of unhealthiness should be dug up at once and immediately burnt with the soil surrounding it. Dead and dying leaves and plants should never be left lying about in the vicinity. Until the life-history of the organisms causing disease in the Gladiolus are fully known it is not possible to say at what stage infection may commence.* Prudence, therefore, dictates that all possible care be taken in all stages of its cultivation. As a precautionary measure the corms can be dusted when dry with sulphur and lime. In America the corms are soaked for a couple of hours before planting in a solution of formaldehyde (1 gill to 30 quarts of water).

With regard to watering, this, on properly prepared ground, should not be necessary in the early stages, when watering would be a danger owing to the possibility of late frosts. In hot, dry summer weather an occasional soaking may be helpful when the flower spikes are showing, but should not be given unless obviously needed. Good tilth, rich soil, and mulching should make watering only an exceptional measure. If it must be done it should be thorough and at intervals, not a repetition of sprinklings. For specially fine blooms selected plants may be given an occasional dose of weak liquid manure: if the ground is dry they should be well watered the day before the liquid manure is given. This should not be done till the flower spike is well above ground.

After flowering, when the foliage yellows, the plants should be lifted, the offsets removed, the old corms cleaned, dried, and stored for replanting. They must be kept in frost proof, but well ventilated and unheated, storage during winter. The offsets can be grown on in nursery beds and will flower in from one to three years, according to size. New varieties can be raised from seed, sown in the spring in gentle heat. The seedlings should not be transplanted. Compost: 6 parts fibrous loam, 2 parts leaf-mould, 2 parts old manure, 1 part silver sand, with a 5" pot of bone meal and another of wood ashes added to every barrow load of compost.

* Such knowledge cannot be gained hurriedly, and we are informed that results of investigations in progress must not be expected for many months.

THE PROPAGATION OF HARDY RHODODENDRONS

FROM time to time articles appear in the newspapers of a marvellous Rhododendron bush that has both purple and red flowers on it at the same time. This, of course, is due to the *ponticum* stock having suckered. If the suckers are not removed, they will take all the nourishment away from the named variety and the bush will revert to the wild. Everybody knows that Roses are usually grafted and briers are removed as they grow, but in the case of Rhododendrons, suckers are more difficult to recognise, and in many a small garden they often escape notice; whilst in Azaleas they are almost impossible to distinguish, and the public should refuse to buy any of them grafted: they are easily propagated from layers, and once a nurseryman has a few stools down, he can get as many as he may wish.

All the hybrid Rhododendrons can be raised from layers and require no attention afterwards. It is not practicable to propagate the newest varieties in this manner, as layering is slow; but nobody should buy *Pink Pearl*, for example, to-day unless it is on its own roots.

There is a great deal of difference in the grafting. Some nurserymen take a great deal of trouble, graft the plants quite low on the collar and plant them very low the first year, so that as a rule the plant gets on its own roots. Others take less trouble in the matter.

The grafting of Rhododendrons is quite an art. The *ponticum* stock should have a woody stem, not much bigger than a lead pencil, and be from 6 to 12 inches in height. It should be potted up in the early autumn and, when the plant is thoroughly established, should be brought into a little gentle heat, when a piece of the variety which it is wished to propagate should be grafted on to it as low down as possible and the union surrounded with grafting wax. A little bottom heat is

an advantage until the stocks are united, when the plant can be gradually cooled off and should be ready to plant out sometime in the summer. One of the cleverest propagators of Rhododendrons grafts his plants rather later in the year with a little bottom heat from rotting leaves.

But for the amateur who only wishes for a few extra plants of some variety which he enjoys, layering is the simplest form of propagation. One of the lower branches is bent down till a piece of the hard wood reaches the ground and it is held in position by a stick which has been cut with a crotch at the end: a little earth is then put over the branch, and a piece of sandstone on the top will help to keep the moisture in during the summer. A couple of years should see this well rooted, though some of the smooth-bark Rhododendrons may take a little longer. As soon as sufficient roots have grown out, the plant may be separated from its parents with a sharp knife and planted out. This is really the only way to propagate those Rhododendrons which have not *ponticum* blood in them, such as *Shilsoni*, *Cornubia*, and all the various Himalayan hybrids which have been produced of recent years, as they are not really happy with *ponticum* and never unite properly, being very apt to split off at the graft should a strong current of air catch them. The layering method is also undoubtedly the best one for deciduous Azaleas, but the evergreen Japanese Azaleas are easily struck from cuttings taken in August with half-ripened wood under a bell-glass in a cold frame. The same applies to all the Lapponicum series of Rhododendrons, and in this way the best forms can be selected and propagated for the garden. Caucasicum hybrid Rhododendrons will also strike without great difficulty, and *Cunningham's Sulphur* is easily raised in this way.

Generally speaking, however, the species of Rhododendrons are best raised from seed. To make absolutely certain that a bee has not cross-fertilised any of the flowers, they should be hand fertilised with pollen taken, if possible, from another plant, though if this cannot be done pollen from another flower on the same plant will do. Select a truss which is not yet fully open on a strong piece of wood, cut off any of the flowers which have already burst and leave on three or four buds which would open that particular day if left to themselves. I carefully open

the buds and, with a pair of grape scissors, cut off the corolla, so that the bees shall no longer be attracted by the flower; I then carefully cut away all the anthers, leaving the stigma alone, and make absolutely certain that no pollen has by any chance got upon it. In some of the *Fortunei* and other series the corolla has to be very carefully removed in order to avoid this. I then leave the stigma for a day or two, or, in the case of some of the species like *maximum* and *Ungernii*, some four or five days, till the stigma is sticky and ready to receive the pollen. If I want the true species, I then put its own pollen upon it and mark the particular truss with a label so that I can find it again at the end of the year, or early January, when the seed pod will have to be removed.

The same method can, of course, be applied to making hybrids, and the amateur whose amusement it is to raise new plants may get a lot of fun out of raising Rhododendron hybrids, and may almost ensure success if he uses a *species* on one side. For instance, *discolor* crossed on to any of the best red hybrids will give quite an attractive pink-flowering Rhododendron, some better than others, but nearly all worthy of a place in the garden. The same remark applies to *Fortunei*. Of course, two species crossed together will almost always give a constant and intermediate result, but at all costs one must avoid crossing together two Rhododendrons which both have *ponticum* or *catawbiense* blood in them, as in this case the majority of plants revert to the purple; even a red, like *Doncaster* x *Pink Pearl*, will throw mauve Rhododendrons, absolutely useless; whereas *Doncaster* x *Aucklandii*, which was first made by Mr. Lowinsky, has given a range of Rhododendrons from pink to scarlet—all of them worth growing, though perhaps rather tender except for the favoured sheltered garden.

But for seed raising one must have patience. The seed is picked as the capsules split, and in any case the first week in January. The capsules are then put into an envelope to dry, which takes about a week in the house, and the seed is then cleaned. I like to sow my seed on granulated peat-moss litter, which, after being soaked, is rubbed fine and placed in a shallow pan which has been well crocked. A very thin layer of silver sand will help to keep the moss down. The seed is sown towards the middle or end of January and kept in a gentle heat.



"RHODODENDRON DELEIENSE," A NEW SPECIES
(See "Botanical Expeditions")

Photographed by F. Kingdon Ward] [*To face p.* 74

Great care must be taken in the watering, as the seed is very fine, and a mist is the best for this purpose. Seed must never be allowed to become dry, and if kept in a little frame inside a greenhouse will germinate all the quicker. Once it is up and growing strong the sooner it is pricked off into boxes containing a mixture of leaf mould, good fibrous loam, and silver sand the better. It is not necessary for me to add that there must be no lime in the loam, as most Rhododendrons dislike it and will not grow in it. I try to get the Rhododendrons pricked off in April or May, so as to give them a chance to make any growth before the winter comes, as that is their dangerous time. The smaller Chinese Rhododendrons are very apt to damp off during the winter months and the plants should be watered as little as possible overhead. If necessary the box or pan can be soaked by being immersed in a shallow pan of water. The house wants well ventilating all the winter, but the plants do not like a cold draught. Some of the weaker-growing Rhododendrons may have to be planted out in a frame for a year after this, or, if they have made good growth, they may be put out straight into the nursery, where they should stay until they are twelve to eighteen inches in height, when they may be planted out in the woodland or garden. I have raised thousands of seedlings in this way, and though I first began by using *ponticum* hybrids I was warned of this by a friend who told me a year after I had done them to burn the lot. I did not do so then, but have practically followed his advice since; whereas all those which have been raised from species, or species x hybrids, if not all first class, at any rate those which have flowered have given me pleasure, and I hope some of my friends also.

LIONEL DE ROTHSCHILD.

OPENINGS FOR WOMEN IN HORTICULTURAL RESEARCH

THE opportunities for women to undertake research work in problems relating to Horticulture are at present strictly limited. Investigations in such subjects as pomology, plant breeding, diseases of cultivated plants, and fundamental problems of plant nutrition, etc., can only be undertaken at fully equipped research institutes or in University departments. There is no question that women with the necessary aptitude for this type of work and with the knowledge acquired during a general horticultural training should be successful in this field. Research work is, however, so specialised in character that further training in pure science, such as chemistry, botany, or mycology, is often required in preparation. It must, moreover, be recognised that, although most intelligent women can be trained in the methods of scientific research, the ability to initiate and carry through successfully a piece of investigation is an uncommon gift. No woman should therefore seriously consider the possibility of a career in this field unless she is prepared for a long and arduous training, and with the possibility in mind that events may prove that her special abilities do not lie in the field of research.

Scholarships for the training of investigators are offered both by the Ministry of Agriculture and by the Department of Scientific and Industrial Research. For these competition is keen and the standard of a First-Class Honours Degree is generally requisite.

The opportunities for employment for trained investigators are practically limited to the Research Stations subsidised by the Ministry of Agriculture and to University departments.

I have confined my remarks to Research, but there are other avenues along which women can apply a scientific and practical knowledge of Horticulture, e.g. Inspectors under the Ministry of Agriculture and Advisors and Instructors under various County Council Authorities. Again, the positions are not numerous, but they are open to men and women who have not the necessary ability to pursue research.

KATE BARRATT, D.Sc., A.R.C.S.

STRAWBERRY CULTIVATION

DURING the last few years the strawberry crop has proved a very difficult one, almost everywhere, and a number of reasons have been advanced to account for this—e.g. the so-called " Red-Plant," Eelworm, and Strawberry Aphis. The vigour of the actual stocks of plants has also been blamed. Many wild statements about the future of strawberry-growing have been made. It has even been stated in the Press that the fruit will be more or less extinct in a few years.

The difficulties have been particularly noticed during the post-war period, and seem to be the result of the combination of a number of factors, probably starting with the wholesale indiscriminate propagation that followed the war when plants were needed in large numbers to replant and increase beds, whereas the supply of really good plants was very limited. This shortage was further intensified by the drought of 1921, which crippled many young beds and seriously checked runner production. The result was a distinct loss in vigour of large numbers of plants, which seems to have made them much more liable to certain pests and diseases and less resistant to the extreme climatic conditions which have prevailed during recent years.

It is advisable, therefore, for the grower to start with a vigorous stock of plants, and this is of such importance that the Ministry of Agriculture issues certificates to growers of the most popular varieties whose stock reaches the necessary standard as to vigour, purity, freedom from disease, etc.*

Land for strawberries in gardens should be thoroughly well prepared by double-digging or trenching, soon enough to allow the soil to settle before planting, adding any reasonable amount of dung that is available. Some bone-meal or basic slag might also be worked in at the same time. If pot runners are obtained, these should be planted on well-firmed ground as early as possible. In normal seasons planting is usually possible from mid-July onwards, and the earlier the planting the better, but in a dry season runners are later and it is unwise to plant until soil conditions are suitable, unless watering can be efficiently carried out. Where open-ground runners are used, these will not generally be available until September, or even later, and suitable soil conditions are even more necessary than for pot plants, since they receive a much greater check from moving and replanting.

* See Official Notices.

Distances for planting vary considerably according to soil, variety, and other conditions, but 2′-2½′ between the lines and 12″-15″ apart in the lines covers the usual distances for average conditions.

Cultivation.—Plant firmly so that the base of the "crown" is just covered with soil. If planted too deeply there is risk of rotting should a wet winter follow planting; while too shallow planting increases the risk of drying out during a period of drought and reduces the root-production of the young plant. Lightly hoe occasionally between the plants to keep the weeds down and the soil open. Should a frosty period follow planting, examine plants carefully, and if any have "lifted" press them back firmly into their former position or the plants will probably dry out during the following spring.

As soon as soil is dry enough in February or March hoe through again and apply a dressing of some well-balanced fruit manure, this will then become available to the plant when the roots are actively feeding and will not only help the fruit but the development of the crowns for the following year's crop. Keep the hoe going until the flowering period, and then bed down with good clean straw, preferably barley straw. Stable manure is often used in gardens, but clean straw is far more hygienic; moreover, strawberries readily absorb any taint, and there is never any certainty that the stable manure will be washed clean before the fruiting season. The straw should be tucked well under the flower trusses, and sufficient spread over the soil to prevent heavy rains splashing the fruit with grit—this is the main object of the strawing. As a deterrent to slugs soot may be freely dusted round the plant before bedding down.

Before fruiting has finished, runners will begin to develop from the young plants. These will be the best with which to plant a new bed. It is a good practice to make a new bed each year, since the life of a bed is generally only three or four years. The runners may be laid into small pots (about 3″) filled with any well-drained soil, fixed in position either with a small wire hook or hairpin or by a stone laid on the stem of the runner on top of the pot. If the soil is kept moist the runners should be nicely rooted in three to four weeks and ready to remove from the parent plants. Only three to five of the strongest and healthiest runners should be taken from any plant (and these only from really good plants). Indiscriminate and unlimited runner-taking is a frequent cause of deterioration. At one time runners were not usually taken from maiden (or one-year-old) plants, but were often taken from old worn-out beds. Modern practice is to take them almost entirely from maiden plants. After the runners are removed the bed should be cleaned up (by removing the bedding, old fruit trusses, and dead foliage), and then well hoed, drawing the soil up towards the rows as far as possible, as this helps to encourage root pro-

duction. At this stage the application of some quick-acting soluble manure, such as liquid manure in some form, may prove beneficial in helping to build up crowns for the following season.

The rooted runners should be stood in an open situation and kept well watered so that they will be ready to plant out at the earliest practicable moment. Trials carried out over several years have demonstrated that, under normal weather conditions, runners planted in July or early August develop into far larger plants the following season than later planted runners. In some seasons a difference of seven to ten days in the planting date causes an almost incredible difference in the first season's crop, apart from the increase in the size of the plant. If the weather is dry at planting-time give the plants a really good soaking of water. After that keep the hoe going regularly to conserve soil moisture. The routine work on the two-year-old or other beds is similar to that described for young beds, except that no runners are taken from them, and as beds become unsatisfactory they should be destroyed. A succession of young beds should be kept going to replace them.

Diseases.—A number of mysterious strawberry diseases have been much advertised in the Press, but the principal troubles seem to be due to a few definite causes: (1) Lack of vigour in the plant, (2) Strawberry Aphis, (3) Red Spider, (4) Mildew, (5) Slugs. *Strawberry Aphis* (*Capitophorus*) is distinct from the common aphis so often found on forced strawberries. It is pale in colour and is found mainly on the quite young unfolding leaves and central crown, though in a severe attack it may be almost all over the plant. A relatively small number can seriously cripple a plant, resulting in the production of small " miffy " leaves and flat crowns, also severely checking root production. As a control all plants from which runners are to be taken should be examined. If the pest is present the plants and runners should be sprayed thoroughly with nicotine and soap, or some similar wash. Before planting, the runners should be well dipped in a similar insecticide. Dry spraying with nicotine dusts may be substituted for wet spraying, and is probably more practicable and economical on large areas. If sulphur is incorporated in the dust, as it is in some cases, the dusting will also help to control mildew. *Mildew*, contrary to general opinion, is often severe in a dry season. Occasional dustings with sulphur generally control it effectively. *Red Spider* is a more serious trouble of strawberries outside than is generally realised, especially in hot, dry seasons. Its effect bears a good deal of resemblance to the damage by *Capitophorus*, the foliage being small and pale and the crowns flattened. It is very difficult to control outside as the dense webs protect the pest from either dustings or wet sprays, unless the latter can be applied with considerable force, which is not easy on low-growing plants like strawberries. *Slugs* are often a serious problem, but some of the proprietary slug controls are highly recommended by users. Frequent

hoeing and well sooting before bedding down will go a long way towards control in a normal season, but in a showery season they may become a most difficult problem.

Strawberry Varieties.—As in most garden subjects we find far too many varieties. The majority could be lost altogether with advantage. Personal fancy and local conditions are important factors in the choice of varieties. The following are mostly well known. *Royal Sovereign* (very similar to, if not now synonymous with, King George V).—A first early of good flavour, colour, shape, and cropping power. The most popular variety in cultivation, but many stocks are lacking in vigour so that a good stock should be secured. *Madame Lefebvre.*—Less well known, though grown extensively for market. A few days earlier than R. Sovereign. Very vigorous grower, of splendid habit, heavy cropper, fruit large, rather dark in colour but flavour poor. *Duke.*—Early and heavy cropper in some districts, but not so generally reliable as R. Sovereign. *Sir Joseph Paxton.*—An old variety which for a mid-season crop is still hard to beat, especially for quality. Fruit firm, darkish, good shape, and excellent flavour. It is essential to procure a good vigorous stock. *Bedford Champion.*—A good variety for succession, though not too robust. Fruits over a long season, berries large and of moderate flavour. *Madame Kooi.*—A very strong-growing variety which can often be grown where other varieties fail. Fruit large, often rather ugly, colour and flavour poor.

To summarise:

(1) Start with a really good stock.

(2) Plant firmly and as early as is practicable.

(3) Hoe frequently, always slightly towards the plants, but avoid deep tillage, especially near the plants.

(4) Keep plants clear of weeds, insect, and other pests.

(5) When propagating take only a limited number of runners, and these only from vigorous, healthy, fruiting plants.

C. J. GLEED.

SWEET PEAS

LIST of up-to-date varieties selected by the Floral Committee of the National Sweet Pea Society:—

BLUE. Bluebird, Boy Blue (Carter Cup), Reflection.*† (LIGHT). Gleneagles,*† Mermaid, Porcelain. (MEDIUM). Tom Webster (A.M., 1928). (DARK). Commander Godsall, Fortune* (A.M., 1926), Jack Cornwell, V.C.

BLUSH (PINK). Dainty Maid, Valentine.*† (LILAC). Elegance, Lilac Queen.*

CARMINE. Brilliant Rose,* Marjorie Stevenson.

CERISE. Charming. (PALE). Nina,† Rosy Morn.* (DEEP). Charm,*† Daventry, Hero. (SALMON). Delightful, Mrs. A. Searles (F.C.C., Reserve G.M., 1926). (SCARLET). Flamingo,*† Grenadier, Pimpernel.

CREAM. Matchless, What Joy.*†

CREAM PINK. Mary Pickford (A.M., 1924), Susan,* Venus. (PALE). Mrs. Arnold Hitchcock. (DEEP). Ambassador, La France, Picture,*† (SALMON). Idyll*† (A.M., 1928), Magnet.

CRIMSON. Honour,* Sybil Henshaw.

FANCY. Skylight,† Carnival.

FLUSHED (CREAM GROUND). Big Ben (A.M., 1929), Britannia, Jack Hobbs.* (WHITE GROUND). Carmelita (A.M., 1926), Mrs. H. J. Wright.*

IVORY. Ivory Picture* (A.M., 1924), Leslie Rundle.

LAVENDER (ROSY). Austin Frederick Improved, R. F. Felton*† (A.M., 1912; S.M., 1913). (PALE). Wembley† (F.C.C., G.M., 1924). (LILAC). Gladys, Lilac Time, Powerscourt*† (A.M., 1921).

MAROON (RED). Hawlmark Maroon, Splendour.* (DARK). The Sultan* (A.M., 1921), Warrior.

MAUVE. Chieftain,*† Guardsman, Royal Mauve. (ROSY). International.

ORANGE. Orange Picture, Royal Sovereign.*† (DEEP). Colorado,*† Prince of Orange, Wizard. (PINK). Crusader, Geo. Shawyer† (A.M.), Royal Pink.* (SCARLET). Mammoth† (A.M., 1924).

PICOTEE EDGED (WHITE GROUND). Youth. (CREAM GROUND). Jean Ireland (F.C.C., 1915), Sunkist.*

PINK (PALE). Ascot,*† Supreme. (DEEP). Hebe, Pinkie.*†

PURPLE. Olympia,* Purple Monarch.

ROSE. Corona,* Sunset (Bolton's) (A.M., 1921). (OLD ROSE). Wild Rose.†

SALMON (ORANGE). Gold Crest.†

SCARLET. Huntsman*† (A.M., 1927; Gold Medal, 1927–28), 2 LO. (BRIGHT). Flaming June (A.M., Gold Medal, 1928–29).

WHITE. Avalanche,*† Vectis. (TINTED). Constance Hinton, Model.*

* Considered the best in each colour.

† Of special value for cultivation under glass.

TOO MUCH ALIKE VARIETIES

Not more than one of the grouped varieties may be shown on the same competitive stand at any exhibition of the National Sweet Pea Society unless otherwise stated.

BLUE. (1) Bluebird, Mrs. T. Jones; (2) Boy Blue, Heavenly Blue. (DARK). Commander Godsall, Jack Cornwell, V.C. (LIGHT). Gleneagles, Porcelain, Silver Sheen.

BLUSH. Felicity, Valentine.

CARMINE. Mascotts Ingman, Renown, Brilliant Rose, Marjorie Stevenson.

CERISE. (PALE). Doris Lucifer, Rosy Morn. (DEEP). Centaur, Charm, Glorious, Daventry, Hero. (SCARLET). Flamingo, Grenadier, Pimpernel, Royal Scot, Wonderful.

CREAM. Daffodil, Majestic Cream, Matchless, What Joy.

CREAM-PINK. (PALE). Cecily, Fair Lady, Mrs. A. Hitchcock, Radiance. (DEEP). (1) Hawlmark Salmon Pink, Pink Perfection. (2) Miss California, W. J. Unwin. (3) Edith Cavell, La France, Picture.

CRIMSON. Charity, Crimson King, Marjorie Ryder, Sunproof Crimson, Sybil Henshaw.

FLUSHED (WHITE GROUND). Carmelita, Mrs. C. W. J. Unwin, Mrs. H. J. Wright. (CREAM GROUND). Britannia, Faerie Queen, Jack Hobbs.

IVORY. Ivory Picture, Leslie Rundle.

LAVENDER. Austin Frederick Improved, R. E. Felton. (LILAC). Gladys, Powerscourt. (PALE). Blue Butterfly, Wembley.

MAROON (RED). Hawlmark Maroon, Splendour.

MAUVE. Chieftain, Guardsman, King Mauve, Lady Eveline, Royal Mauve.

ORANGE (DEEP). Poppy, Wizard.

PICOTEE EDGED (CREAM GROUND). Jean Ireland, Sunkist.

PINK (DEEP). Hebe, Hercules, Miss Philadelphia.

PURPLE. Mascotts Purple, Olympia, Purple Monarch, Purple Perfection, Royal Purple.

ROSE. Private Jack Smellie, Sunset (Bolton's), Verdun.

SCARLET. (1) Hawlmark Scarlet, Mascotts Scarlet. (2) Huntsman, 2 LO.

WHITE. (1) Avalanche, Edna May Imp., Joan Ryder, Mascotts White, Moneymaker, Nora Unwin, Vectis, White Perfection. (2) Constance Hinton, Model.

VARIETIES RECOMMENDED by the Floral Committee of the N.S.P.S. for general garden cultivation:—

Ascot (pale pink), Avalanche (white), Bonfire (bicolour), Charming (deep cerise), Corona (rose), Delightful (rose cerise), Elegance (blush, lilac), Grenadier (cerise scarlet), Huntsman (scarlet), Ivory Picture (ivory), King Mauve (mauve), Magnet (deep cream-pink), Mrs. Arnold Hitchcock (pale cream-pink), Mrs. H. J. Wright (flushed white ground), Olympia (purple), Picture (cream pink), Pinkie (deep pink), Powerscourt (lavender, lilac), Reflection (blue), Sybil Henshaw (crimson), Warrior (maroon), Wembley (lavender, pale), Youth (picotee-edged).

NOTES ON LORETTE PRUNING

SOME form of summer pruning is essential in order to thin out the number of new wood growths on fruit trees and to utilise the sap to develop fruit buds in their stead. Such treatment also admits sun and air to the growing fruit, which improves its quality and appearance. It can be done by pinching back the shoots while they are still immature, and continuing the process as new growths develop throughout the summer. As this pinching back only checks growth to a very slight extent it has to be done over and over again, with the result that it is scarcely ever properly done.

Lorette has tried to reduce summer pruning to a simple method of shoot cutting carried out at regular intervals of time throughout the summer.* No pruning is then necessary in winter. His whole system is based on the fact that he found by experience that shoots emanating from the stipulary eyes are less rank and more fruitful than shoots growing from the buds found in the axils of the leaves. To understand his system it is essential that his definitions of the various growths of fruit trees should be comprehended. It is of primary importance to carry out his ideas as to the spacing of the branches and spurs on the trees, and the adequate fertilisation of the soil. It must be borne in mind that he only enunciates principles, and that these principles must be adapted to the climate, soil, and conditions under which the trees are growing. Scab is especially inimical to good results from his methods, as it seems to attack the weak stipulary buds in preference to the axil buds. This causes bare patches of fruitless and leafless branch, a condition which this system of pruning is meant to obviate.

Anyone who has grown fruit for a few years must have been struck by the variations in growth from year to year, due to climatic conditions; also by the great differences in the type of growth produced by different varieties of apple and pear trees. Soil, too, modifies growth to an extraordinary extent, and greatly affects the disease-resisting properties of the trees. From this it will be understood that modifications will have to be made according to the weather, the soil, and the type of fruit tree.

Lorette's system of pruning is divided into two distinct operations:

* Cf. *The Lorette System of Pruning*, by Louis Lorette, Professor of Arboriculture, late Chief Instructor in Practical Horticulture at Wagonville, near Douai. Translated by the late W. R. Dykes, M.A., L.-ès-L. It must be remembered that this book was written for use in France, where conditions vary considerably from those in this country.

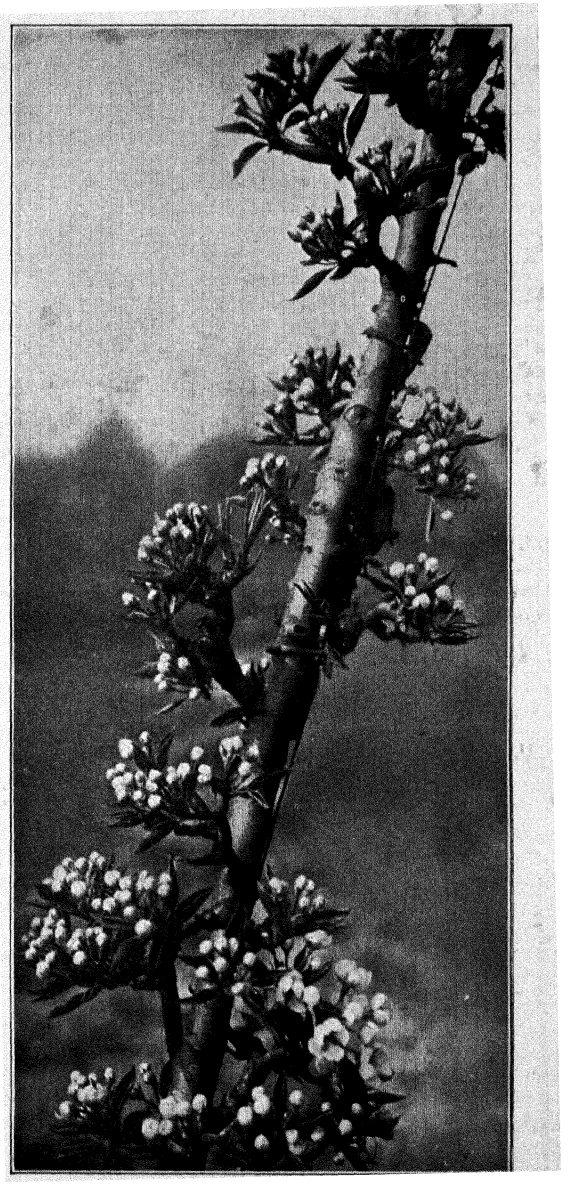
(1) *The pruning of the extension growths*—those shoots which are required to continue the building up of the framework of the tree, in other words the main branches. They require to be cut back yearly so that their buds may develop down to the base of the new wood. If left unpruned, the lower buds will remain dormant, making bare and fruitless spaces. Lorette allows these extension growths to grow unchecked throughout the summer, and to remain at full length throughout the winter.

After the buds have started growing in the spring it is possible to see how much of the shoot will remain leafless if left unpruned. This will give an idea of the cutting back required. As the buds are growing it is easy to select and cut back to a strong leaf bud. The hard summer pruning makes the extension growths very strong. After a wet growing season they require hard pruning. After a dry season they need only be lightly cut. In any case, where the branches are trained horizontally they only need light pruning, as the flow of sap is checked and the lower buds, those nearest to the trunk of the tree, get an ample supply of sap to enable them to become fruit buds, or to grow into wood shoots.

(2) *Pruning of the laterals.* As growth continues some of the upper buds in the extension growths will develop into shoots. Other shoots will grow out from the old spurs and branches down the tree. Lorette advocates going over the trees about the middle of June and cutting out any of these shoots which have attained a length of 12 inches, are as thick as a pencil, and whose substance is what he describes as half woody. The top shoot is not cut, as this will be the extension growth to be pruned in the following spring. The cutting is very severe, only leaving a stump $\frac{1}{4}$ to $\frac{3}{8}$ of an inch long. He relies on the stipulary buds developing into weak shoots or fruit buds. Shoots which are not of the requisite dimensions are left unpruned until the trees are again gone over in the middle of July.

Some weak shoots will grow which would never be thick enough to be pruned. These should be split with the point of the pruning knife above the third leaf, then bent down and tied to the branch. This will check the flow of sap and help the lower buds to develop into fruit buds. Another type is the shoot that will never attain the requisite length for pruning yet is quite thick and woody. If short, 4 to 8 inches long, these shoots should not be pruned. Generally the apical bud will blossom and bear fruit. If longer than 8 inches I generally cut back to two or three buds. Many of the shoots cut back in June produce new shoots which are ready to be cut back in like manner when the trees are gone over in July and August.

Old fruit spurs are more difficult to deal with. If neglected they develop far more fruit buds than the sap can render productive, resulting in undersized fruit or barren spaces. Three or four buds is ample for one spur. The surplus should be cut off, keeping the spur as short and compact as possible. When pruning shoots on



LORETTE PRUNED

This illustration is taken from "The Lorette System of Pruning," by Louis Lorette, translated by the late W. R. Dykes, and published by Martin Hopkinson, Ltd., at 7/6 net.

[*To face p.* 84

old spurs the cutting back must be regulated to the run of the sap. In a wet season some buds must always be left to allow an outlet for the surplus sap. Shortening shoots to two or three buds does not check growth to anything like the extent that cutting back to the base does. The top bud of the shortened shoot begins to grow in a few days and provides an outlet for the sap. Later on in the year the new growth from this top bud will have grown into a shoot which is of the requisite dimensions to be cut back to its base, or, if growth is still very rank, to one bud. If it has not grown sufficiently to be cut back before, then in September, when the trees are finally gone over, the whole of the year's growth should be cut back to the second or third bud. At the same time shoots which have been split and tied down should be cut back to three buds.

Lorette gives rules and examples for dealing with many variations of shoots growing out of spurs. During wet years my experience has been that it is much better to prune them lightly, owing to the danger of starting growth in buds that are normally developing into fruit buds. This would mean less fruit in the ensuing year, and the needless trouble of cutting back shoots forced into growth by injudicious severity with the pruning knife.

Lorette's principles are more easily applied to pear than to apple trees, but I have borne the latter in mind when writing these notes. I have found the system very satisfactory with plum trees trained on walls, but for bush plums in the open I found that thinning out branches to admit light and air, and rubbing out surplus buds and shoots was all they required. Varieties of apples which make thick heavy shoots, such as Bramley's Seedling, Newton Wonder, Upton Pyne, and Charles Ross, answer most readily to this method of cultivation. With Cox's Orange Pippin on heavy soil, where they are always liable to attacks of scab, I found it better to cut the shoots back to three buds, and to cut the subsequent growths on these back to one bud. With varieties that have very thin shoots, such as Egremont Russet, I found on my soil (in North-east Devon) that the shoots from the stipulary eyes were too thin to bear fruit, so I treated this variety in the same manner that I treated Cox's Orange. With other varieties, such as Allington Pippin, which threw out an extraordinary number of shoots if too heavily pruned, it proved better to allow them to grow much longer spurs, by leaving four to six buds when first cutting back their shoots. These long spurs seem to use up a greater quantity of the sap and not to make so many useless growths in the ensuing years.

In spite of our variable climate and the great differences in the types of growth to be found in the fruit trees in our gardens, I am certain that anyone who tries a modified form of Lorette pruning will be gratified by the results. Not only will the trees blossom and in good seasons fruit over the whole length of their branches, but the effect of going over and regularly pruning the trees will imbue the owner with a greater interest in fruit culture. In far too many

gardens in England the fruit trees are subjected to the ministrations of a jobbing gardener, who treats all varieties alike to a rule of thumb pruning to three spurs. Bush trees under this system gradually turn into topiarian models, but they are very poor fruit bearers.

VAUGHAN WARDELL.

PRUNING

Experiments in the healing of woody stems when pruned go to prove that wounds made from May to August become rapidly impervious to the entry of disease. September and October wounds block only in part, and November to April do not heal till the following spring.

APPLES

AMERICAN BLIGHT.—Reported immune: *Irish Peach, Northern Spy, Winter Majestic.* Susceptible: *Allington Pippin, Beauty of Bath, Bismark, Cox's Orange Pippin, Prince Albert.*

INJURED BY SULPHUR SPRAYS.—*Cox's Orange Pippin, Lane's Prince Albert, Stirling Castele.*

INJURED BY BORDEAU MIXTURE.—*Allington Pippin, Beauty of Bath, Lord Derby.*

PLUMS

GOOD FOR MARKET.—*Count Althann's Gage, Czar, Denniston's Superb, Heron, Jefferson, Oullins Golden, Victoria.*

DAFFODILS OF THE DAY

THE last few years have brought about a wonderful advance both in the wider cultivation of Daffodils and in the striking results obtained by raisers. Now that so many more are engaged on raising seedlings a far greater number of good flowers are being introduced annually. In the past some men worked on quite haphazard lines; in many cases no records were kept and much self-fed seed was sown. At the present time very few would trouble to raise bulbs from self-fertilized seed. Careful crosses are made in the hope of obtaining specific characters, and elaborate records kept of the pedigree extending over several generations. The grower of to-day, whether of seedlings or named varieties, has wonderful material to work upon. In many cases it would appear to be impossible that any improvement on existing types could be effected, yet year after year some new flower appears which is a distinct advance upon any seen before.

The work accomplished by the Rev. G. H. Engleheart is reflected in the race of yellow Ajax, characterised by earliness, vigour, and freedom of flower. *Magnificence*, though not a show flower, may be cited as an example. His white trumpets possess the same qualities; *Beersheba*, a flower of the highest quality, is an outstanding one; while his Poeticus varieties are proverbial. I believe that *White Lady*, one of this raiser's early flowers which is now grown by the acre for market purposes, was his favourite; while the advent of *Will Scarlet* marked an epoch in the daffodil world. The coloured flowers raised by Mr. P. D. Williams are generally far in advance of other raisers'. They are characterised by purity and depth of colour, length of stem and vigour of constitution. The raising of *Fortune* has enabled The Brodie of Brodie to raise a magnificent race of red-capped Incomparabilis, while his white trumpets and Leedsii types are of outstanding excellence. The highly coloured flowers raised by the late Mrs. R. O. Backhouse (the work is now being carried on by Mr. R. O. Backhouse) appear on every show-stand throughout the country. Messrs Barr & Son, Mr. Guy Wilson, Mr. A. M. Wilson, the late Dr. Lower, the Donard Nursery Co., Mr. Richardson, Mr. Copeland (for double flowers), Messrs. Bath, Messrs. Pearson, Mr. H. Backhouse, and the writer have all raised notable flowers.

The highest type of flower to-day should conform not only to the florist standard but be suitable for general cultivation. The colourings of many flowers seen on the show-bench are too delicate to stand the rough and tumble of ordinary garden cultivation, but

if the flowers are cut before they are fully expanded, and opened under glass, their cleanliness and purity of colour is preserved. This course (or protection from sun, rain, and wind) should be followed with all blooms required for exhibition or table decoration. Some assert that the florists' standard is too formal and what is loosely termed the decorative type of flower only is suitable for the garden. Of these the number is legion. Many thousands are registered in the Royal Horticultural Society's classified list, and hundreds appear in Trade Catalogues. But, as every daffodil raiser knows from painful experience, only a very small percentage of those raised are an improvement on existing varieties, and when they occur are necessarily expensive. Second- and third-rate flowers are plentiful, and many are disposed of at cheap rates for mixed planting. Most are beautiful, but they will not bear comparison with the highest types.

Large quantities of the older varieties such as *Emperor* (1890), *Golden Spur* (1889), *ornatus* (F.C.C. 1886), *Barrii conspicuus*, *Sir Watkin* (1884 F.C.C.) are still cultivated for the cut-flower trade, but they are gradually being superseded by far better types. The stocks of these have been acquired by enterprising market growers. A selection of the best and most frequently exhibited flowers seen during the past two or three years would embrace amongst others the following in the various sections. Many of these are very expensive. Of others, but small stocks exist which are not yet available for general distribution. Most are suitable either for exhibition or general cultivation, and many have received a First Class Certificate or Award of Merit at the R.H.S. or Midland Daffodil Society.

Division I. Trumpet Daffodils: (*a*) Yellow or lemon trumpet, perianth same or lighter shade, (not white). *Advance-guard, Brimstone, Bulwark, Cleopatra, Crocus, Dawson City, Florists' Delight, Godolphin, Grenadier, Harpist, Honey Boy, Magnificence, Rheingold, Royalist, Sulphur, Whiteley Gem.*

(*b*) White trumpet and perianth. *Askelon, Beersheba, Eskimo, Kantara, Moray, Mrs. Lower, White Chevron, White Emperor, White Knight, Zionist.*

(*c*) Bi-color. *Carmel, Countess of Antrim, Halfa, Helen O'Hara, Jack Horner, Lady Primrose, Moira O'Niell, Quartz, Rosemary, Rosemorran Giant, Vestal Virgin.*

Division II. Incomparabilis: (*a*) Yellow, with or without red on cup. *Adventure, Alroi, Copper Bowl, Damson, Donax, Farthingale, Fortune, Fortune's Pride, Golden Ingot, Havelock, Jorrocks, Jubilant, Killigrew, Mephisto, Morea, Nimrod, Penquite, Pilgrimage, Torrid.*

(*b*) Bi-color. *Beauty of Radnor, Bernadino, Bodilly, Delhi, Eucharis, Folly, Fortune's Queen, Galopin, John Evelyn, Nissa, Princess Badoura, Rewa, Warlock.*

Division III. Barrii: (*a*) Yellow, with or without red on cup. *Bridegroom, Hades, Kilter, Lady Sackville, Red Sea, Seraglio, Varna.*



"NARCISSUS SOLLERET," A JONQUILLA HYBRID EXHIBITED BY W. B. CRANFIELD

See "New and Noteworthy Plants"] [*To face p.* 88

(*b*) Bi-color. *Carminowe, Coronach, Dragoon, Firetail, Lady Lilford, Lady Moore, Morocco, Picador, Red Sun, St. Egwin, Sunstar, Therapia, Warspite.*

Division IV. Leedsii: (*a*) Long cup or crown. *Bradwardine, Ciceley, Ettrick, Fanny Currey, Grayling, Helmet, Hymettus, Marmora, May Malony, Mitylene, Sea Shell, Suda, Tenedos.*

(*b*) Short (less than $\frac{1}{3}$ of perianth segment) cup or crown. *Machete, Mystic, Puck, Samaria, Silver Plane, Silver Salver.*

Division V. Triandrus Hybrids: (*a*) Long cup or crown. *Harvest Moon.*

(*b*) Short (less than $\frac{1}{3}$ of perianth segment) cup or crown. *Acolyte, Maid Monica, Venetia, Waterfall, Wavelet, White Coral.*

Division VI. Cyclamineus Hybrids. *Golden Cycle, minicycla, Orange Glory, Trewirgie.*

Division VII. Jonquilla Hybrids. *Golden Goblet. Solleret, Yellow Jacket* (*palium luteum*).

Division VIII. Tazetta and Tazetta Hybrids. *Glorious, Medusa, Peter Lower, Red Guard, Xerxes.*

Division IX. Poeticus Varieties. *Ace of Diamonds, Dinton Red, Hexameter, James Hogg, John Masefield, Kestrel, Narrabri, Opera, Raeburn, Recessional, Red Rim, Ringdove.*

Division X. Double Varieties. *Engleheart's White Rose, Holland's Glory, Mary Copeland.*

Division XI. Various. This section represents the smaller species. There are no very marked varieties.

W. B. CRANFIELD, F.L.S., F.R.H.S.

GARDEN ENEMIES

SOME DISEASES AND PESTS OF BULBS

A BULB is a modified bud which usually lives underground. It consists of a comparatively small stem surrounded by a number of overlapping scale-leaves. The outer scale-leaves are usually thin and dry, and serve as a protective coat to the bulb, but the inner ones are thick and fleshy. The latter are packed with reserve food, mainly in the form of starch grains, which has been manufactured by the green leaves in the presence of light. Roots are produced around the outer edge of the base of the stem or " plate " of the bulb, and new bulbs are formed by the growth of the lateral buds situated in the axils of the bulb scales. If satisfactory growth is to be obtained care must be taken to purchase and plant sound bulbs. It is wise to see that the basal plates of all bulbs are quite sound when purchasing, otherwise a good root system cannot be formed.

Storage Rots.—Much damage can be caused to bulbs in store by forms of the common blue mould *Penicillium.* Insufficiently ripened bulbs and damaged or bruised parts are first attacked, and from them the fungus may penetrate into the sound tissues, and destroy the bulb. Lilium, Narcissus, Tulipa, Scilla, Gladiolus, Iris, and other bulbs and corms are susceptible to this form of decay, which can largely be avoided by careful handling and keeping the bulbs quite dry whilst out of the ground. A light dusting with flowers of sulphur may also be beneficial.

Narcissus bulbs that have been scorched by exposure to the sun, and varieties that are particularly liable to " Basal rot," are not infrequently damaged by *Fusarium sp.* This fungus is sometimes particularly severe on large soft imported bulbs which may have got damp in transit, and in which flat plates of white mycelium may be seen between the scales of the rotting bulb.

The Bulb Mite is another trouble which is likely to cause loss when the bulbs are out of the ground. When a quantity of bulbs is stored they should be sorted over from time to time, and decaying material removed if present and destroyed. The hot-water treatment as applied for eelworm control will free bulbs from mite. Fumigation with para-dichlorbenzene has been shown to be effective: 4 ozs. of the crystals per cubic foot of bulbs are used in an air-tight container, and the fumigation carried out for 72 hours. The same treatment will kill *Aphides* (green fly), a few species of which

infest stored tulip and some other bulbs. For the destruction of the larvae of *Narcissus flies* a longer exposure is necessary, and 120 hours has been stated to give a 100 per cent. kill.

Fungus diseases.—Sometimes black bodies varying in size from a pin's head to about ¼ inch across are found on bulbs. These are "sclerotia," or the vegetative resting stage of certain fungi, and are capable of further development. When a diseased bulb is planted the new growth is promptly attacked by the fungus, and such a bulb may serve as a centre from which others in their turn become infected with disease. *Sclerotium Tuliparum* is one of these sclerotia-forming fungi, and it causes the tulip disease known as Grey Bulb Rot, and may also attack a few other kinds of bulbs. Unhealthy plants more or less rotted around the neck should be removed carefully and burnt, before the "sclerotia" become detached from the diseased plant. If the soil has become infected it is better to grow bulbs of susceptible kinds—such as Tulip, Iris, Crocus, Scilla—in another part of the garden. If desired the soil may be sterilised by steam, and treatment with formalin solution has also proved effective. Dressing the soil with flowers of sulphur has sometimes proved to be beneficial. *Botrytis Tulipae* is another sclerotia-forming fungus; it is responsible for "Fire" in tulips, and causes spots on the flowers and considerable damage to the leaves and bulbs. The disease is commonest and most severe where large numbers of tulips are grown together, owing to the readiness with which the spores of the summer stage of the fungus may be blown from plant to plant, causing widespread infection during warm, moist spells of weather. If good sound bulbs are planted a reasonable distance apart the average gardener is not likely to be much troubled.

The Gladiolus is becoming more difficult to grow owing to the spread of disease, due largely to imported corms which are attacked by Hard Rot (*Septoria Gladioli*) and Dry Rot (*Sclerotium Gladioli*). There are also two bacterial diseases which attack the foliage and corm. It is advisable to plant only corms which appear sound, and all plants which are obviously unhealthy should be removed as soon as they are observed and burnt.*

* A dying plant, sent to the Editor by an amateur grower, was forwarded to Mr. W. C. Moore, of the Ministry of Agriculture and Fisheries' Plant Pathological Laboratory, Harpenden, who reported that it was typical of many similarly affected Gladiolus plants received during the season. "The browning and death of the foliage in all these cases was due to failure of the root system of the young corm, probably as a result of drought. The young roots wilt and become flaccid from the tips backwards and, with the entry later of soil organisms, the inner tissues rot away until finally only the skin and the central 'stele' remain. Although drought may be held mainly responsible for the trouble in 1929, it is probable that the action of any factor (e.g. waterlogging or poor soil aeration) which hinders or prevents the establishment of a vigorous root system by the young developing corm would have the same effect. Dying off of this nature must not be confused with the somewhat similar symptoms produced by one or other of the organisms mentioned above."

Virus diseases.—There are several virus diseases of bulbs which cause a mottled or striped appearance of the leaves, sometimes with a certain amount of dwarfing or even distortion. Some varieties of Narcissus are frequently affected with diseases of this type, which are sometimes known as "Yellow Stripe," "Grey Disease," etc. Various bulbous Iris, and several other kinds of bulbs may be similarly affected, and although some of these plants will flower they are obviously unhealthy. There is not much known about these particular bulb troubles, and how they spread from plant to plant, but they are believed to be due to plant virus. From information available in similar plant virus diseases in other hosts, it is unlikely that any cure will be found; and in the light of our present knowledge it is wise to remove and destroy badly mottled specimens, or other healthy plants may become involved.

Eelworm disease.—Mention must be made of the disease of bulbs due to small unsegmented worms known as "nematodes" or eelworms. Eelworms are seldom observed in the field owing to their small size, which in the case of a fully developed plant parasitic species is about $\frac{1}{25}$ inch in length. They are usually present in very large numbers in a badly diseased plant. The *eelworm disease of Narcissus*, which is one of the most widely spread troubles of the commercial grower of this plant, is usually brought into the garden by slightly infected bulbs. These bulbs may be quite sound so far as outward appearance goes, and it is only when the bulb is grown that any abnormality is likely to be detected. If a bulb has been infected for some time it may be sunken and soft at the "nose," and if suspicions are aroused a few bulbs should be cut transversely, when the presence of discoloured concentric rings will tend to confirm the need for further enquiry. During growth pale-coloured and swollen lesions may be seen in the foliage, often accompanied by more or less distortion of the whole plant. These are the usual symptoms, but different varieties react in different ways, and, in general, the *poeticus* varieties of Narcissus tend to dwindle away rather than distort. If distorted plants of this character are seen they should be burnt, for if allowed to remain, the eelworm will escape into the soil and attack neighbouring plants. Great vigilance should be exercised against these insidious pests, and at the earliest opportunity all adjacent bulbs should be lifted and, when dormant, subjected to the hot-water treatment. This consists in immersing the bulbs in a bath retained at 110° F. for 3 hours. The water is a means of conducting the heat through the bulb so that the eelworms and their eggs will be destroyed without causing damage to the bulb. The same treatment will kill Bulb Mite and destroy the larvae of the Narcissus flies. If these two insect pests only have to be considered, the duration of the treatment may be reduced to one hour.

Other pests.—The Large Narcissus Fly (*Merodon equestris*) and the Lesser Bulb Flies (*Eumerus spp.*) have long been known as pests of the Daffodil in this country. They belong to the same family as the Hover flies (*Syrphidae*), and the grubs feed greedily in the bulb. All the species prefer a warm sunny spot, so that when bulbs are lifted they should be ripened in shade, and not be left lying about in the sun, where the flies can lay their eggs upon them. Although Merodon was first recorded in this country as long ago as 1869, the flies seem to be increasing in number, particularly in the warmer parts of the country. Control measures have already been touched upon in these notes.

There are other kinds of damage which cannot be termed diseases, but which, nevertheless, are very annoying to the gardener. It should be remembered that rats and mice will eat many kinds of bulbs, and are particularly fond of Tulips, which they will scratch up when food is scarce. Slugs and ground caterpillars will also cause damage which the good gardener will know how to keep in check. Only a brief outline of a few of the possible troubles of the bulb grower has been given, but it will be sufficient to emphasise the desirability of obtaining bulbs from a firm with a reputation to uphold, and of paying a fair price for them. The Empire Marketing Board has reminded the public that good supplies of British bulbs of several kinds may be had; and if low-priced imported bulbs are obtained, the only recommendation of which is an alluring catalogue printed abroad, the grower must not be surprised if his experience of some of the diseases of bulbs is increased.

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CONTROL OF THE GREENHOUSE WHITE-FLY

History of the Parasite.—In 1924 a minute Cahcid wasp was found parasitising the scales of the Greenhouse White-fly in Ohio, and was described and named *Encarsia formosa* by Dr. A. B. Gahan. The insect was first found in England, near Elstree, Herts, by Mr. L. Hawkins in 1926, and material of the parasite was obtained from him in July of that year. In breeding experiments at the Cheshunt Experimental Station, it was established at once that the parasite generations consisted exclusively of female insects, reproduction being parthenogenetic. Later it was found that males made their appearance only at comparatively low temperatures. From the few females obtained at Elstree, two generations were bred, so that in September some 2,500 white-fly scales containing the parasite were available for testing in the Experimental Station tomato houses. Sufficient control was obtained from them to warrant the breeding of the parasite during the winter months in a

specially heated glasshouse. In 1927 white-fly was completely stamped out in the Experimental Station cucumber houses during March and April, and during the year some 10,000 parasitised scales were distributed to a dozen growers of tomatoes with good results. Towards the end of the year a grant from the Empire Marketing Board provided means for building a special glasshouse in which the parasite could be bred on a larger scale, and distributed to growers. In 1928 some 280,000 parasitised scales were sent out to growers in the British Isles, including the Channel Isles, and a large consignment was forwarded to the Canadian Government through the Parasite Laboratory at Farnham Royal. Reports obtained from the recipients showed that the best period for distribution is from the beginning of April to the middle of June, but good results may be obtained in well-heated houses from distribution made as early as January. From January 1 to June 30, 1929, over 700,000 parasitised scales were distributed directly to some 260 owners of glasshouses, and many others, through the Royal Tunbridge Wells Gardeners' Association and the Guernsey Growers' Association.

Method of Breeding and Distribution.—In order to breed the parasite in large numbers for distribution, it is necessary to keep a stock of unparasitised white-fly scales so that a continuous source of the white-fly is available. The stock is maintained upon tobacco plants grown in pots, the parasite being averse to the sticky foliage of this plant. When large numbers of white-fly have been obtained, the tobacco plants are placed with young tomato plants in "60" pots in a house where a small stock of the parasite is always present. As the white-fly lay their eggs first upon the lowest leaves of the tomato plant, parasitised scales of white-fly first appear on these, being recognisable at once from their black colour. The lowest shoots are cut off, packed in boxes and sent to owners of glasshouses infested with white-fly. A little later the next lot of shoots are similarly despatched when ready, the plants being repotted until they are established in 10- or 12-inch pots. A single tomato plant will give a continuous sequence of branches with parasites upon them for a period of 3 or 4 months from March onwards. Some 50 branches of large size can be packed into a box 14" × 9" × 6", and upon these there may be over 20,000 parasitised scales. On receipt of the box, the grower makes the branches into bunches of 4 to 6 and hangs them up for a period of 3 weeks in his glasshouses to allow the adult parasites to emerge from the black scales.

The period from April to June is most suitable for starting the parasite, and complete control of white-fly cannot be expected from distributions made at a later date, unless the glasshouses are well heated during winter, when the parasite is unable to survive in unheated glasshouses or outside. When an average temperature of 70° F. is maintained, black parasitised scales may be expected to appear upon the underside of the lower foliage or infested plants some 14 days after receipt of the parasite by the grower. The

parasite will not destroy insects other than the white-fly. At low temperatures (50° F. to 60° F.) the breeding capacity of the parasites is much lowered, and unless kept at 70° F., or over, the parasite is often averse to laying its eggs in the white-fly scales upon the leaves of Tobacco, Datura, Eucalyptus, Bouvardia, Abutilon, and some varieties of Primula and Geranium. Upon the plants mentioned it is usually difficult to obtain a high percentage of parasitism.

Immediate Control Measures.—In cases of severe infestation of white-fly, when immediate control measures are called for, the houses may be fumigated with sodium cyanide and sulphuric acid, the amount of cyanide per 1,000 cubic feet space recommended being ⅛ oz., with ½ oz. 33 per cent. sulphuric acid. Due precautions are necessary, as both the gas given off and the sodium cyanide itself are extremely poisonous, but with ordinary care there is no danger from the operation. The fumigation must be carried out at dusk, and the ventilators and doors opened from outside before dawn the next morning. The amount recommended will kill the majority of adult flies and will not materially harm the parasite, leaving the young stages of the fly alive for the parasite to breed in. Five ounces of Tetrachlorethane or fumigant containing this liquid per 1,000 cubic foot space, poured upon the path of the house at dusk, will have the same effect, but should not be used where Chrysanthemums, Fuchsias, Pelargoniums, Azaleas, Hydrangeas, and Cinerarias are grown, as these plants may be severely damaged by the fumigant. Nicotine and probably Naphthalene fumigations as used for Aphids and Red Spider Mite respectively are also without effect upon the parasite, but Paraffin emulsion sprays sometimes kill it.

Recognition of the Presence of the Parasite.—Scales of white-fly containing the parasite are recognisable from normal scales by their jet-black colour. The eggs of the white-fly appear as the minutest black specks to the naked eye, while the parasitised scales are as large as a small pin's head. They should be looked for upon the underside of the lower foliage of plants upon which the white-fly is breeding. The parasite develops from the egg to maturity in about a month and escapes through a roundish hole cut in the roof of the black scale-case. The scale turns black from 11 days to 3 weeks after the parasite egg is deposited within it, according to temperature. The adult female parasite is a very minute insect with a pale-yellow body: it is usually found upon the underside of the upper foliage of plants on which white-fly is breeding, but on sunny days often sits upon the upper side. When touched, the insect jumps and then takes to flight in a hovering manner. The male parasite has a dark body and is slightly larger then the female; it is most likely to be met with in late autumn or early spring.

Application for Parasites.—In making application for the parasite, it is necessary only to write to the Entomologist, Experimental Station, Cheshunt, Herts, stating clearly the number of glasshouses for which the parasite is needed. When blocks of

houses are concerned, the number of houses in each block should be given. There is no charge for the parasite. Application should be made as early as possible after February. There is little object in writing for the parasite after the middle of June unless the houses are well heated during the winter months. Full directions are enclosed in each box of parasite material distributed.

EDWARD R. SPEYER.

SLUGS AND THEIR CONTROL

SLUGS are small animals which are particularly destructive to agricultural and horticultural crops. They measure up to about 6 inches in length, and may be a variety of sombre colours, dull browns and greys, black, yellow, and white, and are often obscurely marked to render them less conspicuous. When the slug is in motion the body appears elongate, blunt at the head, and tapering towards the tail. There are no legs, but the entire undersurface of the body is a muscular structure known as the *foot*, and movement is regulated by the expansion and contraction of this organ. The head is continuous with the body, and bears two pairs of tentacles which can be protruded and withdrawn at will. On the tips of the larger pair of tentacles are the eyes. Beneath the tentacles is the mouth, which contains a pair of mandibles or jaws, and a structure known as the *radula*. The radula is covered with rows of teeth, and is used for rasping off particles of plant tissue for food. By means of the radula the slug makes holes in foliage or tubers, and severs leaves from the plants. Behind the head the body is somewhat humped, the hump being formed by the mantle. This is irregularly oval, and is associated with the rudiments of a shell. Beneath it lie some of the most important organs of the body, the respiratory chamber and the generative organs. The respiratory chamber opens externally through a small orifice on the right side of the mantle.

The bodies of slugs are covered with slime, which is exuded by slime glands in the skin. A large slime gland opens just below the mouth and secretes the slime over which the animal moves. In dry situations the exudation of large quantities of slime is essential to free movement, and the loss of slime so weakens the slugs that they may perish before reaching a moist situation where recuperation is possible. Moisture is one of the most important factors necessary for the continuance of slug life. During the day the slugs shelter in damp situations, under stones, boards, in the lower crevices of walls, among decaying vegetation, in the soil, in thick grass, or among the lower leaves of such plants as cabbage, lettuce, rhubarb, etc. At dusk, when the surface of the ground is moist, they come out to feed, though feeding may take place during the day in wet weather.

Slugs are hermaphrodite. Multiplication is rapid since each

individual is capable of laying eggs, and it has been estimated that in some species each individual lays up to 1,000 eggs during its lifetime. The eggs are laid in the soil, among moist vegetation or decaying plant remains. They are spherical or rather oval, and may be quite transparent or milky white. They vary in size up to about $\frac{1}{8}$ of an inch in diameter, and may be laid singly or in batches of up to 60, held together by slime. Eggs are laid periodically during the spring, summer, and autumn. Hatching usually takes place in 3 to 4 weeks, but in the case of eggs laid late in the autumn, hatching may not occur until the following spring. Young slugs are small and transparent. They feed for a time on decaying plant remains, and later attack healthy unbroken plant tissue.

A number of species of slugs occur as pests. The most common and widespread is *Agriolimax agrestis* L., the grey field slug. It is pale yellowish or whitish, sometimes spotted or blotched with darker pigment, and exudes a milky white slime. The species of slug most commonly found in allotments and gardens in towns is *Milax sowerbii* Fér. This slug is dark grey to almost black, with a well-marked lighter keel along the middle of the back, and rather flattened ridges, with darker hollows along the body. When fully extended this slug is characteristically very long and narrow. *Arion hortensis* Fér., the black garden slug, is common in most gardens. It is small and dark, with a yellow foot and yellowish slime, and has a very tough skin. Other slugs which are fairly generally prevalent are *Arion subfuscus* Drap., a rather large coffee-coloured slug, *Arion ater* L., the large black slug which is generally found in hedges and ditches, and *Milax gagates* Drap., closely allied to *M. sowerbii*, which it resembles.

Nature of Injury.—Though injuries by the various species of slugs are very similar, it is noticeable that whereas the grey field slug prefers stems and leaves for its food, the small black garden slug feeds largely at or below the ground-level, destroying young shoots in the hearts of plants of a tufted habit of growth, or eating into the food-storage roots and stems of carrots and parsnips, and into the stems of earthed-up celery. This black garden slug, *Arion hortensis*, is often a serious pest in gardens and nurseries where young herbaceous plants are being raised, and is also specially injurious to the young succulent shoots and stems of paeonies. Sowerby's slug is a persistent underground feeder, and is common in urban gardens and allotments, where it feeds on root crops, especially potatoes, often honey-combing them with its feeding tunnels. It is also very injurious to bulbous plants, and herbaceous plants with root stocks. The large black slug is mainly a slug of the countryside, preferring the damp obscurity of hedgerows and ditches. Where new gardens are made in the country this slug may cause some annoyance for a year or two, especially if rockeries are made, for it can shelter under the stones and in the

denser rock plants like Arabis and Aubretia, and come out at night to feed on the young growth of any available plants. With a little careful observation slug injury is readily diagnosed, and some idea of the species causing the injury can be obtained.

Control of Slugs. Modification of Conditions.—The first step towards reducing the numbers of slugs is to make conditions less favourable for their development. Badly drained, heavy soil tends to encourage them. Adequate drainage, together with lightening the soil by means of applications of lime and the usual cultural methods, tends to reduce the amount of slug injury, as well as improving conditions for the plants. Plant remains and garden refuse provide food for slugs, therefore tidiness is a matter of importance. Proper compost heaps with inter-layers of lime are recommended where refuse is not immediately dried and burnt. Artificial manures should be substituted for farmyard manure on land abnormally rich in humus, since the latter adds to the decaying matter on which the slugs can feed, and should therefore be avoided.

Trapping.—Where the slug population is high, trapping may be of considerable value to reduce numbers. Cut potatoes, cabbage, and lettuce leaves should be placed at intervals along the edges of the garden, and covered with a sack folded lengthwise, and weighted with stones to keep it from being blown away. The traps should be examined each day. It is advisable to supplement trapping with hand-picking the slugs in the evenings when they come out to feed, or during the day in showery weather.

Use of Repellents, etc.—Substances such as lime, soot, powdered coke, or copper sulphate and lime in the form of dry Bordeaux mixture, dusted on the soil about the plants, and also lightly hoed in between the rows, give the plants temporary protection from the attacks of slugs. Since some of these substances may scorch the plants care is necessary when applying them. Copper sulphate may be used when the land is being prepared for cropping, since it kills the slugs in the soil and affords some protection for the subsequent crop. It should be applied in fine crystalline form, mixed with an equal quantity of ground lime. A dressing of ½ lb. per 20 sq. yds. should be broadcast before digging, and another similar dressing worked in about a fortnight or ten days before seeding or planting. Some of this mixture should be kept on hand and sprinkled periodically along the edges of lawns or hedges to destroy slugs in their passage from such sites to the vegetable or flower garden. To reduce the injury by slugs control measures such as these must be employed continuously. Many gardens are naturally suited for slug development, and it requires constant vigilance to overcome the influence of such favourable factors as heavy soil, moist climate, and an abundance of food.

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SOME PESTS AND REMEDIES

LITTER in a garden is a fruitful breeding ground for blight and other pests.

AMERICAN BLIGHT (*Schizoneum lanigara*).—Spray forcibly in winter with caustic wash, in summer with paraffin emulsion, or paint parts affected with methylated spirits, paraffin, quassia wash, tobacco water, or carbolic wash. Use a stiff brush. ANT (*Formica*).—Pour into nests boiling water, paraffin, dilute carbolic acid, or cyanide of potassium. Dig out nests and treat soil with naphthalene. Set traps.

APHIDES.—The rate of increase is abnormally high in Aphides and control methods to be successful must be applied as soon as possible after their presence on plants is noted. The factors which speed up fecundity are (i) abundance of food, i.e. the presence of the primary host plant and availability of secondary or alternate host plants; (ii) favourable weather conditions (high temperature and humidity); and (iii) the physiological condition of the host plant. Parthenogenesis is a normal form of reproduction in Aphides during the spring and summer months. Both winged and wingless forms are found in most species, the latter being provided with organs of flight to enable them to migrate to a fresh supply of food, and, if they are migratory species, to their alternate hosts. Many Aphides possess glands on the abdomen which excrete a mealy, waxy (Cabbage Aphis), and, in some species, a threadlike substance (Woolly Aphis or American Blight). This substance repels water so that an insecticide deficient in soap does not "wet" the bodies and therefore gives disappointing results. The food of Aphides consists of plant juices which they obtain by puncturing the tissues of the plant and abstracting the sap through the proboscis. All parts of the plant are liable to attack: leaves (cabbage aphis, *Brevicoryne brassicae* L.), soft stems (rose aphis, *Macrosiphum rosae* L.); bean aphis, (*Aphis rumicis* L.), woody stems (willow aphis, *Pterochlorus viminalis* Boyer de Fonsc.), flowers (chrysanthemum aphis, *Myzus persicae* Sulz.), fruit (peach aphis, *Aphis persicae-niger* Smith), and roots and tubers (subterranean form of woolly aphis, *Eriosoma lanigerum* Hausm., and french bean aphis, *Geoica phaseoli* Pass.), while some are gall formers (poplar aphis, *Pemphigus bursarius* L., and many species of *Chermes*). The damage to plants by Aphides is both direct and indirect. Direct damage consists of abstracting the juice of plants which occasionally results in the discoloration of foliage and flowers. A general weakening effect is produced, wilting is common, and the vitality of the plant is lowered thereby causing it to become open to attack by pathogenic organisms. Indirect damage consists of (i) the presence of "honey-dew"—a sweet fluid which is excreted from the anal aperture—on the foliage. Its presence on leaves hinders respiration by blocking the stomata. Later, certain Moulds grow on the excretion so that light is cut off and photo-synthesis prevented; (ii) the transmission of pathogenic organisms directly or indirectly through the punctures made by the proboscis of the insects. Virus diseases, especially Mosaic and Leaf-Curl, are known to be directly transmitted by Aphides. The punctures made by various species provide a ready entrance for fungus spores (Woolly Aphis is often the precursor of Canker in Apples). SYMPTOMS OF ATTACK.—1. Foliage discoloured, sometimes accompanied by reddish pustules

(rosy apple aphis, *Anuraphis rosae* Baker; currant blister aphis, *Capitophorus ribis* L.). 2. Foliage curled (plum aphis, *Anuraphis prunina* Walk.). 3. Defoliation (spruce aphis, *Aphis abietina* Walk.). 4. Stems bearing clusters of Aphides (bean aphis, *A. rumicis* L.). 5. White, waxen threads on foliage and stems (beech aphis, *Phyllaphis fagi* L.; woolly aphis, *E. lanigerum* Hausm.). 6. Roots split (*Anuraphis tulipae* Boyer de Fonsc. on carrots). 7. Roots galled (subterranean form of woolly aphis). 8. Petioles, stems and shoots galled (poplar aphis, *P. bursarius* L.; certain species of *Chermes* on Conifers). The most difficult forms to destroy are those included in No. 2, for within the curled leaves the insects are protected from wet sprays and efficient results will only follow the use of dusts so that penetration is complete. NATURAL ENEMIES.—Among the more important predaceous insects that feed on Aphides are ladybirds and their larvae (*Coccinellidae*), Hover Fly larvae (*Syrphidae*), and Lace-wing larvae (*Chrysopidae*). Parasitic enemies belong to the Hymenopterous Families *Braconidae* and *Chalcidae*. There are numerous avian enemies, e.g. the House Sparrow, which collects large numbers of Aphides for its nestlings: Wren, Chaffinch, Blue Tit, Swallow, and House Martin. Certain species of entomophagous Fungi attack Aphides. There are certain climatic restraints, e.g. heavy rain, hail, and high winds—all of which dislodge countless numbers of Aphides. Late frosts destroy large numbers of the freshly emerged insects, whilst alternate spells of cold and mild weather during the early spring are a decided check on these insects. PREVENTIVE AND REMEDIAL MEASURES.—A careful watch must be kept on all garden plants. Hard and soft fruits, vegetables, ornamental trees and shrubs, annuals, herbaceous plants and plants grown under glass are all open to attack by one or more species of plant lice. To ensure success, early application of an insecticide is essential. Remedial measures are based on the destruction of these insects by a contact wash which affects them through the breathing pores or spiracles. The wash must be applied with great force and the insects actually hit by the spray. As Aphides are liable to congregate on the under surface of leaves, the wash must be directed there by means of an angle bend or swivel nozzle. 1. *Clean Cultivation.*—This includes the destruction of weeds which are growing in the vicinity of cultivated plants. Such plants as sow-thistles, plantains, various crucifers (e.g. shepherd's purse and charlock), umbelliferous and graminaceous weeds harbour various species of Aphides, which migrate to these plants during the summer months. The stumps of infested Brassicas should be removed and placed in the hot ashes of a garden fire. Prunings of fruit and ornamental trees, which are often covered with the eggs of plant lice or hibernating Aphides, must be burnt and not allowed to remain on the ground surrounding the plants. Hedge plants and windbreaks must be watched and, if Aphides are present, sprayed at the same time as the fruit plantation. Woody-stemmed plants when obtained from Nurserymen should be examined for eggs. 2. *Spraying.*—There are three reasons for the poor success which often follows the application of a contact insecticide: (i) inadequate pressure; (ii) carelessness in application so that the insects are not touched by the spray, and (iii) the absence of sufficient spreading material in the wash. Hard waters require more soap than soft waters, and if the percentage of soap is too low the wash will not spread and cover the

body of the insect. Contact washes should be applied through a coarse nozzle at a pressure of 90–100 lb. to the square inch. Infested plants should not be sprayed during bright sunny weather, for scorched foliage will often result if this practice is persisted in—rather wait for a dull day, or spray in the evening when the sun has lost its power. Again, potatoes which are to be sprayed with Bordeaux or Burgundy Mixtures as a preventive against "Blight" (*Phytophthora infestans*) must be free from Aphides, otherwise serious scorching will ensue through the absorption of copper salts into the foliage through the punctures made by the insects.

Nicotine forms the toxic principle of one of the best contact washes. It is made by dissolving 1 lb. soft soap in about 2 gals. of water, which is then made up to 10 gallons with soft water, after which ¾ oz. of 96–8 per cent. Nicotine is added. This wash must be used with care and not applied to fruit and vegetables, especially Lettuce, for some time before they are to be used for table. *Derris root* is used in conjunction with soap powder and has proved an efficient and non-poisonous wash. It is a proprietary insecticide obtainable from suppliers of garden sundries. A decoction of *Quassia chips* is an old and well-tried remedy, the disadvantage being the trouble of boiling the chips for several hours. It can now be obtained in a form ready for immediate use. To prepare the home-made wash, 1 lb. Quassia Chips are boiled in sufficient water to cover them for twelve hours. 1 lb. of soft soap is then added and, when dissolved, water to make 25 gallons of wash. *Tar Oil Washes* are for use in the dormant season on deciduous fruit and ornamental trees. They are used at 6½–7 per cent. strength for the destruction of Aphis eggs. Provided that the spraying is carried out in a thorough manner, so that every part of the tree is wetted, the results will be found so satisfactory that spring applications of contact washes are eliminated. At this strength, all mossy, algal, and lichenous growths are removed and hibernating insects exposed to the attacks of birds. 3. *Dusting* with a Nicotine dust is found to be more satisfactory in the combating of leaf-curling Aphides than a contact wash. The dust penetrates into the curled leaves and destroys the insects within. Dusts should be applied during calm weather, preferably in the early morning when the foliage is covered with dew to allow for better adherence. 4. *Fumigation of glass-houses* should be a routine operation. Nicotine fumigant or Hydrocyanic acid gas are efficient fumigants for Aphides. The former material is safer for use in conservatories and leaky houses. 5. *Soil Fumigation* is necessary for the root form of the woolly aphis and root aphides generally, such as those which are found on grasses (in lawns), Saxifragas, Carnations, etc. Carbon bisulphide used at the rate of 1 oz. to the square yard when the soil is dry, so that the gas permeates through the soil particles, will be found an efficient method of destroying these root pests. This material is highly inflammable and must not be used where there is a naked light. *Naphthalene* (2–3 oz. to the square yard) will be necessary for destroying root aphides such as are found on carrots and lettuces. The material is broadcast and forked in during digging operations in the autumn and winter. Better results will follow if the ground is watered, or if heavy rain follows application. 6. *Grease Banding* of fruit trees (especially those grown in pots) and standard roses is often necessary to prevent ants from climbing the plants and

obtaining the "honey-dew." Ants are known to carry Aphides from one tree to another, and where this occurs a belt of adhesive material will correct the trouble.—G. F. W.

APPLE CAPSID BUD (*Plesiocoris rugicollis*).—Spray with tar-distillate—8 or 10 per cent.—followed by oil spray or nicotine wash in spring. ASPARAGUS BEETLE (*Crioceris asparagi*).—Spray with paraffin emulsion. Cut off and burn affected shoots. ASPARAGUS FLY (*Platyparea poeciloptera*).—Hand-pick flies in early morning. Trap flies with sticky substance. Dust with powdered charcoal. Pick and burn infected shoots. BEAN BEETLE (*Bruchus rufimanus*).—Treat as for Pea Beetle. BELL MOTH (*Tortrix bergmanniana*).—Crush leaves of roses that are rolled up to kill grubs. Cut off and burn affected shoots. Spray with tobacco water or soap wash. BIG BUD (Black Currants).—Pick off. Spray with paraffin emulsion every ten days April–June. BITTER PIT IN APPLES.—The cause is unknown, and the problem of its control not yet solved. Hard pruning and a heavy water supply late in the season appear to predispose an apple to bitter pit. With some varieties it does not appear till after the fruit is picked, usually within a month. Cold storage does not prevent it, and fruit picked before fully ripe develops it in cold storage more rapidly than if ripened thoroughly on the tree. BLACK FLY (*Aphis rumicis*).—Broad Beans—cut off and burn tops. Spray with tobacco water or soap wash. Dust with tobacco powder or Hellebore powder. Under glass—fumigate with tobacco. BLACK SPOT (*Actinonema rosae*).—Destroy all affected leaves. Spray directly any sign appears with 1 oz. sulphide of potassium in 3 gals. of water. BUD ROT—Carnation—(*Sporotrichum anthrophilum*). Remove affected buds. BULB MITE (*Rhizoglyphus echinopus*).—Burn badly infested bulbs, and do not replant bulbs on infected ground. Soak bulbs in quassia extract, or potassium sulphide (1 oz. to 1 gal. water). CABBAGE MOTH (*Mamestra brassica*).—When digging in winter destroy pupae. Handpick caterpillars. Spray with salt 2 oz. to 1 gal. water. CABBAGE ROOT FLY (*Phorbia brassica*).—Protect plants with tarred paper or card discs fixed on stems by a slit to a cut in the centre of disc. Remove and burn plants badly affected. No cruciferous plant should be grown on same ground after a bad attack. CARNATION RUST (*Uromyces caryophyllinus*).—Cut off and burn affected leaves. Spray with Carnation fungicide. CARNATION SPOT (*Septoria dianthi*).—Cut off and burn affected leaves. Dust with equal parts lime and sulphur. CELERY FLY (*Tephritis onopordinis*).—Pinch affected parts to crush young grubs. Cut off and burn badly affected leaves. Spray with soap wash in June and July. Do not replant on same ground in succeeding year. Burn all refuse when crop is cut. CHRYSANTHEMUM MIDGE.—This pest is supposed to have been introduced from the United States on the Chrysanthemum *Monument* in 1924, and has spread to other varieties. The midge is very small, with a dark orange body. It lays eggs on the foliage, and the larvae give rise to galls. February to June and September to November are the danger seasons. *Treatment.*—Remove and burn all young shoots from infected plants in December. Burn all old plants after cuttings are taken. Spray cuttings in January with Nicotine Wash. CLUB ROOT.—No plants of the *Brassica* family should be put in ground that has had a crop infected with the fungus, *Plasmodiophora brassicae*. Lime (fresh) should be dug in during the winter, at the rate of half a

bushel per square rod. Water seed drills with solution of mercuric chloride (1 oz. to 6 gals. water). Dip roots in solution before planting. Water seedlings 10 days after germination with dilute solution (1 oz. in 10 gals.), again in a week, and a few days before planting. COCKCHAFER (*Melolontha vulgaris*).—Grubs live underground and eat plant roots. Kill at sight. CODLIN MOTH (*Carpocapsa pomonella, syn. Tortrix pomonana*).—Burn affected fruit. Spray with caustic wash or paraffin emulsion. Trap in rag or paper bands on trees. CUCKOO-SPIT, FROGHOPPER (*Aphrophora spumaria*).—Brush off and destroy insect. Wash off spittle with stiff brush and soapy water. Spray forcibly with paraffin emulsion. CURRANT MOTH (*Incurvaria capitella*). —Spray in winter with soda emulsion. Handpick and burn infested shoots. DAHLIA DISEASE.—Small round spots appear on the leaves, due to a smut fungus, *Entyloma Dahliae*. It spreads rapidly in damp and shade. All dead leaves should be burnt before storing for winter, and spotted leaves removed and burnt directly they are noticed. Do not replant on ground where diseased plants grew the previous year. Lime the soil. Spray with Bordeaux mixture of lime-sulphur. DART MOTH (*Agrotis segetum*).—Fork round plants attacked and destroy caterpillars in the soil. Water with warm solution of soft soap and collect caterpillars as they emerge from the ground. Destroy chrysalides when digging in winter. DUTCH ELM DISEASE (*Graphium ulmi* Schwarz) is caused by a small fungus, which forms its fructifications upon dead, diseased wood. Since each fructification produces many thousands of spores which are capable of attacking healthy trees, great care should be taken to destroy all dead wood. In acute cases, where defoliation is proceeding rapidly, the tree should be felled, twigs, branches, and any chips of wood burnt, and the trunk cut up for firewood or disposed of otherwise. If the wood is stored for any purpose it should be kept dry, as, if stacked outside, it would provide an ideal situation for development of fructifications of the fungus. The tree-stump should be carefully tarred or treated with creosote; this should be repeated later, particular care being taken to treat cracks, especially those formed between the bark and the wood. In those cases where the progress of the disease is slow or confined to isolated branches in the crown, no immediate treatment is recommended, but the trees should be kept under observation. If the symptoms become general and acute the procedure outlined above should be carried out. EARWIG (*Forficula auricularia*).—Trap in inverted flowerpots filled with hay, crumpled paper, or moss. Destroy grubs when digging. EEL WORM (*Tylenchus devastatrix*).—Remove and burn affected portions or plants. GALL MITES (*Phytoptus ribis, P. avellanae, P. pyri*).—Cut off and burn affected shoots, and prune bushes hard back. Dress cuts, and spray trees in winter with diluted paraffin emulsion. GOOSEBERRY MILDEW (*Sphaerotheca morsuvae*).—Cut off and burn infected shoots or fruit. Spray after all fruit is picked with ½ lb. copper sulphate in 10 gals. water. GOOSEBERRY SAWFLY (*Nematus ribesii*).—Shake bushes and destroy caterpillars. Spray with quassia or paraffin emulsion. Dust with lime or soot in damp weather. Remove top soil under bushes in winter and destroy grubs. LEATHER JACKETS, Daddy Long Legs grubs (*Tripula oleracea*).—*See* treatment for Wireworms: fork powdered naphthalene into the soil. MAGPIE MOTH (*Abraxas gros-*

sulariata).—Dust with lime and soot in damp weather in spring. Remove and burn all dead leaves, etc., under bushes in winter. MILDEW.—Dust with sulphur or spray with sulphur wash. MILLIPEDES (*Julius terrestris, J. pulchellus, J. complanatus*).—Destroy whenever possible. Keep soil well worked. MINT RUST (*Puccinia menthae*).—Dress bed with 1 oz. of sulphate of ammonia per square yard when dry, and water in. Make fresh bed when planting on clean ground with roots free from disease. ONION FLY (*Anthomyia ceparum*).—Remove and burn infected plants. Never plant on the same ground in successive years. Spray in summer with weak paraffin wash. Use nitrate of soda, sulphate of ammonia, or Peruvian guano 1 oz. to the square yard. Sprinkle gas lime or powdered charcoal between the rows. PEA BEETLE (*Bruchus pisi*).—Infested seed should not be sown (to a certain extent infected peas will float in water). Dip peas in boiling water for five seconds and then rinse in cold water. Dust leaves with soot or lime. PINE SAWFLY (*Lophyrus pini*).—Crush the larvae or brush from trees. Spray with hellebore wash: or arsenate of lead. RABBIT DETERRENT.—Preventive wash 20 lb. lime, 2 lb. salt, 4 lb. size, and ½ pt. paraffin. Mix with water to a thin paste. Must be strained and further diluted for spraying. For list of Rabbit Proof Plants see *Year Book*, vols. I and II. RATS, MICE, AND VOLES.—The damage done annually in this country by rats has been estimated at millions. Individual effort is not sufficient to rid the land of the pest. In some places it does not even reduce the number, for the rats merely concentrate where least disturbed, and from there forage over the neighbourhood. Further, they migrate from place to place, and are a menace even to the health of the community by spreading infected fleas and animal diseases. Both the Black Rat, *Rattus rattus*, with its variant *R. r. alexandrinus*, and the Brown Rat, *Rattus norvegicus*, are prolific breeders. The females start breeding at a very early age and have several litters during the year. Apart from such preventive measures as making buildings so far as possible rat-proof; the proper construction, protection, and repair of drain pipes, ventilators, etc.; the protection of all food supplies; the use of concrete, broken glass, and tar to fill burrows under walls or floors; the careful disposal, and, so far as can be, immediate destruction of refuse; and the protection when possible of the rat's natural enemies. There are other remedial measures officially recommended. These include hunting with ferrets, trapping, gassing, and poisoning. The use of deterrents which tend to make the surroundings distasteful to rats is often desirable. A cheap and effective one is iron sulphate (green vitriol), a waste product of modern gas-works. Dissolve one handful of the sulphate crystals to a quart of hot water (or 1 cwt. to 40 gallons). A teaspoonful of crude carbolic acid may be added, and the mixture made in large quantities and used very liberally. For systematic treatment of freshly deposited household and trade refuse these should be thoroughly moistened with the solution by means of a watering-can with a rose. For use indoors apply the solution through a funnel into the holes; paint woodwork and masonry in places frequented by rats with the solution. Several coatings may be necessary, but eventually the rats will avoid the premises. A liberal dusting of powdered iron sulphate will be found effective in keeping rats away. Other deterrents are silicate of soda (water glass), or a mixture of gas

water and creosote on rags. Naphthalene, camphor, and wild mint tend to keep rats and mice at bay. Various rat poisons are on the market, and also rat viruses, cultures of microbes that cause intestinal diseases in rats. Some are infectious, but a slightly infected rat may recover and be thereafter possibly immune. There is also a risk of the infection affecting human beings. Dr. Hans Wreschner asserts that several cases of death and many cases of illness in human beings are on record, caused by using bacteriological preparations for killing rats and mice, and an outbreak of enteritis in a large London establishment was attributed to the same cause in 1900.* Red Squill is considered the safest poison to use. The liquid extract can be obtained from any chemist. A paste can be made with bread and an equal quantity of the liquid and boiled milk (cooled), and placed in saucers or tin lids where the rats are known to come. Dose: 1 teaspoonful (small) per rat, half quantity per mouse. As rats are very suspicious, a variety of poison as well as bait will be found necessary. Poison should only be used by authorised and responsible persons. The Protection of Animals Act, 1911, provides that it shall be a defence that the poison was placed for the purpose of destroying rats, and that all reasonable precautions were taken to prevent access thereto of dogs, cats, fowls, or other domestic animals. Several machines for gassing rats in burrows, hedgerows, banks, and open sheds are on the market, and poison dust has been experimented with, blown into holes by a special machine. The Water Rat or Vole, *Microtus amphibius*, does much harm by the banks of streams or ponds, and Field Mice and Voles must be added to the category of the gardener's enemies. Their own natural foes are the Kestrel, the Short-eared Owl, the Sparrow Hawk, the Weasel, and the Stoat. Ravens, rooks, crows, and seagulls also war upon them. RED SPIDER (*Tetranychus tellarius*).—Usually affects plants insufficiently watered. Spray with 1 oz. potassium sulphide in 3 gals. water. Dust ground with naphthalene, 1 lb. to 25 ft.—RHODODENDRON BUG (*Leptobyrsa* [*Stephanitis*] *rhododendri*).—Spray at end of June and middle of July with 1 lb. soft soap, 10 gals. of water, 1 tablespoonful paraffin; especially the under-surface of leaves. FLY.—The R.H.S. has notified gardeners of a new Rhododendron pest of the "White Fly" type, which lays its eggs on the under-side of the leaf. The paraffin wash "Volck" is recommended as a spray. Growers in doubt of the presence of the pest are invited to post specimen leaves to the R.H.S. Laboratory, Wisley. ROSE MILDEW (*Spaerotheca pannosa*).—Dust with sulphur or spray with solution of sulphide of potassium—1 oz. to 2 gals. of water, for summer wash, or ½ oz. sulphate of copper in winter, when buds are dormant. ROSE RUST (*Phragmidium subcorticatum*).—Burn all diseased leaves, and fallen leaves, in autumn. Spray in spring with 1 oz. sulphide of potassium in 3 gals. water. Sponge affected parts with methylated spirit diluted 50 per cent. with water. SAWFLY GRUBS (Leaf-rolling) (*Blennocampa pusilla, Emphytus cinctus, Hylotoma rosae*).—Hand-pick. Wash with nicotine and soft soap. Black Sawfly or Slugworm

* M. Danysz, of the Pasteur Institute in Paris, claims to have discovered a germ that will infect and kill all types of the rat species, but be innocuous to other rodents—hares, rabbits, ferrets, and squirrels. It was successfully tried in Rouen.—(EDITOR.)

(*Eriocampa rosae*). Nicotine and soft soap in spring. SCALE (*Mytilaspis pomorum*).—Keep trees clean from moss, etc. Spray with paraffin emulsion. SILVER LEAF (*Stereum purpureum*).—By the Silver Leaf Order all dead wood from plum and apple trees must be cut out and burnt before July 15th. SLUGS AND SNAILS (*Limacidae*).—Among other remedies the Min. of Agric. recommends rings of slaked lime, or ash soaked in paraffin, round choice plants. The R.H.S. recommends traps of bran (½ in. deep, covered with board or cabbage leaf), placed near plants overnight. Slugs to be collected and destroyed in the morning. Baits of Slug Poison. Hand-pick at night with a lantern. Good cultivation and effective drainage are the best preventatives, with occasional lime, salt, or soot dressings. As a slug deterrent, not as manure, lime may be mixed with soot, salt, or caustic soda; or plants may be powdered with alum; or the soil dressed with copper sulphate (5 lb. to 1 cwt. of kainit). STRAWBERRY APHIS (*Capitophorus fragariae*). —Dip runners in soft soap and nicotine wash before planting. Select runners from plants free from aphis. THRIPS (*Thrips adonidum*, etc.)— Spray with quassia extract or paraffin emulsion. TORTRIX MOTHS (*Tortrix ribeana, Pardia tripunctata, etc.*).—Hand-pick and spray with ½ oz. arsenate paste to a gallon of water. TURNIP MUD-BEETLE (*Helophorus rugosus*).—Do not sow fresh seed near ground that has borne an affected crop. Dress with nitrate of soda, 28 lb. to ¼ acre. VAPOURER MOTH (*Orgyia antiqua*).—Hand-pick eggs and cocoons in winter, and caterpillars when they appear. Spray with Paris green (2 oz. to 25 gals. of water) or arsenate of lead. VIOLET GALL MIDGE (*Dasyneura affinis*). —Pick and burn affected leaves. Dust with pyrethrum or nicotine. WART DISEASE, caused by *Synchytrium endobioticum*.—Any person whose crop is affected must by the Wart Disease of Potatoes Order immediately report the disease to the Min. of Agric. or an Inspector. WINTER MOTH (*Cheimatobia brumata*, etc.).—Grease-band fruit trees in autumn to prevent the wingless females ascending to lay eggs on the buds. Spray in spring with paraffin emulsion. WIREWORMS.— Keep ground well worked. Trap with carrot and poison baits or potatoes. Fumigate with calcium cyanide. Dress with lime. Water soil with solution of 2 to 4 per cent. liquid ammonia. WOODLICE (*Oniscus asellus, Porcellio scaber, Armadillo vulgaris*).—Keep walls clean. Trap under stones and tiles examined daily to destroy the lice underneath.

RECIPES FOR REMEDIES.

ALUM SOLUTION.—1 lb. lump alum, 1 gal. water. BURGUNDY MIXTURE.—4 lb. copper sulphate, 5 lb. washing soda, 1¼ lb. soft soap, 40 gals. water. Dissolve the sulphate in 29 gals. water (in wooden or earthen vessel), and the soda in 18 gals. water in another vessel. Mix the two solutions and add soap dissolved in 2 gals. water. Must be used fresh.—R.H.S.D. CARBOLIC WASH.—4 oz. carbolic soft soap, 1 wineglassful of petroleum, 1 gal. water. CAUSTIC WASH.—2½ lb. caustic soda (98 per cent.), 10 gals. water. CHESHUNT COMPOUND.— 2 parts (weight) copper sulphate powder to 11 parts ammonium carbonate, fresh and finely crushed. Mix and store in stoppered glass or stone jar for 24 hrs. Dissolve 1 oz. of mixture in hot water and add 2 gals. cold water. Use immediately. It corrodes iron, tin and zinc. LAWN SAND.—24 lb. sand, 4 lb. sulphate of ammonia (commercial), 1¼ lb. sulphate of iron (commercial).

LIME WASH for Aphis.—2 lb. fresh lime, 1 gal. water. LIME WATER.—1 lb. lime, 2 gals. water. NICOTINE WASH.—(*See* page 101.) PARAFFIN EMULSION.—2 gals. paraffin, 28 gals. water, 6 lb. caustic soda, 1½ lb. soft soap. Dissolve soap in a gallon of boiling water and churn in the paraffin. Dissolve soda in remaining 27 gals. Mix well immediately before use. PARAFFIN WASH.—2½ pints paraffin, ½ lb. soft soap, 10 gals. water. POISON BAITS.—7 lb. bran, 4 oz. Paris green, broadcast in evening. PYRETHRUM WASH.—1¾ oz. Pyrethrum powder, ¾ oz. white soap, 1¾ pints water. Soak for 72 hrs. Dilute with water to 1 in 9. Shake well before using. QUASSIA EXTRACT.—(*See* page 101.) Dilute as required. ROSE INSECTICIDE SPRAY.—¼ pint quassia extract, 2 oz. potassium, 3 gals. of water. SLUG POISON.—1 part Paris green, 20 parts bran, 1 lb. of mixture to 1 square rod. SODA EMULSION.—½ lb. sulphate of iron dissolved in 9 gals. water, ½ lb. lime, slaked with a little water and then moistened to the consistency of milk. Add to first solution and strain. Stir in 5 pints paraffin. Add immediately before use 2 lb. caustic soda powdered. SOFT SOAP WASH.—1 lb. soft soap, 4 gals. soft water. SULPHUR WASH.—(*a*) 3 lb. flowers of sulphur, 6 lb. quick-lime, 3 lb. salt, 1 lb. caustic soda, 10 gals. water; (*b*) 4 oz. soft soap, 1 gal. of water. Stir in as much sulphur as can be absorbed.—R.H.S.D. TOBACCO WATER.—2 lb. soft soap, 3 gals. soft water, 1 qt. tobacco liquid added when cold.

NOTES.

WITH lead arsenate, lime sulphur, or Bordeaux mixture, or their compounds, use 1 oz. of Saponin to 50 gals. of the spray instead of soft soap. Arsenical sprays, if used on apples early in the season, have no ill-effect on the consumers of the ripe fruit. Tar distillate washes are injurious to root and vegetable crops, and do not destroy Black Currant Gall Mite, nor the eggs of the Lackey Moth and the Fruit Tree Red Spider.

TAR DISTILLATE WATER WASH.—Experiments in progress at Long Ashton with a view to discover what substance in the commercial tar distillate washes was most toxic proved that the acids were useless, but the neutral remainder boiled at a high temperature gave a tar distillate that killed all the eggs of the Winter Moth and the Permanent Apple Aphis which the crude wash only did partially. Emulsification was secured with sulphonated oils supplied by the British Dyestuffs Corporation, Agral WB and Agral AX. This wash was about 100 per cent. more effective than the crude tar distillate, and did far less damage to the foliage.

Prof. C. F. Doucette's experiments with cyanogen gas to destroy the eggs and larvae of the Narcissus flies have been carried out on a large scale in America, and bulb growers there consider the treatment far better than submersion in hot water. Only American-grown bulbs have been treated, the imported ones being dealt with on the old system. It is claimed that the pests are completely destroyed, and the bulbs suffer no ill-effect. Treated bulbs flower a week earlier than those untreated.

The advent of air traffic opens up yet another possible source of plant pest distribution. On arrival of the Graf Zeppelin in the United States the American authorities found some roses in a cabin were infested with anthracnose disease.

PEST PARASITES.—One of the many activities of the Empire Marketing Board is the breeding of parasitic insects that will destroy plant pests. During 1928–9 300 larvae of a Wood Wasp parasite fly were collected in Devon and sent to New Zealand, where that pest is rampant. Upwards of 30,000 parasite-infected larvae of the Pine Tortrix were collected, largely in Suffolk, and sent to Ontario, with 20,000 parasites of the greenhouse White Fly, which were sent in cold storage on tomato sprays. Another beneficent parasite, of a fruit tree scale insect, had yet more elaborate arrangements for transport, as they were packed in test tubes and fed on raisins. Many other tens of thousands, including 30,000 of the Pear slug infested with no less than three of its enemies, were sent from the breeding laboratory, under the Imperial Bureau of Entomology, to Australia, Canada, India, Kenya, South Africa, the Falkland Isles, New Zealand, and distributed in Great Britain.

MECONOPSIS FUNGUS (*Peronospora arborescens*).—A downy mildew that attacks Meconopses, especially *M. betonicifolia var. Baileyi*. First symptom blackish spots on leaves, with grey mildew on reverse. Occurs also on the Corn Poppy, *Papaver somniferum, P. dubium, P. Argemone*, and the Welsh Poppy, *Meconopsis cambrica*. Control: keep all host plants away from Meconopses, and do not grow on ground previously planted with them. Remove and burn infected leaves, or badly infected plants. Do not handle healthy plants after touching diseased. Burn old plants and all dead leaves.

RATS (the Danysz Virus).—A leaflet has been issued in Paris describing the good results obtained in a campaign against the sewer rats of Paris. A larger pamphlet, *Les Campagnoles*, deals with field voles, bank voles, and allied species which had done much harm to agriculture in various French districts. The Danysz virus was not obtained, like some others, from a disease to which the human race is liable. Certain members of the staff of the Pasteur Institute offered themselves for experiment, and it was found that no ill results followed the strongest doses. Experiments tried with domestic animals, poultry and game birds, proved the virus equally harmless in their cases. The statistics proved by several hundred experiments in the destruction of rodents show the following results for the virus: in 50 per cent. of cases a complete destruction of the pests. In 30 per cent. a partial destruction. In 20 per cent. no appreciable results, thought to be due to a reinvasion of the pests.—A.W.S.

CONTROL OF RATS AND OTHER RODENTS.—Investigations are in progress at Oxford as to the best means of control of destructive rodents. Details as to the fluctuations and control of mice, rabbits, rats, squirrels, voles, etc., are required. Anyone willing to make and forward records of observations and experiments should write to Mr. A. D. Middleton, University Museum, Oxford.

WEEDS OF THE GARDEN

THE gardener, amateur or professional, is every whit as interested in weeds as the farmer. Just as mankind in general must earn his bread by the sweat of his brow, the gardener in his turn must obtain all that is worth having in gardening by labour and extreme care in everything he undertakes. A very fine appreciation of what is involved in the production of a beautiful garden is contained in Kipling's poem *The Garden*, which every gardening enthusiast should most undoubtedly read.

In spite of the natural beauty of many wild plants which we call weeds, man's inherited antagonism to those which interfere with the due production of his crops—whether in farm or garden, whether arable or grass—has been touched upon by writer after writer through the centuries: Thomas Tusser, Thomas Hale, Jethro Tull, Shakespeare, John Fitzherbert, James Grahame, Sinclair, and a host of others. One might perhaps usefully quote the following extracts:—

> Everything that grows without being sown or planted, among a Crop that has been sown or planted, is in that Place a Weed. The whole Benefit of the Tillage was intended for the Crop, and this robs it of a part.
>
> THOMAS HALE, *The Compleat Body of Husbandry*, 1756.

> Slack neuer they weeding, for dearth nor for cheap,
> the corne shall reward it, yer euer ye reape.
>
> THOMAS TUSSER, *Five Hundred Pointes of Husbandrie*, 1557.

> It is needless to go about to compute the value of the damage weeds do, since all experienced husbandmen know it to be very great, and would unanimously agree to extirpate their whole race as entirely as in England they have done the wolves, though much more innocent and less rapacious than weeds.
>
> JETHRO TULL, *The Horse Hoeing Husbandry*, 1731.

> I will go root away
> The noisome weeds, that without profit suck
> The soil's fertility from wholesome flowers.
>
> SHAKESPEARE, *Richard II*, Act iii, sc. 4.

When considering the question of how far weeds can be extirpated, it is desirable to recognise at the outset that flowering plants are of many types. The first and most simple position

is to regard them as annuals, biennials, and perennials. Annuals in general flower, produce seed and die in the one season, but here again some species—such as groundsel and annual meadow-grass—may produce several generations in one season, and may even flower and seed during several of the colder months. Biennials grow from seed and produce strong plants which store food for over-wintering, and in the second season throw up a flowering stem, produce seed, and die. In general, perennials may grow from seed, and go on producing flowers and seed for a number of years, varying widely with the species concerned. The perennials are those which are on the whole regarded as giving the most trouble, although this can by no means be accepted as the rule, if only because such annuals as charlock, the wild oat, the corn marigold, and Yorkshire fog are among the worst weeds of the farm, whilst in gardens such annuals as groundsel, shepherd's purse, annual meadow-grass, and chickweed must similarly be included among the most troublesome weed pests.

Perennials, however, are held to be particularly difficult because so many of them possess deep-seated roots or creeping root stocks, small portions of these when broken off serve to increase the plant. In dug ground the following species may be considered the most troublesome, according to the district: creeping thistle, great bindweed and field bindweed, ground elder or gout weed, nettles, docks, wild mint, horsetail, creeping buttercup, coltsfoot, couch grass and twitch (*Agrostis sp.*). As regards grass land the following perennials are troublesome: creeping thistle, creeping buttercup, docks, daisy, plantains, dandelion, sorrels, knapweed, nettles, twitch. Among the more common annual weeds which give trouble in dug ground in gardens may be mentioned charlock, chickweed, spurrey, fat hen, knotweed, annual meadow-grass, mayweeds, cleavers, and shepherd's purse.

The important question from the point of view of the reader will be to determine means by which weeds may be eradicated. As regards annual and biennial weeds, whether of arable or grass land, the two principal means of reduction are to kill all the weeds before they can attain maturity and scatter their seed, and to prevent the introduction of fresh seed by way of impure seeds purchased for sowing, or contained in manure, introduced soil or fresh turf. Wherever annuals occur on dug ground, therefore, the free and repeated use of the hoe is likely to go far in reducing their numbers very considerably in two or three seasons, provided due care is taken not to introduce them afresh. In so far as perennials are concerned on dug ground, one may say that in garden cultivation as elsewhere there is no royal road to their destruction. Indeed, wherever it is possible removal by hand by means of the fork is perhaps the most successful, although every care must be taken to ensure that broken portions are not left behind to grow afresh. In some situations, of course, this plan

can only be practised at intervals, which may conceivably be rather long; in such cases frequent cutting down to the ground-level or just below it may succeed in killing some species, or at the least keeping them within bounds until the fork may be used. It has been said that the repeated cutting off of any plant will end in its death. It must not be forgotten also that thoroughly good gardening, corresponding to high farming, will also tend to a reduction in weeds because of the encouragement it gives to the sown crop to grow rapidly and strongly, and so suppress the undesired weeds.

Lawns are frequently infested with certain of the grass-land weeds mentioned above, and on small areas drastic action in the form of labour may be the most speedy and least troublesome remedy in the long run. Two or three years ago the writer sowed two small patches of ground with grass seeds. The seeds came well, but the ground was undoubtedly full of the seeds of plantains, creeping buttercup, and mouse-ear chickweed, and of the first-named in particular there must have been thousands. In the determination to give the grass a chance a kneeling job with knives for two was undertaken. Weeds were lifted by the basketful, and when all looked clean the grass was well rolled. The grass then grew rapidly, and although the same task was undertaken once more the quantity of weeds to be removed was greatly reduced, and comparatively few have been found during the past year. Taking lawns as a whole, one might suggest that the most hopeful treatment against weeds consists in an occasional thorough hand-weeding; repeated rolling and mowing; top-dressing with good rich mould which has preferably been sterilised; an occasional light dressing of sand; and during the summer two or three dressings of sulphate of ammonia at the rate of 1 cwt. per acre. As regards other fertilisers, potash and phosphates may be given if considered desirable every two or three years.

Perhaps one might suitably conclude these brief notes by quoting the following lines from Sir Edwin Arnold's *The Light of Asia*—

> If he shall labour rightly, rooting these,
> And planting wholesome seedlings where they grew,
> Fruitful and fair and clean the ground shall be,
> And rich the harvest due.

H. C. Long, B.Sc. (Edin.)

BIRD FRIENDS OF THE GARDEN

THE utility of Bird Life is a subject to which little thought is given by the average gardener, yet it is well worth the consideration of all garden lovers. I have recently come across some gardeners—of no small repute—who have installed nesting-boxes, not for the love of the birds, but primarily for the love of their garden. A few modern gardeners are just beginning to realise to what extent they are indebted to birds for their help throughout the year in ridding the garden of injurious insects. All of us know what it is to be troubled with the hosts of destructive insects which infest most gardens during the summer months. Let those who are fortunate enough to have Tits in their garden watch these birds at work—busily engaged upon branch after branch, leaf after leaf, unceasingly eating up the minute harmful insects such as greenfly, caterpillars, and beetles. It has been ascertained by a well-known authority that the food of the Blue Tit consists of 78 per cent. injurious insects, and that of the Great Tit 66·5 per cent. I have observed even the despised House Sparrow occupied in clearing the rose trees of greenfly. Only last week I was interested in watching a new worker in our garden, a Great Spotted Woodpecker. For some 20 minutes at a time it was industriously pecking out the destructive grubs in our rose-pergola—what a hopeless task it would be to set a gardener to clear a pergola of injurious grubs hidden beneath the bark! Yet the Woodpecker knows where the grubs exist, and he does the work without being asked. I would draw special attention to the fact that the birds are working all the year round, as this is an important point to remember. Let us protect our fruit as much as possible, but if in June the Thrush secures a few strawberries from under the nets, let us not be too hard on him. He deserves a change of diet after all the slugs and snails which he has destroyed during the other 11 months of the year. It is far easier to protect our fruit from birds than it would be to cope with slugs and snails were their numbers not kept in check by our feathered friends.

People sometimes complain that the droppings of House Martins fall from the nest on window-sills. This may lead to the destruction of the nest. Destruction is, however, extremely undesirable. Such birds as the House Martin, Swallow, Swift, Flycatcher, Wagtail, and others, are almost entirely insectivorous. We cannot justly complain of an increase of flies, gnats, mosquitoes, if we destroy their natural enemies. Owls and Kestrels are amongst

man's best friends, and deserve every protection, as their food is composed chiefly of mice, rats, voles, and beetles. The Cuckoo, too, is highly beneficial to the gardener. It is particularly fond of caterpillars of the hairy type.

The presence of the useful bird in the garden should therefore be greatly welcomed. Some can be quite easily attracted. The chief item in a bird's life is its food supply; where the food supply is plentiful, in that locality will the bird usually remain whilst unmolested. It is obvious, then, that we must consider our feathered friends when their food supply is scarce and put out both food and drink for them in the winter months. Tits, like Robins and Wrens, can be easily persuaded to nest in the garden if nesting-boxes are hung up at suitable points where they will not be visited by cats. These boxes can be easily made at home, though extremely good ones may be purchased quite cheaply. It must be borne in mind that the size of the entrance hole will have an effect on the species of bird likely to inhabit the box. These details can, however, be easily overcome if the box is selected from the catalogue of a well-known manufacturer who caters for the requirements of a number of species.

STUART BOARDMAN.

TOWN GARDENS

THE atmosphere in a town is smoke-laden. From it a quantity of sulphurous acid washes into the soil, which becomes sour and infertile. Lime will neutralise this acid, and town gardeners should lime their soil each winter.

The impure atmosphere and overshadowing buildings prevent most of the sunshine from reaching the plants in many gardens. Either shade-loving plants must be used exclusively, or the garden must be given extra light by whitewashing the walls.

Town air is drier than that of outer districts. Syringing the foliage of plants with clean water in the summer evenings helps to maintain the moisture content of the air, and cleanses the soot-laden pores of the leaves, and assists growth. Shiny-leaved plants, which will wash clean, usually grow better in the town garden than do plants with hairy or downy foliage.

Cats and dogs are sometimes a serious nuisance to the would-be town gardener. A light wire-netting fixed above the wall for about two feet will generally prove effective in keeping cats away. Spring shrubs that make a thicket of growth—such as holly, or Berberis stenophylla—will help to keep straying dogs from suburban front gardens.

PLANT NAMES

COMMON SPECIFIC NAMES.

Acaulis=stemless, *acer*=sharp, pungent, *aculeatus*=prickly, *acuminatus*=sharply pointed, *adpressus*=pressed on, *aestivus*=in summer, *affinis*=related to, *agrestis*=rural, *alatus*=winged, *albescens*, *albicans*=becoming white, *algidus*=cold, *alpestris*=mountain, *amabilis*=lovable, *amarus*=bitter, *ambiguus*=doubtful, *amoenus*=pleasant, *amplexicaulis*=sheathing the stem, *anceps*=two-headed, *angustus*=narrow, *annularius*=ringed, *anomalus*=irregular, *apertus*=open, *apiculatus*=pointed, *apterus*=suitably fitted, *aquatilis*=living in water, *aquifolius*=needle-leaved, *arachnitis*=cobwebby, *arboreus*=tree-like, *arenosus*=sandy, *argenteus*, *argurus*=silvery, *argutus*=clear, pungent, *aridus*=dry, *aristatus*=bearded (like an ear of corn), *armatus*=armed, *arvensis*=belonging to cornfields, *asper*=rough, *aucuparius*=enticing birds, *augustus*=majestic, *aureus*=golden, *australis*=southern, *azureus*=blue, *avellanus*=torn from.

Baccatus=berried, *barbatus*=bearded, *bellus*=beautiful, *blandus*=pleasant, *bonus*=good, *borealis*=northern, *botrycides*=bearing bunches like grapes, *bracteatus*=furnished with bracts, *brevis*=short, *brumalis*=wintry, *bryoides*=moss-like, *bullatus*=like a bubble.

Caeruleus=heavenly blue, *caesius*=bluish-grey, *caespitus*=turfy, *calyculatus*, *calycinus*=furnished with a calyx, *campanulatus*=bell-shaped flowers, *candicans*=growing white, *candidus*=white and shining, *canescens*=growing white, *canus*=greyish-white, *capillaris*=hair-like, *capitatus*=furnished with a head, *cardinalis*=red, *carneus*=flesh-coloured, *carus*=dear, *castus*=chaste, spotless, *caudatus*=tailed, *caulis*=stemmed, *cernuus*=with face down, *ciliaris*, *ciliatus*=furnished with hair like eye-lashes, *cinereus*=ash-coloured, *cirrhosus*=curled, *citrinus*=yellow, *clarus*=brilliant, *coccineus*=scarlet, *cochlearis*=snail-shaped, *coelestis*=heavenly, *colossus*=gigantic, *comatus*=hairy, *communis*=common, *comptus*=adorned, *concinnus*=neat, *concolor*=of the same colour, *confertus*=dense, *congestus*=crowded, *contortus*=twisted, *copiosus*=abundant, *cordatus*=heart-shaped, *coriaceus*=leathery, *cornutus*=horned, *coruscans*=flashing, *corymbosus*=with clusters, *crassus*=thick, *crenatus*=scolloped, *crispus*=curled, *cruentus*=bloody, *cuneatus*=wedge-shaped, *curtus*=short, *cuspidatus*=pointed, *cyaneus*=dark blue.

Dealbatus=white-washed, *decandra*=with ten stamens, *decorus*=becoming, *decumbens*=lying down, *decurrens*=passing down

and adhering to, *decussatus*=intersecting, *dentatus*=toothed, *dichotomus*=twice forked, *didymus*=twin, *dependens*=hanging down, *diffusus*=spread, *dimorphus*=of two forms, *discolor*=of two colours, *distichus*=in two rows, *divaricatus*=stretched apart, *dolabratus*=hatchet-shaped, *dulcis*=sweet, *durus*=hard.

Edulis=edible, *elatior*=higher, *esculentus*=edible, *eximius*=uncommon, excellent, *excelsus*=lofty.

Falcatus=scythe-shaped, *farinosus*=mealy, *fastigatus*=sharpened to a point, *fastuosus*, *fibrosus*=fibrous, *filiferus*=bearing threads, *fimbriatus*=fringed, *fissus*=split, *flabellatus*=fan-shaped, *flaccidus*=flabby, *flavus*=yellow, *flexuosus*=full of bends, *floccosus*=woolly, *florabundus*=full of flowers, *flore pleno*=double-flowered, *floridus*=flowering, *foetidus*=stinking, *foliosus*=leafy, *formosus*=beautiful, *frondosus*=leafy, *frutuosus*=fruitful, *fugax*=transitory, *fulgens*, *fulguralis*=gleaming, *fulvus*=tawny, *fuscus*=dark.

Gelidus=icy, *gemmatus*=bearing buds, *glaber*=smooth, *glaucus*=bluish-grey, *glomeratus*=heaped together, *glutinosus*=sticky, *gracilis*=slender, *grandis*=large, *gratiosus*=favoured, *gratus*=pleasant, *graveolens*=strong-smelling.

Helix=winding, *hiemalis*=winter, *hirsutus*=with stiff hairs, *hispidus*=rough with hairs, *horridus*=bristly, *hortensis*=belonging to the garden, *humilis*=low, *hyperboreus*=northern.

Igneus=fiery, *illustris*=renowned, *imberbis*=beardless, *imbricatus*=overlapping, like tiles, *immaculatus*=unspotted, *incanus*=grey, *incarnatus*=flesh-coloured, *incisus*=divided, *inermis*=unarmed (without thorns), *inflatus*=swollen, *insignis*=remarkable, *integer*=entire, *intumescens*=swelling, *involucratus*=with a wrapper, or envelope, round flowers, *iridescens*=shining with various colours.

Maximus=greatest, *melleus*=honeyed, *micans*=glittering, *mirabilis*=wonderful, *mitis*=mild, ripe, *mollis*=soft, *mucronatus*=having a sharp point, *multus*=much, many, *muralis*=on the wall, *muscoides*=moss-like, *mutabilis*=changeable.

Nanus=dwarf, *neglectus*=despised, *nemoralis*, *nemorosus*=of the grove, *niger*=black, *nitens*, *nitidus*=shining, *nivalis*=snowy, white, *nodosus*=knotty, *nudus*=naked, *nutans*=nodding.

Obconicus=shape of an inverted cone, *occidentalis*=western, *ochroleucus*=yellow white, *oculatus*=having eyes, spotted, *officinalis*=used in a workshop, medicinal, useful in manufacture, *olens*=odorous, *onustus*=laden, *oppositifolius*=having opposite leaves, *ornatus*=adorned, *oxycanthus*=with sharp flowers.

Pallidus=pale, *paluster*=marshy, *paniculatus*=tufted, *pannosus*=ragged, shrivelled, *papillosus*=bearing small nipples, *parvus*=small, *patens*, *patulus*=open, patent, *paucus*=few, *pectoralis*=belonging to the breast, *pedatus*=footlike, *pedunculatus*=stalked, *peltatus*=shield-like, *pennatus*=winged, *peregrinus*=foreign, strange, *petiolaris*=having leafy stalks, *petraeus*=rocky, *pileatus*=capped, *pilosus*=hairy, *plenus*=full, *plicatus*=folded, *plumosus*=feathered, *praecox*=premature, precocious, early, *praestans*=outstanding, *pratensis*=growing in a meadow, *princeps*=chief, *procerus*=tall *procumbens*=lying down, *pubens*=mature, luxuriant, *pudicus*=modest, *pulchella*, *pulcher*=beautiful, *pullus*=dark, *pulverulentus*=dusty, *pumilus*=dwarf, *pungens*=pricking, stinging, *purpureus*=purple, *pusillus*=very small, *pygmaeus*=dwarf.

Quinatus=fivefold.

Racemosus=full of clusters, *radicans*=rooting, *ramosus*=branched, *rectus*=straight, upright, *reflexus*=bent back, *reptans*=creeping, *retusus*=thrust back or blunt, *ringens*=gaping, *riparius*=growing on river banks, *ruber*=red, *rufus*=ruddy, *rugosa*=wrinkled, *rupiculus*=growing on rocks, *rutilans*=shining with ruddy gleam.

Sanguineus=bloody, *sarmentosa*=full of twigs, *sativus*=cultivated, *saxatilis*=frequenting rocks, *scaber*=rough, *scandens*=climbing, *sclerus*=hard, *scutatus*=armed with a shield, *secundus*=on one side, *serratus*=notched, *sempervivus*=ever-living, *sessiliflorus*=flowers without stalks, *setaceus*, *setigerus*, *setosus*=bristly, *sinicus*=curved, swelling like a breast, *sinosus*=wavy, *sordidus*=dirty, paltry, *speciosus*=beautiful, *spectabilis*=worth seeing, notable, *spicatus*=spiked, *squamosus*=scaled, *squarrosus*=with projecting scales, *stellatus*=starry, *striatus*=fluted, *strictus*=drawn together, *suavis*=pleasant, *subulatus*=awl-shaped, *sylvaticus*, *sylvestris*=pertaining to woods.

Tectus=covered, *tenebrosus*=gloomy, *tener*=tender, *tenuis*=thin, weak, *teres*=rounded, *tomentosus*=densely haired, *tortuosus*, *tortus*=twisted, *typhina*=like a bulrush.

Uliginosus=marshy, *umbellatus*=branched like an umbrella, *umbrosus*=shady, *urens*=burning, stinging, *utilis*=useful.

Vagans=rambling, *vaginatus*=sheathed, *validus*=strong, *velatus*=veiled, *venenosus*=poisonous, *venosus*=veined, *venustus*=charming, *verecundus*=bashful, *vernalis*, *vernus*=pertaining to the spring, *verus*=true, *versicolor*=of various colours, *verticillatus*=arranged in whorls, *vespertina*=belonging to the evening, *villosus*=shaggy, *virens*, *viridis*=green, *virgatus*=twiggy, *viscosus*=sticky, *vulgaris*=ordinary.

SOME PREFIXES AND TERMINATIONS IN GENERAL USE.

(The position of the hyphen indicates prefix or suffix.)

NOTE.—The last letters are omitted of terminations which are Latinised adjectives, as they vary with the gender of the genus: *us, a, um; er, era, erum; is, e.*

a-=not, *-acanth-*=thorn, *alb-*=white, *-anthes*, *-anthus*=a flower, *anti-*=like, *argento-*=silvery, *atro-*=black, *aureo-*=golden, *bi-*=two, *brachy-*=short, *calo-*=beautiful, *-carp*=a fruit, *-caulis*=a stem, *cephal-*=a head, *cheir-*=a hand, *chrys-*=golden, *circum-*=around, *-cladon*=a shoot, *crypt-*=concealed, *dasy-*=hairy, *erythro-*=red, *-escens*=becoming, *eu-*=well, beautiful, *-fer*=bearing, *-fol*=a leaf, *-form*=the shape, *glab-*=smooth, *gymn-*=naked, *-gyn-*=female, *haem-*=blood, *hetero-*=of different sorts, *holo-*=entirely, *homo-*=resembling, *-immus*, *-issimus*=superlatively, *in-*=not, *iso-*=equal, *lati-*=broad, *lepto-*=thin, *mact-*=large, *mega-*=large, *melan-*=black, *micr-*=small, *mon-*=single, *multi-*=much, many, *myri-*=innumerable, *nudi-*=naked, *-oides*=like, *oligo-*=few, *-opsis*=like, *oxy-*=sharp, *pachy-*=thick, *parvi-*=small, *penni-*=feather, *pent-*=five, *phil-*=loving, *-phyll-*=leafed, *platy-*=flat, wide, *pleur-*=at the side, ribbed, *-pod-*=footed, *poly-*=many, *ptero-*=winged, *rhiz-*=a root, *rhod-*=rosy, *schiz-*=split, *scler-*=hard, *semper-*=always, *sten-*=narrow, *strept-*=twisted, *sub-*, *suf-*=under, somewhat, *tetra-*=four, *-thamnus*=branched, *trich-*=hairy, *uni-*=one, *xanth-*=yellow, *xyl-*=woody, *zanth-*=yellow, *zyg-*=yoked together.

T. S. LINDSAY,
Author of "Plant Names."

SOILS AND COMPOSTS

SOIL for garden purposes should consist of (1) mineral properties, (2) organic properties, (3) air and water. The constituents necessary to plant life are (1) oxygen, hydrogen, and carbon; (2) nitrogen, lime (except for calciphobe plants), sulphur, potassium, phosphorus, magnesium, iron, and calcium. Mineral properties in soil are supplied by the disintegration and decomposition of rocks, the organic by the decomposition of plant and animal refuse. Water and air supply the remainder of necessary factors. Clay soil comprises all that plants need, but requires extra cultivation and preparation as the soil particles are too fine and too closely compressed to allow the requisite free passage of air and the percolation of water to dissolve the soluble salts for the roots of plants to absorb. Heavy soil should be trenched; stones, brickbats, and mortar rubble dug into the lowest spit to assist drainage; and road grit (clean of tar), sand, charcoal (burnt wood not wood-ashes), burnt clay, and lime in the upper spits. Digging should be done at the end of the year to allow all possible action of snow and frost. If done before heavy rain the surface soil is washed and beaten into a light crust and the work of the elements on the lower soil minimised, unless broken over again. Good drainage on heavy soil is of the utmost importance.

SOIL STERILISATION, to destroy pests and diseases. There are many sterilising apparatus now in use. What is essential is that a uniform temperature of not less than 210° F. should be maintained for from 15–40 mins. Soil may be sterilised by baking or steaming. If baked care must be taken not to overheat.

COMPOSTS.—Soil should not be burnt for potting composts, but steamed for 30 mins. ROCK GARDENS.—⅓ sand and grit, ⅓ leaf-mould, ⅓ loan. Mortar rubble should only be used for plants that require lime. MORAINE.—⅛ loan, ⅛ sand, ½ leaf-mould, ⅝ grit and small stones. RHODODENDRONS (seed).—"Sand and humus, or sand and peat, well shredded, is best for the purpose—about 3 parts sand to 1 of humus." (Kingdon Ward, *Rhododendrons.*) FRUIT TREES, ETC., IN POTS.—4 parts good turfy loam, ½ part well-rotted manure, ½ part old mortar rubble, and a 5-inch potful of bone meal to each barrow load of the compost. STRAWBERRIES IN POTS.—4 parts loam, 1 part rotted manure, a little mortar rubble and a 5-inch potful of bone meal to each barrow load of the compost.

Primulas, Tuberous Begonias, Schizanthus.—2 parts loam, 1 part leaf-soil and sand.

Gloxinias, Streptocarpus, Begonia "Gloire de Lorraine" and

other fibrous-rooted ones, Lilium auratum, Gesneras, Achimenes.—2 parts loam, 1 part peat, 1 part leaf-soil and sand.

Fuchsias, Cinerarias, Herbaceous Calceolarias, Mignonette, Hippeastrums (Amaryllis), Geraniums or Pelargoniums, Deutzias, Lilacs, Celosias, Chrysanthemums, Cyclamen, Arums, Campanulas, Roses, Narcissus, Hyacinths, Hydrangeas, Tulips, Gladiolus Colvillei, Spiraeas, Prunus, Wistarias, Pyrus, Japanese Cherries, Francoa, Agapanthus.—3 parts loam, ½ part rotted manure, ½ part leaf soil and sand.

Cytisus, Camellias, Nerines, Lilium speciosum, L. tigrinum, L. candidum, L. longiflorum.—3 parts loam, 1 part leaf-soil and silver sand.

Carnations. *First Potting.*—⅔ loam, ⅙ sand, ⅙ leaf-mould. *Second.*—¾ loam, ¼ sand, manure (old), and ashes (equal parts). *Third.*—¾ loam, ⅛ manure, 1/16 ashes, 1/16 lime rubble and sand.

TOMATOES UNDER GLASS.—The soil should be carefully prepared either by steam or heat sterilisation or by the use of Formaldehyde or Di-Chlor-Cresol. An ideal soil would seem to be a friable, well drained, but firm, sandy loam. *Manuring.*—If the soil has been heat sterilised very little nitrogenous manure will be necessary, and attention should be paid to the addition of phosphates and potash, particularly the latter. Little manure should be given until the first bloom trusses open.

MANURES

THE need of manure may be classified under four headings: (1) To increase the supply of available plant food, either directly or indirectly, through its solvent action on the soil; (2) to improve the mechanical condition of the soil; (3) to hold up water in the soil and so ensure a constant supply to the plant; (4) to favour the growth and work of micro-organisms on whose activity the productiveness of the soil to a certain extent depends. All these are supplied by organic manures (Dung, etc.), only the first by mineral manures (other than Basic Slag). (See Min. of Agric. Leaflet 175.)

CHEMICAL MANURES should be used to supplement farmyard manure—Basic Slag (Lime and Phosphoric Acid—lime in excess) in autumn on heavy soils, Superphosphate of Lime (Lime and Phosphoric Acid—acid in excess) in spring on light soils.

The following ARTIFICIAL MANURES must not be mixed as they neutralise each other. Nitrate of Soda and Superphosphate, Basic Slag and Sulphate of Ammonia, Nitrate of Soda and farmyard manure, Lime and farmyard manure, Basic Slag and farmyard manure, Lime and Sulphate of Ammonia, Basic Slag and Sulphate of Ammonia, Lime and Calcium Cyananide (Nitrolim), Lime and Nitrate of Lime, Basic Slag and Calcium Cyananide (Nitrolim), Basic Slag and Nitrate of Lime.

BONFIRE ASH.—Store in a dry place, or apply before rain has fallen on it, as water dissolves the valuable potash contained in wood ashes. Thistles, docks, couch, bindweed, etc., should invariably be put on the bonfire to burn, not on the rubbish heap to rot.

BURNT BRACKEN is useful if cut and burnt early, the valuable potash contents are lost when it gets too dry.

GARDEN WASTE.—Valuable manure can be prepared by stacking rough grass, straw, and all garden refuse, with a sprinkling of Sulphate of Ammonia between each 9-inch layer to assist rotting. Where farmyard manure cannot be obtained this is a good substitute. Other waste products that can be utilised for organic manure are (1) waste from animal carcases, (2) waste from manufacturers, (3) waste from towns. (For details see Ministry of Agriculture Leaflet 175.)

GREEN MANURE.—Green crops (mustard, rape, peas, lupins, etc.) dug in before flowering.

LEGUMINOUS PLANTS—peas, beans, clover, etc.—increase the nitrogen content of the soil in which they are grown.

LIME is not a substitute for manure. Lime is necessary: (1) to counteract acidity in soils; (2) to break up heavy soils; (3) to provide a proportion of the food necessary to plant life; (4) to assist the chemical action in the soil by the liberation of potash and retention of phosphates, both necessary for plant life; (5) to assist drainage in the soil; (6) to prevent diseases (finger-and-toe) in cabbages, swedes, turnips; (7) to discourage slugs and wireworm. Though necessary for cabbages, it is disliked by potatoes and tomatoes. Lime should never be mixed with manures or soot (except as an insecticide, *see* p. 106), as it liberates the ammonia contained in them and so reduces the manurial value. Lime may be applied on the surface later after farmyard manure has been previously dug in, or applied at least a month before manuring.

LIQUID MANURES are particularly valuable, as their action is quicker and application is of the easiest. Cow dung, allow 1 gallon of water to every 2½ lb. of dung. Poultry manure, allow 1 peck of manure to a 40-gallon cask. Sheep droppings, 1 peck to 40 gallons.

LONG STRAW MANURE should be used on heavy soils. Long dung helps to dry out land, but if dug in during the winter tends to decompose and so renders the soil more liable to hold water in the spring. The value of farmyard manure applied in spring is greatly lessened if dry weather follows.

POULTRY MANURE.—Poultry droppings should be stored in a dry place with layers of dry soil, not lime. Turn occasionally. One or two ounces are sufficient for 1 square yard.

SALT should not be applied to damp and heavy soils.

SAWDUST is of little value as, or in, manure.

SOOT provides nitrogen and helps to make good tilth. It should never be used fresh, and should be applied early in the year on heavy ground. Soot water is a useful liquid manure.

MEASURES AND MEASUREMENTS

Note.—Many here given are obsolete but are included for purposes of reference. Weights (contents) are approximate only, and differ in various localities.

ACRE.—(Statute) = 4 sq. roods = 4,840 sq. yds. = 14,520 sq. ft. = 160 rods. (Cheshire) = 10,240 sq. yds. (Cornish) = 5,760 sq. yds. (Cunningham) = 1·291,322 statute acres. (Derby) = 9,000 sq. yds. (Devon) = 4,000 sq. yds. (Dumbarton) = 6,084·441 sq. yds. (Herefordshire) = 3,226½ sq. yds. (Lancashire) = 7,840 sq. yds. (Inverness) = 6,150·4 sq. yds. (Irish) = 7,840 sq. yds. (Leicestershire) = 2,308¾ sq. yds. (North Wales) = 3,240 sq. yds. (Scottish) = 6,150·4 sq. yds. (Westmorland) = 6,760 sq. yds. (Welsh) = 9,680 sq. yds. = 2 English acres. (Wilts) = 3,630 sq. yds.

ANKER = 10 gals. = 40 qts. = 80 pts.

APPLES.—Bushel = 40–4 lb. Barrel = 120–144 lb. Basket (wicker) = 1 imperial bushel. Case = 40 lb. Bonnet (chip) No. 1 = ½ bushel. Peck = 16 lb. Sack = 3 heaped bushels. Box = 40 lb., weight varies. Pot = 56 lb. = 64 lb. (Evesham). Sleek = 40 lb. (Glasgow.)

ARTICHOKES (Tubers).—Pot = 80 lb. Sieve = 20 lb.

ASPARAGUS.—Bundle = 25, 50, 100, 120, 125, or 150 heads.

BAG = ½ to 1 cwt. See Beans, Beetroot, Brussels Sprouts, Carrots, Cobnuts, Greens, Parsnips, Peas, Potatoes, Turnip Tops, Turnips. See also Pea Bags, Potato Bags.

BARBED WIRE.—See Wire.

BARREL = 36 gals. = 144 qts. = 288 pts. = about 3 bushels. See Potatoes.

BASKET.—(Wicker handle) = 675 cub. ins. capacity. (Chip) = 2 lb., 3 lb., 4 lb., 12 lb., from 160–245 cub. ins. capacity. (Standard) 3 = 180–9 cub. ins.; 4 = 240–52 cub. ins. capacity. See Apples, Cherries, Grapes, Plums, Strawberries.

BATTEN.—(Sawn deal) = 2″ to 2¾″ × 6″ to 8″.

BAULK.—(Sawn deal) = 5″ × 5″ and upwards.

BEANS.—(Broad), Peck = 7–9 lb. (French or Kidney), Peck = 10 lb. Bag, weight varies. Load (Runners) = about 3 bushels. Box = 7–8 lb. Pot = 40 lb.

BEETROOT.—Bag, Half-bag, Pot, weight varies according to size.

BLACKBERRIES.—Punnet (chip) = 1 lb., 2 lb., 4 lb., (peck) = 12 lb.

BOARD.—(Sawn deal) = ½″ to 1½″ × 9″ to 11″.

BOAT = flat oval basket used for Strawberries and Red and White Currants.

BONNET.—(Chip) = 15″ top, 12″ bottom, 8¾″ average depth = ½ sieve = 1,270 cub. ins. capacity.

BOTTLE = 2 qts. = 2-qt. bottles = 4-pt. bottles.

BOX.—See Apples, Potatoes, Tomatoes. Apple Box = 18″ × 11½″ × 10½″ = 2,227 cub. ins. capacity. Beans = 7–8 lb. Tomatoes = 15 lb. Seakale = 8 lb. Veneer Box, No. 1 = 1 bushel = 18¾″ × 12½″ × 10″ = 2,343·7 cub. ins. capacity. No. 2 = ½ bushel = 14″ × 10½″ × 8½″ = 1,249·5 cub. ins. capacity. Wood Box (non-returnable), No. 1 Tray = 18″ × 11½″ × 3½″.

BRAN.—Bushel = 17 lb.

BRICKS.—Load = 500. Rod of brickwork = 16½′ × 16½′ × 1½ brick thickness = 306 cub. ft. = 11⅓ cub. yds. = 4,500 bricks and about 75 cub. ft. of mortar. Dutch clinker bricks measure 4¼″ × 3″ × 1¼″. Paving bricks, 9″ × 4½″ × 1¾″. Square tiles, 6″ × 6″ × 1″, or 9¾″ × 9¾″ × 1″. Stock or kiln bricks, 8¾″ × 4¼″ × 2¾″.

BROCCOLI.—Bundle = 6–20. Sack = 60–70 lb. Cape Broccoli, Bundle = 6–8. Crate (wicker basket) = 5–6 doz.; (wooden) = 2–4 doz.

BRUSSELS SPROUTS.—Half-bag = 20 lb. (Hull), 26–8 lb. (London). Pot = 40 lb.

BUNCH.—See Carrots, Greens, Herbs, Leeks, Turnips; Carnations, Daffodils, Forget-me-nots, Gypsophila, Lily of the Valley, Paeonies, Pinks, Roses, Sweet Peas, Tulips.

BUNDLE.—Varies with season. See Asparagus, Broccoli, Carrots, Celery, Greens, Rhubarb, Tomatoes, Turnips.

BUSHEL = 4 pecks = 8 gals. Bushel sieve measures 17½″ top diameter, 10¾″ depth at circumference, 10″ at centre. (Covent Garden.) Standard = 17½″ diameter, 10½″ depth at side, 9″ depth at centre = 2,270″ capacity. Half-sieve = 12½″ top diameter, 6″ depth. Bushel basket = 14½″ diameter top, 10″ bottom, 17″ depth. Bushel basket C.G. = 17½″ diameter top, 10″ bottom, 10″ depth. Bushel flat = 21″ long, 16″ wide, 10″ deep.

CABBAGE.—Tally = 5 doz. Crate (wicker basket) = 5–6 doz. = 42 lb. net; (wooden) = 2–4 doz.

CABLE'S LENGTH = 120 fathoms = 720 ft.

CANE.—See Spinach.

CANVAS.—Roll = 28 ells.

CARD.—See Wood.

CARNATIONS.—Bunch = 12.

CARROTS.—Bunch = 8–12. Bundle = 36–40. Bag, weight varies according to size. Half-bag = 56 lb. (British), 50 lb. (imported).

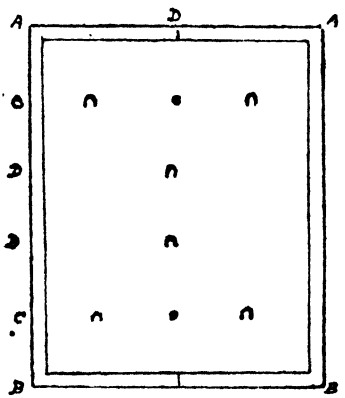
CASE = about ⅘ bushel. See Apples, Onions.

CAULIFLOWERS.—Tally = 60. Crate = 2 doz. (French), 15–18 (Italian).

CELERY.—Bundle = 6–20, usually 12; 4–6 (Bristol). Fan or Roll = 8 or 10 washed, 12 unwashed heads.

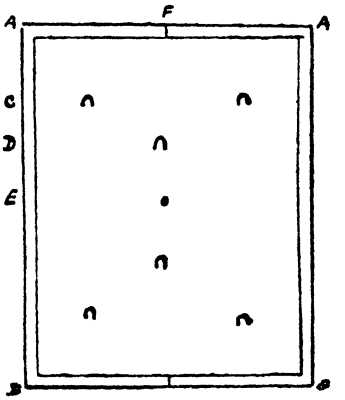
CENTARE = 1,550 sq. ins.
CENTIMETRE = ·3937 ins.
CHAIN = 100 links = 22 yds. = 4 poles.
CHALDRON = 4 qrs. See Coal, Coke.
CHALK.—Ton = 18 cub. ft. (Lump) Ton = 29 cub. ft.
CHERRIES.—Chip = 2½–8 lb. Peck = 18 lb. Half-sieve = 24 lb. net. Pot = 63 lb. Quarter = 12 lb. Sieve or bushel basket = 48 lb. Strike = 12 lb. Side = 63 lb. (Wolverhampton).
CHIPS.—See Basket, Bonnet, Apples, Blackberries, Cherries, Currants, Raspberries, Strawberries.
CLAY.—Ton = 17–19 cub. ft.
COAL.—Sack = 224 lb. = 2 cwt. = 3 bushels. Bushel = 80 lb. Ton = 10 sacks. Chaldron = 12 sacks. Keel = 8 chaldrons.
COBNUTS.—Bag = 100 lb.
COKE.—Sack = 4 bushels. Chaldron = 12 sacks.
COOMB = 4 bushels.
CORD.—See Wood.
CRATE.—See Cauliflowers, Lettuce, Spinach.

CROQUET COURT I.



A–A—28′
A–B—35′
A–C— 7′
A–D—14′
C–D— 7′
D–D— 7′

CROQUET COURT II.



A–A—28′
A–B—35′
A–C— 7′
A–D—10½′
A–E—17½′
A–F—14′

CUBIT = 18 ins.
CUCUMBERS.—Flat = 2½, 3, or 3½ doz. Pad = 24–8.
CURRANTS.—Chips = 2½–8 lb. Half-sieve = 24 lb. net = 10 or 11 qts. Peck = 12 lb. Sieve = about 20 qts. Handle = about 6 lb. (Liverpool).
DAFFODILS.—Bunch = 12.

DAMSONS.—Peck = 18 lb. Half-sieve = 24–8 lb.
DEAL.—(Sawn), measures 3″ × 7″ to 9″.
DEEPS = Orange boxes.
DOZEN = 12. See Long Dozen.
EARTH.—Load = 1 cub. yd. Ton = 18 cub. ft.
ELL.—English = 45″ (differs in different countries).
EXHIBITION BOXES.—*Carnations:* Length—18 blooms (3 rows of 6), 23¼″; 12 blooms (3 rows of 4), 15¾″; 6 blooms (3 rows of 2), 8¼″. Width—12″; Depth—4¾″. *Roses:* Length—24 blooms, 3′ 6″; 18 blooms, 2′ 9″; 12 blooms, 2′; 9 blooms, 1′ 6″; 6 blooms, 1′. Width—1′ 6″; Height in front—4″. *Violas:* 12 blooms, 14″ × 11″; 6 blooms, 7″ × 11″. Height at back, 5″.
EXHIBITION DISH.—*Fruit:* Apples = 6. Apricots = 9. Bananas = 12. Bullaces = 30. Cherries = 50. Currants: Black = 1 lb.; Red or White = 30 bunches. Damsons = 30. Figs = 9. Gooseberries = 30. Grapes = 2 or 3 bunches (according to Schedule). Melon = 1. Nectarines = 6. Nuts = 1 lb. Oranges = 6. Peaches = 6. Pears = 6. Pineapple = 1. Plums = 9. Prunes = 30. Quinces = 6. Raspberries = 50. Strawberries = 20. Tomatoes (where admissible) = 9 dessert, or 6 bunches of small varieties.

Vegetables: Artichokes, Globe = 6, Jerusalem = 12. Asparagus = 36. Beans: Broad = 18, French Climber or Dwarf = 36, Scarlet Runners = 24. Beet = 6. Brussels Sprouts = 50. Ditto, stems = 3. Cabbages = 3. Cauliflower or Broccoli = 3. Capsicums and Chillies = 24. Cardoons = 3. Carrots, long or stump-rooted = 6. Celeriac = 6. Celery, White or Red = 3. Couve Tronchuda = 3. Cucumbers = 2. Egg Plant fruits = 12. Endive = 6. Kale = 3. Kohlrabi = 9. Leeks = 6. Lettuces = 6. Marrows = 3. Mushrooms = 12. Onions = 6, pickling = 1 lb. Parsnips = 6. Peas = 50. Potatoes = 6. Pumpkin = 1. Radishes, bundle = 24. Rhubarb Sticks = 3. Salsify = 12. Savoys = 12. Scorzonera = 12. Seakale = 12. Shallots = 24. Stachys = 50. Tomatoes = 12, cluster (ornamental) = 3. Turnips = 6.

NOTE.—In Collections the number differs for: Artichokes, Globe = 9. Beans, Broad = 24. Cauliflower or Broccoli = 6. Carrots = 10. Celeriac = 9. Celery = 6. Kohlrabi = 12. Leeks = 9. Onions = 12. Potatoes = 12. Turnips = 10.

FAGGOTS.—Hundred = 120 lb. Load = 50–60.
FAN.—See Celery.
FATHOM = 6 ft.
FEATHERS.—Bale = about 1 cwt. Last = 17 cwt.
FIRKIN = 9 gals.
FLASKET = ½ load (basket).
FLATS.—See Cucumbers, Grapes.

FLOORING.—Square = 100 sq. ft.

FLOWER POTS.—Thimbles = 2″ diameter at top, 2″ deep. Eighties (Thumbs) = 2½″, 2½″. Sixties = 3″, 3½″. Forty-eights = 4½″, 5″. Thirty-twos = 6″, 6″. Twenty-fours = 8½″, 8″. Sixteens = 9½″, 9″. Twelves = 11½″, 10″. Eights = 12″, 11″. Sixes = 13″, 12″. Fours = 15″, 13″. Twos = 18″, 14″.

FOOT = 12 ins.

FORGET-ME-NOTS.—Bunch = a handful.

FURLONG = 40 rods = 220 yds.

GALLON = 4 qts. = 8 pts. = 10 lb. distilled water. Southampton gallon, see Strawberries.

GILL = ¼ pt. = 5 oz. of water.

GLASS.—Stone = 5 lb. Seam = 24 stone = 120 lb. Panes of English glass measure 20″ or 24″ × 18″, 20″ × 16″, and 20″ × 15″.

GOOSEBERRIES.—Peck = 12–14 lb. Half-sieve = 28 lb. net. Pot = 63 lb.

GRAPES.—Basket = 4–6 lb. Shallow = 10–12 lb. Flat—varies.

GRAVEL.—Load = 1 cub. yd. Ton = 20 cub. ft.

GREENGAGES.—Round = about 7 lb.

GREENS.—Bundle or Bunch = as many as can be tied together by the roots. Bushel (cut and packed) = 26–30 lb. Bag = 56 lb.

GROSS = 12 doz. See Long Gross.

GUANO.—Bag = 1½ cwt. Bushel = 60–70 lb.

GYPSOPHILA.—Bunch = a handful.

HALF-BAG.—See Brussels Sprouts, Carrots.

HALF-BARREL.—Usually 15″ diameter top and bottom, 17″ centre, 16½″ deep.

HALF-BOX = 14½″ × 9″ × 9″ = 1,174·5 cub. in. capacity. See Apples.

HALF-SIEVE = 3½ imperial gals. = 12½″ diameter, 6″ depth = ½ bushel = 2 pecks = 4 gals.

HAND.—See Radishes.

HANDLE.—See Currants.

HAY.—Truss (old) = 56 lb., (new) = 60 lb. Load or ton = 36 trusses. Bale = 2 cwt.

HECTARE = 2·471 acres.

HECTOLITRE = 2·75 bushels (dry), 26·417 gals. (liquid).

HERBS.—Bunch = handful of stems.

HIDE = 120 acres.

HOGSHEAD = 54 gals.

HONEY.—Gallon = 12 lb.

HOPS.—Pocket = 1½ cwt. and odd lb.

HOSE.—Lengths, 30′ and 60′.

HUNDRED.—Common = 5 score.

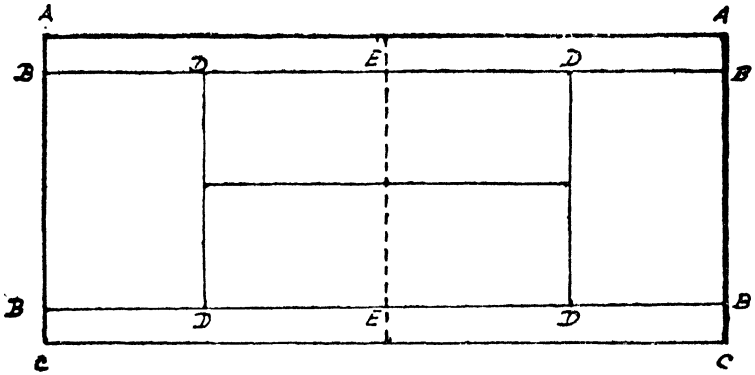
HUNDREDWEIGHT = 4 qrs. = 112 lb.

IMPERIAL BUSHEL = 2,219,360 cub. in. capacity.

INCH = 12 lines = 72 points.

JUNK = ⅛ of a bushel.
KAINIT.—Bag = 2 cwt. Bushel = 75–80 lb.
KILDERKIN = 18 gals. See Rundlet.
KILO.—See Kilogramme.
KILOGRAMME = 2·2046 lb.
KIPE = 18″ diameter top, 12″ bottom, 12″ deep (Worcestershire).
LAST = 10 qrs. = 2½ cwt. = 12 barrels. See Feathers, Pitch, Tar.
LAWN TENNIS COURT = 78′ × 36′.

TENNIS COURT MEASUREMENTS.



A–A—78′
A–B—4½′
A–C—36′
A–C (diagonal)—86′
B–D—18′
D–E—21′

LEAD.—Sheet = from 6 lb. to 10 lb. per sq. ft. Pipe usually 1″ bore = 13 lb. to 14 lb. to the yard.
LEEKS.—Bunch = 6, 8, or 10.
LETTUCES.—Score = 22 heads. Box (Cabbage) = 24–30 (London). Crate (Cabbage) = 2 doz. (Leeds and London), = 5 doz. (Manchester).
LILY OF THE VALLEY.—Bunch = 12.
LINK = 7·92 ft.
LITRE = ·908 qt.
LOAD = 5 qrs. = 1¼ cwt. Load (oblong 4-handled basket with loose lid) = 30″ × 26″ × 16″. See Beans, Bricks, Earth, Faggots, Gravel, Hay, Parsnips, Planks, Straw, Tiles, Timber.
LOGANBERRIES.—Punnet of (chip) = 4 lb. (Peck) = 12 lb.
LONG DOZEN = 13.
LONG GROSS = 156.
LONG HUNDRED = 120.
MARL.—Ton = 18 cub. ft.
MEAL.—Boll = 140 lb. Sack = 2 bolls = 280 lb.
METRE = 39·37 ins.

MILE = 8 furlongs = 80 chains = 320 rods = 1,760 yds. = 5,280 ft. = 63,360 ins.
MILLIMETRE = ·0394 in.
MOULD.—Ton = 33 cub. ft.
MUSHROOMS.—Pottle = about 1 lb. Half-sieve (wild) = 12 lb. Basket = 4–6 lb.
NAIL.—(Measure) = 2¼ ins.
NAILS.—Bag = ½ cwt., ¾ cwt., 1 cwt. Tacks, etc., 6 score = one hundred.
NITRATE OF SODA.—Bag = 2½ cwt. Bushel = 90 lb.
ONIONS.—Peck = 16 lb. Bag = 120 lb. Poke = about ½ bushel. Bushel = 56 lb.
PACE.—(Military) = 2½ ft. (Geometrical) = 5 ft.
PACKAGE.—See Tomatoes.
PADS (oval baskets).—See Cucumbers, Potatoes.
PAEONIES.—Bunch = 6.
PALM = 3 ins.
PAINT.—1 lb. paints 4 yds.
PANTILE.—Measures 13½″ × 9½″ × ½″ = roughly 5 lb.
PAPER.—Quire = 24 sheets. Ream = 20 quires = 480 sheets.
PARSLEY.—Pot = 20 lb.
PARSNIPS.—Bag, weight varies according to size. Load = about 2 cwt.
PEA BAG.—See Beans, Onions, Peas, Potatoes.
PEARS.—Bushel = 50–6 lb. Peck = 18 lb. Pot = 72 lb. (Evesham). Sleek = 50 lb. (Glasgow).
PEAS.—Peck = 8 lb. Bushel = 10½ imperial gals. = 64 lb. Sieve = 30 lb. Sieve (bushel) measures 17¾″ diameter top, 11¼″ deep = 5 pecks. Pot = 72 lb. = 40 lb. (Worcestershire). Bag—weight varies. Case = 40–4 lb.
PECK = 2 gals.
PIN = ⅛ barrel = 4½ gals.
PINKS.—Bunch = 12–24.
PINT = 4 gills.
PIP OR PUP = gallon basket with rim. See Strawberries.
PITCH.—1 lb. required for 12 yds. Last = 12 barrels.
PLANKS.—(Sawn deal) measure 1½″ to 4½″ × 11″ and upwards. Load = 50 cub. ft.
PLUMS.—Bushel = 56 lb. Carton = 9 lb. Half-sieve = 28 lb. net. Peck = 18 lb. Pot = 72 lb. (Evesham). Sleek = 60 lb. (Glasgow).
POCKET.—See Hops.
POKE.—See Onions.
POLE.—See Rod.
POT.—(Wicker oblong basket) = 21″ × 14″ × 15″. See Apples, Artichokes, Beans, Brussels Sprouts, Cherries, Greens, Gooseberries, Parsley, Pears, Peas, Plums, Potatoes, Spinach.
POTATO BAGS = under 1 cwt.

POTATOES.—Peck = 20 lb. Bushel = 56 lb. Sack = 168 lb. (London). Barrel = 200 lb., 84 lb. (Leeds), 168 lb. (Glasgow). Cwt. (uncleaned) = 120 lb. Bag = 120–6 lb. (Yorkshire), 140 lb. (Devon), 160 lb. (Somersetshire). Box = 64 lb. Pad = ½–1 cwt. Pot = 80 lb. (Evesham).

POTTLE = 2 qts. See Mushrooms, Strawberries.

PUNCHEON = 72 gals. = 288 qts. = 576 pts.

PUNNET = ½ lb.–1 lb. weight of choice fruit. Chip = 4 lb. Peck = 12 lb. See Blackberries, Loganberries, Raspberries, Seakale, Strawberries.

PUTTY.—1 lb. to 20 yds.

QUART = 2 pts.

QUARTER = 8 bushels (measure) or 28 lb. (weight). See Cherries.

QUARTER-BOX = $12\frac{1}{2}'' \times 7'' \times 7'' = 612{\cdot}5$ cub. in. capacity.

QUINTAL = 220·46 lb.

RADISHES.—Hand = 12–30.

RAPE SEED.– Bushel = 48 lb.

RASPBERRIES.—Punnet = ½–1 lb. (Chip) = 4 lb., 6 lb. (Peck) = 12 lb. Chips = 2½–8 lb. Tub = 28–56 lb. net.

RHUBARB.—Bundle = 20 to 30 stems.

ROCK SALT.—Bushel = 65 lb.

ROD = Pole = Perch = 5½ yds. = 16½ ft. = 10 links.

ROLL.—See Fan.

ROSES.—Bunch = 12.

ROUND.—See Greengages.

RUNDLET = kilderkin = ½ barrel = 18 gals. = 72 qts. = 144 pts.

SALADS.—Tally = 5 doz.

SALT.—Peck = 14 lb. Bushel = 56 lb.

SALTPETRE.—Bag = 1 cwt.

SAND.—Ton = 24 cub. ft. Pit sand ton = 22 cub. ft. River sand = 19 cub. ft.

SAVOYS.—Tally = 60.

SCANTLING.—(Sawn deal) measures $2'' \times 4'' \times 4\frac{1}{2}''$.

SCORE = 20, except Lettuce, *q.v.*

SEAKALE.—Box = 6, 8, or 12 lb. net. Bundle = 13–18 heads. Punnet = 2–2½ lb.

SHALLOW.—See Grapes.

SHINGLE (Clean).—Ton = 24 cub. ft.

SIDE.—See Cherries.

SIEVE.—See Bushel.

SLATE BATTEN.—(Sawn deal) = $\frac{3}{4}'' \times 2''$.

SLATES.—Great hundred = 120. Sizes : Doubles, $13'' \times 6''$; Ladies, $16'' \times 8''$; Countesses, $20'' \times 10''$; Duchesses, $24'' \times 12''$.

SLEEK.—W. Scotland measure. See Apples, Pears, Plums.

SOFT SOAP.—Firkin = 64 lb. Barrel or Pack = 256 lb.

SPAN = 9 ins.

SPINACH.—Bushel = 24–30 lb. Cane = 14 lb. Crate = 12 lb. Half-sieve = 12 lb. Pot = 20 lb.

SQUARE (floor or thatch) = 100 sq. ft.
STACK.—See Wood.
STRAW.—Truss = 36 lb. Load = 36 trusses.
STRAWBERRIES.—Pottle = about 2 pts. Punnet of choice (hothouse), ½–1 lb. (Chip) = 2½–4 lb. (Peck) = 12 lb. Chips = 2½–8 lb. Southampton gallon = 4 lb. Pip or Pup = 6 lb.
STRIKE = 2 bushels. See Cherries, Tomatoes.
SWEDES.—Peck = 18 lb. Bushel = 45 lb.
SWEET PEAS.—Bunch = 12.
TALLY (Vegetables) = 50. See Cabbages, Salads, Savoys.
TAR.—Barrel = 256 lb. = 26¼ cwt. Last = 12 barrels. 1 gallon tars 12 yds.
THATCH.—17 trusses of wheat straw thatches square of 100 ft.
TIERCE = 42 gals. = 168 qts. = 336 pts.
TILE measures 10½″ × 6¼″ × ⅝″. Weighs roughly 2½ lb.
TILES.—Load = 1,000.
TIMBER.—Load of rough = 40 cub. ft., hewn = 50 cub. ft. Elm, ton = 64½ cub. ft. Beech, ton = 51½ cub. ft. Ash, ton = 47 cub. ft. Oak (English), ton = 36⅕ cub. ft. Sawn timber, see Battens, Boards, Deals, Baulks, Planks, Scantlings, Slate Battens.
TOMATOES.—Box = 15 lb. Bundle = four 12-lb. boxes. Package = 52 lb. Strike = 12 lb. or stated weight.
TON.—2,240 lb. = 20 cwt. = 42 bushels.
TULIPS.—Bunch = 12.
TURNIP TOPS.—Bushel = 36 lb.
TURNIPS.—Bunch = 9–15. Peck = 16 lb. Bushel = 45–56 lb.
VEGETABLES.—Tally = 50 or 60.
WALNUTS.—Bag = 1 cwt.
WATER (distilled).—1 pint = 1½ lb.
WIRE (Barbed).—50¾ lb. fences 1 acre single line, 6$\frac{1}{16}$ lb. fences 100′, 1 lb. fences 1 rod = 16½′.
WIRE NETTING.—Roll = 50 yds. Gauge of wire 19·6 to 18 according to mesh. Widths from 6″ to 72″ increasing by 6″. Mesh from x⅜″ to 4″ (hexagonal). Sheep netting, 3″ and 4″ (square with 3-ply salvage).
WOOD.—Card or Cord = 128 cub. ft., or 4′ × 4′ × 8′ = 128 cwt. Stack = 108 cub. ft., or 3′ × 3′ × 12′ = 108 cwt.
YARD = 3 ft. = 36 ins.

HEDGES

PLANTING.—Prepare trench thoroughly beforehand. Plant in autumn or early spring. CULTIVATION.—All hedges require annual attention as regards pruning, trimming, training, and clearance of weeds. PRUNING depends on subjects utilised, position, and requirements of hedge.

EVERGREEN HEDGE PLANTS.—*Azara microphylla; Berberis,* several varieties; *Buxus sempervirens* (Box); *Cerasus Laurocerasus* (Cherry Laurel), *C. lusitanica* (Portugal Laurel), and other varieties; *Cupressus lawsoniana, C. macrocarpa, C. obtusa* (*Retinospora obtusa*); *Escallonia macrantha; Ilex* (Holly), most varieties; *Laurus nobilis* (Bay); *Lonicera nitida; Olearia Haastii; Phillyrea; Quercus Ilex* (Evergreen Oak); *Rhamnus Alaternus* (Buckthorn); *Tamarix anglica* (Tamarisk); *Taxus* (Yew); *Thuya occidentalis, T. plicata* (*T. Lobbi,* Aborvitae); *Ulex* (Gorse).

DECIDUOUS HEDGE PLANTS.—*Acer* (Maple); *Alnus* (Alder); *Betulus* (Birch); *Carpinus Betulus* (Hornbeam); *Cornus stolonifera* (Dogwood), and other varieties; *Corylus Avellana* (Hazel); *Crataegus Oxycantha* (Hawthorn); *Cydonia Maulei* (Maule's Quince); *C. vulgaris* (Common Quince); *Fagus sylvatica* (Beech); *Fraxinus* (Ash); *Kerria japonica; Philadelphus* (Syringa); *Prunus cerasifera* (*P. myrobalana,* Myrobalan); *P. spinosa* (Blackthorn); *Pyrus Malus* (Crab Apple); *Quercus* (Oak); *Ribes grossularia* (Gooseberry), *R. sanguineum* (Flowering Currant); *Rubus* (Brambles, most varieties); *Sambucus niger* (Elder); *Symphoricarpus racemosum* (Snowberry); *Syringa* (Lilac); *Ulmus* (Elm); *Veronica* (several hardy shrubby varieties); *Viburnum Lantana,* and other varieties.

PART II

SPECIAL ARTICLES IN PREVIOUS ISSUES

1927.

ALPINES—Henri Correvon.
AN ISLAND GARDEN—Stella Callaghan.
CHALK, GARDENING ON—F. C. Stern, M.C., F.L.S.
DAHLIA CULTURE—W. J. Chittenden (Sec. Nat. Dahlia Soc.).
DWARF BEDDING OR GARDEN ROSES—J. Coutts.
GARDENING FOR WOMEN—The Viscountess Wolseley.
HERBACEOUS PLANTS—Mrs. Philip Martineau.
LILIES—R. W. Wallace.
MOUNTSTEWART—The Marchioness of Londonderry.
PROPAGATION OF SHRUBS—The Hon. H. D. McLaren.
THE ENGLISH GARDEN IN THE PAST—E. Sinclair Rohde.
TREES IN THE GARDEN AND PLEASURE GROUNDS—Sir Hugh Beevor, Bart.

1928.

ECONOMIC BOTANY—Jamieson B. Hurry, M.A., M.D.
FOLKLORE OF PLANTS, SOME IRISH NOTES—B. Hunt.
GLAMIS: THE AUTUMN GARDEN—The Countess of Strathmore.
HARDY PRIMULAS—A. Wardell.
HEATHER GARDEN—D. Fyfe Maxwell.
HEPATICAS—A. W. Silver.
HISTORY OF GARDEN DESIGN IN ENGLAND—Thomas Mawson, F.L.S.
IMPERIAL FRUIT SHOW—Sir W. Lobjoit, J.P., O.B.E.
OLD GARDEN ROSES—Miss Gertrude Jekyll, V.M.H.
PICKING AND PACKING FRUIT.
RABBIT-PROOF PLANTS—The Rt. Hon. Sir Herbert Maxwell, Bart.
SWEET PEAS—A. G. Bartlett, Sec. National Sweet Pea Society.
VEGETABLE COOKING—F. Marie Imandt.
VEGETABLE EXHIBITS—Edwin Beckett, V.M.H.

1929.

A FRAME GARDEN—A. C. Bartholomew.
A JAPANESE GARDEN IN PERTHSHIRE—Ella Christie.
BRITISH ORCHIDS—C. B. Tahourdin.
DELPHINIUMS.
FRUIT FOR THE SMALL GARDEN—A. W. Silver.
HORTICULTURAL WORK OF THE MINISTRY OF AGRICULTURE—J. Lockton Bryan.
OUR FRUIT AND VEGETABLES—S. L. Bensusan.
PLANT NAMES—*History in Names*—The Hon. Lady Cecil. *Latin derivations*—Archdeacon Lindsay.
PLANT SANITATION—J. Ramsbottom.
THE ROMANCE OF FLOWERS—B. Hunt.
PERPETUAL FLOWERING CARNATIONS—C. Englemann.
PLANTS FOR AN OLD WORLD GARDEN—Mrs. Wardell.
SWEET PEAS.
TOMATO GROWING—W. E. Shewell-Cooper.

PART II

EVENTS OF INTEREST, 1929

1929 is likely to be remembered as a year of extremes. Exceptionally cold weather in the earlier months, followed by prolonged drought; a wonderful summer that lingered on through a mild autumn and a late but particularly richly coloured display of autumn foliage. Even in December, Roses, Chrysanthemums, and other flowers made splashes of colour in the garden. That more damage was not done by the severe winter was possibly due to the fact that it was continuous and dry, not intermittent and damp as in 1928. But the shortage of water consequent on the failure of spring rainfall and summer drought became a serious consideration before the long spell of dry weather broke in a series of gales and heavy rain at the end of the year. The rainfall in the Thames Valley for the first three months of the year—2·90″—was the lowest on record, and before the end of June the Manchester Corporation Waterworks Committee had to appeal to the public to restrict the use of corporation water in gardens. The Scottish strawberry crop suffered heavily from drought and heat. Growers of green vegetables in the home counties also suffered severely, especially with the Brussels sprouts crop. Savoys were brought from as far north as Lancashire and other places outside the usual area of supply to make good the deficiency in the London market.

One of the most curious effects of the abnormal weather was the demoralisation of the honey bee. It is conjectured that the honey supply in flowers was curtailed, and there was a scarcity of wasps. Whatever the explanation, the bees in many places attacked the ripe fruit and did much damage.

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In these days, when so much is being done to secure for the public admission to private grounds and privately owned and maintained beauty spots, it is much to be regretted that there is not a more general recognition of the standard of behaviour that visitors, who are in the position of guests, might reasonably be expected to maintain. Yet, to give a few instances, owing to the damage done in the park at Hardwick, to which the public were admitted free, the Duke of Devonshire had to issue a notice that it would be closed if the privilege of visiting it continued to be abused. Policemen on special duty had to be stationed there for the holiday week-ends. The litter left after a holiday took six men with horses and carts a week to clear up. Fences were damaged, names and offensive words carved on newly painted gates, boats smashed on the pond, an oak tree burnt, and other destructive acts committed. In a letter to *The Times* Lord Bledisloe mentioned the destruction done in his gardens and Deer Park when thrown open to the public at Easter. Flowers were stolen and tools

from the excavators' hut of the Society of Antiquaries by the Roman camp; large stones were rolled into the Plane Tree Valley from the Roman temple, and Roman tiles and mosaic tesseræ were stolen. Numbers of visitors watched the thefts and destruction without any attempt at intervention. The agent for the Townley estates notified the Bowland Council that the land at Whitewell, near Clitheroe, a popular picnic resort, would be shut to the public owing to the destruction and litter resulting from week-end visitors. Lord Fitzwilliam closed Edlington Woods to the public owing to the wanton destruction done. It was stated in a Police Court prosecution, when a fine was imposed for depositing litter in the Tower Gardens, that " this crime was greatly on the increase." Eighty trees on the new Kingston By-pass Road were wantonly destroyed and had to be replaced, and all the buds were stolen from the 3,000 bluebell and 3,000 daffodil bulbs planted. Other instances are given under dates. Nor are the public the only offenders. The Duke of Newcastle was to have handed over Glory Woods to Dorking on July 28, but decided to withhold his gift as a protest against the action of the Surrey County Council, who proposed to make a by-pass road that would spoil the gift. We can but refer to the controversy over the question of the erection of pylons on the Downs and in Lakeland; but another matter that should rouse the antagonism of every gardener is the destruction caused by smoke, fumes, and dust from power stations. In April the Secretary of the Lea Valley Association Growers Ltd., the Director of the Cheshunt Research Station, and Mr. Bernard Bolas, Plant Physiologist, in a letter to *The Times*, drew attention to the damage done by deposits of dust in the neighbourhood of a power station. It was proved that from 26 to 42 % of light was lost in consequence. A letter from Lord Dawson of Penn was published in *The Times* in August, pointing out the danger to child-life from the fumes and smoke from two electricity generating stations in the Marylebone District. A special article the following day referred to the large number of trees already " most seriously affected." Several had been cut down " because it had become apparent that the most skilful tending could not keep them alive in such an atmosphere." Some of the Crown tenants in Regent's Park are bound by stringent clauses to maintain the old trees, an obligation in present conditions impossible to carry out.

Prof. Abercrombie points out in his article the necessity to decide on what we as a nation wish to keep. No better instance of the necessity for clear thinking can be advanced than one which concerns gardeners and gardens. The proposed expenditure on sunbaths in Regent's Park is made at a moment when attention has been drawn by Lord Dawson and others to the curtailment of light, in addition to dirt deposits, made by power stations in the Marylebone district, and elsewhere, and when London air and sunshine is further threatened by the proposed erection of a great power station at Battersea. The risk incurred to Chelsea Physic Garden alone should in itself be sufficient to rouse all garden lovers in opposition to the scheme.

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In the annual report of the National Trust for 1928–29 the most important fact was the completion of the purchase of Stonehenge.

Hightown Common, near Ringwood, was secured through the Commons and Footpaths Preservation Society, and vested in the National

Trust. The vendor, who purchased it from the Morant Trustees, had recently erected a villa and started brickworks. These are to be removed, and a small shelter erected as a memorial to Lord Eversley.

Mr. T. B. Macauley, President of the Sun Life Assurance Co., Canada, promised funds to the sum of £10,000 to found a Macauley Research Institute in Scotland.

Among other beauty spots secured for the nation, Prof. G. M. Trevelyan presented Moneybury Hill, Ashridge, with the Bridgwater Memorial and the hanging woods to the National Trust. He also purchased 400 acres at the head of the Langdale Valley and gave it to the National Trust. Mr. and Mrs. E. D. Simon presented the National Trust with Cockley Beck Farm at the foot of Hardknott Pass above Duddon Valley. Under the will of the late Mr. and Mrs. W. R. Reid, Lauriston Castle was made over to the Edinburgh Corporation for a public Park.

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Mr. Leonard Sutton and Mr. William Cuthbertson appealed for seeds for distribution in the distressed mining areas. In response over 76,000 packets were provided by seedsmen in the British Isles.

The National Union of Allotment Holders obtained an assurance from the Ministry of Labour that work on allotments would not count against unemployment pay if unemployed holders lost no opportunity of obtaining employment.

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The Empire Marketing Board granted Kew £1,200 for four years, with an increase of £180 in the fourth year. A complete botanical survey of the Empire is to be made.

The Empire Marketing Board and the Board of Works again purchased British-grown bulbs, including Galdioli corms, for the London Parks.

Moneys subscribed to the First Commissioner of Works for carrying out works in the Royal Parks, according to an official list, will be spent on *Shelters:* Greenwich Park, Kensington Gardens, Richmond Park, Bushey Park, Primrose Hill. *Boating Ponds:* Greenwich Park, Regent's Park, Richmond Park. *Sandpits:* Kensington Gardens, Richmond Park, Bushey Park. *Swings, etc.:* Various parks. *Bathing facilities* at the Serpentine. *Hard Tennis Courts:* Greenwich Park. *Sunbathing facilities:* Regent's Park. *Games Ground:* Hyde Park. *Pavilion:* Regent's Park.

The trees, shrubs, and plants in the London Parks are again being labelled. It is hoped that these labels will receive better appreciation from the public than has been the case in the past when labels were stolen, broken, and deliberately misplaced.

The question of establishing a National Park, or parks, attention to which had been frequently drawn in the Press, led to the appointment of a Government Committee to consider the report on the desirability and possibility of establishing one or more national parks in Great Britain for the preservation of natural characteristics, flora, fauna, etc., and to advise on suitable areas.

The report of the Select Committee dealing with the Forestry Commission (White Paper, H.M.S.O. 97), estimated that the return on the capital invested " is speculative, and will mainly be deferred for a period

of from 60 to 80 years." The experiment of acquiring deer forests in Scotland for afforestation has not so far proved successful, despite a substantial amount of money spent.

To provide work for local unemployed in Poplar it was decided that hundreds of trees should be planted in the Borough.

Over two million people visited the gardens at Hampden Court Palace.

A new garden was made in Mitre Court, Inner Temple.

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Horticultural Examinations.—The Examiners again had to note that candidates did not come up to the standard required in the examinations for the National Diploma in Horticulture and the Teachers' Advanced Examination, especially in the practical work. Weakness in description and performance of practical operations were most noticeable.

In connection with the appeal for £20,000 for Studley Horticultural College the Treasury promised a grant up to £5,000 on a pound for pound basis on money raised. The sum is required to complete the purchase of the freehold, extend the buildings, and enlarge the work carried on.

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Awards and Honours of interest to horticulturists during the year included (New Year Honours), Dr. Leonard Cockayne, Ph.D., F.R.S., (C.M.G.); Prof. Dame Helen Gwynne-Vaughan, D.B.E., LL.D., D.Sc. (D.G.C.); E. W. Davy (M.B.E.). (Birthday Honours): Sir Robert A. Sanders—Minister of Agriculture 1922–4—(Baron); Peter Chalmers Mitchell—Secretary of the Zoological Society—(Knight); Francis J. Plyman, Director of Agriculture, C.P. India (C.I.E.); Ernest William Davy—Assist. Director of Agriculture, Nyassaland Protectorate (M.B.E.); John C. F. Fryer—Research work, Harpenden (O.B.E.). Civil List Pensions were granted to Mrs. Daydon Jackson, widow of the late Dr. B. Daydon Jackson (see *Year Book*, 1928, p. 24) and Miss Elinor Wallich, granddaughter of the late Dr. N. Wallich, Curator of the Calcutta Botanic Gardens, and daughter of the late Surg.-Maj. G. C. Wallich, both botanists and zoologists.

The French Government bestowed the honour of Officier du Merité Agricole upon Sir William Lawrence, Bart., for his services to Horticulture.

Dr. R. A. Fisher, of Rothamsted Experimental Station, was awarded the Weldon Prize of Oxford University, and elected a Fellow of the Royal Society. Dr. A. D. Imms, also on the Rothamsted staff, was elected a Fellow of the Royal Society. The Linnean Medal was awarded to Prof. Hugo de Vries in appreciation of his valuable services to biology. Messrs. Easten and Robertson, FF.R.I.B.A., were awarded the R.I.B.A. Medal and Diploma for the R.H.S. new hall.

No award was made of the Lord Derby Gold Medal by the National Inst. of Agric. Botany, but a C.M. was awarded to Mr. D. MacKelvie, whose late variety, No. 675, was tested against Golden Wonder at the Potato Testing Station, Ormskirk. No award was made of the Clay Cup or the Cory Cup for Roses, as the Council of the Nat. Rose Soc. did not consider that any novelties shown during the year were worthy of the awards.

Under the organisation of the Cheshire County Horticultural

Superintendent, Mr. W. E. Shewell-Cooper, the Agricultural Education Committee and the Cheshire Branch of the National Farmers' Union Fruit and Vegetable Committee, arranged a Cheshire County Orchard Competition, with a view to the improvement of neglected orchards and further planting of fruit trees. Miss M. Bostock, Merefield, Haslington, was first in the section for " Cultivated grassland orchard of half-an-acre or over," and Mr. H. C. Groome, Guilden Sutton, in the section for cultivated arable orchard.

The first prize in the Competition for five tubers of uniform size and shape, weighing approximately 10 oz. each, of Potato Arran Banner, arranged by Messrs. Dobbie, was won by Mr. Walter Underwood of Stafford.

The Hon. Katharine Plunkett, of Ballymascaulan House, Co. Louth, who celebrated the hundred and tenth anniversary of her birthday in 1929, was awarded two cups and several prizes at the Dundalk Show for exhibits of fruit and flowers. Another Irish centenarian, Mr. Michael Coughlan, of Tullamore, King's County, aged 109, who still works in his garden every day, celebrated the 80th anniversary of his wedding. Mrs. Coughlan is 106.

Mr. A. J. Sewell presented the R.H.S. with a new medal, the Sewell Medal for Alpine Plants. Six are offered for award annually, three for amateurs, three for professionals.

Despite the abnormal weather conditions of the preceding months the Chelsea Flower Show provided a wonderful display. The sight of the great tents before the public were admitted was an unforgettable experience, a riot of colour and fragrance in stretching vistas of loveliness. A most original and interesting exhibit consisted of dioramic groups of Californian subjects. Mrs. Sherman Hoyt brought not only trees, ferns, cacti, etc., but much of the actual stone and soils over from California. At the conclusion of the show the exhibit was given to Kew Gardens.

Instead of hiring a large hall for the Great Autumn Show, the R.H.S. Council decided to hold a series of special Shows at their two halls. For the Londoner, or those within easy distance of Vincent Square, this made only the difference of four good shows in place of one big special show, but to people at a distance from town the arrangement was undoubtedly disappointing. To select the show of most personal interest instead of seeing all is by no means the same thing, and not every country member could afford to come up for the series.

The National Rose Society extended its Rose Trial Grounds at Haywards Heath. Growers who wish to participate in the trials should send not less than six plants (dwarf) or two (rambler or climber) to Mr. Courtney Page, National Rose Society, Haywards Heath (Southern Railway), Sussex.

The Delphinium Society held its first show, and is to be congratulated on the artistic beauty and excellent grouping that made the R.H.S. new hall into a blue fairyland. The National Sweet Pea Society also arranged a most beautiful display. In both cases the clean line and fine proportions of the new hall made an ideal background.

At the first general meeting of the new Alpine Garden Society it was decided that money prizes should not be given, but winners should receive in place orders on booksellers for horticultural books.

The Empire Marketing Board appointed Mr. J. E. Grant White to

organise a British horticultural section in the North-east Coast Exhibition at Newcastle.

The Norfolk and Norwich Hort. Society celebrated its centenary.

The Guildford and District Rose Society prepared and planted as a public rose garden about three-quarters of an acre of the old garden in Stoke Park, purchased by the Corporation for a public Park.

The Guildford Gardeners' Association distributed 1,558 plants (Fuchsias) to school children of the town to grow for the summer show.

The Earl of Clarendon, President of the Watford and Home Counties' Horticultural Society, and the Mayor of Watford, issued an appeal for £500 to clear the liabilities of the Society, incurred through losses on the Shows of 1928 and 1929, and stated that no show would be arranged for 1930 " until the financial position of the Society warrants it."

The Spectator appealed for surplus plants for distribution where needed, with a view to help, by practical means, " to create that appreciation of beauty without which no scheme of social amelioration will ever achieve its whole object."

The Tree-planting Committee of the Cambridge Preservation Society, in order to improve the road between Trumpington and Shelford, with the aid of the Director of Forestry of the University and the Director of the Botanic Garden, prepared a plan for planting low-growing flowering trees and shrubs in grass on each side of the roadway.

A Rose Garden was laid out at the south end of Preston Park, Brighton, greatly improving the entrance from the main London Road. It was designed by Capt. Maclaren, Superintendent of the Brighton Parks. Six thousand rose trees are being planted.

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Agreements reached between three of the greatest producers of nitrogenous fertilisers resulted in a reduction on prices of 10s. per ton.

Mr. James Pulleyn, a York stockbroker, bought property in the centre of that city and converted it into a covered market for the sale on commission of garden and small-holding produce, having first obtained counsel's opinion on the validity of such proceeding. The Market Committee of the York Corporation challenged the venture on the ground of infringement of their rights to market tolls. Producers appealed to the local branch of the N.F.U., and Mr. Pulleyn suggested that contracts should be made on the producers' premises instead of in the sale room.

Some Essex market gardeners and farmers, finding that no profit could be made on the sale of produce through the established channels, started direct sales to the public from stalls on their own premises. In the neighbourhood of Becontree the experiment met with prompt success.

At a period when new foreign potatoes fetched £15–£17 a ton English growers could only get 12s. 6d. a ton for old potatoes. A farmer in the south of England offered 50 tons of good old potatoes to an infirmary. The gift was refused as the officials preferred to buy new foreign potatoes at £18 a ton.

Broccoli from Cornwall could be sold at a better profit in Brussels and Cologne than in London, and spring vegetables from East Kent found a better market in Glasgow. London had foreign supplies.

For the first time for many years the market was over-supplied with black currants.

Owing to the high rent, 52s. per ten rods, over a third of the Manor Road Allotments, Richmond, Surrey, were unlet.

In the Report of the Ministry of Agriculture on Crops the acreage under Beans (picked green) showed an increase of 400 acres, Brussels Sprouts showed a decrease of 3,700, Broccoli and Cauliflowers an increase of 400, Cabbages an increase of 4,500, Carrots an increase of 300, Celery a decrease of 100, Onions an increase of 1,700, Peas an increase of 9,000. The acreage under small fruit changed little, Raspberries and Strawberries being rather less, Currants and Gooseberries slightly increased.

A statement issued by the Dept. of Agriculture for Scotland gave 15,144 acres under first-early potatoes, 19,413 acres of second-early; 91,270 main crop. The largest acreage for a variety: Epicure, 7,939; Great Scot, 13,777.

The Forest Research Institute at Dehra Dun, India, reported that experiments had been made in the manufacture of paper from Bamboo stems, and that Bamboo pulp could be brought to this country from Burma at a price to compete successfully with Scandinavian wood-pulps of a similar quality.

A hybrid plant of the Malvaceae order has, after years of experiment, been produced by Mr. Leonard Browning. Brotex, this new biennial, is of quick growth, reaching 6′ by October if sown or transplanted in the spring. If grown for fibre it can be harvested the first year, and an average crop should give 60 tons to the acre. For wood or seed Brotex must have a second year's growth. Experts claim that the wood will make first-class paper and the seed makes good cattle cake. Though still in an experimental stage it is hoped that the plant will prove a valuable addition to arable farming.

A cedar, 70′ high and girth of over 14′, in the grounds of Canford School, Wimborne, was transplanted to a distance of 35 yards, to allow for additional building, the Governors having decided to risk the move rather than cut down the tree. It recovered from the move but was blown down by a severe gale in December.

A Tulip bulb, grown in the gardens of Lincoln's Inn, bore six blooms, four on one stem.

Mr. R. Rogie, Easter Anguston, Culter, near Aberdeen, planted one tuber of Potato Arran Banner in 1928. The " seed " from this produced 3¾ cwt. in 1929. Mr. William Gardner, Roddinglaw, Gogar, Midlothian, obtained a crop of 19 tons 8 cwt. to the acre with the same variety.

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It was accidentally discovered in the spring at Bournemouth, that if a rubber sheet were placed closely over flooded grass leather-jackets would collect in masses on the surface beneath it and could be easily swept up and destroyed. Twenty-eight lbs. of grubs were swept up in 12 days off a bowling green infected with the pest, a saving of £500, the cost of relaying the green. See Venner (Obituary).

In the garden of the Wallsend United Methodist Church a length of the foundations of Hadrian's Wall was discovered on excavation by the North of England Excavation Committee.

Mrs. Locker-Lampson was sued by two tenants for damages, £286, for the loss of 13 heifers that got into her plantations and eat Yew

leaves. Mr. Justice Hawke gave judgment in her favour, as she was under no obligation to keep the fence in repair.

A copy of *Historia Naturalis*, by Pliny Secundus, dated Venice, 1469, fetched £620 at a sale at Sotheby's.

JANUARY.

A syndicate was appointed at Cambridge to consider the organisation and finance of the Botanic Garden, and the relations between it and the Dept. of Botany and other scientific departments, in consequence of the need of the Botanic Garden for increased financial support.

Mr. H. W. Abbiss, Hort. Superintendent of Cornwall, with a deputation of Cornish growers visited the continent to examine possible openings for the sale of Cornish broccoli. Subsequently arrangements were made with the Ministry of Agriculture for the grading and marking of British broccoli, and consignments were marketed later in Brussels and Cologne.

Dr. Rendle exhibited to the Fellows of the Linnean Society a specimen of a subterranean Orchid from West Australia. The plant has an underground rootless rhizome "in symbiotic relationship with a fungus which closely invests the decayed roots of *Melaleuca unicata*." It grows 12" below the surface of the ground, and has an inflorescence 3" across.

Over 200 unemployed miners were brought to London in accordance with arrangements made by the then Government for the employment of 700 miners to work in the London Parks, a sum of £200,000 had been voted in December 1928 for that purpose.

Mr. Samuel Wallrock undertook to lay out the new public Park at Stanmore Hill, purchased partly by subscription and partly by the Hendon Rural District Council.

The County and City of Leicester secured Bradgate Park, the home of Lady Jane Grey, for the public, through the generosity of Mr. Charles Bennion.

The Royal English Arboricultural Society's essay competition for children was won by Doris Gough, Heddington School, Wilts. Charles S. Bottom, St. Stephen's Boys' School, Redditch, was second. 3,000 essays were received.

2nd.—At the meeting of the Science Masters' Association at Cambridge the President, Dr. A. C. Seward, Master of Downing College, referred to the lack of trained botanists for well-paid posts in the Dominions.

8th.—A Kew expert having reported that the old elms on the Terrace Walk at Richmond were badly decayed and very dangerous, the Richmond Town Council decided they must be removed and proposed to plant in their place copper beech and silver birch.

14th.—George Clifton, vegetable seller in Little Earl St., applied to the Holborn Borough Council for a licence to sell vegetables in the street on Sundays. The licence was refused. On a subsequent appeal to the High Court the decision of the Council was upheld.

15th.—The Advisory Committee on Agricultural Science recommended grants to (among others) Mr. W. E. H. Hodson, Seale-Hayne Agric. College, to study methods of control of pests and diseases of Narcissus bulbs in Holland; Mr. Morley Davies, Harper Adams Agric. College, to attend the International Commission of Soil Science at

Königsberg; Dr. E. M. Crowther, Rothamsted, to attend Commissions of the International Society of Soil Science, and Budapest, also to visit the chief research laboratories on the Continent that deal with soils and fertilisers.

16*th*.—Fifty-second annual general meeting of the National Rose Society.

19*th*.—To commemorate the birth of the founder a conference on Polyploidy was held at the John Innes Horticultural Institution.

The fiftieth annual general meeting of the National Carnation and Picotee Society was held.

The first tree, a Turkey Oak, on the Barnet By-pass Road, was planted by Lord Ullswater, initialling the scheme of the Roads Beautifying Association.

23*rd*.—A bronze statue of "A Sower," by the late Sir Hamo Thornycroft, R.A., was presented to Kew Gardens by the Royal Academy of Arts through the Leighton Fund. The pedestal was designed by Sir Edward Lutyens, R.A., and Mr. A. Drury, R.A.

24*th*.—The eighty-ninth annual general meeting of the Gardeners' Royal Benevolent Institution.

FEBRUARY.

Lady Londonderry, President of Studley College, appealed to the public for £20,000 to purchase the estate and buildings, for constructional purposes, and to secure the Government grant of £5,000.

Under the supervision of the Aberdeen College of Agriculture prizes to the value of £216 a year were offered by Mr. T. B. Macauley, of Canada, for the best crops of potatoes, the best managed small-holdings, and the best piece of reclamation in the Lewis.

The Cornish export trade of broccoli, bearing the national mark, was inaugurated at the end of the month.

Protests were lodged against the action of the local Council in selecting a disused chalk-pit on the border of Maidenhead Thicket as a midden for Cookham. The place is a recognised beauty spot.

A fine of 10s. was imposed on the tenant of a Glasgow flat for keeping a flower-pot on the window-ledge without adequate fastening.

Exhibition of Flower Paintings at Walker's Galleries by Mrs. H. Tangye Reynolds.

Mr. Leonard Philpot exhibited Flower Paintings at the Claridge Gallery.

4*th*.—Annual General Meeting of the National Chrysanthemum Soceity.

7*th*.—Mr. Alfred Duckworth Melson, of Hither Broome, Lapworth, Warwick, left a field by the Canal for a public open space to be called the Melson Memorial Park.

13*th*.—Mr. Cecil Hooper lectured at the Royal Society of Arts on "The Pollination of Fruit Blossoms and their Insect Visitors."

23*rd*.—It was decided in the First Division of the Court of Sessions, Edinburgh, on appeal, that the defendants were not liable for injuries received through the sudden fall of an elm tree on a char-à-banc.

The Leeds and District Market Growers' Association held their sixteenth annual Rhubarb Show at the Griffin Hotel. The exhibits were subsequently given to the Military Hospital.

25th.—The National Conference on Agriculture opened at the Mansion House.

26th.—The Lord Mayor opened the Ideal Home Exhibition at Olympia. Model gardens were laid out in the annexe.

MARCH.

A portion of Albury Downs, adjoining Newlands Corner, was opened to the public by revocable deed by the Lord of the Manor, the Duke of Northumberland. Vehicles, including motors, may not be taken on the Downs.

Mr. F. J. Hayes, of High Wray, near Hawkshead, presented the National Trust with Bee Holme, a wooded promontory on Lake Windermere.

Some six acres of ground at Clewer were presented to the town of Windsor by Capt. Lionel and Mr. Arthur Stovell for a perpetual open space.

Mr. and Mrs. E. D. Simon presented Cockley Beck Farm, at the head of the Duddon Valley, to the National Trust for preservation in its unspoiled condition.

Mr. Herbert Ward presented Egypt House and 26 acres of ground to the Cowes Urban Council for a public pleasure ground.

The Forestry Commission secured about 12,000 acres in the Grampians, 4,000 to be afforested, the area unsuitable for trees to be transferred to the National Trust.

Packets of seeds for unemployed miners' allotments were given by Messrs. Carter, Dobbie, Ryder, Sutton, and West.

The foreshore of Canvey Island was planted with *Spartium Townsendii* to preserve it from erosion.

Pictures of Old Homes and Gardens of England and Italy were exhibited by Mr. Herbert George at the Greatorex Galleries.

3rd.—At the Federated Home-grown Timber Merchants' Association Lunch Lord Clinton, Chairman of the Forestry Commission, referred to the future lack of soft wood and urged collaboration with the Commission in tracing and registrating private supplies to fill the gaps.

7th.—Despite the severe weather, which lessened the number of entries, the western bulb growers put up a wonderful display at the Western Commercial Show at Penzance. Speaking at the Show Mr. George Pilcher, M.P., said that from 400 to 500 millions of bulbs were annually imported from Holland. Mr. H. V. Taylor said that Cornwall had at least 500 acres of the best broccoli in the world.

8th.—A conference was held on technical subjects at the Penzance Show, with Mr. H. V. Taylor in the Chair.

Miss Augusta Cicely Fane, of The Cottage, Fulbeck, Lincs., died at the age of 100, leaving £100 to the rector and churchwardens for the upkeep of the churchyard, "in keeping it well mown, and as like a lawn as possible, and the rose trees carefully tended in the same manner, as far as possible, as I have endeavoured to keep it."

The Kingsbridge Habitation of the Young Helpers' League held a Floral Bazaar in aid of Dr. Barnardo's Homes.

19-20th.—At the sale of the Claygate Lodge Orchids a plant of *Cattleya Shimadzu var. Titanic* was sold for 210 guineas. The total sum realised was £5,782 3s.

21*st*.—Mrs. Annie Isabel Jones left £100 to her trustees for the upkeep of her little Garden of Rest at Tanybryn, Llanfair Clydogan.

22*nd*.—H.R.H. the Prince of Wales visited Covent Garden Market at 7 a.m. and spent an hour and a half there inspecting the stalls and chatting to the sellers.

Sir Ernest Benn gave a dinner at the Hotel Cecil to celebrate the jubilee of *Gardening Illustrated*.

23*rd*.—A gold watch was presented by his staff to the Superintendent of Parks for the Borough of Gateshead, Mr. Alexander Craig Davidson, and a gold wristlet watch to Mrs. Davidson, in recognition of his services for fifty years.

27*th*.—A heath fire at Wangford Warren resulted in damage to the amount of £1,000 in Thetford Chase, planted by the Forestry Commission. 300 acres of five-year-old trees were destroyed.

28*th*.—A fine Sycamore, near the southern entrance to Kensington Gardens Broad Walk, was cut down to permit of road-widening. The adjacent roadway was only occupied by a cabman's shelter and cab stand.

29*th*.—The famous gardens of Ashridge House were opened to the public on Saturdays, Sundays, and Bank holidays, at a small charge.

APRIL.

Mr. Boies Penrose offered to subscribe a pound for every pound up to £10,000 subscribed within two months to the C.P.R.E., being "the more moved to do so when I see England now making many of the very mistakes in development that have gone far to spoil the amenity of much of America."

The C.P.R.E. arranged four "Save the Countryside" Exhibitions to tour the country for instructional purposes, and to rouse public interest in the work of the Council and kindred bodies.

At a conference at the Midland Agricultural and Dairy College, during a discussion on Celery Marketing, it was urged that the frequent gluts at certain markets could be avoided by organisation, and that much of the celery was too big and coarse.

Rosa gigantea, which seldom flowers in this country, flowered in the Cambridge Botanic Garden. It was discovered by Sir George Watt in Manipur in 1882.

Over £2,000 of damage was done by fire among young plantations at Binn Hill, Huntly, Aberdeenshire.

Mrs. Sidney Fairbairn held an exhibition of flower paintings at the Brook St. Galleries.

Miss Marion Broom held an exhibition of flower paintings at the Graham Gallery.

1*st*.—H.M. the Queen visited a jumble sale at Colebrook House, Aldwick, and put up to auction a bunch of primroses she had gathered in the grounds of Craigweil House. It fetched £6 10s.

The Reading Gardeners' Association held a "Hospital Night." A collection of cut flowers was sent to the Royal Berkshire Hospital with a donation of £3 10s. collected at the meeting.

A garden wall, 12' high, built against a bank planted with trees and shrubs, collapsed during digging operations close to the foundations

to lay an electric cable for the Plymouth Corporation. Five of the men at work were killed.

16–17*th.*—Daffodil Show. Despite adverse weather conditions a good display was secured.

21*st.*—Daffodil Sunday at Kew.

21*st*–22*nd.*—The hedge of a large nursery garden at Pirbright was burnt in a serious heath fire. Troops from Aldershot assisted to fight another serious heath fire near Minley Manor and Lord Revelstoke's house, Fairbank, Horley.

24*th.*—Sir Frederick Keeble lectured at a public meeting arranged by the British Science Guild at the Mansion House, on the application of fertilisers.

25*th.*—A show and sale of Flowers was held at the new Horticultural Hall in connection with the appeal for £25,000 for Studley Horticultural College. The Show was opened by Princess Mary, Countess of Harewood, who sent a quantity of daffodils.

Mr. James Lennox submitted a scheme to the National Farmers' Union of Scotland for the establishment of a Society for the disposal of Scottish Potato crops.

30*th.*—Four gardens in Motspur Park, Surrey, were robbed of tulip and hyacinth bulbs in flower.

Annual Meeting and Gathering at East Malling Research Station.

MAY.

The rare shrub *Zelkova* from the mountains of Crete, was brought by the Indian Air Mail in three days from Suda Bay. The plants arrived in good condition and were taken by Mr. George P. Baker to Kew.

When digging up ground for a tennis court at The Mount, Papcastle, Roman pottery, coins, and stone slabs were found.

An exhibition of flower pictures was held at the Macrae Gallery, Fulham Road.

2*nd.*—Eight acres of young firs were destroyed by fire in Windsor Forest.

Cider Inspection at Long Ashton. A tractor demonstration was arranged by the Ministry of Agriculture.

9*th.*—A Liverpool greengrocer displayed Spanish potatoes as new "English." The National Federation of Retail Fruiterers, Florists, and Fishmongers reported the matter to the Ministry of Agriculture. On prosecution the offender was fined £10 and £10 10s. costs.

15*th.*—Miss D. M. Cayley, of the John Innes Horticultural Institute, showed specimens of transmission by bulb grafting of the virus that causes "breaking" in tulips at the Royal Society's Conversazione, and an exhibit of plants poisonous to animals and fish was displayed by the Rothamsted Experimental Station, with English-grown Pyrethrum and Pyrethrum products.

At the Annual Festival Dinner of the Royal Gardeners' Orphan Fund at the Savoy Hotel a telegram was sent to H.M. the Queen expressing thankfulness for the King's recovery.

18*th.*—The Northern Branch of the Royal Scottish Arboricultural Society held its first tree-felling competition at Dalcross. Messrs. J. Lyons and J. Davison were the winners of the first prize.

18–20th.—The British Mycological Society held the Spring Foray at Petersfield.

20th.—Mr. William J. Bean, I.S.O., retired from the Curatorship of the Royal Botanic Gardens, Kew, after 46 years on the staff.

21st.—The annual throwing of dice for Bibles bought with the rent of Bible Orchard was held under the will of Dr. Robert Wilde of St. Ives, Hunts.

Private View and Lunch at the Chelsea Flower Show. Princess Mary visited the exhibition.

22nd–24th.—R.H.S. Chelsea Show. The Cain Cup for the best exhibit shown by an amateur was won by Lady Aberconway and the Hon. H. D. McLaren. Messrs. Sutton & Sons won the Sherwood Cup for the most meritorious exhibit in the show.

22nd.—Dr. F. W. Pember, Vice-Chancellor of Oxford University, unveiled a bronze portrait plaque of the late Sir William Schlich in the School of Forestry. As a further memorial to the late Professor of Forestry, an area of forest, to be named the Schlich Forest, in the vicinity of Oxford available for experimental work, is to have a group of oak trees planted and maintained in his memory. Sir W. Schlich was a great authority on silviculture, and instrumental in founding the Oxford School of Forestry and the Chair of Forestry at that University.

At the Annual Meeting and Dinner of the Gardeners' Club a presentation was made to Mr. F. C. Puddle, the Treasurer and Secretary, for his services.

26th.—Chestnut Sunday.

27th.—Beckenham Place Park was opened as a public Park.

29th.—Three British firms competed at Barcelona in the competition for new roses for the gardens of the Royal Palace of Pedralbes. The Queen of Spain presided at the first meeting of the jury.

JUNE.

The Queen's gift of roses from the Windsor Royal Gardens sold at Christie's for the Queen Alexandra Fund realised from £2 2s. to £100 a flower, making a total of £2,098.

The Committee of Management of the Chelsea Physic Garden passed a resolution to the effect that they were "gravely apprehensive that the institution of a large electric power station at Battersea" would "exert a detrimental influence on vegetation and seriously prejudice the scientific research and instruction carried on in the garden." Copies of the resolution were sent to the chairman of the London Power Company, the Ministry of Agriculture, and the Office of Works.

The Western Australian Government presented the Duchess of York with a gold-mounted casket containing a bottle of scent made from the Australian *Boronia*.

The Duke of Norfolk presented the Sheffield Corporation with the Monument Grounds for a recreation ground, as a memorial of his coming of age.

Lord Rothermere purchased the Foundling Hospital Site for a children's park, and a camping-ground for the British Boy Scouts' Association for a month annually.

Paulowna Fargesii flowered at Kew for the first time after twenty-one years. It was first found by Abbé Farges in N.E. Szechuan, and

seeds sent to M. Maurice de Vilmorin about 1896. It flowered in M. Boucher's nursery in Paris in 1905.

1st.—A delegation of members of the Garden Club of America arrived in England to visit English gardens. Arrangements were made by the Gardens Committee of the English Speaking Union.

The seventieth birthday of Mr. F. Capp, the originator of the Professional Gardeners' Association, was celebrated by a meeting of the Association in the gardens of Nostell Priory, by permission of the Hon. Charles Winn. Mr. Capp was afterwards presented with a gold badge on election to honorary life membership.

3rd.—Lord Reading presided at the dinner at the Hyde Park Hotel to welcome the members of the Garden Club of America who were visiting this country.

Members of the Garden Club of America visited Kew Gardens.

4th.—Sir Ian Colquhoun presided at a meeting in Glasgow organised by the Association for the Preservation of Rural Scotland, to discuss the acquirement of a national reserve. A Committee was appointed to investigate and report.

5th.—The Manchester City Council decided to buy 100 acres at Alexandra Park offered by Lord Egerton at a nominal price for a public Park.

6th.—The French Ambassador opened the Iris Society's Show in the new Horticultural Hall. A reception was held by the R.H.S., the Iris Society, and the English Speaking Union to the members of the Garden Club of America.

7th.—Down House, the home of Charles Darwin, acquired for the nation by Mr. George Buckston Brown, F.R.C.S., and held in trust by the British Association, was formally opened to the public.

8th.—British Mycological Society's Annual Phytopathological Excursion at Wisley.

11th.—The Parish Council of Chalfont St. Giles decided to postpone the destruction of an ancient elm which it was feared might fall and do damage to a butcher's shop, as Gen. Sir Alexander Gordon offered to guarantee the financial loss incurred should such accident occur.

13th.—Sir Alexander Stevenson, Lord Provost of Edinburgh, declared Lauriston Castle and grounds open to the public.

The proposal of Col. Sutherland, Forestry Commissioner, to feu the lands belonging to the Glasgow Corporation at Loch Katrine, and afforest 7,000 acres reserved under the water powers of the Corporation, with payment of an annual feu duty, was refused by the Town Council and the Water Committee, as dual control was not to the interests of the City.

21st.—Mr. J. Elliot Mark, chairman of the L.C.C. Parks and Open Spaces Committee, opened the Tabard Garden, provided in connexion with the clearance of the Tabard St. area and the formation of the Tabard St. Garden housing estate. The drinking fountain was the gift of Sir John Dewrance.

21st–22nd.—The Annual Field Meeting of the Association of Economic Biologists was held at Cambridge. The University Farm, the Low Temperature Research Station, and Wicken Fen were visited.

25th.—Mr. Percy Bunyard was presented with the British Carnation Society's Gold Medal as an appreciation of his work as Secretary.

26th.—The syndicate appointed to consider the financial situation

of the Cambridge Botanic Garden issued a report with 13 recommendations. These included the creation of a new University Lectureship for the teaching of systematic botany, that further moneys should be provided, and that the Town of Cambridge be invited to contribute to the cost of the garden so long as the general public were admitted to it.

Members of the Nat. Sweet Pea Society visited the trial grounds at Messrs. Bolton and Son's nurseries, Halstead, Essex.

At the third annual Show of the Guildford and District Rose Society blooms were exhibited from the Municipal Rose Garden planted in the spring by the Society.

A meeting was held in Friends' House, Euston Rd., by the London Council of Social Service and the St. Pancras Council of Social Service, to encourage Londoners to save their Squares. The meeting urged that effect be given to the recommendation of the Royal Commission on London Squares of Sept. 11, 1928.

Eighty-fourth Annual Festival Dinner of the Gardeners' Royal Benevolent Institution.

29th.—Mr. W. R. Oldham, Chairman of the Wisley Gardens Committee, opened the new sports ground given by the R.H.S. Committee. A cricket match was played between the London Staff and Gardens Staff and Students, which ended in a tie.

JULY.

Mr. and Mrs. Noton Barclay presented Ings and Stable Hills, on the south-west of Derwentwater, to the National Trust, to keep the view of the lake open to the public.

Mr. H. W. Walker gave the island of Rampsholme in Derwentwater to the National Trust.

Nine acres of land, the site of an ancient earthwork known as Desborough Castle, was presented to High Wycombe for an open space by Sir John Dashwood.

The Interim Report of the Central Joint Committee of the Lord Mayor's Fund for the Relief of Distressed Mining Areas in England and Wales stated that the Committee were unable to deal with the question of allotments in those areas until late in the season, but assistance towards proper cultivation of allotments by the unemployed was approved and Divisional Committees were to co-operate with County Agricultural Committees, and also with the Society of Friends already at work on allotment schemes. In consequence many allotments that could not have been cultivated otherwise had been carried on, and upwards of 70,000 allotment holders had been assisted at a cost of £15,000. It is hoped to carry on this work more extensively next year.

The Sir Reginald Hanson Challenge Cup for the best kept lock, weir, or ferry garden on the Thames was won by A. E. Allen, lock-keeper, Teddington. The Thames Conservancy Board's First Prizes were won by D. E. Collins, Shifferd; A. Baldwin, Mapledurham; E. E. Light, Sonning; A. E. Allen, Teddington; J. R. C. Overy, Keen Edge.

The Champion Ash of Ashridge Park, the finest specimen in existence, was destroyed by lightning. It measured 130′ in height, with a breast-high girth of 12′.

The Hon. Vicary Gibbs opened the gardens of Aldenham House to the public on the Saturdays of July, August, and September.

A first edition of White's *Natural History and Antiquities of Selborne* was sold at Sotheby's for £80.

3rd–5th.—The Annual Conference of the Fédération Horticole Professionelle Internationale was held in the R.H.S. Lecture Hall. Among subjects discussed were the questions of Plant Registration to protect the raisers of novelties, the creation of an International Phyto-pathological Bureau, and Plant Nomenclature.

4th.—Prince George opened the grounds of Chiswick House with the fine Lime Avenue and beautiful cedars to the public.

5–6th.—National Rose Soceity's Summer Show.

6th.—H.M. the Queen visited the Chelsea Rose Show.

The Horticultural Club's annual outing included visits to Messrs. Cheal's nurseries at Crawley, and Lt.-Col. Messel's gardens at Nymans.

6th.—Three men were fined £2 2s. costs and £2 fine each at the Kingston County Police Court for wilfully damaging 15 silver birch, mountain ash, and fir trees on Esher Common, planted by the Esher and Dittons Urban District Council two years previously. They were caught in the act of uprooting the trees.

8th.—The Committee of the United Horticultural Benefit and Provident Society gave a dinner to Mr. and Mrs. Arthur Bedford to signify their appreciation of his services for 21 years as a member of the Committee, and latterly Treasurer. Mr. Bedford was presented with a gold watch and Mrs. Bedford with a gold wristlet watch.

8–10th.—Parks Superintendents' Conference at Manchester.

11–12th.—The Norfolk and Norwich Hort. Society held their centenary Exhibition at Eaton Park, in conjunction with the National Sweet Pea Society's Provincial Show. The National Rose Society sent a deputation and the R.H.S. gave special awards.

13th.—Charlton Park, Greenwich, was opened to the public by Lord Crewe, Lord-Lieut. of the County of London.

16th.—A Cherry and Soft Fruit Show was held by the Kent Branch of the National Farmers' Union in conjunction with the R.H.S. at the new Horticultural Hall.

It was reported at Covent Garden that the market was over-supplied with home-grown new potatoes.

17th.—An exhibition and sale of produce at Studley Horticultural College was opened by the Duchess of York.

19th.—The Metropolitan Water Board resolved to suspend the use of water for gardens until further notice. The public were warned a fortnight previously that economy in the use of water was imperative. Little or no attention was paid to the official warning, and the quantity of water consumed had increased considerably.

22nd.—Annual inspection of District Railways station gardens.

The Minister of Agriculture informed the House of Commons that the 1d. admission charge at Kew would cease on and after August Bank Holiday. About £5,000 a year would be lost by this remission.

26th.—Annual General Meeting of the National Institute of Agricultural Botany.

31st.—Annual Outing of the R.H.S. Gardens Club. The gardens of Ashford, Handcross, and Highdown, Goring-on-Sea, were visited.

AUGUST.

Owing to water shortage restrictions on the use of water for gardens were general in London and many other places.

The First Prize Stations in the Metropolitan Gardens Railway Competition were Hammersmith, Northwich Park, and Chesham. Dollis Hill, Kilburn, and Stoke Mandeville took second prizes. Neasden, W. Hampstead, and Croxley Green third. Ruislip Manor, Wembley Park, and Waddesdon fourth.

The Church lands at Brentwood, which had been cultivated as allotments for 17 years, were sold for building purposes.

Weston Mill, near Plymouth, suffered from a plague of toads, attributed to the vicinity of a Corporation refuse tip.

A gardener at Riverdale Grange was attacked by over 2,000 bees and so severely stung that he had to be removed to Sheffield Royal Hospital.

A copy of Philip Miller's *Gardener's Dictionary*, dated 1763, once the property of the poet Cowper, was sold at Sotheby's.

2nd.—The trial plots at East Craigs for the Scottish Potato Trials were visited by growers, farmers, merchants, and others interested, on the invitation of the Department of Agriculture for Scotland, for the annual demonstration of new seedlings.

5th.—The charge of 1d. for admission to Kew Gardens introduced during the war came to an end. Payment of 6d. on Tuesdays and Fridays, students' days, continues.

6th.—The grounds of the Foundling Hospital were opened as a Play Centre for children for two months.

7th.—Mr. and Mrs. Frederick Bright celebrated their golden wedding. Mr. Bright was well known as a cultivator of specimen Fuchsias, and succeeded in crossing the Clivia with the Hippeastrum.

8th.—The National Institute of Agricultural Botany invited parties of farmers, potato growers and merchants, agricultural advisory and administrative officers, and others to visit the Potato Testing Station at Ormskirk.

Mr. C. E. Foister, Plant Pathological Div. Dept. Agric., Scotland, at a Conference of Empire Meteorologists at Oxford, pointed out that certain plant diseases were due to weather conditions. A system of weather forecasting sufficiently accurate and detailed was needed to enable warnings to be given to growers that certain diseases would appear when weather favoured their onset.

13th.—The first colour film used at a horticultural lecture was shown at the R.H.S. meeting, when Mr. Amos Perry lectured on Aquatic and Waterside Plants.

14th.—Mr. Luke Dann, for thirty years employed as gardener by the Harrogate Corporation, celebrated his golden wedding.

15th.—Much damage was done by fire to Wicken Fen; between 50 and 100 acres were burnt.

17th.—H.M. the Queen paid an informal visit to the Old English Garden in Battersea Park.

21st–22nd.—The Shropshire Horticultural Society again held a very successful Show in the Quarry at Shrewsbury. The finest non-competitive exhibit in the Show was a grand display of vegetables sent by the Hon. Vicary Gibbs (gardener, Mr. Edwin Beckett). The standard of exhibits was high, and the Show arrangements notably well managed.

24*th*.—The Roads Beautifying Association held its first general meeting.

26–30*th*.—Summer Meeting of the Royal English Arboricultural Society at Sheffield.

27*th*.—At the R.H.S. Show a fruit from a *Peach Peregrine* was exhibited which was half peach and half nectarine.

28*th*.—Annual meeting of the Royal English Arboricultural Society at Sheffield.

Southport Show opened.

30*th*.—The tenant of a basement flat in Tavistock Road, N. Kensington, when digging in her garden found a human skull.

The London Gardens Guild held a successful exhibition in the new Horticultural Hall. A special feature consisted of corporate displays from local gardening societies; Bermondsey and Rotherhithe Hort. Society took first prize. Unfortunately the costs of the show exceeded the receipts.

The gold cup offered in the National Gardens Guild Brighter Petrol Station Competition was won by the Coombe Bridge Station, Kingston By-pass.

31*st*.—Mr. C. H. Wright, A.L.S., Assistant at the Royal Botanic Gardens, retired at the age limit after 45 years at Kew.

SEPTEMBER.

Less than half the average rainfall was recorded, the lowest in sixty years.

Sir James Reynolds, M.P., offered Dove Park, Woolton, to the Liverpool Corporation for the use of the public. The house was destroyed by fire in 1921.

Sir Howard Frank promised the First Commissioner of Works £5,000 to defray the expense of laying out a playing field on the old exhibition site in Hyde Park.

Sir Arthur du Cros and Mrs. Van den Bergh each offered gifts of £500 towards the provision of shelters in the Royal Parks. An anonymous donor, in addition to a promise of £500, offered £5,000 to provide facilities for children, to permit of mixed bathing in the Serpentine, and sun-bathing, Government to contribute an equal sum for the purpose.

The Berkhamsted authorities gave "casuals" the job of clearing caterpillars from the large acreage in the vicinity under cultivation.

Mr. J. B. Jack, Vice-President of the Motherwell Parks Department, on his departure for America was presented with an inscribed gold watch in recognition of his work by the members of the Hamilton and District Gardening Association, and with a gold Masonic emblem by members of the Parks Department.

The great Black Hamburgh vine at Hampton Court Palace bore over 500 bunches of grapes. These were sold to the public at 5s. a pound.

12–13*th*.—Sir William Lobjoit, O.B.E., presided at the 25th Annual General Meeting and Conference of the Horticultural Education Association at the Edinburgh and East of Scotland College of Agriculture.

24–25*th*.—Annual General Meeting of the Horticultural Trades Association at Worcester.

26*th*.—The North of England Horticultural Society held a most successful three-day show at Harrogate, which was opened by Lady Barran. In the opinion of Mr. A. S. Galt, Hort. Organiser and Lecturer, Leeds University, the roses were the finest ever staged at any N.E.H.S. show. A silver plaque was presented to Mr. J. S. Brunton for his services to the Society.

26*th*.—The Holly Trees house and grounds, Colchester, were opened to the public as a museum and open spaces by the High Steward of the Borough, the Rt. Hon. Annie Viscountess Cowdray.

OCTOBER.

H.M. the King sent a special donation to the Royal Gardeners' Orphan Fund of £15, as the Sandringham Horticultural Society's Show was not held on account of his illness.

The King of Siam, an old Etonian, gave an Italian Garden to Eton, which was constructed opposite College Field near the Provost's lodge.

A lady, who desired to remain anonymous, presented Holme Lacy with its beautiful gardens and 340 acres of grounds to the county of Hereford, on condition that the house was not pulled down or sold without her consent.

Studley Court, with 32 acres of ground, near the centre of Stourbridge, was given to the town for a public park by Mr. Ernest Stevens in memory of his wife.

As a memorial to the late Mr. Bernhard Baron, his son, Mr. Louis Baron, offered to pay for a pavilion in Regent's Park for the use of those playing games there.

The Lord Mayor and the Lady Mayoress entertained the Fruiterers' Company to dinner at the Mansion House, when the annual presentation of home-grown fruit was made by the Company. This was afterwards given to various charities. The Lady Mayoress was presented with a case of silver spoons.

At the twenty-third Annual Meeting of the Salisbury Gardeners' Society the Chairman, Mr. S. W. Tucker, the Hon. Tres., Mr. P. Baglin, and the Hon. Secs., Mr. F. Gullick and Mr. C. J. Phelps, were presented with gifts from the members in recognition of their twenty-one years' service in those offices.

Mr. J. B. Philip, Hon. Sec. Deeside Field Club and Editor of the *Deeside Field*, was presented with an inscribed gold watch and chain from the members, as a recognition of his services since the foundation of the Club.

Mr. Charles H. Wright, A.L.S., retired, under the age limit, from the Kew staff after forty-five years' service in the Herbarium.

The National Gardens Guild reported that its branch, the Prisons Gardens Association, had up to date appointed lecturers to fifteen prisons. The aim of the Association is to attach an experienced horticulturist to every prison and Borstal Institution in the country.

A local Committee was formed at Malvern to raise funds for the purchase of existing quarry rights on the Malvern Hills, and so prevent further disfigurement.

The Roads Beautifying Association appealed for funds to purchase

strips of land in Bucks., along the proposed North Orbital Road, in order to give "a visible example of the combination of beauty and convenience in places threatened with ugliness and waste."

Chrysanthemum Shows, in accordance with annual custom, were on view in Finsbury, Southwark and Waterloo Parks.

A pumpkin cut at Wigton, Cumberland, weighed 76 lbs.

An apple, *Mére de Ménage*, gathered by Mr. J. H. Gait at Stonehaven, Kincardineshire, weighed over 19½ oz. and measured 14$\frac{3}{16}$" in circumference.

Several instances were reported of apple trees that flowered for a second time after the fruit was harvested.

Another human skull (see Aug.) was dug up in a garden. Workmen building a wall at College Crescent, Hampstead, discovered it.

Nearly 100 flower paintings by British artists were exhibited at the Fine Art Society's Galleries, New Bond St.

Mrs. Amy C. Reeve Fowkes exhibited "Beautiful Flower Pictures" at the Arlington Gallery, Old Bond St.

Miss J. Knowles and Miss G. E. Carver exhibited water-colour pictures of flowers at the Graham Gallery, New Bond St.

Mr. Van Hengelaar's flower paintings were exhibited at the Bloomsbury Gallery.

2nd.—The Masters Memorial Lecture at the R.H.S. was postponed till Nov. 5, owing to the illness of Mr. Ronald G. Hatton, Director of East Malling Research Station, the Lecturer for 1929.

7th.—It was decided by a unanimous verdict at the Demonstration and Conference at Messrs. McGill & Smith's Potato Trial Grounds, Ayr, that the intensive breeding and testing of new varieties had been of practical value.

10th.—The National Park Committee, apointed to enquire into the question of forming a National Park, held its first meeting.

10–11th.—National Conference for the Preservation of the Countryside at Manchester.

12th.—As an extension of the Manchester conference on the Preservation of the Countryside a conference was held on the preservation of Lakeland at Ambleside. Mr. Oliver Stanley, M.P., remarked that "Government Departments, with their peculiar views as to the feasibility of pylons, electric standards, telephone posts, and cables, showed an attitude of mind only to be described as an ostrich complex." But objectors "could not hope to obstruct; they could only divert."

16th.—Mr. R. E. L. Vaughan Williams, K.C., accepted Sir Frederick Richmond's offer of the Severells Estate near Friday Street to the Friday Street Preservation Fund for £8,500. The estate is to be handed over to the National Trust.

The National Sweet Pea Society held its Annual General Meeting in the offices of Messrs. James Carter & Co., Raynes Park, after the President, Mr. Harold Beale, had entertained the members to lunch there. On vacating the chair, at the end of his year's Presidency, Mr. Harold Beale was presented with the Society's Gold Medal and a framed autographed photograph of a group at Norwich Show. The Society's Gold Medal was awarded to Mr. Hugh Dickson. The winners of the Essay Competition were Mr. George de la Perelle, Mr. John A. Strickland, and Mr. Thomas Baines.

17th.—4,015 apples were gathered from a tree belonging to the

Marquis of Huntley at Orton Hall, Peterborough. The tree was grown from a pip of an Australian apple sown in 1887.

19*th*.—Chrysanthemum Shows in Battersea and Victoria Park opened.

The Archbishop of Canterbury, speaking at the conference at Canterbury organised by the Kent Rural Community Council, said: "Their object was not to prevent people from coming into the country, but to preserve the country into which they wished to come." He referred to the "intolerable, hideous, and impudent kiosks," adding that "there was a danger of Kent, the Garden of England, becoming a succession of tea gardens." As for the petrol stations, "even the attempts which were made to make them less hateful than they were by surrounding them with flower-beds only made them more glaring."

22*nd*.—Under the presidency of Sir William Lawrence the Dorking and Leith Hill Preservation Society was started. A telegram was sent from the meeting to Mr. Roland Vaughan Williams to convey gratitude and appreciation of the efforts made by him and his wife to save Friday Street for the nation.

23*rd*.—At the Annual Meeting of the British Gladiolus Society the proposal to award the Society's silver-gilt medal to Mr. T. E. Wolstenholme, Secretary of the Southport Flower Show, was carried with applause.

The Roads of Remembrance Committee arranged for the planting and dedication of an oak tree in memory of Flight Lt. Philip Johnston, R.N.A.S., on the Kingston By-pass near Kingston Vale.

The National Carnation and Picotee Society, and the British Gladiolus Society, provided the floral decorations for the Colchester Oyster Feast. The Mayor's Parlour was decorated by local growers with roses, and a display of the trophies and cups won by them during the season.

24*th*.—The ninth Holland County Potato Show was held. Thirteen cups were offered for competition, and the South Lincolnshire Wholesale Potato Merchants' Association presented a Trophy for the best trade exhibit of Potatoes.

25*th*.—H.R.H. Prince George opened the Imperial Fruit Show in the Bingley Hall, Birmingham. There was a notable exhibit from the Empire Marketing Board of empire grown fruit. East Malling exhibited specimen apple trees on different root stocks.

26*th*.—At the annual meeting of the New Forest Association it was decided that action be taken to counter the encroachment of self-sown firs on the open heath.

30*th*.—Conference of retail fruiterers at the Imperial Fruit Show.

31*st*.—The new London Fruit Exchange was opened by the Lord Mayor. After the ceremony the Lord Mayor auctioned a basket of fruit, which realised 130 guineas for the Fruit Trades Benevolent Fund, and a second basket fetched 125 guineas. To commemorate the opening a dinner was given at the Guildhall.

Immediately after speaking "with emphasis against band performances in the public gardens on Sundays," an Edinburgh Town Councillor died in his seat at the council.

Luncheon and conference of fruit growers at the Imperial Fruit Show.

The Linnean Society's Annual Dinner and President's Reception.

NOVEMBER.

Prof. C. V. Boys presented Kew Gardens with a specially designed sundial, constructed by himself on a pillar that was one of the balusters of old Kew Bridge. The dial is correct for the Kew Latitude. A table of instructions explains how Greenwich mean time, or Summer Time, may be read to within a half-minute.

The Rev. W. G. Clarke Maxwell gave the mansion of Monkeaton Park with its gardens, valued at £20,000, to Derby, the Derby Corporation having decided to buy 180 acres of the property for a public park.

At the Livery Banquet of the Worshipful Company of Gardeners the President of the R.H.S., Mr. Gerald Loder, presented the Hon. Fellowship of the R.H.S. to Mr. E. A. Ebblewhite, in recognition of his long services as Clerk to the Company.

The first prize in the Potato-cropping competition arranged by the Scottish Agricultural Industries, Ltd., was won by Mr. John Hamilton of East Kilbride, with a yield of 23 tons 11 lbs. to the acre. Messrs. Bryd Bros. were second with 22 tons 3 cwt. 2 qrs., and Messrs. R. & J. Logan, third with 20 tons 10 cwt. 2 qrs. 24 lbs.

The fine avenue of elms and sycamores, ¾ mile long, from Pluckley to Surrenden Dering, now a school, was felled and sold for timber. An appeal for funds to purchase it for the nation, though it met with an immediate response, was not initiated early enough to stop the destruction of the trees.

In connection with road widening in Park Road, Regent's Park, the Marylebone Borough Council decided to remove the old trees and plant 107 young plane trees on the sides of the widened road.

A special exhibit was on view in House 14*c* at Kew Gardens, illustrating the history and development of the Chrysanthemum.

Mrs. Harry Dewhurst exhibited flower paintings at the Graham Gallery.

2nd.—The King and Queen sent a birthday message to Mrs. Ann Leighton on her 100th birthday. She worked with her late husband in making the Leighton Nurseries—now the Johnson Nurseries.

4th.—The First Commissioner of Works and residents in Powis Road, ow, planted trees on both sides of the street.

5th.—The Men of the Trees held a two-hour exhibition of tree pictures at the Rembrandt Hotel, Kensington.

The beautiful paintings of fruits done by W. Hooker for the R.H.S. in 1815–16 were displayed at the R.H.S. show.

7–8th.—National Chrysanthemum Show. The Holmes Memorial Challenge Cup was won by Sir John Ward.

11th.—Under the scheme of the Roads of Remembrance Committee, eight roads were planted with " trees of remembrance " by the boy and girl captains of Headston Council School, Pinner.

The purchaser of a five-acre plot of building land at Bedfont was fined 40s. and 21s. costs for failing to destroy certain weeds upon it when notified in June that this should be done. The ground adjoined cultivated agricultural land.

18th.—Excavations in the garden of Benwell Park, by members of the North of England Excavation Committee, on the site of a Roman Chapel of Standards, disclosed a vault made about A.D. 120–140. Coins and a sword-hilt were also found.

19th.—At the R.H.S. Show, Mr. C. Engelmann exhibited three varieties of roses cut at Murray Hill, New Jersey, U.S.A., eleven days previously. Two of the varieties won the A.M.

A novel competition was held at the R.H.S. Show. The Society and the Ministry of Agriculture offered prizes for Walnuts, with a view to discover good strains growing in this country. Exhibitors were requested to supply twelve shoots from each prize-winning tree, from which scions could be made and grafted at East Malling for propagation. Two of the trees obtained would be returned to the original grower. It is hoped in this way to discover the best varieties in the country and improve the stocks of home-grown walnuts. The East Malling Research Station put up an informative exhibit, with specimens of nuts and young trees. Demonstrations were given of stratifying the nuts for spring sowing, of grafting methods, and other work.

Lady Falmouth, Chairman of the Swanley Horticultural College, at the Annual General Meeting referred to the need for more scholarships for students anxious to obtain help for horticultural training.

20th.—The L.C.C. advertised the intention of presenting a Bill to seek from Parliament power to prohibit building in the 450 garden squares of the London area; to authorise the local authority to take over such as may be neglected (with compensation to the owners); and to compel owners to keep squares in good order.

Annual Meeting and Dinner of the Iris Society.

The British Carnation Society held its Annual Meeting and Dinner.

20th–21st.—The British Carnation Society's Thirty-seventh Show.

21st–23rd.—The third of the Norfolk and Norwich Hort. Soc. Centenary Celebration Shows.

22nd.—At a meeting of S.W. Lancashire farmers in Liverpool it was agreed that for a period of a month none of those present would sell potatoes in Liverpool Market at under £2 per ton, in consequence of the glut and resultant low prices. The President of the Liverpool branch of the N.F.U. pointed out that the importation of foreign potatoes was forbidden in Ireland, and in Liverpool the glut was mainly due to heavy importations from France and Spain. He suggested that surplus potatoes should be sent to the sugar beet factories and dried for cattle food.

26th.—Mr. W. Stewart, N.D.H., Superintendent of the Royal Hospital Gardens, lectured at Prince Henry's Room, Fleet St., on "The Construction and Cultivation of Window-boxes," in connection with the London Gardens Guild Window-box campaign.

DECEMBER.

Much damage was done by the severe gales to trees in various parts of the country, and some fatal accidents occurred through trees falling. Trees across the permanent way interfered with road and railway traffic in many places.

The Gardens Committee of the Queen's Institute of District Nursing in the Report for 1929 stated that 690 gardens were opened and the sum of £7,765 was raised. The largest item was £834 15s., sent from Sandringham gardens by H.M. the King. The next highest totals were £688 8s. 10d. from Sussex gardens, £599 3s. 11d. from Surrey gardens, and £509 5s. 4d. from gardens in Kent.

Mr. W. J. Bean, on his retirement from Kew, was appointed Advisor and Consultant on the planting of Highways to the Ministry of Transport.

Subsequent to the retirement of Mr. Walter P. Wright the Kent Teachers' Association held a reception and presented him with a handsome piece of plate in appreciation of his services, particularly in the development of school gardening.

Mr. H. B. Witty, on his retirement from the post of Superintendent of Parks, Cemeteries, and Recreation Grounds at Hull, was presented with an illuminated address by the Hull Parks and Burial Committee in recognition of his services.

Scottish potato growers complained that the prices offered for potatoes were nearly 50% less than the cost of production.

It was estimated that some 9,000 rabbits had been killed during the year on the Burghead estate, Morayshire, that the Scottish Forestry Commission took over for afforestation.

Mr. Olin Howard exhibited pictures under the title of " Flower Moods " at the Cooling Galleries.

3rd.—A meeting was held at the Hôtel Métropole by the invitation of Sir Harold Boulton and Sir James Calder, to discuss the formation of a Wood Preserving Association.

7th.—At the annual meeting of the Windsor and Eton Rose and Hort. Society at Windsor Guildhall, Lady Crichton, the wife of the retiring President, handed an inscribed silver tray to the Hon. Sec., Mr. J. H. Harding, in appreciation of his services.

At the conference of the potato industry at Spalding, the chairman, Mr. J. Blindell, M.P., issued a statement to the effect that in view of the serious state of the potato trade a special emergency committee to form a British United Potato Marketing Board. Special measures were to be adopted by all growers with regard to the marketing of the year's crop.

9th.—The L.C.C. Education Committee's Special Services Committee were urged by a deputation from the Guild of Blind Gardeners to give instruction in gardening in all schools for blind and myopic children, and employ as many myopic boys as possible in the parks and open spaces.

At a lunch at the Liverpool Street Hotel the Assistant Manager of the London and North-Eastern Railway announced that efforts were in progress to assist the marketing of fruit, potatoes, sugar-beet, etc., and a joint committee had been set up with the National Farmers' Union.

10th.—Inaugural meeting of the Alpine Garden Society at the R.H.S. new Hall.

11th.—An urgency meeting of the Directors of the Scottish Chamber of Agriculture was held in Edinburgh to draw public attention to the very grave position of the potato trade. It was agreed to circularise every Member of Parliament in England and Scotland, and to try and arrange a conference with the leaders of the three political parties.

13th.—A potato dealer of Auchterforfar, Forfarshire, was fined £10 and £44 9s. costs at Lincoln under the Wart Disease (Potatoes) Order, for selling potatoes with a false " clean land " certificate from an area infected with Wart Disease.

14th.—Princess Mary, Countess of Harewood, received gifts at the

Windsor Guildhall for the Princess Christian Infant Nursery at Windsor. The gifts included flowers, fruit, and vegetables from the Royal gardens.

The Fifty-first Annual General Meeting of the National Carnation and Picotee Society was held at the new R.H.S. Hall.

19*th*.—" The Piper and His Dog," a seventeenth-century stone group by Caius Gabriel Cibber, was sold with other garden ornaments from Welcombe House, Stratford-on-Avon, at Sotheby's for £115, and a marble figure of Diana with a hound for £170.

NATIONAL ROSE SOCIETY'S TRIAL GROUNDS

It was reported at the Annual Meeting of the Society in January that 2,030 plants had already been received and planted. Varieties are identified by number only, as a means to secure to raisers the safety of their new productions, and with the same object in view certain rules have been laid down with regard to visitors. Admission, members only, is by permit for a fixed date, Saturdays and Wednesdays from the middle of June to the end of September. These permits are not transferable. Roses are frequently inspected by the special Committee, and First Class Certificates will be awarded seedling Roses after extended tests.

BOTANIC EXPEDITIONS, 1929

Great Barrier Reef Expedition

An expedition arrived on Low Island, 40 miles north of Cairns, N. Queensland, in July 1928 for a year's work and observation of the life in a tropical coral reef area. Mr. G. Tandy was the Botanist with the expedition. The Low Islands offer many interesting botanical problems, with mangrove swamp to windward. *Rhizophora mucronata* is the dominant tree.

Imatong Mountains, Soudan, Expedition

Dr. T. F. Chipp, of the Royal Botanic Gardens Kew, visited the Imatong Mountains in February. A hundred specimens were obtained and a new northern record for mountain flora of the East African equatorial mountains, and a further link with the vegetation of the Abyssinian plateau and high mountains of west equatorial Africa. The collection has been placed in the Herbarium at Kew.

Indo-China Expedition

Mr. F. Kingdon Ward left England on February 9th, to join the Rooseveldt expedition in French Indo-China. (The Gardener's Year Book, 1929, p. 39.) It was expected that the meeting would take place somewhere in Laos, near the frontiers of Burma, Yunnan, and Siam.

Starting from Mandalay on March 14th, Mr. Kingdon Ward proceeded by motor lorry 280 miles across the Shan plateau to the Salween river. Beyond the Salween there was only a mule road, but at grave risk the lorry was driven on to Kengtung, 400 miles from Mandalay. Here the baggage was transferred to mules and the journey continued eastwards to the Mekong river, where it forms the frontier between the Burmese Shan States and French territory. Before the Mekong was reached, however, the expedition diverged from the route in order to climb a mountain over 8,000 feet high. This mountain, the highest in the Southern Shan States, was found to be covered with forest to the summit. A fine white-flowered "Maddeni" Rhododendron was collected, and another species, not in bloom, discovered. Magnoliaceae were abundant here, and several fine Orchids.

The Mekong was crossed on May 1st, and three days later Mr. Kingdon Ward reached Muongsing, the first French outpost. From here the mules were sent back to Kengtung. Owing to a bad attack of fever, Mr. Kingdon Ward was held up in Muongsing for



RAFTS DESCENDING THE MEKONG



MOUNGSING, WHERE MR. KINGDON WARD WAS LAID UP WITH FEVER

Photographed by F. Kingdon Ward] [*To face p.* 158

six weeks. Meanwhile news was received that the Roosevelt party could not get through; but touch was established with another detachment of the expedition under the leadership of Mr. Harold J. Coolidge, fifteen marches distant from Muongsing. Owing to sickness in this party, however, followed by the tragic death of one of the Americans, contact could not be made.

In the second week of June Mr. Kingdon Ward left Muongsing and, marching two days' journey over the mountains, reached the Namtha river. The rainy season had now begun, and travel in Laos, except by boat or raft, became impossible. After an exciting canoe voyage lasting six days, in the course of which many dangerous rapids were run, Mr. Kingdon Ward reached the Mekong again. Here he transferred to a raft for the 170 miles voyage to Luang Prabang.

During the canoe journey many interesting trees were seen, and a number of plants collected, including a magnificent scarlet Bauhinia, an Oak, a big Millettia, species of Acacia, Engelhardtia, Ficus, etc. The jungle was very thick, and the river was often enclosed by sheer cliffs. Luang Prabang was reached on June 23rd, and a week later the raft voyage was resumed. From Luang Prabang to Vientiane, the capital of Laos, is 290 miles, and at this season when the Mekong is high it takes nine days. Only a limited amount of collecting was possible, when the raft was tied up for the night. The last 250 miles on the Mekong, from Vientiane to Savanakhet, was done by steam launch in 2½ days.

There is a motor road from Savanakhet over the Annamite range to Hiré on the coast of Annam, about 250 miles distant. This was travelled by lorry in two days, and was chiefly interesting because a totally different type of forest is passed through within 50 miles of the Mekong. Instead of the dense jungle which lines the banks of the river this forest was quite open, more like a park, with stunted trees. Many herbaceous flowering plants were noticed, and a small collection made. Hiré was reached on July 13th. The climate of the coast strip is very different from that of Laos, most of the rain falling in the winter instead of the summer. A collection of plants was made on the sand dunes of the China Sea.

Mr. Kingdon Ward left Hiré by sea on July 19th, reaching Saigon on the 21st. Here he met Col. Theodore Roosevelt and Mr. Harold Coolidge. Two days later the expedition broke up, the Americans sailing for the United States, while Mr. Kingdon Ward returned to Rangoon via Singapore and Penang. The trip across the south-eastern peninsula of Asia, from Mandalay to the China Sea, had taken four months. As a reconnaissance for future work at any rate the journey was a success.

Iraq and Persia Expedition

Mr. J. M. Cowan, of the Royal Botanic Gardens, Kew, and Mr. C. D. Darlington, of the John Innes Horticultural Institution,

visited Iraq and Persia between March and June. A collection of living bulbs and succulents and dried specimens was made, largely in North-west Persia. The route followed was: Bagdad, Kermanshah, Hamadan, Danlatabad, Burujivd, Khurramabad, Sultanabad, Isphahan, Qum, Tehran, Kasvin, Zinjan, Tabriz, Urmya, Ushnu, Ardebil, and Astera. The expedition was financed by the Empire Marketing Board and the John Innes Horticultural Institution.

Mishmi Hills Expedition

On January 6, 1929, Mr. F. Kingdon Ward reached England on his return from a plant-hunting expedition in the Mishmi Hills.* He and his companion, M. H. M. Clutterbuck, left Sadiya on March 1, 1928, to proceed up the Lohit valley to the wild tangle of jungle, hills, and rivers beyond administrated territory, rising northward to the ranges that lie between Upper Burma, Tibet, Assam, and China. Their route lay first down the Tidding valley to the steep-sided narrow valley of the Lohit. The Delei river was reached on the 15th, where they camped for three weeks before starting over unexplored ground up the Delei valley. The valley flora was found to be very similar to that on the Sadiya plain. Woody Leguminosae in a variety of forms, trees, climbers, and shrubs, including a new species of Aerocarpus, provided the prominent feature. The Araliacae were also conspicuous. There were some orchids, mostly epiphytic, and a species of Aeschynanthus made gorgeous display with flowers in balls of vivid scarlet. No temporate flora was found till the Delei-Dou divide was climbed, where at 6,000 feet the fringe of the temperate forest was reached, with Rhododendron, Pieris, Gaultheria, and Ilex.

Throughout the expedition, owing to the animosity of the Mishmis, there were more than the usual difficulties over carriers, even from the outset, but by April 4th a start was made up the Delei valley. The Mishmi path was difficult from the first, through tropical jungle, over boulders in the river bed, and up and down steep cliffs. Chiboan, the second camp, was reached after a climb of some 1,500 feet, a fine Dendrobium being collected on the way and a promising Gaultheria that appeared robust, but, at only 5,000 feet, may prove tender. From this camp trips were made into the temperate rain forest, where *Magnolia rostrata* was prominent, and *Michelia Wardii* discovered, together with *Mahonia calamicaulis*. The higher ground proved fairly open as compared with the impenetrable secondary growth between it and the land cultivated by the Mishmis. Among the Rhododendrons was an "Irroratum" with flowers of blackberry-and-apple colour, unique in that section, and a "Thomsoni" with leaves nearly a foot long. The forest was unusually rich in species of Calanthe or Phaius. A bushy evergreen (like an Osmanthus) with prickly stems was notable among

* See The Gardener's Year Book, 1929, pp. 37–9.

the undershrubs, with numerous fragrant white flowers among its scarlet berries of the previous winter. As a woodland plant it is possibly not hardy.

Chibaon was left on April 19th. The next halt showed no change in scenery or vegetation. Dark gullies, precipitous flanks, ravines, cliffs, and dense forest stretched indefinitely between the explorers and the snow-clad peaks. From this camp a ridge was reached at 9,000 feet which ran up to the main range. Several good Rhododendrons were found. A special feature of the vegetation was the number of smaller Ericacae, though none of the new species found were out of the common. A small Rhododendron, *R. mishmiensis*, with flowers of crocus yellow, was occasionally found growing epiphytically; another habitually or alternatively epiphyte, found growing from 4,000 to 7,000 feet, was the white *R. dendricola*. An "Edgworthii" of similar habit bore white flowers banded with rose-purple on the reverse. Another yellow, *K.W.*8163, was the deepest yellow known in the "Grande" section. Tree Rhododendrons abounded in the Delei forest. *R. megacalyx*, *R. aureum*, and the new *R. deleiensis* were also collected here.

The next move, to Tablekon, brought them within what had been supposed to be possible distance of the pass, but on investigation it was found that the Delei river simply rose on the southern face of a minor range and its gorge was a hopeless cul-de-sac. As further advance proved impossible it was decided to attempt to reach Kaso, a peak over 15,000 feet, far back on the Delei-Dou divide. A precipitous ridge led towards it. A camping ground was reached at 10,000 feet, and there the next six weeks were spent, failing the possibility of reaching better ground.

No Primulas were met with until June 4th, when, after climbing the ridge and descending through an Abies forest, a new yellow "Nivalis" (*P. mishmiensis*) was found on a rocky cliff. Further on more alpines were seen, including a dwarf bearded Iris, probably the same as one collected in the Seinghku valley. A further ascent brought them to the snow. The narrow ridge was carpeted with dwarf and scrub Rhododendrons and "Yellow Peril," previously collected, grew everywhere round. From this camp three alpine Primulas were found, growing with a few other plants on the rocky cliffs, and three forest Primulas in the woodland gullies with a good Lysimachia. One of the forest Primulas (*P. Normaniana*) should prove a notable addition to the "Geranioides" section. The flowers are bright purplish pink, with orange or crimson eye and frilled petals. A butter-yellow "Candelabra" (*P. polonensis*) grew with the "Geranioides." Another of the latter section, a poor thing with purple flowers, grew with the handsome red-flowered *P. rubra*, a most attractive plant quite unlike any other "Sikkimensis." In one spot only was found a dwarf "Sikkimensis" with large creamy flowers. The violet *Omphalogramma Souliei* was common all along the upper part of the ridge. Masses of *Primula calthifolia* grew

on the northern slope, and plants of the alpine meadow type were showing.

On July 1st a start was made up the ridge to a camping site above the last firs, some 12,000 feet up. Hundreds of a maroon Nomocharis with many other alpine flowers grew in a valley a few hundred feet below. Another Nomocharis, which proved to be *N. aperta*, grew on the gravel flank of the ridge. One Meconopisis, probably *M. impedita*, was seen, and flowering plants of *M. paniculata*, not hitherto known outside Sikkim and Nepal. There was no great variety of alpines, as the forests continue up almost to the snow line and the rock everywhere is dark granite and closely banded gneiss. The yellow *Bryocarpum himalayense*, previously only known from Sikkim, was common everywhere from 10,000 to 12,000 feet.

After six weeks on the ridge they returned to the previous camp in the Mishmi village. A few seeds of the beautiful Butterfly Violet (*V. serpens*) were collected with some of three other species before returning to Meiliang to send to Sadiya for further supplies. Though still on short rations another start was made up the Delei-Dou divide on August 17th, through rain forest with herbaceous undergrowth. On a ridge a path had to be cut through dense Rhododendron scrub, but by September 2nd the main divide was reached and another attempt was made to reach Polon. Eventually Polon was conquered on October 1st in a deluge of rain. On a second ascent, ten days later, the seeds of several Rhododendrons were collected, again in bad weather. By the 13th Polon, Kaso, and much of the ridge were under snow. Stress of weather, therefore, resulted in a return to the Meiliang camp, with some collection of seeds *en route*. On the 17th a start was made for a five-day trip to Kaso again. A few seeds of the beautiful creeping Rhododendron Rock Rose (*R. patulum*) were obtained, and all new Primulas. But the alps were then under deep snow. Polon, 2,000 feet lower, had less snow, so a return there was arranged. For once fortune favoured to some extent, and among other treasures secured were "bulbs" of *Primula Agleniana atro-crocea*. Ten days later these were posted to England, so within a month they were planted again, the only chance of getting flowering specimens of this glorious species. On the summit a few capsules of the beautiful creeping *Rhododendron crebreflorum*, seen on the first ascent, were obtained with great difficulty by digging the plants out of the snow. The expedition returned to Sadiya on November 3rd after eight months in the Mishmi Hills. About a dozen new species of Rhododendron and six of Primula were discovered, and seed of all obtained. Other interesting plants of which seed was secured are several Acers, including *A. Wardii*, Gaultheria spp. Ilex spp., including *I. nothofagacifolia*, the "Golden Abelia," a fine Aristolochia, *Podophyllum versipelle*, *Viburnum Wardii*, an alpine Lonicera, Arisaema spp. Hedychium spp., a new almost herbaceous Buddleia, *Dactylicapnos scandens*, and Schizandra sp. Some living Orchids were also sent

home. The botanical results of the expedition were at least as interesting as the horticultural.

Oxford Expedition to the Guiana Rain Forest

Major R. W. G. Hingston, with a party of scientists from Oxford and Cambridge, left England in July for British Guiana. A base camp was established north of the Essequibo, from which the rain forest was to be studied, especially the wild life of the tree-top zone. The expedition was financed by the Royal Society, the Percy Sladen Fund, and the West Indian Committee. The Royal Geographical Society undertook the expenses of a surveyor, and the Royal Botanic Gardens, Kew, financed and sent a botanist, Mr. N. Y. Sandwith, who had been working previously for some time on the British Guiana collections in the Kew Herbarium, with a view to preparing a Flora of the Colony. The Expedition is expected to end in January.

Somaliland

Mr. C. L. Collenette, through the Ministry of Agriculture, the Empire Marketing Board, and the Royal Botanic Gardens, Kew, joined the British and Italian Boundary Commission for the demarcation of the boundary between British and Italian Somaliland, at the suggestion of the Secretary of State for the Colonies (Mr. Amery) that a qualified botanist should accompany the Expedition. The country is botanically unknown. The Commission is expected to be at work for about six months from September 1, 1929.

South African Tour

On July 28, 1928, Mr. J. Hutchinson, Assistant in the Kew Herbarium, left for a tour in South Africa. (The Gardener's Year Book, 1929, p. 37.) The tour, which included an expedition in the Karoo, accompanied by officers of the Botanical Survey of the Union of South Africa, and up, via Natal and Grahamstown, to the Limpopo, was financed by the Empire Marketing Board, and lasted until the spring of 1929. The tour in the Zoutspanberg Division as far as the River Limpopo was made in company with General the Rt. Hon. J. C. Smuts. Many very interesting collections of South African succulent plants were sent home to Kew.

West Indies

At the request of the Commissioner of Agriculture for the West Indies, Mr. S. F. Ashby, Mycologist of the Imperial Bureau of Mycology, visited Dominica, the West Indies, Antigua, and St. Lucia, in January, February, and March, to study diseases of Limes and Sugar-canes in the West Indies.

REPORTS FROM EXPERIMENTAL STATIONS

CAMPDEN, GLOS.

THIS Research Station, situated in the midst of an extensive fruit and vegetable growing area, is concerned with the various aspects of the preservation of fruit and vegetables. The work may be divided under three headings:—

(1) RESEARCH.—During the past year the research work has been largely in connection with the rapidly developing canning industry. Some of the discoveries made at the Station have been of considerable help to the Industry.

Variety Trials: Strawberries.—The opening up of several new canning factories during the past few years has caused an increased demand for strawberries. Unfortunately, the strawberry crop has been falling off very noticeably over the same period, with the result that canners during 1928 were unable to obtain sufficient quantities to meet their requirements. This shortage has brought to light the necessity of planting a considerable acreage of the fruit to supply their growing requirements. It is, therefore, essential to know which of the varieties are most suitable for canning, and to obtain this information systematic tests have been carried out here during the past season. Thirty varieties of strawberries have been canned. These were obtained from sixteen different districts spread over six counties.

Lacquer Tests: Fruits.—Fruits put down during 1927 in cans coated with various types of lacquers were exhibited at the Canners' Convention held at Worcester in May 1928. The improvement in the colour of soft fruits canned in double-lacquered cans was so striking that practically all the canners in this country during last season used double-lacquered cans for packing soft fruits.

Other problems which are receiving attention include: (*a*) experiments on the causes of the corrosion of tinplate by fruit acids; (*b*) the use of the vacuum-sealing process in fruit canning; (*c*) preparation of fruit syrups, fruit purees, and juices, concentrated under vacuum for use as natural fruit flavours in soda fountains, ice cream, etc.; (*d*) extensive tests on the canning of green vegetables.

(2) ADVISORY.—This section answers enquiries relating to commercial and domestic methods of fruit and vegetable preservation.

(3) EDUCATIONAL.—The educational side deals chiefly with the preservation of garden crops on a domestic scale. In addition to lectures and demonstrations to Women's Institutes, etc., five

Courses of Instruction in the home preservation of fruit and vegetables were given during the summer months.

F. HIRST, M.Sc., A.R.C.Sc.

CORSTORPHINE.

The Registration Station deals with comparative trials of new varieties of potatoes immune from Wart Disease, and with their ultimate official registration as improved varieties. It also tests varieties for immunity. The work includes the selection of virus-free units of varieties and the building up of healthy stocks from the selected units. Investigations into methods of estimating the tolerance of varieties are in progress; also comparative testing of new varieties of cereals for registration as improved varieties. The number of seed samples examined in 1928–9 was 8,788.

CHESHIRE SCHOOL OF AGRICULTURE.

The experimental 3-acre orchard laid down in 1921 is now proving of great interest. The trees are all on type stocks, as classified by East Malling. It is obvious that there is a marked difference in the growth of trees, and those on Type IX particularly have yielded heavy crops. Very little fruit has yet been gathered from those on Type I, Type XII or XVI. Growths may be gauged by quoting the average height in the James Greive variety. We have James Greive on Type IX, average height 2′ 9″, on Type II = 4′ 9″, on Type I = 5′ 9″, on Type XVI = 6′ 6″.

Spraying.—The tar-distillate spraying trials carried out for 3 years in 3 counties have demonstrated that the best washes—McDougall's, Mortegg, Carbo Craven, Carbo Krimp, Stentite, Abolene—do control Aphis, Apple Sucker, Winter moth, and Tortrix moth.* It has not been proved that those washes have any effect on the control of Red Spider or Capsid Bud. Trials of Lime-Sulphur for the last 3 years have shown very efficient control of Apple Scab.

Small Fruits.—Manurial trials on Gooseberries have successfully shown the effect of Potash manuring as a control of Leaf Scorch, with a corresponding increase in crop. Investigations are still being carried out in (1) methods of pruning Black Currants; (2) varieties of Raspberries; (3) varieties of Strawberries, and the selection of first plants from the runners of healthy plants—sub-stations are being set up for this work in various parts of the country.

Vegetables.—Variety trials have been in progress for 3 years in Cucumbers, Celery, and Onions. The Onion Trial was established at the request of the Giant Onion Societies in order to enquire into the best varieties for Show purposes. Results have shown that Crossling's Selected Onion gives in every case the heaviest

* Results were published in *The Fruit Grower.*

bulb. Other good varieties have been Dickson and Robinson's Premier, Sutton's Selected Ailsa Craig, and Cranston's Excelsior. The Celery Trial has shown that the following varieties are useful for both show and market: Dickson and Robinson's Late Pink, Clucas' Prize Pink, Clucas' Market White, Watkins and Simpson's White Perfection, Daniel's Giant Red. Over 400 varieties were grown in the trial plots. The results of one year's Cucumber Trials appeared in a previous issue (*Year Book*, 1928, pp. 282–3).

DISEASES.—Investigations into the control of *Club Root* and *Cabbage Root Maggot* in Brassicas have been satisfactory. The use of Mercuric Chloride is recommended as the best control so far under experiment. The spraying of Bordeau Mixture as a control of *Celery Rust* has been satisfactory.

MANURING.—The use of Bacterised Peat as a manure has been the subject of trial on a small scale.

FLOWERS. *Annuals.*—Investigations have been carried out in the sowing of annuals in the autumn as a commercial proposition. Cornflower, Nigella, and Larkspur, sown in September, have all stood the northern rigorous winters and have been cut 3 weeks, in some cases a month, before the spring-sown ones. Further trials are in progress.

CHRYSANTHEMUMS.—All new outdoor flowering varieties are placed in the trial borders every year.* The costs and returns in connection with the disbudding of Chrysanthemums have received attention, and it has been shown that there is usually a difference in the returns from beds of plants disbudded and similar beds grown spray (undisbudded). The manuring of Chrysanthemums is now under investigation.

GENERAL WORK.—Soil sterilisation has been experimented with and a £12 brick-built baking apparatus has been found easier to use and just as efficient as a similar and dearer steam plant.

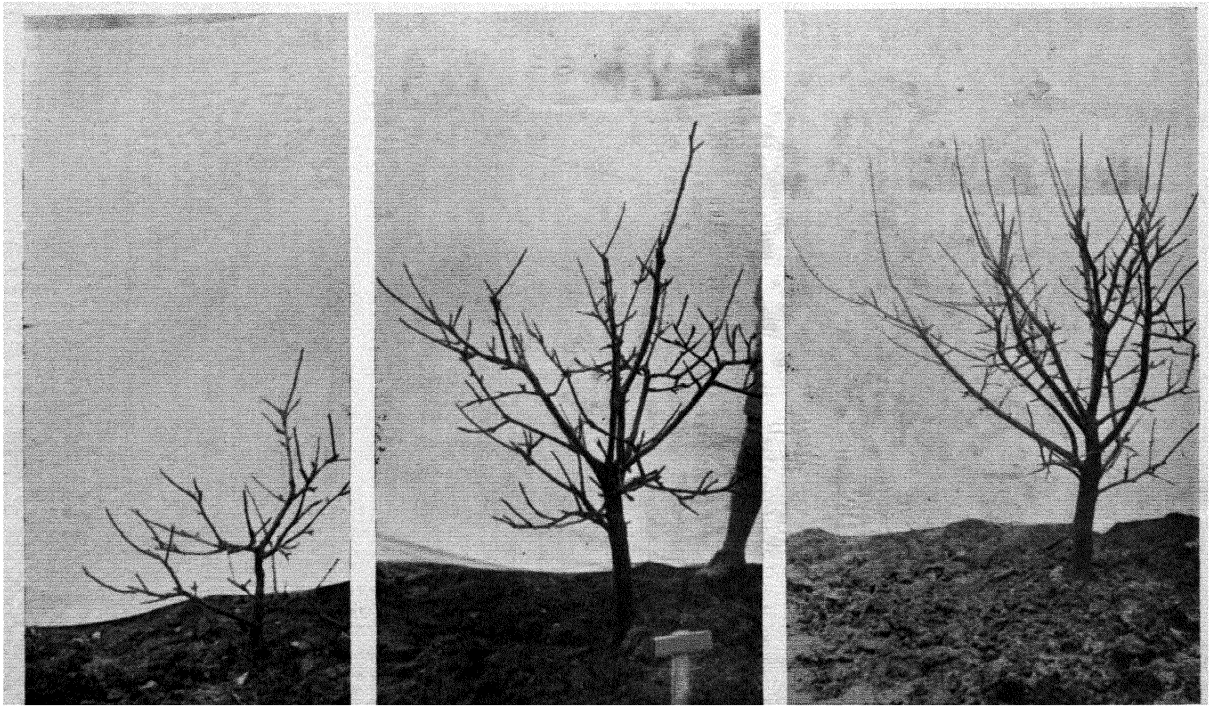
A collection of some 13 Rhubarb varieties has been established. At present the only variety showing a reluctance to seed is The Sutton.

The manuring of Lawns, from the point of view of erradicating weeds and the general improvement of the grass, has shown that Sulphate of Ammonia is very satisfactory. Good results have been obtained by the application of 2 oz. to the square yard three times in the season, in June, July, and August.

POTATOES.—Experiments have been carried out on the question of earliness of maturity and costs returns. The market grower who markets his potatoes early for the sake of enhanced prices, does he lose owing to the crops being small? We have found that in a month a crop may double itself. In that case unless the price at the beginning of the month is double that at the end, the grower gains nothing by early marketing.

W. E. SHEWELL-COOPER, C.D.H., F.R.H.S.

* Reports are published in the *Gardener's Chronicle*.



Apple "James Grieve," eight years only. (1) *On Type IX,* (2) *on Type II,* (3) *on Type I, as classified by East Malling. All trees planted side by side at the Cheshire School of Agriculture Experimental Station.*

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EAST ANGLIAN INSTITUTE.

Investigations are being carried out on: (1) Spraying of Fruit Trees to control Apple Scab; (2) Spraying of Fruit Trees to control Red Spider; (3) Manuring of Fruit Trees; (4) Control of Parsnip Canker.

EAST MALLING.

Investigations in progress may be outlined as follows:—

1. *The Small Fruits* (including currants, raspberries, gooseberries, and strawberries) grown upon their own root systems. Work in these cases consists first in building up a collection of varieties to be used for the initial establishment of systems of description, classification, and nomenclature. Then follows selection and propagation of desirable strains and experimental work upon the cultural conditions required by each, attention being given to the raising of new varieties. The incidence and control of fungus and insect diseases and pests are investigated in collaboration with the Pathological Staff.

2. *The Tree Fruits* which are usually grown as composite trees, the desired variety being vegetatively united, by grafting or budding, with an extraneous root system previously established. The varieties under investigation include apples, pears, plums, and cherries. Special attention has been given to root-stocks in view of the control of the performance of the tree which can be obtained by root-stock selection in the nursery stage. Collection, description, classification, and nomenclature have also been the first problems in the case of root-stocks. Following this, methods of vegetative propagation of selected varieties have been sought, and the Physiological Section has collaborated in this investigation. A detailed study of the reciprocal influence of stock and scion as indicated by vigour, cropping, disease resistance, root development, etc., has called for the co-ordination of the activities of all sections of the Staff. In the course of this work it has been found possible to effect a considerable measure of standardisation of horticultural material, and to obtain some knowledge of its potentialities. Such standardisation is absolutely necessary, not only for the effective planning and control of a commercial plantation, but also to reduce to reasonable limits the size of the plots necessary for experimental work.

It has also been necessary to develop a technique in relation both to experimental plot planning and to measurement and observation, which, whilst adaptable to field conditions, will also afford results of known reliability. By these means it is possible to make a much more intensive study than hitherto of the reactions of the tree to external factors such as soil conditions, planting methods and pruning, spraying and manurial treatments, all of which subjects are under investigation. The control of apple scab

and mildew, the brown rot fungi, and the bacterial canker of stone fruits are being dealt with by the Mycology Section. Similarly the Entomology Section is engaged in the testing of egg-killing washes, and in investigating the control of apple sawfly.

The Range and Distribution of Apple Root Systems.—The performance of a fruit plantation is frequently determined in some measure by the root growth of the trees. This fact has recently received much wider recognition than has hitherto been the case, probably due, to a large extent, to research work which has shown the very definite effects upon tree growth and fruiting obtained by the use of different root-stocks. The fact has remained, however, that at present our knowledge concerning the actual form, spread, depth, growth, and general behaviour of fruit tree roots after the first year or so from planting is comparatively slight. This is scarcely to be wondered at, for while the branches of a tree are visible and accessible, the roots are securely hidden below ground, and are by no means easy to study, particularly as the tree becomes larger.

The programme of intensive research on the roots of mature apple trees in operation at this station for two years, forming part of the general study of root-stocks, has already produced interesting and important results. The work involved the excavation in detail of the complete root systems of a number of comparable mature trees, whose whole life-history is known, grafted on various root-stocks, and growing in two different soils. The method used to isolate the root systems was to dig a trench beyond the area of the roots, and work it in definite steps across the whole area of soil into which the roots extended. The roots were carefully removed as the soil was loosened. Qualitative observations were made by mapping the roots individually. Finally it was possible to reconstruct the whole tree with each root in its original relative position. Quantitative results were obtained in other cases by removing the soil permeated by the roots in blocks of known size and position. The contained roots were then washed, graded, and weighed in the laboratory. A combination of the two methods has been used in later excavations. The trees excavated have all been of the variety Lane's Prince Albert, aged ten to eleven years, part of two of our Stock Trial Plots, on medium loam at Malling (Lower Greensand) and light sand at Wisley (Bagshot sands).

The excavations show clearly that on both these soils the roots extend far beyond the branches. While the greatest weight of root is naturally in the area nearest the trunk, the fine fibrous roots are fairly evenly distributed over the whole area of the root system, a fact which indicates that for greatest efficiency manures should be spread over an area considerably greater than that covered by the branches of the tree. The old practice of placing manure in a small ring round the trunk, while doubtless, tending

to encourage root development there, does not give the tree the fullest opportunity of using the nourishment provided.

The trees at Malling on vigorous and semi-dwarfing stocks, planted at 15′ apart, showed considerable root interlacing at 10 years old. The root systems were usually somewhat one-sided, but not consistently in any particular direction. The depth of the root systems was found to be much greater than was popularly believed. The deep roots did not spring directly from the trunk, but they descended, often quite vertically, from the more or less horizontal scaffolding of roots which occurs in about the top 15″ of soil. Vertical roots often followed worm burrows, which appear to have a considerable influence upon the depth of rooting of the trees. At Malling the depth limit was set by the rock (Kentish Rag) which occurs at a depth of 3′–8′ below the surface. The roots penetrated down to this, and in one case a tree on a very dwarfing stock Janne de Metz (No. IX) followed a depression to a depth of 9′ 6″. The great depth of root of these dwarf trees proves conclusively that their precocity and small size is not due in this case to shallow roots, as had previously been considered the case. At Wisley, although the sandy soil extends to a depth of several feet, the roots did not penetrate as deeply as in the loam at Malling, and nowhere came in contact with rock. There are indications, however, that a fluctuating water table may have some influence on the root distribution in the sand. It is clear that there are considerable differences in range and distribution of roots of different root-stocks in the same soil, and of similar stocks in different soils.

The fundamental importance of this new work is becoming more and more apparent. Though the moving of many tons of earth to obtain about half as many pounds of roots is a long and laborious process, the information gained cannot fail to be of value, and interesting side-lights are appearing from the Entomological, Biochemical, and Geological viewpoints. Progress in understanding all the many factors that affect fruit-tree root development is not likely to be very rapid, but it is encouraging to find such interesting results following our preliminary work.

Vegetative Propagation.—Early in the history of the Station it was realised, as the result of experiment and of observations in growing plantations, that if efficient control of tree performance was to be obtained by the use of suitable root-stocks, it was necessary to evolve methods of multiplying stock varieties possessing known potentialities in such a way as to maintain their characteristics. Until it shall be possible to discover and use races of stocks which will reproduce through seed without the variation which usually occurs in this process, the Station has concentrated its efforts on methods of vegetative propagation, whereby genetic uniformity of any given variety can be maintained absolutely, in the absence

of sudden mutations which observations shows to be of rare occurrence in the deciduous fruits. Extensive trials have been carried out over a period of some 12 years using a gre at many varieties of stocks for apples, plums, pears, and cherries. In some cases satisfactory results were obtained from the outset, but in others it has been necessary to try several methods before success was obtained.

Most apple stocks produce satisfactory numbers of rooted shoots from stools; while many plums, on the contrary, do not yield adequate crops of new plants when thus grown. Many of the varieties, when treated as layers, produce adequate numbers of new shoots annually, a large proportion of these, however, do not readily produce roots. Rooting is improved, though with some sacrifice as regards total shoot production, by covering the layers with soil immediately before bud-break, a process which results in etiolation of the bases of the shoots. The number of shoots obtained naturally increases, up to a point, with the age of the stool, and in both stools and layers it has been our common experience that better rooting occurs as the parent plants grow older, so that success has been obtained in later years with varieties which at first gave little promise. It is recognised, of course, that the procedure involved in propagation from stools and layers is somewhat troublesome, and it would be more satisfactory if equally good results were obtained from stem cuttings, but so far quinces and some varieties of plum are the only subjects which can be satisfactorily raised from hard wood cuttings. On the other hand, some Mahaleb cherries have as yet failed to respond to any propagation method except that of soft wood cuttings. Mazzard cherries and pears have been multiplied by means of layers, while many varieties can also be raised from root cuttings when material is available.

As a result of these extended trials it has been found possible to propagate vegetatively, by some method or other, every variety of fruit plant and root-stock which has been fully tested, although in order to obtain this success it has been necessary to study each variety individually, and to adapt the methods accordingly. Varieties even closely related do not necessarily react similarly to the same treatment, and generalised instructions are therefore impossible, but there is no reason to think that any variety will fail to respond to some modification of one of the many methods at the propagator's disposal.

Intelligence.—Even in the absence of any advisory staff at the Station, an effort is made to study the demand for the dissemination of information which necessarily follows the publication of results or research. In addition to 31 lectures given to agricultural audiences, 153 personal visits have been paid to growers on their farms during the past year. Over 1,200 queries have been dealt with by post, and 1,700 enquirers have visited the Station

to obtain information concerning the work in progress; whilst a large number of requests for advice have been dealt with by telephone. R. G. HATTON.

GULVAL.

Great educational progress has been made in the growing of the main crops of the area and in their marketing. Such progress can be attributed to the County Council educational propaganda work, to the demonstrations given, to the distribution of material, and to the object-lessons afforded by the Commercial Exhibitions. Among the direct achievements were: (1) the marketing of Roscoff broccoli on a commercial scale; (2) the exportation of experimental consignments of broccoli to Belgium and Germany.

The Western Commercial Show continues to flourish; while the Bulb Sterilising Station run under County Supervision is proving a great boon to bulb growers of the district.

Although a good deal of trial and experimental work goes on, our work is severely handicapped by the small size of the Station, which also functions on the lines of a demonstrative centre and enquiry bureau. Some additional experimental work has been undertaken with crops such as tobacco, pyrethrum, and the flowering periods of bulbs from various sources. The following figures and observations were compiled by the head gardener (A. E. Gunningham) and W. J. Moyse.

Apples.—There is a decided tendency with some varieties toward "biennial" cropping. This is most marked in the case of Col. Vaughan, American Mother, and to a certain extent in Newton Wonder, Allington Pippin, and Bismarck. The tendency is being kept in check by approved pruning, thinning, and manuring methods. Capsid Bug became a serious pest and is spreading, the variety Allington Pippin was the most seriously attacked. Some Cox's Orange Pippin trees had to be removed (through being badly attacked by canker) demonstrating that the variety is unsuitable for West Country planting. Various tar-oil washes were used for Winter spraying, and lime-sulphur against scab.

Broccoli.—The work of the Station in seeding, selecting, and distributing the Roscoff forms, irrespective of season, probably brought in an additional sum of some £10,000 to the district during the season 1928–9. The broccoli trials were continued with the object of grouping the different strains of Roscoff. This work aims at supplying a succession, or giving a continuity of supply, of this variety during the period November to April. Previous trials proved that the Roscoff varieties when seeded in the district give better crops than when seeded elsewhere. The cutting period of many Roscoff forms extends over a period of six weeks, and it is hoped by selection to get the cutting periods reduced, and at the same time get a succession of strains. Results of Trials:—

Early St. Laud (direct from France). December 20th.* Leaf

* First Cuttings made.

dropping bad. *Late Angers* (once grown in Essex). February 25th.* Leaf dropping bad. *Early St. Laud* (once grown in Essex). December 22nd.* Leaf dropping bad. *Early Angers* (once grown in Essex). February 20th.* Poor. *Sutton's Early Roscoff.* January 26th.* Very poor type. *Second Early Roscoff.* March 15th.* Very good indeed. *Gulval 1.* Plant Selfed. March 15th.* Excellent late strain, regular. *Gulval No. 1. Selected.* March 15th.* Showed some leaf variation, but good heads. *Veitch Roscoff.* December 19th.* Very mixed, but some good heads. *Gulval Early Roscoff.* November 23rd.* Very poor. *Gulval Early St. Malo.* November 22nd.* Very good strain; should be retained. *Gulval Half Roscoff.* Very poor. *Gulval 1925 Roscoff.* Tregoning saving. January 15th.* Produced good class heads. The seed of all varieties was sown about April 20, 1928. The Roscoff strains were subjected to a very severe test during the very cold winter, and there is much satisfaction in learning that these strains are capable of withstanding extreme cold.

H. W. ABBISS.

HARPER ADAMS AGRICULTURAL COLLEGE.

Cabbage variety trials were held, also Spinach variety trials. Experimental floriculture was concerned with varieties of Helichrysum, Calendula, and Statice.

HERTFORDSHIRE INSTITUTE.

The area of land devoted to the commercial production of crops under glass in the Lea Valley (Herts, Essex, and Middlesex) is approximately 1,500 acres. More than half of this is in Hertfordshire, where it is safe to estimate that capital amounting to £2,000,000 is locked up in the industry, and employment is found for about 5,000 workers.

The glass-house industry has a remarkable history of rapid progress and development since the first houses were built about 1880, and has resulted in the establishment and concentration of an extremely intense form of Horticultural in the south-east of the county. One notable feature has been the enterprise of the growers. There is no better evidence of this than the fact that they, on their own initiative, and originally at their own expense, were responsible for starting research work to find solutions for the difficulties experienced in growing their crops.

In such a complex and specialised business as that of growing tomatoes, cucumbers, and other crops under glass, it is of chief importance that growers and workers should have received some technical training. The large capital involved, and the lower margin of profit due to foreign competition, make the method of

* First Cuttings made.

learning by trial and error too hazardous for modern conditions. As in other industries, a groundwork of practical experience linked with technical instruction is the basis of commercial success. Similarly, high wages, unless combined with skill and a sense of responsibility, are an intolerable burden. A training centre, supported by an area of commercial glass-houses, was therefore started at this Institute. This plant is run as a demonstration, profit-earning department. It provides the indispensable practical and commercial basis for the instruction given in the class-room or among the plants. Skill in manual work is developed, and the reasons for each operation discussed or explained. Tillage, manuring, control of pests, diseases, etc., form subjects for study. Marketing, income, and expenditure are discussed and exemplified.

The area of glass erected for educational purposes extends to 1¼ acres, with packing sheds, frames, etc. Peaches, vines, bedding plants, tomatoes, cucumbers, and carnations are being grown. The aim is to grow the best possible crops at the minimum cost, and to market the produce to the best advantage. To the other activities of the Institute is now added the provision of a specialised training, practical and technical, for those who choose to take up this form of Horticulture.

LANCASHIRE C.C. FARM.

Experiments were carried out in the manuring of varieties of fruit trees, tomatoes, and other crops.

MANCHESTER UNIVERSITY.

The investigation and research work in progress in the Botanical and Entomological Departments has yielded some encouraging results. In the case of Hollyhock Rust and Fire Blight in Tulips, Mr. Holmes Smith has found it possible to control both diseases very effectively. Variety Trials of Onions for resistance to White Rot have shown the superiority of certain varieties over others, and one Autumn-sowing variety has, in addition, shown extreme resistance to frost. A simple method for the dual control of Clubroot and Root Maggot in Brassicae has been satisfactorily worked out as well as one for the control of Celery Rust; while the employment of Lime-Sulphur for the control of Apple Scab in Northern orchards has proved the most effective and least damaging to the foliage and fruits. Investigations into the cause of "Potato sickness," and the relation between the age or condition of a Potato plant and the incidence of Potato Blight, are in progress.

Further trials of tar-distillate washes continue to demonstrate the value of these Winter washes in controlling some of the more important insect pests of fruit trees. Experiments are still in progress on the control of root flies, and Mr. H. W. Miles is obtaining

interesting results with insecticides containing creosote and naphthalene. The study of the life-history of the Pith Moth of the Apple has now been completed, and a full account will be published shortly. Research work on Slugs has created a good deal of local interest, and treatment with copper sulphate continues to give satisfactory control of this ubiquitous pest. Studies on the insect pests of Ornamental Trees and Shrubs are being initiated, and it is hoped that the work will receive support.

MIDLAND AGRICULTURAL COLLEGE.

Experiments carried out during the year included investigations concerning: varieties of Onions; varieties of Beans; Carrot root fly; Onion root fly; Cabbage root fly; Parsnip canker.

T. M.

MONMOUTHSHIRE AGRICULTURAL AND HORTICULTURAL INSTITUTE.

Carried out during the year were demonstrations on Cider Orchards, Potato Variety Trials, Manurial demonstrations on vegetable plots, Dry spraying of Potatoes, Brassica and Potato Trials, County demonstration allotments.

ROTHAMSTED.

Some of the Researches carried out during 1928–9.

Physics Department.—B. A. Keen, D.Sc., F.Inst.P. Investigation of the relations between soils and water is being conducted by Dr. Keen. (*a*) Field experiments on cultivation and their effects on the soil. In this section much use is made of a recording dynamometer. (*b*) Laboratory investigation of the physical and chemical factors responsible for the production of tilth in soils.

Entomology Department.—A. D. Imms, M.A., D.Sc., F.R.S. Dr. Imms is making an extended study of the nature and extent of the control exercised by indigenous parasites and predators over the chief agricultural pests.

Bee Research.—D. M. T. Morland, M.A. The programme accords with recommendations of the Bee Research Committee, viz.: (*a*) Feeding experiments on the relative values of cane and beet sugar as winter food. (*b*) Experiments at Kimpton Hoo on the Warm and Cold Way problem. (*c*) The technique of controlled mating, particularly with the Watson method of Artificial Insemination, with a view to attacking the problems of inheritance in the bee.

Bacteriology Department.—H. G. Thornton, B.A. Mr. Thornton's inoculation investigations carried out for several years, and last year at 39 centres all over the country, have shown that after inoculation lucerne can be grown as well in the north and west of the country as in the south-east. The important practical

question remains of comparing lucerne sown in Spring with a cover crop and lucerne sown in Summer without it.

Insecticide and Fungicide Department.—F. Tattersfield, D.Sc., F.I.C. The study is being carried out of the insecticidal action of plant extracts and synthetic organic compounds, special attention being given to Pyrethrum.

Mycology Department.—Wm. B. Brierley, D.Sc., F.L.S. Dr. Brierley is continuing his work on the physiological and genetic analysis of fungi and the study of virulent strains. Mr. R. H. Stoughton is studying the " Black Arm " disease of cotton, caused by *Bacillus malvacearum.* A special grant has been made by the Empire Marketing Board for the study of the nature of virus disease. The work is carried out largely on potatoes and tomatoes.

Chemistry Department.—E. M. Crowther, D.Sc., F.I.C., A.Inst.P. The form in which nitrogen is taken by the plant is being re-investigated by Dr. Crowther and Dr. Richardson. A further and fuller study is being made of the nitrification process in soils. The influence of the growing crop and of the ploughing in of green crops on nitrification is being studied on the green-manure plots at Woburn. The enormous extension in the production of nitrogenous fertilisers from the air has completely altered the situation so far as these are concerned, and much fuller experimental work is now being carried out to discover: (*a*) the detailed effects and relative agricultural values of the different substances now available; (*b*) the influence of quantity of nitrogen and time of application on character of growth, composition and quality of crop and yield. Investigations are also taking place with regard to phosphatic and Potassic fertilisers.

B. A. KEEN.

SCOTTISH SOCIETY FOR RESEARCH IN PLANT BREEDING.

In addition to Trials of hybrid oats, over 1,500 seedling potatoes were grown for comparison and selection. Attention has been concentrated on the production of seedling potatoes of agricultural value which are free from virus disease. Several promising seedlings apparently free from virus disease are undergoing initial trials.

Pasture forms of perennial ryegrass, cocksfoot, and timothy have been collected and are being studied. Certain forms of these grasses are now being multiplied. Investigations are also being made to discover whether Plantago maritima will be of value as a constituent of pastures where there is excess of wild white clover.

Many parent " roots " of swedes were selected on the basis of chemical analysis. An attempt is being made to trace the origin of the type known as a " Bulbless Bolter." The inheritance of flesh colour in one hybrid was found to be controlled by two factors.

WILLIAM ROBB.

SOMERSET FARM INSTITUTE.

The chief work and objects of the Horticultural Section of the Farm Institute are: (1) To give occular demonstrations on the various phases of commercial horticulture, more especially relating to fruit and vegetable growing. (2) By demonstration trials and experiments to translate the work of Research Stations along practical lines, and to adapt the findings of research to the particular conditions of Somerset. (3) Comparative trials of varieties, methods, manuring, and other special treatments for the information of growers in the county. (4) To provide practical training and instruction to students by methods which should equip them with practical experience and information, and enable them to take up Horticulture as a career.

The Horticultural Section occupies about 18 acres of land. (*a*) Gardens, attached to the Institute. Five walled in portions 3 acres in area, dating back three centuries or more. Entirely replanted in 1920. (*b*) Fruit Plantation and Market Garden of about 15 acres planted in 1925 and 1929.

Institute Gardens.—When the Institute was opened in 1920 these gardens were very derelict; they were thoroughly cleaned, and were replanted to adapt them for educational purposes. The chief items of interest are: (1) Cordon Pears on walls planted in a succession of years as trees raised by students were available. These trees are on various root-stocks for trial. The varieties are those chiefly grown for commercial sale. (2) Apple trees, to demonstrate the effect of several recognised methods of pruning upon growth and cropping. (3) Other trees show the effect of manurial treatments, specialised pruning, ringing, etc. (4) There is a collection of commercial varieties of Gooseberries and Currants and recently introduced Plums.

Trials of commercial varieties of vegetables and methods of cultivation are carried out on various crops each season. A few selected kinds of flowers are grown for cut-flower sale.

Fruit Plantation and Market Garden. (1) *Taws Field.*—3 acres planted in 1925 to demonstrate the planning of a small fruit plantation. Half-standard Apples with bush apples and pears as fillers. About 1 acre of Black Currants in five varieties for pruning and cropping trials. Gooseberries and Raspberries: Collection of commercial varieties. (2) *Skippers Down.* About 11 acres planted in 1929, for demonstration experiments. (*a*) The effect of Dung, Nitrogen, Phosphates, and Potash for Apples, Black Currants, Gooseberries, and Strawberries. About 3 acres divided into 12 plots. (*b*) Demonstration of Black Currant Culture. Age of bush at planting. Promotion of Vigour. Manuring. Pruning. Comparisons of strains of Baldwin's Black variety. (*c*) Intensive planting of Apples and Pears, controlled by an adapted Lorette system of pruning and by manuring. (*d*) Vegetable Culture on

Market Garden Systems to be arranged from the Autumn of 1929. (*e*) Demonstration of varieties and strains of Asparagus, and the effects of Nitrogen, Phosphates, and Potash on growth and cropping. *The Nursery.*—Demonstration and practice in raising of fruit tree stocks. Propagation of fruit trees, bushes, and general nursery work. *Tools and Appliances on View.* Simar Rototiller Motor Cultivator. Planet wheeled tools. Various spraying machines. Powder-spraying guns, etc.

W. D. HAY, B.Sc. (Agr.).

TAMAR VALLEY (ELLBRIDGE).

An increasing interest in the work of this recently established Station is being shown by the growers of the district. Its position on the arterial road is a great asset, as it constantly reminds growers of its object—service to the Tamar Valley intensive industry. It has already achieved something, if only as a demonstrative centre for manual processes, for labour-saving devices and machinery, such as motor cultivators, dry sprayers, etc. The Station now functions as a crop weather station under the Ministry of Agriculture, and continues its work as a fruit sub-station under the R.H.S. We have still to complete the layout, particularly in the matter of roads and paths. Perennial weeds are being reduced, and the Simar Rototiller and motor hoe should help in this matter. It would be of benefit to the Station if suitable students could be obtained. The Station has already taught the strawberry growers that by selection and early (July) planting they get increased vigour, and a gain in time and crop which must mean increased returns. The striking growth between July and October planted runners could be seen half a mile away. A certain amount of the seed-saving work on Roscoff broccoli was transferred from Gulval to Ellbridge on account of its isolation from a Brassica seeding standpoint. The excellent Roscoff heads produced during the Winter show that these varieties could be profitably grown in parts of the Tamar Valley. Two public bulb sterilisers have been erected (under the Cornwall County Council's supervision) in the district. The Station supplied a quantity of strawberry runners and bush fruits to school gardens, and to a number of commercial growers.

Apples and Plums.—The influence of the different stock types on apples is becoming more apparent. The characters of precocity were constant.

Strawberries.—Time of Planting Trial. The importance of time of planting is emphasised by the phenomenal difference between July, August, and October planted runners. A grower planting early should harvest over 10 cwt. of fruit more per acre in the first bearing year, and being high-grade fruit this would mean a gross return of at least £25 per acre more than that received from late Autumn or Spring planted runners.

Broccoli.—In order to test the Roscoff broccoli in the Tamar Valley, a trial of some 12 strains was planted. *St. Malo*, selected at Gulval. Failed to germinate. *Roscoff No. 1*, selected at Gulval. March.* Good heads. *Roscoff No. 1*, re-selected at Gulval. March.* Good heads. *Roscoff No. 1*, seeded at Gulval. Late.* *Half Roscoff*, seeded once at Gulval. Late.* Damaged by frost. *2nd Early Roscoff Giles.* Late.* *Early Roscoff Suttons.* February.* Damaged by frost. *Early Roscoff*, from France. February.* Damaged by frost. *Roscoff No. 1*, 1924, seeded at Gulval. March.* Damaged by frost. *Roscoff No. 1*, 1925, seeded at Gulval. March.* *Roscoff*, seeded Gulval, 1927. March.* *Roscoff*, Gulval, 1925 (source Tregonning). Late.* Good heads. In spite of the severe weather and windswept position of the Station, many excellent heads matured. Some of the early ones were damaged by frost. In view of the suitability of the district for broccoli seeding, it was decided after roguing and selection to seed the bulk of the crop.

H. W. ABBISS.

WALSALL ARBORETUM.

The series of experiments with fertilisers on lawn grass carried out in 1928, which roused much popular interest, were again continued, with the difference that only half a plot was treated. The results proved to be similar to those obtained the previous year. (For details see *Year Book*, 1929, pp. 58–9.)

* In season.

HORTICULTURAL PUBLICATIONS, 1929

GENERAL

Book of the Tree. Edited by Georgina Mase. Peter Davies. 6/- net.

BACON, FRANCIS. *Of Gardens.* De la More Press. 1/-, 2/- net.
Bacon's well-known essay attractively produced as a small gift book, with good clear type.

BUNYARD, E. A. *The Anatomy of Desert.* Dulau. 10/6 net.
Pomologist and student, out of the storehouse of his knowledge and experience Mr. Bunyard has produced a book unlike any other, for he found "no one to copy." Only home-grown fruits are included in the contents of a most interesting volume, and if we have a criticism to make it is that the pomologist has more to say than the student. Not less of the former is needed, but more of the latter would have been welcome. R. H. R.

COX, E. H. M., F.L.S. *Wild Gardening.* Dulau. 5/- net.
Mr. Cox has given a book that was much needed, not only on the theory of wild gardening, but on the practical work involved. He has made a Wild Garden for himself, and describes the process of its making and the labour involved in construction and upkeep. The book is illustrated with attractive photographs, and has an Index.

"Daily Mail" Garden Plans. Edited by P. W. D. Izzard. Associated Newspapers Ltd. 1/6.

DAVIDSON, H. C. *"Daily News" Gardening Month by Month.* "Daily News" Press. 6d.

Fruit Culture. Lane. 3/6.
The amateur gardener who wishes to know a little about the selection, planting, and care of fruit trees and small fruits will find useful preliminary information in this book. There is a Fruit Growers' Calender and an Index.

EDWARDS, A. *Rock Gardens: How to Plan and Plant Them, with Sections on the Wall, Paved, Marsh and Water Gardens.* Ward, Lock. 7/6 net.
The increasing popularity of Rock Gardens makes a book on them at a popular price welcome to the majority of gardeners who cannot afford Farrer's classic work. Lists and tabular matter are given, with a number of illustrations, and an alphabetical list of plants and brief cultural details. In some instances it were wise to consult an *Index expurgatorius* before admitting the plants

mentioned within the limits of the Rock Garden, notably *Helxine, Petasites,* and *Polygonum.*

FARTHING, F. HADFIELD, F.R.H.S. *Every Day in My Garden.* Knopf. 7/6.

A useful book for the amateur who needs general information. The coloured illustrations are from a well-known nurseryman's catalogue.

FLETCHER, F. J. *Cut Flowers for Market.* 2nd Ed. Benn. 2/6 net.

FORESTIER, J. C. N. *Gardens: A Notebook of Plans and Sketches.* Reissue. Scribner. 30/- net.

FOX, HELEN MORGENTHAU. *Patio Gardens.* Macmillan. 25/- net.

Though Mrs. Fox has not lived in Spain, she has visited Spanish gardens and read widely the literature concerning them. The useful classified bibliography at the end of her handsomely produced volume does not include, she says, all the works consulted, but those only likely to be useful, with a view to "transplanting" the ideas to her own country, America, by adaption of ideas rather than slavish imitation. It is good to note in a book of this description that those whose "purse is slim" are considered, as well as those who need set no narrow margin to their fancy. Town gardeners especially may find some useful new ideas in these pleasant pages. The book is generously decorated with illustrations by Ralph L. Reaser and has a good index.

GRIEVE, MRS. *A Modern Herbal.* Edited by Mrs. C. F. Leyel. Cape.

HAMPDEN, MARY. *Flower Culture Month by Month.* Jenkins. 3/6 net.

HENSLOW, T. GEOFFREY W. *Garden Architecture.* Dean. 10/- net.

HOOD, G. W., M.SC. *Horticulture: Elementary and Practical.* Kimpton. 15/- net.

KLEIN, S. T. *The Garden of Enchantment for Old and Young Alike.* Rider. 4/6.

LAMPLUGH, ANNE. *Flower and Vase: A Monthly Key to Room Decoration.* Country Life Ltd. 5/- net.

A monthly guide to the use of flowers in house decoration, with hints as to vases, etc., how to keep cut blooms fresh and suggestions for colour schemes. The advice to despoil the countryside for selfish aims is to be deprecated.

LIVINGSTONE, A. E. *Your Flower Garden and the Things That Matter.* Lockwood. 5/- net.

MCDONALD, DONALD. *Fruit Culture and Utility.* Hayes. 6/- net.

An introductory volume on fruit culture for the amateur originally issued in 1924. The book is illustrated in line and colour and lists given of seasons. The fruits are arranged alphabetically after the preliminary chapters on Culture.

MACSELF, A. J. *Chrysanthemums for Amateurs.* Collingridge. 5/- net.

NICHOLS, ROSE STANDISH. *Italian Pleasure Gardens.* Williams & Norgate. 42/- net.

The American author of *Spanish and Portuguese Gardens* has given in her new volume an interesting survey, historical and descriptive, of the gardens of Italy. The volume is illustrated with numerous photographs. There is a chapter on the reconstructed gardens at Pompeii, planted by Prof. Spano, also a list with most notable features. A Garden Itinerary makes the book a valuable guide. It has an Index and Bibliography, so that both the student and the general reader will find it of use and interest. The illustrations are an education in themselves. A sketch map showing garden centres is given on the end-papers.

Popular Gardening Annual. Edited by H. H. Thomas. Amalgamated Press. 2/6.

PRATT, ANNE. *Wild Flowers of the Year.* R.T.S. Reprint. 7/6 net.

RANKIN, MARGARET. *A First Book of Wild Flowers.* 7th Ed. Melrose. 6s. net.

ROBINSON, W. *The Wild Garden.* 7th Ed. Murray. 9/- net.

All garden lovers must congratulate Mr. William Robinson on having lived to see after fifty-nine years this seventh edition of his book on the naturalisation and natural grouping of hardy flowers. The original edition had but one woodcut; this is embellished with numerous engravings of drawings by Alfred Parsons, R.A., who "went in quest of lost flowers" for the purpose with the author. The quest for lost flowers to-day is on the increase, and wild gardens—wild intentionally or accidentally—very popular. We should have been grateful for more hints on the vexed subject of preventing the wildness exceeding bounds, but even without it welcome a new and excellently produced edition of this classic.

ROHDE, ELEANOUR SINCLAIR. *A Garden of Perennials: being A Garden Anthology.* Medici Society. 2/6 net.

Extracts in verse and prose from a variety of authors in praise of gardens. A pleasing gift-book in good, clear type.

The Garden Lovers' Days. Medici Society. 3/6 net.

A tastefully produced Diary for the boudoir or drawing-room table, with extracts, prose and poetry, from miscellaneous authors.

SANDERS, T. W., F.L.S. *Garden Foes.* Collingridge. 5/- net.

A useful reference book for the gardener, giving the pests and diseases that injure flowers, fruit, and vegetables, with advice as to control and receipts for remedies suggested. The book is fully illustrated in line, half-tone, and colour. The book is not indexed, but the arrangement is on alphabetical lines.

SHELTON, L. *Beautiful Gardens in America.* Cheap Ed. Scribner. 30/- net.

STEP, EDWARD, F.L.S. *Wayside and Woodland Blossoms.* 3 vols. Frederick Warne. 7/6 each.

These pocket volumes in a neat cardboard case are designed

for those who wish to know something of flowers, but have no desire to study botanical books. Alternate pages have coloured illustrations, with occasional photographs in the third volume. The illustrations in this are in most cases far better than in the first two. The line is fairly accurate in all, but the colouring of the lithographs is primitive. In Vol. III the majority of illustrations are as good as could be expected in a book at so reasonable a price. Economy in printing rather than botanical rules dictated the arrangement of the text, which is consequently on no recognised scheme.

TAYLOUR, MRS. BASIL. *Japanese Gardens.* Methuen. 25/- net.

TEMPLE, AUGUSTA A. *Flowers and Trees of Palestine.* S.P.C.K. 6/- net.

A neat pocket volume on the flora of Palestine. The four chapters are mainly concerned with suggested identifications of plants and trees mentioned in the Bible. The remainder and bulk of the book consists of an alphabetical descriptive list, with Latin and English names, and brief notes on locality. There are thirty coloured plates. It should serve its purpose of providing a portable handbook for visitors.

THOMAS, H. H., and ARNOTT, H. *Rockeries, How to Make and Plant Them.* Cassell. 1/6.

TINLEY, GEORGE F., HUMPHREYS, THOMAS, and IRVING, W. *Colour Planning in the Garden.* Cheap Ed. Jack. 21/- net.

VAN DE PASS, CRISPAN. *Hortus Floridus.* Vol. II. Reprint. Cresset Press.

VILLIERS-STUART, MRS. C. M. *Spanish Gardens, Their History, Types, and Features.* Batsford. 25/- net.

A beautifully produced book, illustrated with coloured plates, line drawings, and good photographs. "The continuity of Spanish garden-craft" from its inception is demonstrated, and interesting comparisons with Indian gardens of "similar treatment" show how strongly Arab influence has affected the gardens of Spain. Plans as well as pictures of historical gardens are given, but there is no map. The book is the outcome of fifteen years' study of gardens in Spain.

WRIGHT, WALTER P. *Garden Trees and Shrubs.* Allen & Unwin. 15/- net.

In this second edition Mr. Wright has added a Supplement on the best of recent introductions. It is a book for the amateur, and many will find it of use and interest, but the subject is too vast a one to be dealt with exhaustively in a book of this description.

MISCELLANEOUS

A Little Book of Conceited Secrets and Delights for Ladies. Newly set forth by Moira Meighn. The Medici Society. 2/6 net.

AVEBURY, LORD. *Ants, Bees, and Wasps.* New Ed. with notes by J. G. Myers. Kegan Paul. 10/6.

BAINBRIDGE, J. S., M.Sc. *Home Pests and Their Destruction.* W. Heinemann. 3/6 net.

Though intended to be mainly concerned with indoor pests, some of these are to be included in garden pests also. Every gardener, as well as every householder, should take note of the chapter on "Rats and Mice."

BAYNE, CHARLES S. *The Call of the Birds.* Jarrolds. 7/6 net.

The Editor of *The London Naturalist* has given a delightful collection of bird studies in these pages. The chapter on the Protection of Birds should be read by everyone, and note made that "the vast majority of our birds are either beneficial or harmless, and there is something to be said in favour of the very few whose records are black." The book has coloured illustrations and an index.

BENSUSAN, S. L. *On the Tramp in Wales.* Noel Douglas. 6/- net.

Though partaking more of the character of a guide-book than its predecessor *Latter Day Rural England*, the chapters on Welsh agricultural and horticultural institutions give practical information on the subject, and the general reader, attracted by the title and the author's name, will find instruction as well as entertainment in its pages.

Bird Sanctuaries in Royal Parks (England). Report of the Committee for 1928. H.M.S.O. 10d.

BLOSSFELDT, PROF. KARL. *Art Forms in Nature.* Zwemmer. 42/- net.

BROWN, C. A. CAMERON, B.Sc., A.M.I.E.E. *Electricity in Agriculture.* Bulletin No. 5 of the Inst. of Agric. Engineering, Oxford Univ. Clarendon Press. 2/6 net.

With the development of rural electrification this statistical information should be of use. The situation is summarised briefly. "The farmer, at present uncertain of the benefits of electricity, is chary of making a request for it; the supply company, uncertain of the farmer's ultimate potential demand, is chary of making an offer." Result: "a kind of deadlock."

CAREY. M. C. *Flower Legends.* Pearson. 2/- net. 2nd Ed. re-written.

These papers are admittedly not folklore notes, but flower tales retold in story form. The legend of the Alpha and Iota is usually told of the Delphinium. The Marigold legend concerns *Caltha*, the Marsh Marigold, but the illustration appears to be meant for *Calendula*. A book for children.

CHISHOLM, A. H. *Birds and Green Places.* Dent. 15/- net.

CULPEPER, NICHOLAS. *Selections from "The English Physitian."* St. George's Series. De la More Press. 1/6, 2/6 net.

A small gift book with attractive woodcuts and a few extracts from Culpeper.

DAVIES, WILLIAM C. *Photography as an Aid to the Study of Plants and Plant Problems.* Whitcombe & Tombs. Wellington, N.Z.

FREE, E. E., and HOKE, TRAVIS. *Weather: practical, dramatic, and spectacular facts about a little-studied subject.* Constable. 14/- net.

If weather is "little studied" it is much talked of in this country. But this is an American book, so written from the viewpoint of the United States not Great Britain. It contains a miscellaneous collection of information, some elementary, some little known. A short bibliography and a good index are included.

FRENCH, C. N. *A Countryman's Day Book: An Anthology of Countryside Lore.* Dent. 6/- net.

An anthology of weather-, country-, and garden-lore, attractively produced. The contents include some hitherto unpublished matter.

GIMLETTE, JOHN D. *Malay Poisons and Charm Cures.* Churchill. 10/6.

HADDEN, N. G., and HENDY, E. W. *Guide to the Natural History of Porlock and District.* Lyceum Press, Taunton. 1/-.

HAYES, EVELYN. *From a Garden in the Antipodes.* Sidgwick & Jackson. 5/- net. Verses, the majority unrhymed, written in a New Zealand garden, descriptive of the owner's work, her companions, and her thoughts.

HOGARTH, A. MOORE. *The Rat: A World Menace.* Bale & Danielsson. 7/6 net.

HOWARD, H. ELIOT. *An Introduction to the Study of Bird Behaviour.* Camb. Univ. Press. 42/- net.

HUDSON, W. H. *The Naturalist in La Plata.* New Ed. Dent. 6/-.

HUNT, LEIGH. *The Months.* New Ed. Ingpen & Grant.

LAMBERT, A. M. *The Gift Tree.* Noel Douglas. 1/-.

A Christmas booklet with verses about gardens and birds.

LANCUM, F. HOWARD. *Memoirs of a Field Naturalist.* Burlington Publishing Co. 6/-.

A collection of light sketches and reminiscences. Many of the chapters are on garden subjects, though not concerned primarily with gardening.

MARTINEAU, MRS. PHILIP. *Cantaloupe to Cabbage.* Cobden Sanderson. 5/- net.

A collection of recipes for fruit and vegetable dishes. "The dishes given at my own dinner parties seem to very well content the diners." We should be more content if the infinitive were not split, but the excellence of the dishes we do not question.

MURPHY, MICHAEL. *Co-operative Marketing of Agricultural Products. Longmans.* 3/6 net.

NICHOLSON, E. M. *How Birds Live.* 2nd Ed. Williams & Norgate. 5/- net.

In the revised and enlarged edition of this interesting book the author maintains his theory, despite adverse criticism, that bird-song is territorial. There is an additional appendix on methods and results of bird-marking, still only in preliminary stages. Much may be eventually learnt, especially when it is more generally

known that the ring on any ringed bird found should be forwarded to the address on the ring.

Oranges: World Production and Trade. Empire Marketing Board. H.M.S.O. 1/- net.

PARKER, ERIC. *English Wild Life.* English Heritage Series. Longmans. 3/6 net.

A volume of convenient size for the pocket. Though not a horticultural book, Mr. Parker has given such a delightful account of the wild life which surrounds—and occasionally invades—gardens that every garden lover of this garden island should possess it, even if the strict horticulturist may gasp at sundry heresies in the chapter on insects.

PETTIGREW, W. W., V.M.H. *Handbook of the Parks and Recreation Grounds of the City of Manchester.* Manchester Parks Committee, Town Hall, Manchester. 6d. net.

PORTER, JOHN. *The Crop Grower's Companion.* Gurney & Jackson. 8/6 net.

POUCHER, W. A., PH.C. *Perfumes, Cosmetics and Soaps. Vol. II. A Treatise on Practical Perfumery.* 3rd Ed. Chapman & Hall. 25/- net.

RAVEN, CHARLES E., D.D. *Bird Haunts and Bird Behaviour.* Martin Hopkinson. 10/6 net.

Birds are so essentially a part of the garden that bird books are usually of interest to gardeners. We confess, though, that the subjects dealt with in Canon Raven's delightfully written book are not the feathered folk we see normally in gardens, though much will be of interest to owners of larger spaces and ornamental grounds where the bird population is less limited. It is certainly a book for the bird lover to read.

REDGROVE, H. STANLEY, B.SC., A.I.C. *Scent and All about It: a Popular Account of the Science and Art of Perfumery.* Heinemann. 3/6 net.

In addition to the synthetic perfumes which the work of the modern chemist has evolved the book deals with essential oils obtained from plants, and gives methods of preparation by enfleurage, etc. There is a bibliography and an index.

REDGROVE, H. STANLEY, B.SC., A.I.C., and FOAN, GILBERT A. *Blonde or Brunette? A Complete Account of the Theory and Practice of Hair-dyeing in all its Branches.* W. Heinemann (Medical Books) Ltd. 7/6 net.

Henna, *Lawsonia alba*, with other plants, including Chamomiles, *Anthemis nobilis* and *Matricaria Chamomilla*, are among the oldest and safest hair dyes. Four or five others are also employed. This book, the first of its kind in English, written by a chemist and botanist in conjunction with a hairdresser, is of interest to those concerned with the chemistry of plant products.

Report on the Development and Costs of the Oxford Process for the Production of Sugar from Sugar Beet. Clarendon Press. 2/6 net.

Seed Trade Buyers' Guide. The Seed World. Chicago. $1.

STEP, EDWARD. *British Insect Life. A Popular Introduction to Entomology.* Werner Laurie. 25/- net.

SMETHAM, HENRY. *C.R.S. and His Friends, being Personal Recollections of Charles Roach Smith, F.S.A.* C. W. Daniel Co. 7/6 net.

THOMPSON, C. J. S. *The Mystery and Art of the Apothecary.* Lane. 12/6 net.

TREVELYAN, G. M. *Must England's Beauty Perish.* Faber. 1/- net.

Prof. Trevelyan's efforts to secure the preservation of the beauties of the countryside have gained the gratitude of all country lovers. The little book is a plea on behalf of the National Trust, and gives a list, with map, of estates, etc., now held by it. This is work that should have support from all those who appreciate this garden our England.

TURNOR, CHRISTOPHER. *The Land: Agricultural and National Economy.* John Lane. 1/- net.

Three lectures given at Rugby on the history of English agriculture, its present situation and outlook. The author has studied *in loco* the methods of countries which "successfully oust our land products from our own markets." His little book should be in the hands of all interested in the land, its problems and productiveness, were it only for the one sentence. "The damage done by rats and other animal and vegetable pests is very great; many million pounds sterling could be saved every year if existing legislation against these pests were enforced." All three lectures deserve attention and thought.

WAUGH, FREDERICK V. *Quality as a Determinant of Vegetable Prices.* Columbia Univ. Press. King. 10/-.

WESTELL, W. PERCIVAL, F.L.S., F.S.A. Scot. *Nature in Field and Meadow.*

Nature in Wood and Forest. Sheldon Press. 2/6 net each.

Where the Bee Sucks. Poems chosen by Iolo A. Williams. Paintings by Katharine Cameron, R.S.W., A.R.E. The Medici Society. 12/6 net.

An anthology of old flower poems, "a bouquet, rather than a herbarium or a botanic garden." Mrs. Cameron's flower paintings make the volume a delightful gift. "Purple Irises," "Tropaeolum" (*T. speciosum*), and "Brambles" are especially felicitous, and the "Mountain Fern" is a delicate gem. It is hard to believe it is by the same artist as the frontispiece.

WHITE, GILBERT. *The Natural History of Selborne.* Ed. by E. M. Nicholson. Thornton Butterworth. 42/- net. Ed. de Luxe. 105/- net.

WOODWARD, MARCUS. *How to Enjoy Birds.* Hodder & Stoughton. 2/6 net.

A pleasantly written book that will tell young people something about the birds in our gardens and countryside. There are some coloured illustrations.

WRANGHAM, S. D. *Wasps and How to Destroy Them.* Pilot Press. 1/-.

WRIGHT, F. J. *The New Nature Study.* Thornton Butterworth. 5/- net.

An introduction to the new science of phenology, the relation between climate and life. The history of phenology and its study abroad are given in appendices. The book is illustrated with plans, charts, and photographs, and is well indexed. It suggests a method of nature study, not only of possible interest to all nature lovers, but also of practical use.

WRIGHT, RICHARDSON. *The Gardener's Bed-Book. Short and long Pieces to be read in Bed by Those who love Husbandry and the green growing Things of Earth.* Lippincott. $2.50.

Between the "Pieces" short cultural directions or maxims are given quite irrespective of the context with occasionally comic result. These are mainly for American gardens, but as a Bed-book there is much to recommend it to English readers.

STUDENTS AND SPECIAL

Agricultural Research in 1927. Murray. 1/- net.

Agricultural Statistics. H.M.S.O. 1/3.

AKENHEAD, D. *Viticultural Research.* H.M.S.O. 1/- net.

ALLAN, H. H. *New Zealand Trees and Shrubs.* Whitcombe & Tombs. 6/6 net.

ARTHUR, J. C., and others. *The Plant Rusts (Uredinales).* Wiley, New York. Chapman & Hall. 32/6 net.

ASAMI, YOSHICHI. *The Crab-Apples and Nectarines of Japan.* Marquis Nabeshima. Tokyo.

A Survey of the Soils and Fruit of the Wisbech Area. Research Monograph, No. 6. Min. of Agric. H.M.S.O. 3/6.

AUCHER, E. O., and KNAPP, H. B. *Orchard and Small Fruit Culture.* Wiley, New York. Chapman & Hall. 25/- net.

BEAR, F. E. *Theory and Practice in the Use of Fertilisers.* Wiley, New York. Chapman & Hall. 20/- net.

BEWS, J. W. *The World's Grasses: Their differentiation, distribution, economics, and ecology.* Longmans. 21/- net.

BISBY, G. R., BULLER, A. H. R., DEARNESS, JOHN. *The Fungi of Manitoba.* Longmans. 7/6 net.

BOSE, SIR JAGADIS CHUNDER. *Growth and Tropic Movements of Plants.* Longmans. 21/- net.

Sir Jagadis Chunder Bose has given in his new volume the conclusion of his experiments in the mechanism of plants. He deals with a wide range, and includes "the movements of growing organs under the changing conditions of the environment." The chapter on the mechanism of the twining stem is of particular interest. A record of devoted, careful and detailed research, beautifully produced.

BOWER, PROF. F. O., F.R.S. *The Origin of a Land Flora.* Huxley Memorial Lecture. 1929. Macmillan. 1/- net.

Prof. Bower inaugurated regular courses of botanical instruction at the Royal College of Science in 1882, when Huxley was its President. From these the Department of Botany in the Imperial College of Science was evolved. The lecture is a revision of *The Origin of a Land Flora* published in 1908. The origin of the existing land flora is still a matter of controversy. This paper sums up the present state of our knowledge, and gives the author's theories on the subject, with a re-statement of his Theory of Interpolation.

British Hardwoods: Their Structure and Identification. Dept. of Scientific and Industrial Research. H.M.S.O. 5/- net.

BROOKS, F. T. *Plant Diseases.* Ox. Univ. Press. 21/-.

BULLER, A. H. REGINALD. *Practical Botany.* Longmans. 6/- net.

BURGESS, C., M.A. *Sugar Beet in the Eastern Counties,* 1928. Univ. of Camb. Dept. of Agric. Farm Economics Branch, Report No. 13. No. 2. Heffer. 2/6.

BÜSGEN, DR. M. *The Structure and the Life of Forest Trees.* 3rd Ed. Revised and enlarged. Trans. by Thomas Thomson. Chapman & Hall. 30/- net.

CALVERT, ALBERT F., F.C.S. *Daffodil Growing for Pleasure and Profit.* Dulau. 21/- net.

CARSLAW, R. McG., M.A. *Four Years' Farming in East Anglia,* 1923–27. Heffer. 3/- net.

Report No. 12 of Cambridge University Farms Economics Branch is mainly concerned with purely agricultural matters, but notes on Fruit and Soils (with diagram) of the approximate district are of interest to horticulturists also.

CLARK-KENNEDY, A. E. *Stephen Hales, D.D., F.R.S. An Eighteenth Century Biography.* Camb. Univ. Press. 15/- net.

Stephen Hales, author of *Vegetable Statics,* will be remembered as a botanist for his work on the flow of sap. The genus *Halesia* (Snowdrop Tree) was named in his honour by John Ellis. His experiments and researches in plant physiology, root pressure, transpiration, and capillarity placed him above and beyond his botanical contemporaries. A chapter of this bibliography is devoted to this, but botanists will regret that there are no more than passing references to his "simpling" with his friend Stukeley round Cambridge, while his "botanical experiments in his garden at Teddington are only mentioned in a footnote, and but brief mention is made of his visits to Kew to give Princess Augusta "practical advice in the management of her gardens." The large hot-house pulled down in 1861 had special ventilation pipes designed by him. Botany was, however, only one of the varied interests that occupied his long and useful life. There is a good index and some finely reproduced illustrations.

COCKAYNE, DR. L., Ph.D., F.R.S., F.N.Z.Inst. *The Vegetation of New Zealand.* 2nd Ed. Haberland, Leipzig. 42/-, cloth 45/-.

COCKAYNE, L., Ph.D., F.R.S., and TURNER, E. PHILLIPS, F.R.G.S. *The Trees of New Zealand.* N.Z. State Forest Service, Wellington. 4/-.

CRAIG, J. W. *Commercial Tomato Culture.* 3rd Ed. Benn. 2/6 net.

CROOKALL, R. *Coal Measure Plants.* Arnold. 12/6 net.

CROWFOOT, GRACE M. *Flowering Plants of the Northern and Central Sudan.* Wheldon & Wesley. 7/6 net.

DEARSON, H. H. W. *Gentales.* Camb. Botanical Handbooks. Cam. Univ. Press. 18/- net.

DE ROTHSCHILD, LIONEL. *Field Notes of Rhododendrons and Other Plants collected by Kingdon Ward in* 1927–28.

DYKES, W. R., M.A., L. ès L., V.M.H. *Notes on Tulip Species.* Edited by E. Katherine Dykes. Jenkins. £6 6s.

EARLE, F. S. *Sugar Cane and Its Culture.* Wiley, New York. Chapman & Hall. 22/6.

ENDEAN, T. M. *Cacti Culture.*

EYON, LEWIS, F.I.C., and LANE, J. HENRY, B.Sc., F.I.C. *Starch: Its Chemistry, Technology and Uses.* Heffer. 12/6 net.

FISK, EMMA L., and ADDOMS, RUTH M. *A Laboratory Manual of General Botany.* Macmillan. 4/6 net.

Flowering Plants of South Africa. Vol. IX.

GAUMANN, DR., and DODGE, DR. *Comparative Morphology of Plants.* McGraw Hill, New York. 37/6.

GODWIN, H., and TANSLEY, A. G. *The Vegetation of Wicken Fen.* Part V of *The Natural History of Wicken Fen.* Edited by Prof. J. Stanley Gardiner, F.R.S. Bowes, Cambridge. 5/- net.

The first portion of the fifth part of the Wicken Fen series gives the vegetative history of the Fen. The need for funds to prevent it becoming worthless thicket is shown. Successive papers by other authors deal with its Diptera and Trichoptera.

Grape Fruit Culture in B.W.I. and British Honduras. H.M.S.O. 1/- net.

HALL, SIR A. DANIEL, K.C.B., LL.D., Sc.D., F.R.S. *Fertilisers and Manures.* 3rd Ed. rev. and enl. Murray. 8/-

The Book of the Tulip. Martin Hopkinson. 21/- net.

The outcome of thirty years' experience and wide reading, this is a book by an expert for experts, but also for the inexpert who desire to amend ignorance. After dealing with the Tulip's life cycle and the history of its introduction to gardens, the systematic relationships of tulip species is carefully examined so far as present knowledge of the genus permits. Descriptions are given of Tulips in cultivation, with valuable cultural notes. The Garden Tulip and the English Florists' Tulip have respective chapters, whilst others deal with "sports," cultivation, and propagation. A short bibliography and three indices (Species, Varieties, General) are included. No amateur who desires to have something more than

casual knowledge can afford—and no expert will wish—to be without this notable addition to the horticultural library.

HAMBLIN, STEPHEN F. *American Rock Gardens.* Orange Judd Pub. Co. New York. $1.25. Kegan Paul. 7/6 net.

HARDENBURG. *Bean Culture.* New York. Macmillan. 12/- net.

HART, J. N. *Rose Growing.* Ward, Lock. 1/- net.

With the knowledge of an experienced and successful rose grower, Mr. Hart has "edited" a useful handbook wherein he has collected a mass of practical information and advice. It is illustrated with many informative diagrams. The list of insecticides and fungicides, and "The Rose Grower's Calendar" will be welcomed by many amateurs.

HAWLEY, R. C. *The Practice of Silviculture, with Particular Reference to its Application in the U.S.A.* 2nd Ed. Wiley, New York. Chapman & Hall. London. 20/- net.

HENDERSON, I. F., and W. D. *A Dictionary of Scientific Terms: pronunciation, derivation, and definition of terms in biology, botany, etc.* 2nd Ed. revised. Oliver & Boyd. 16/- net.

HINGSTON, MAJ. R. W. G., M.C. *Problems of Instinct and Intelligence.* Arnold. 10/6 net.

Horticultural Enterprises. Edited by Kary C. Davis, Ph.D. 4th Ed. Farm Enterprises Series. Lippincott. 10/6 net.

This American school textbook purports to provide the most up-to-date information on the garden, the orchard, and small fruit. Some of the information and most cultural details are for America, not this country. In this connection it is well to remember, as a fellow countryman of the author's has confessed, that the American's "heritage is mainly British" (see WRIGHT above), and additions to it are for local conditions. The comparison of English and American methods is interesting in itself. The book is well produced, strongly and flexibly bound, with the advantage that it opens easily and flatly. It is also well illustrated.

HOAR, P., and HILL, J. G. *An Introduction to the Chemistry of Plant Products.* Vol. II. Metabolic Processes. 2nd Ed. Longmans. 10/6 net.

HOTTES, ALFRED CARL. *The Book of Shrubs.* New York.

HUDDLESON, I. FOREST. *The Differentiation of the Species of the Genus Brucella.* Tech. Bulletin. No. 100. Michigan State College.

HUME, H. HAROLD. *Gardening in the Lower South.* Macmillan. 21/- net.

An instructive and interesting account of gardening in S. Carolina, Georgia, Florida, and the south of Alabama, Mississippi, Louisiana, and Eastern Texas, with cultural details of plants grown there. Well produced and illustrated. There is a good index.

Index Londinensis. Rev. and enl. ed. of Pritzel's Index. Ed. by O. Stapf (See. R.H.S.). Vol. i. Clarendon Press. 105/- net.

JONES, ARTHUR, B.Sc., and MAKINGS, S. M., N.D.A. *Celery Production and Marketing in the Isle of Axholme.* Survey Studies, No. 1. Midland Agric. Col. Sutton Bonnington. 1/-.

LEVYNS, M. R. Lecturer in Botany, Univ. of Cape Town. *Guide to the Flora of the Cape Peninsula.* Juta. Cape Town. 15/6 net.

LINDSAY, ARTHUR WARD. *Textbook of Evolution and Genetics.* New York. Macmillan. 12/6 net.

LONG, H. C., B.Sc.(Edin.). *Weeds of Arable Land.* Mis. Pub. Min. of Agric. No. 61. H.M.S.O. 2/6 paper covers, 3/- qrt. bound, 3/6 cloth, net, post free.

The Editor of the Journal of the Ministry of Agriculture published in 1928 a book on poisonous plants. This comprehensive book on weeds is its companion volume, and could only have been produced at the price as a Government publication. Unlike many garden books its value is in inverse ratio to its price. Damage done by weeds, their indication of soil conditions, how they are distributed, form subjects for the first chapters, followed by practical advice on prevention and suppression. A short bibliography is given and an index. Not the least valuable part of a most useful book is the final section of 101 illustrations, the majority excellent line drawings that show seed, seedling growth, root, and flowering plant of typical weeds. A practical and interesting book for all gardeners.

LOWSON, J. M., and FOX, L. C. *A Textbook of Botany.* 7th Ed.

MCCOOL, M. M., and BOUYOUCOS, G. J. *Causes and Effects of Soil Heaving.* Tech. Bulletin No. 102. Michigan State College.

MCKELVEY, SUSAN DELANO. *The Lilac: A Monograph.* Macmillan. £3 15s. net (American).

Miss McKelvey has undertaken an immense amount of work in compiling this monograph. Not only is every known species of *syringa* carefully described, and most of them illustrated, but the colour chart at the end of the book enables the specialist (whether professional or amateur) to identify the unnamed varieties in his or her possession. P. A.

MAIDEN, J. H., F.R.S., F.L.S. *A Critical Revision of the Genus Eucalyptus.* Part 10. Vol. VII.

MARSHALL, W. E. *Consider the Lilies.* 2nd Ed. Marshall & Co., New York. W. F. Constable, Commercial Road, Paddock Wood. 5/6.

After brief notes on Lilies in general, 110 varieties are described in alphabetical order, with culture hints (for America). The book is very fully illustrated with coloured pictures. The Flowering Time-Table is for New York. At such a popular price the book should be welcome to many as of interest and use, though the difference in climatic conditions must be remembered where questions of cultivation are concerned.

MATSUURA, HAJIME. *A Bibilographical Monograph on Plant Genetics.* Tokyo Impl. Univ. Dulau. 10/- net.

MAXIMOV, N. A. *The Plant in Relation to Water. A Study of the Physiological Basis of Drought Resistance.* Trans. and Ed. by R. H. Yapp. Allen & Unwin. 21/-.

MAYURANATHAN, P. V., B.A. *The Flowering Plants of Madras City and its immediate Neighbourhood.* Bulletin of Madras Government Museum. New Series. Government Press, Madras. Rs. 8.

NICHOLLS, Sir H. A. *A Text-book of Tropical Agriculture.* 2nd Ed. Revised by J. A. Holland, F.I.S. Macmillan. 15/- net.

NISSLEY, CHARLES H. *Starting Early Vegetables and Flowering Plants under Glass.* Orange Judd. New York. $3.

O'BRIEN, GEORGE. *Agricultural Economics.* Longmans. 10/6 net.

ONSLOW, MURIEL W. *Practical Plant Biochemistry.* Cambridge Press. 12/6.

OWENS, C. E. *Principles of Plant Pathology.* Wiley. New York. 23/6.

PRESTON, ISABELLA. *Garden Lilies.* Orange Judd Pub. Co. New York. $1.25. Kegan Paul. London. 7/6 net.

RAMSBOTTOM, J., O.B.E., M.A. *Fungi, an Introduction to Mycology.* Benn's Sixpenny Library. Benn. 6d.

Register of Growers of Certified Stocks of Potatoes. Ministry of Agriculture. 1/-.

Report of the Conference on Polyploidy. John Innes Hort. Inst.

Rice Grass: Its Economic Possibilities. Misc. Pub. Min. of Agric. No. 66. H.M.S.O. 8d. net, post free.

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APONOGETON *leptostachyum var. lilacina*, A.M. Pond-weed. Lilac.

ASTER (Annual) *All Saints Light Blue* (Morris), H.C., W.T.—

American Branching Azure Blue (Atlee Burpee), H.C., W.T.—*American Branching Dark Blue* (Atlee Burpee), H.C., W.T.—*American Branching Fairy* (Atlee Burpee), H.C., W.T.—*American Branching Mary Semple* (Atlee Burpee), H.C., W.T.—*Astermum Lavender* (Bodger), H.C., W.T.—*Ball's White* (Nutting: Bodger: Atlee Burpee), A.M., W.T.—*California Giants Light Blue* (Dobbie), H.C., W.T.—*California Giants Light Purple* (Dobbie: Bodger), H.C., W.T.—*Californian Giant Light Blue* (Atlee Burpee), H.C., W.T.—*Crimson Beauty* (Clucas), H.C., W.T.—*Dwarf Chrysanthemum White* (Benary), H.C., W.T.—*Dwarf Victoria Rose* (Dobbie), H.C., W.T.—*Early Beauty Rose* (Bodger), H.C., W.T.—*Giant Comet Cinnabar Red* (A. Dawkins), H.C., W.T.—*Giant Comet Light Blue* (Dobbie), H.C., W.T.—*Giant Comet Mauve Queen* (Dobbie), A.M., W.T.—*Giant Comet Peach Blossom* (Dobbie), H.C., W.T.—*Giant Comet Rose* (Dobbie), H.C., W.T.—*Giant Comet The Bride* (Dobbie), H.C., W.T.—*Giants of California Deep Rose* (Watkins & Simpson), H.C., W.T.—*Giant Victoria White* (W. H. Simpson), H.C., W.T.—*Hercules Rosy Lilac* (Heinemann), H.C., W.T.—*King Crimson* (Atlee Burpee), H.C., W.T.—*King Lavender* (Waller-Franklin Seed Co.), H.C., W.T.—*Late Beauty Azure Fairy* (Bodger), H.C., W.T.; (Dobbie) H.C., W.T.—*Late Beauty Lavender* (Bodger), H.C., W.T.—*Late Branching Azure Fairy* (Watkins & Simpson), H.C., W.T.—*Late Branching Deep Rose* (Waller-Franklin Seed Co.), H.C., W.T.—*Late Branching Lavender* (Waller-Franklin Seed Co.), H.C., W.T.—*Lavender Gem* (Bodger), H.C., W.T.—*Lilliput Dark Blue* (Watkins & Simpson: Daehnfeldt & Jensen), H.C., W.T.—*Lilliput Dark Crimson* (Watkins & Simpson), H.C., W.T.—*Lilliput Rose* (Daehnfeldt & Jensen: Watkins & Simpson: Benary), H.C., W.T.—*Lilliput White* (Benary), H.C., W.T.—*Lilliput White with Red Centre* (Benary), H.C., W.T.—*Madame Rivoire* (Rivoire), A.M., W.T.—*Mammoth Cinnabar Carmine* (Benary), A.M., W.T.—*Mammoth Ostrich Plume White* (Clucas), H.C., W.T.—*Mammoth White* (Benary), H.C., W.T.—*Mignon White* (Benary: Veitch), H.C., W.T.—*Mikado White* (Bath), H.C., W.T.—*Ostrich Feather Light Blue* (Dobbie), H.C., W.T.—*Ostrich Feather White* (Daehnfeldt & Jensen), H.C., W.T.—*Ostrich Plume Rose-pink* (Simpson), H.C., W.T.—*Ostrich Plume Show Queen* (W. H. Simpson: Watkins & Simpson), H.C., W.T.—*Ostrich Plume Terra-cotta* (Carter), H.C., W.T.—*Ostrich Plume White* (Clucas: Middlehursts), H.C., W.T.—*Paeony-flowered Crimson* (Dobbie), H.C., W.T.—*Paeony-flowered Perfection Fiery Scarlet* (Benary), H.C., W.T.—*Paeony-flowered Perfection Light Blue* (Benary), H.C., W.T.—*Peerless Branching Deep Rose* (Clucas), H.C., W.T.—*Peerless Pink* (Atlee Burpee: Waller-Franklin Seed Co.), H.C., W.T.—*Peerless Yellow* (Bodger), H.C., W.T.—*Pride of the West* (Kelway), H.C., W.T.—

Queen of the Market Bright Rose (Bodger: Watkins & Simpson: Waller-Franklin Seed Co.), H.C., W.T.—*Queen of the Market Dark Blue* (Daehnfeldt & Jensen: Bodger), H.C., W.T.—*Queen of the Market Purple* (Waller-Franklin Seed Co.: Bodger), H.C., W.T.—*Queen of the Market White* (Bodger), H.C., W.T.—*Royal Rose* (Atlee Burpee), H.C., W.T.—*Royal Shell Pink* (Nutting), H.C., W.T.—*Salmon Queen* (Bodger), H.C., W.T.—*Sinensis Violet* (Hurst), H.C., W.T.—*Single Pink* (Barr), H.C., W.T.—*Single Violet* (Barr), H.C., W.T.—*Sun-ball Flesh* (Heinemann), H.C., W.T.—*Sunshine Light Blue* (Blossfeld), H.C., W.T.—*Tall Branching Dark Blue* (Dobbie), H.C., W.T.—*Tall Branching Lavender Pink* (Dobbie), H.C., W.T.—*Tall Branching Rose* (Dobbie), H.C., W.T.—*Tall Branching Shell Pink* (Dobbie), H.C., W.T.—*Triumph Brilliant Rose* (Barr), H.C., W.T.—*Victoria White* (Benary), H.C., W.T.

(Perennial) *adfinis*, A.M., H.H.A. Dwarf. Blue.—*Bessie Chaplin*, R.W.T. Large fl. Amellus var. Blue.—*Gayborder Blue*, R.W.T. Semi-double, Novi-belgii var. Blue.—*Mrs. Gladys Forbes*, R.W.T. Large, single, Amellus var. Pale mauve.—*Pink Pearl*, R.W.T. Semi-double Novi-belgii var. Pale pink.—*Thomsoni*, A.G.M. Long flowering period. Hardy H. Violet. Himalayas. Needs no stakes. 2′.—*T. nanus*, dwarfer form, 18″.

ASTILBE *simplicifolia*, A.G.M. Hardy H. 6–8″. White varying to rose. Japan, 1910.

ASTRAGALUS *utahensis*, A.M. Silvery foliage. Rose-purple. America, 1854.

AURICULA *Robb's Fancy*, Premier "Fancy" N.A.P.S.—*Wm. Brocklebank*, Premier "Show." N.A.P.S. Green edged.

AZALEA *Shin Scikai*, 1st. R.A. Evergreen.—*Weyrichii*, 1st. Rh.A.

BEGONIA *Gloire de Lorraine*, Silver Cup, Exeter.—*Mrs. J. Raeburn Mann*, A.M. Double. Pink.

CALCEOLARIA *biflora*, A.M. Doubtfully hardy. Yellow. Chili.—*Benthami*, A.M. Herbaceous. Very free flowering. Yellow.

CALLUNA *vulgaris, var. fl. pl.*, A.M. Double pink heath. Found in Hampshire.

CAMPANULA *carpatica var. Chewton Joy*, A.M. Dwarf. Pale blue, white centre.

CANTERBURY BELL *Calycanthema Mauve* (Hurst), A.M., W.T.—*Calycanthema Rose* (Simpson: Webb), H.C., W.T.—*Calycanthema White* (Webb), A.M., W.T.—*Double coerulea* (Haage & Schmidt), H.C., W.T.—*Double Rose Carmine* (Haage & Schmidt), A.M., W.T.—*Single Mauve* (Hurst), A.M., W.T.; (Daniels), H.C., W.T.—*Single Rose* (Webb), H.C., W.T.—*Single White* (Dobbie), A.M., W.T.

CARNATION *Ann Horton*,* Perp. fl. White marked carmine.—*Artic*, 2nd (White), B.C.S.—*Beauty of Cambridge*, A.M. Border. Scented. Primrose.—*Ben Beswick*, A.M., N.C.P. Self. Sal-

mon-rose.—*Betty Lou*, 1st B.C.S. Deep-pink.—*Bookham Scarlet*, 1st N.C.P.—*Chintz*, 1st (Fancy) B.C.S.—*Circe*, 1st B.C.S. Violet Fancy.—*Circe Improved*, 1st (Purple) B.C.S.—*Coral Glow*, 1st B.C.S. Apricot and yellow.—*Dora Spendlow*, 1st N.C.P. Pink.—*Edenside Clove*, 1st N.C.P.—*Exquisite*, 1st N.C.P. Picotee.—*Fairy*, 1st N.C.P. Picotee, yellow ground.—*Flambeau*, A.M. Border var. Faint Red-orange.—*Florence Grisby*, Special N.C.P. Fancy, white ground.—*Florence Wellstead*, 1st N.C.P. White marked red.—*Gladys*,* 1st (Pink) B.C.S. Perp. fl. Salmon-rose.—*Glenfarg*, A.M., N.C.P. Fancy. Buff marked salmon-pink.—*Glenshee*, F.C.C., N.C.P. Fancy. White marked crimson.—*Guy Allwood*, A.M. Good for greenhouse. Pink.—*Homer*, 1st N.C.P. Terra-cotta.—*Isobel Hamilton*.* Perp. fl. Pink.—*Ivory*, 1st (White) B.C.S.—*Jean Secker*, Silver Med. and A.M., N.C.P. Fancy. Yellow marked scarlet and lavender.—*Joan*.* Perp. fl. Yellow.—*Kathleen*, A.M. Greenhouse. Scented. Good for market. Rose-pink.—*Kitro*, 1st N.C.P. Orange buff marked purple.—*Laddie*, 1st and W. E. Wallace Cup., B.C.S. Light Pink. *Lassie*, 2nd B.C.S.—*Linkman*, Silver Cup and 1st N.C.P. Fancy, yellow ground.—*Lushill Scarlet*.* Very fragrant. Perp. fl. Scarlet.—*Madge*.* Perp. fl. Orange flaked pink.—*Magnum*, 1st B.C.S.—*Maine Sunshine*, 1st (Yellow) B.C.S. Fancy.—*Mary Murray*, 1st N.C.P. Yellow.—*Master M. Stoop*, 1st B.C.S. Deep pink.—*Maud Allwood*, 1st B.C.S. Apricot.—*Mavis*, "Daily Mail" Challenge Cup for best scented, B.C.S. Very fragrant. Pale pink.—*Miss Horn*, F.C.C., N.C.P. Clove-self. Rose pink.—*Misty Morning*, 1st N.C.P.—*Mrs. C. W. Ward*, 1st B.C.S. Pink.—*Mrs. D. Carlow*, F.C.C., Glasgow.—*Mrs. G. Hill*, F.C.C., N.C.P. Fancy, white marked red.—*Nada*.* Perp. fl. Salmon-pink.—*Nina*.* Perp. fl. Helio-trope.—*Peter*, 1st N.C.P. Yellow self.—*R. A. Nicholson*.* Perp. fl. Scarlet.—*Rapture*, 2nd (Pink) B.C.S.—*Red Laddie*, Campbell Amateur Trophy and Silver-gilt Medal B.C.S., 1st (Red) B.C.S., 2nd (Red) B.C.S.—*Rhoderic Dhu*, 1st N.C.P. Crimson.—*Saffron*, 1st B.C.S. Yellow.—*Sam Griffiths*, 1st N.C.P. Fancy.—*Snowflake*, 1st N.C.P. White.—*Sonny Boy*.* Perp. fl. Cerise.—*Spectrum*, 1st (Red) B.C.S., 2nd B.C.S.—*Startler*, A.M. Southport. Sweet scented. Scarlet.—*Steer-forth*, 1st N.C.P. White ground Fancy. Clove scented.—*Sunny*, 2nd B.C.S. Perp. fl. Fancy.—*Thomas Ives*, A.M. Greenhouse. Cerise.—*Topsy*, 1st B.C.S. Fragrant. Crimson.—*White Pearl*, 1st and 3rd (White) B.C.S.—*W. H. Wallace*, F.C.C., B.C.S. Novelty. Greenhouse. No scent. Deep sal-mon.—*Wivelsfield Buttercup*, 1st and 2nd (Yellow) B.C.S. Fancy.—*Wivelsfield Claret Improved*, 1st B.C.S. Purple.

* Registered with British Carnation Society.

CEANOTHUS *Autumn Blue* (*C. thyrsiflorus x C. Indigo*), A.M.

CHILIOTRICHUM *rosmarinifolium*, A.M. Sh. White. Chili, 1831.

CHRYSANTHEMUM *Afron*, C.M. Glasgow.—*Algernon Davis*, 1st Corbridge. Jap. Pink.—*Almeda*, F.C.C., N.C.S. Fawny bronze.—*Arabella*, A.M. Jap. Pinkish mauve.—*Assurance*, F.C.C., N.C.S. Decor. Chestnut and gold.—*Balcombe Bronze*, A.M.; F.C.C., N.C.S. Decor. Good for cutting or market. Bronze, gold tipped.—*Balcombe Sunray*, A.M. Good for cutting or market.—Shaded orange.—*Bébé Gerard*, F.C.C., N.C.S. Decor. Lilac-pink.—*Birmingham*, 1st N.C.S.; 1st (Crimson) N.C.S.; 1st Birmingham; Best crimson, Ayr Jap. —*Bountiful*, C., N.C.S. Deep rose pink.—*Brassy*, A.M., N.C.S. Chestnut gold tipped.—*Bridesmaid*, F.C.C., N.C.S. Salmon shaded fawn.—*Cactus*, A.M., N.C.S. Jap. Chestnut bronze, gold reverse.—*Cavalier*, A.M., A.M., N.C.S. Early. Terra-cotta tipped gold.—*C. G. Weston*, F.C.C., N.C.S. Incurved Jap. Yellow.—*Cissie Brunton*, 1st Birmingham. Jap. White.—*Crimson Focerex*, F.C.C., N.C.S. Jap. Crimson, centre old gold.—*Dart*, F.C.C., N.C.S. Chestnut and gold. —*Dazzle*, A.M.; F.C.C., N.C.S. Pompon. Shaded old-rose tipped yellow.—*Desert Song*, F.C.C., N.C.S. Single. Reddish bronze tipped gold.—*Dick Barnes*, 1st N.C.H.—*Florence Bigland*, A.M. Jap. Yellow.—*General Petain*, 2nd Birmingham. Pink. Jap.—*Gladys Pierson*, F.C.C., N.C.S. Jap. Buff.—*Golden Balcombe*, F.C.C., N.C.S. Decor. Yellow.—*Golden Chestnut*, A.M., N.C.S. Good for garden. Chestnut, gold reverse.—*Hebe*, A.M.—*H. W. Thorpe*, 1st Ayr.—*Joan Higgs*, F.C.C., N.C.S. Incur. Sport from *Autocrat*. White. *Kenneth Hastie*, A.M.; F.C.C., N.C.S. Decor. Good for cutting and market. Crimson.—*Kingcup*, A.M.; F.C.C., N.C.S. Border var. Golden yellow.—*Lady Talbot*, Best in Show, Ayr.—*Louisa Pockett*, 2nd N.C.S. White.—*Lido*, A.M. Jap. Market. Gold bronze.—*Lustre*, F.C.C., N.C.S. Incurved. Decor. Pale mauve.—*Lyonesse* F.C.C., N.C.S. Decor. Indian-red.—. *Madame Gabrielle Thiaux* (*Red Cavell*), A.M.; F.C.C., N.C.S. Sport from *Edith Cavell*. Chestnut, gold reverse.—*Majestic*, 2nd N.C.S.; 1st and N.C.S. Cert., Derby; 1st Birmingham; 1st Corbridge. Jap. Bronze.—*Mona*, 1st Dunfermline. Single.—*Mrs. A. H. Boaden*, F.C.C. N.C.S. Incur. Yellow. —*Mrs. Algernon Davis*, Best bloom, Llanishen.—*Mrs. A. Holden*, N.C.S. Cert. and Special. Surbiton; 3rd N.C.S.; 2nd Birmingham. Jap. Crimson.—*Mrs. B. Carpenter*, N.C.S. Cert. and Special. Surbiton.—*Mrs. Gilbert Drabble*, 1st (White) N.C.S.; 1st Derby; 2nd Birmingham. Jap. White.—*Mrs. George Monro*, 2nd (Crimson) N.C.S.; 1st Corbridge. Jap. Crimson.—*Mrs. Harold Wells*, 3rd (White) N.C.S.; 1st Corbridge. Jap. White.—*Mrs. James Philp*, F.C.C. Glasgow.—*Mrs. J. W. Stone*, F.C.C., N.C.S. Sport from *Mrs. W. Smith*.

Primrose.—*Mrs. Sarah Knight*, A.M. Jap. Flushed mauve.—*Mrs. Stuart Knight*, F.C.C., N.C.S. Decor. Rose.—*Mrs. T. W. Pockett*, 1st Birmingham. Pink. Jap.—*Mrs. W. D. Cartright*, A.M. Jap. Yellow.—*Mrs. W. Hall*, F.C.C., N.C.S. Jap. Rosy mauve, silvery reverse.—*Melrose*, A.M., N.C.S. Deep lilac pink.—*New Year*, A.M. Single. Good for market. Orange, yellow zone.—*Pink Perfusion*, R.W.T. Small pink.—*Princess Mary*, 1st N.C.S. Yellow.—*Queen Mary*, 1st Lancaster.—*R. C. Pulling*. Best in Show, Lancaster; 1st Corbridge. Jap. Yellow.—*Red Majestic*, 3rd N.C.S.; 2nd Birmingham. Best Jap. Birmingham; 1st Harrogate.—*Robert McAlpine*, F.C.C., S.P.V.S.; F.C.C. Glasgow; A.M., Southport. Early. Shaded red.—*Rufflesque*, 1st Dunfermline. Decor.—*Shirley Golden*, 3rd N.C.S. Yellow.—*Snowflake*, A.M.; A.M., N.C.S. White.—*Solidity*, F.C.C., N.C.S. Gold tinted bronze.—*Sundown*, A.M.; F.C.C., N.C.S. Single. Crimson, yellow centre.—*Swardeston White*. Best in show, Dunfermline.—*Thanksgiving Pink*, A.M., F.C.C., N.C.S. Good for cutting and market. Mauve pink.—*Thomas W. Pockett*, 1st N.C.S.—*Trent*, F.C.C., N.C.S. Jap. White.—*Viscountess Hambledon*, F.C.C., N.C.S. Single. Crimson, yellow zone.—*Winnie Avery*, A.M.; F.C.C., N.C.S. Useful for market. Gold-bronze.—*Yellow. Majestic*, 2nd N.C.S. Yellow.—*Yellow Monument*, A.M.

CIRSIUM *occidentalis var. Coulteri*, A.M. Californian thistle. Silver-grey foliage, cerise flowers.

CLIVIA *Ursula* A.M. Orange.

CORNUS *Ma's*, A.M. Cornelian Cherry. Bright red fruits. Yellow. Europe, 1596.

COTONEASTER *multiflora var. callicarea*, A.M. Large dark red fruit.

CRASSULA *sarcocaulis*, A.M. Semi-hardy succulent. Pink. S. Africa.

CRATAEGUS *x Carrieri*, A.G.M. *C. mexicana* seedling. Tree. White. Orange-red fruit.

CYANANTHUS *Farreri*, A.M. Alpine house. Dwarf. Violet-blue. Thibet.

CYNOGLOSSUM *nervosum*, A.M. Blue. Himalayas.

DAHLIA *Albion*, R.W.T. Paeony. Cream.—*Apoldro* (Ballego), A.M., W.T. Small paeony-fl. Scarlet.—*Aurora*, R.W.T. Min. Paeony. Pale terra-cotta.—*Avis Cowdrey*, R.W.T. Cactus. White.—*Baldre*, A.M., W.T. Small-fl. Decor.—*Bhopal*, R.W.T. Min. Paeony. Orange scarlet.—*Bognor Star*, R.W.T. Old gold and rose.—*Cedric*, R.W.T. Paeony. Crimson.—*Charles a.*, R.W.T. Decor. Scarlet and orange tipped white.—*Claret*, R.W.T. Decor. Pink lined claret.—*Cora* (C. Turner), A.M., W.T. Small-fl. Paeony.—*Crimson Gem*, C.M., S.P.V.S. Mignon.—*Daily Mail*, R.W.T. Decor. Yellow shaded orange.—*Darjeeling*, R.W.T. Min. Paeony. Orange,

yellow reverse.—*de Bengel* (Topsvoort), H.C., W.T. Decor.—*Dora*, R.W.T. Charm. Shaded maroon.—*Dorret* (Burrell), A.M., W.T. Small-fl. Paeony.—*Dr. Helmet Spath*, A.M. Southport.—*Early Yellow* (Bruidegom), A.M., W.T. Cactus.—*Eda*, R.W.T. Paeony. Shaded orange.—*Edeghem* (Topsvoort), A.M., W.T. Cactus. Yellow.—*Edna*, R.W.T. Rose tipped white.—*Epsom Star* (Cheal), H.C., W.T. Star. Orange-scarlet.—*Erika* (Treseder), A.M., W.T. Collerette.—*Ethelwulf* (Turner), A.M., W.T. Star. White.—*Fantasy* (Stredwick), A.M., W.T. Decor.—*Faygate Star*, R.W.T. Star. Orange-scarlet.—*Felbridge Star*, R.W.T. Gold and orange.—*Florence M. Davies*. Decor. R.W.T. Orange flushed rose.—*Frau O. Bracht*, R.W.T. Cactus. Primrose.—*Glint*, R.W.T. Charm. Orange scarlet.—*Hadley*, R.W.T. Paeony. Shaded red maroon.—*Hookwood Star* (Cheal), H.C., W.T. Star.—*Jamboree*, R.W.T. Decor. Scarlet crimson.—*Jane* (Burrell), H.C., W.T. Small-fl. Paeony.—*Katherine Valentine Smith*, R.W.T. Cactus. Mauve, white centre.—*Laconia*, R.W.T. Decor. Shaded lilac.—*Lady Snagge* (Cheal), H.C., W.T. Decor.—*Little Marvel* (Cheal), A.M., W.T. Pompon. Pink.—*Lowfield Maroon* (Cheal), A.M. Small fl. Decor. Crimson-maroon.—*Ludwig Thoma* (van der Schoot), H.C., W.T. Decor. *Lurid*, R.W.T. Charm. Scarlet.—*Mabel Crossing*, R.W.T. Min. Paeony. Scarlet.—*Magician*, R.W.T. Decor. Shaded yellow tipped white.—*Marcehenschon* (Carlee), H.C., W.T. Decor.—*Margate Star*, R.W.T. Star. Yellow and rosy purple.—*Mermaid* (Cheal), A.M., W.T. Paeony-fl. Yellow.—*Miss G. Kenkell* (Majoor), A.M., W.T. Decor.—*Mrs. A. Brenls*, R.W.T. Decor. Pink-mauve.—*Mrs. A. F. Dulton* (A. J. Cobb), H.C., W.T. Small-fl. Paeony.—*Mrs. A. S. Galt* (Cobb), A.M., W.T. Small paeony-fl. Scarlet.—*Mrs. Bealey* (Cheal), H.C., W.T. Single.—*Mrs. F. D. Durham*, R.W.T. Decor. Pink.—*Mrs. John Crowther* (Stredwick), A.M., W.T. Decor.—*Mrs. Stuart Sandeman* (Stredwick), H.C., W.T. Cactus. Pink.—*Mrs. W. E. Phillips*, R.W.T. Decor. Yellow.—*Mrs. William Clarke* (H. Woolman), A.M., W.T. Mignon Single.—*Mysore*, R.W.T. Paeony. Rosy mauve.—*Nagpur*, R.W.T. Decor. Scarlet.—*Onah* (Burrell), H.C., W.T., A.M. Small-fl. Decor.—*Pauline*, R.W.T. Paeony. Orange terra-cotta.—*Phyllis Wheaton*, R.W.T. Min. Paeony. Rose-pink and cream.—*Pink Gem*, C.M., S.P.V.S. Mignon.—*Pink Perfection* (Cheal), A.M., W.T. Small Paeony-fl. Pink.—*Premier* (Stredwick), A.M., W.T. Decor.—*Pride of Crawley* (Cheal), A.M., W.T. Decor.—*Rebel*, R.W.T. Cactus. Rose-maroon.—*Redpole* (Stredwick), A.M., W.T. Cactus. Scarlet.—*Red Riding Hood* (Van Tubergen), A.M., W.T. Single.—*Rev. S. Marriott* (Stredwick), H.C., W.T. Decor.—*R. Findlay* (Stredwick), A.M., W.T. Decor.—*R. H. Holton* (Stredwick), A.M., W.T.

Scarlet. Decor.—*Ringdove*, R.W.T. Cactus. Salmon-pink.—*R. Treat* (Gen. McRae), A.M., W.T. Decor.—*Rubin* (Cheal), H.C., W.T. Star.—*Ruth* (Burrell), A.M., W.T. Small paeony-fl. Pale rose.—*Schneider*, R.W.T. Min. Paeony. Scarlet-crimson.—*Seafield* (Dobbie), A.M., W.T. Small paeony-fl. Pink on yellow.—*Senley*, R.W.T. Charm. Crimson.—*Stedfast* (Stredwick), A.M., W.T. Cactus. Scarlet.—*Stella* (Burrell), H.C., W.T. Small-fl. Decor.—*Sunny Clacton*, R.W.T. Single. White banded scarlet.—*Tanglewood* (Treseder), H.C., W.T. Small-fl. Paeony.—*The Ranee*, R.W.T. Min. Paeony. Scarlet.—*Topaz* (Cheal), A.M., W.T. Small paeony-fl. Scarlet.—*Tunis*, R.W.T. Pom. Terra-cotta and crimson.—*W. F. Balding*, R.W.T. Decor. Amber and apricot.—*White King* (Ballego), H.C., W.T. Decor. White.—*White Wonder* (Weyers), H.C., W.T. Cactus.—*Winnie*, R.W.T. Cactus. Yellow flushed lilac.—*Yvonne Salmon* (A. J. Cobb), H.C., W.T. Small-fl. Paeony.

DAPHNE *tangutica*, A.M. Evergreen shrub. White, purple reverse.

DELPHINIUM *Ann Baker* (Baker), A.M., W.T.—*Blue Gem*, R.W.T. Blue.—*Blue Gown*, F.C.C., B.D.S. Semi-double. Blue and mauve.—*Cambria* (Spencer), A.M., W.T.—*Dawn* (Spencer), A.M., W.T.—*Eileen May Robinson*, R.W.T. Lavender and blue.—*Gladys Thrale*, R.W.T. Blue and purple.—*Hewitt's Superb*, R.W.T. Lavender and blue.—*Hunsdon Dell*, F.C.C., B.D.S. Blue flecked mauve.—*Kelway's Lovely*, R.W.T. Semi-double, Lavender and blue, white eye.—*Lady Bath*, F.C.C., B.D.S. Double. Mauve edged blue.—*Lady Eleanor*, F.C.C., B.D.S. Semi-Double. Blue and mauve.—*Lady Elizabeth*, A.M., B.D.S. Mauve and blue, dark centre.—*Lady Emsley Carr*, F.C.C., B.D.S. Semi-double, light blue, black centre.—*Mrs. Hargreaves*, F.C.C., B.D.S. Semi-double. Blue and mauve.—*Mrs. Newton Lees* (Blackmore & Langdon), A.M., W.T.—*Mrs. Paul Nelke*, A.M., B.D.S. Semi-double. Blue, white edged.—*Pompadour*, A.M., B.D.S. Blue and mauve.—*Sir Douglas Haig* (Blackmore & Langdon), A.M., W.T. *See also* LARKSPUR.

DIANTHUS *Allwoodii var. Prudence*, A.M. Good for cutting. Pink.—*Royal Stuart*, A.M., R.C.H.S.—*Sweet Wivelsfield*, A.M. York. Hybrid.

DODECATHEON *splendidum var. Brilliant*, A.M. Rose-purple.

ERICA *australis var. Mr. Robert*, A.M. White form of type. Found in S. Spain by Mr. Robert Williams, 1912.

ESCHSCHOLZIA *Double Carmine Queen*, R.W.T.—*Eastern Queen*, R.W.T. Pale buff, cardinal reverse.—*Flambeau*, R.W.T. Semi-double. Orange-scarlet shot gold.

EUONYMUS *lanceifolia*, A.M. Pale pink fruit, scarlet seeds. China.

FREESIA *Beauty*, A.M. Mauve and yellow.—*Maryon*, A.M. Lilac and white.—*Mrs. R. F. Felton*, A.M. Shaded yellow.

FRITILLARIA *karadaghensis*. Yellow-green, speckled red-brown. Discovered by Mr. George Egger, and sent to Kew from Tabriz N. Persia, by Mr. Gilliat-Smith, 1928.

FUCHSIA *americana* * (Sir W. Lawrence), H.C., W.T.—*Andenken A. H. Henkel* (Dobbie), A.M., W.T.—*Aurora Superba* (H. J. Jones), H.C., W.T.—*Balkon* (H. J. Jones), H.C., W.T.—*Ballet Girl* (Forbes), A.M., W.T.—*Beauty* (Forbes), H.C., W.T.—*Carmen* (Sir W. Lawrence), H.C., W.T.—*Charming* (Dobbie), A.M., W.T.—*Clipper* (Forbes), H.C., W.T.—*Coralle* (H. J. Jones: Cory), A.M., W.T.—*corymbiflora seedling*, A.M. Finer than type.—*Cupid* (W. Auton), A.M., W.T.—*Dainty Lady* (Dobbie: Carter Page), A.M., W.T.—*Display* (Carter Page), H.C., W.T.—*Display?* (H. J. Jones), A.M., W.T.—*Earl of* Beaconsfield (Dobbie), H.C., W.T.—*Fascination* (G. Carpenter: Castle Nurseries: Ladds), H.C., W.T.—*Gartenmeister Bonstedt* (Forbes), H.C., W.T.—*Golden Treasure* (Forbes: Dobbie), H.C., W.T.—*gracilis*.* (Cheal: Forbes), H.C., W.T. Scarlet and purple. Chili, 1825.—*Grande Duchess Marie* (H. J. Jones), A.M., W.T.—*Killiecrankie?* (Forbes), H.C., W.T.—*La France* (Dobbie), A.M., W.T.—*Late Perfection* (R.H.S. Gardens), H.C., W.T.—*Leonardo da Vinci* (H. J. Jones), A.M., W.T.—*Le Robuste* (H. J. Jones), A.M., W.T.—*Marinka* (H. J. Jones), H.C., W.T.—*Masterpiece* (Forbes), A.M., W.T.—*Mauve Beauty* (Castle Nurseries: Dobbie), A.M., W.T.—*Mrs. Marshall* (R.H.S. Gardens), A.M., W.T.—*No.* 2 (Cory), H.C., W.T.—*No.* 3 (Cory), A.M., W.T.—*Princess Mary* (H. J. Jones), H.C., W.T. *Rose Ballet Girl* (Carter Page), H.C., W.T.—*Rose of Castille* (R.H.S. Gardens), H.C., W.T.—*Rose of Castille Improved* (Forbes: Carter Page), H.C., W.T.—*Sunrad* (Carter Page), A.M., W.T.—*Scarcity?* (Forbes), H.C., W.T.—*Thompsonii* * (Veitch), A.M., W.T.—*Unnamed* (Bakers), H.C., W.T.—*White Phenomenal* (Forbes), H.C., W.T.—*Zola* (Forbes), A.M., W.T.

* Hardy.

GAILLARDIA (Perennial) *Gloria* (Ladhams), H.C., W.T.—*Rownham's Queen* (Ladhams), H.C., W.T.—*Tangerine* (Barr: Daniels), H.C., W.T. H.P.—*Maximum var. triumphans* (Ladhams), H.C., W.T.

GENTIANA *hascombensis* (*G. lagodechiana x G. septemfida var. cordifolia*), A.M. Blue and white.—*hexaphylla*, A.M. Dwarf. Blue. N. W. Yunnan, 1894.—*lagodechiana, Hascombe var.*, A.M., R.G. Dark blue marked white.—*prolata*. Sky-blue, white tube. A.M. Dwarf. Bhutan and Sikkim, 1918.

GLADIOLUS *Adoration* (Velthuys), A.M., W.T.—*Ajax*, Silver-gilt Medal B.G.S. Prim. and A.M. Scarlet.—*Alice Amos*, A.M., B.G.S. Large fl. Cream white.—*Anne Croke*, Bronze med. B.G.S. Laciniatus seedling. Shaded pink.—*Annie Gregg*, Silver-gilt Medal B.G.S. Large fl. Cream marked pink.—*Blackwellii*, A.M. Pink, lined carmine.—*Capt. Boynton* (Vel-

thuys), A.M., W.T.—*Carminea*, A.M., B.G.S. Large fl. Ruby and white.—*Christine Prior*, Bronze Medal and A.M., B.G.S. Large fl. Salmon marked blue.—*Dainty*, A.M., B.G.S. Prim. Salmon, lemon, and scarlet.—*Dante*, 1st Prim. Lavender. B.G.S.—*Dark Lantern*, A.M., B.G.S. Ruby and cream.—*David Prior*, A.M., B.G.S. Large fl. Orange-scarlet.—*Dew Drop*, 1st B.G.S. Prim. White.—*Distinction*, A.M., B.G.S. Large fl. Orange.—*Edgar Ingham*, Bronze Medal and A.M., B.G.S. Prim. Salmon, yellow, and white.—*Emma* (Velthuys), A.M., W.T.—*Ethelyn*, 1st B.G.S. Prim. Yellow.—*Gelinotte*, 1st B.G.S. Prim. Pink.—*Geoffrey Henslow*, Silver med. B.G.S. Prim. Coral marked white.—*Gertrude Amos*, Silver Medal and A.M. B.G.S. Large fl. Salmon marked crimson.—*Gladness* (Velthuys), A.M., W.T.—*Gloriana*, A.M., B.G.S. Large fl. Salmon and yellow.—*Golden Eagle*, 1st B.G.S. Large fl. Yellow.—*Guy Mannering*, 1st B.G.S. Large fl.—*Harmony* (Velthuys), A.M., W.T.—*Hinemowa*, 1st B.G.S. Large fl. Fancy.—*Irene*, 1st B.G.S. Large fl.—*Jack Izod*, A.M., B.G.S. Large fl. Crimson.—*Jewel*, 1st B.G.S. Prim.—*Krelage's Favourite*, 1st B.G.S. Prim. Red.—*La Gaiété* (Velthuys), H.C., W.T.—*Leen Wone*, A.M., B.G.S. Prim. Orange.—*Lilac Queen*, 1st B.G.S. Prim.—*Lutetica*, 1st B.G.S. White.—*Marmora*, 1st B.G.S. Large fl.—*Mount Everest*, 1st B.G.S. Large fl. White.—*Mrs. G. C. Taylor*, Silver Medal B.G.S. Prim. Salmon marked crimson.—*Mrs. M. Rumsey*, Silver-gilt med. B.G.S. Shaded rose.—*Mrs. W. J. Unwin*, A.M., B.G.S. Large fl. Shaded pink marked crimson.—*Mrs. Unwin* (Velthuys), A.M., W.T.—*Ne Plus Ultra* (Velthuys), H.C., W.T.—*Old Rose*, A.M., B.G.S. Large fl. Salmon, shaded carmine and white.—*Orange Beauty*, 1st B.G.S. Prim. Yellow.—*Penelope*, Bronze med. B.G.S. Magenta marked white.—*Pfitzer's Triumph*, 1st B.G.S. Large fl.—*Pink Gem*, Silver-gilt med. B.G.S. Prim. Rose-pink, marked white.—*Pink Perfection*, 1st B.G.S. Large fl. Pink.—*Prince of Wales*, 1st B.G.S. Salmon. Large fl.—*Purple Glory*, 1st B.G.S. Large fl. Purple.—*Red Emperor*, 1st B.G.S. Large fl. Red.—*Rival*, A.M., B.G.S. Large fl. White marked carmine.—*Rosella Amos*, 1st B.G.S. Large fl.—*Salmon Beauty*, 1st B.G.S. Prim. Salmon.—*Sappho*, 1st B.G.S. Prim. Smoky.—*Scarlet Flame*, A.M., B.G.S. Prim. hybrid. Scarlet.—*Schwaben*, 1st B.G.S. Large fl. Yellow.—*Senorita*, A.M., B.G.S. Orange marked carmine.—*Shell Pink*, 1st B.G.S. Prim. Pink.—*Souvenir*, 1st B.G.S. Prim. Yellow.—*Sunset*, 1st B.G.S. Large fl.—*Tapestry*, A.M. B.G.S. Large fl. Pink, shaded heliotrope.—*Taurus*, 1st B.G.S. Prim. Lavender.—*The Queen* (Velthuys), H.C., W.T.—*Van*, A.M., B.G.S. Prim. Buff lined purple.—*What Joy*, Silver med. B.G.S. Large fl. White marked canary and purple.—*White Butterfly*, 1st B.G.S. Prim. White.

GODETIA *Tall Double Cherry Red* (Sutton), H.C., W.T.

GORDONIA *axillaris*, A.M. Tender. White.—*Lasianthus*, A.M. Loblolly Bay. Hardy Sh. Yellow. N. America, 1739.

GRAMMATOCARPUS *volubilis* (*Scyphanthus elegans*), A.M. Twining. H.H.A. Yellow. Chili, 1824.

HEDYCHIUM *gardnerianum*, A.M. Herbaceous Gingerwort. Stove. Yellow. Himalaya, 1819.

HELENIUM *autumnale var. Chipperfield Orange*, R.W.T. Yellow shaded orange.—*Wyndley* (Carter Page), A.M., W.T.

HELIOPHILA *integrifolia*. Cape stock. Cool greenhouse. A. Blue. S. Africa, 1823.—*linearifolia*, A.M. Greenhouse evergreen. Blue. S. Africa, 1819.

HEMEROCALLIS *hybrida var. George Yeld*. Yellow to brown. R.W.T.

HIPPEASTRUM *Lady Juliet Duff*, A.M. Crimson.

HYACINTH *Grand Maître*, 1st Paisley.—*Jacques*, 1st Paisley.—*White Friar*, 1st Kilmarnock.

HYPERICUM *reptans*, A.G.M. Hardy in R.G. Prostrate mat. Flowers yellow, buds reddish. Sikkim.

IRIS *Abdera* * (Perry), A.M., W.T.—*Aphrodite* * (Orpington Nurseries), A.M., W.T.—*Benbow* * (A. J. Bliss), A.M., W.T.—*Blue Chintz* * (F. Burton), A.M., W.T.—*Bluet* * (Orpington Nurseries), A.M., W.T.—*Bruno* * (Wallace), A.M., W.T.—*Carfax*, Silver-gilt Medal and C.M., I.S. New Seedling. Red-purple.—*Centurion* * (Orpington Nurseries), A.M. W.T.—*Dog Rose*, C.M. I.S. New Seedling. Rosy mauve.—*Flaming Sword* * (Orpington Nurseries), A.M., W.T.—*Flutter-by* * (Miss Sturtevant), A.M., W.T.—*Greven*, 2nd I.S.—*Gold Imperial* * (Miss Sturtevant), A.M., W.T.—*Harmony* * (Orpington Nurseries), A.M., W.T.—*Hemodus* * (Perry), A.M., W.T.—*India* * (G. L. Pilkington), A.M., W.T.—*Iris King* * (Barr: Perry), A.M., W.T.—*Jacquiniana*, 2nd I.S.—*Jane Austin*, C.M., I.S. New seedling. White feathered purple.—*Joan Curtis*, Silver Medal and C.M., I.S. New Seedling. Standards yellow, falls maroon.—*Joyance*, Dykes Memorial Medal.—*Jurion*, C.M., I.S. New seedling. Purple bicolour.—*Lent A. Williamson* * (Orpington Nurseries), A.M., W.T.—*Lord Lambourne* * (Perry), A.M., W.T.—*Marjory Tinley*, 1st I.S. Lavender.—*Mlle. Yvonne Pelletier* * (Cayeaux), A.M., W.T.—*Mrs. Hamilton Rowans' seedling*, C.M., I.S. Shaded purple.—*Mrs. H. F. Bowles* * (Perry), A.M., W.T.—*Mrs. Marion Cran* * (Perry), A.M., W.T.—*Nemoralia* * (Perry), A.M., W.T.—*Norma* * (Perry), A.M., W.T. *pallida, Shotsham var.* * (Orpington Nurseries), A.M., W.T.—*—pallida var. dalmatica* * (R.H.S.: Forbes: Veitch), A.M., W.T.—*Parc de Neuilly* * (Barr), A.M., W.T.—*Rhein Traube* * (Waterer), A.M., W.T.—*Rialgar* * (Miss Sturtevant), A.M., W.T.—*Romola* * (Orpington Nurseries), A.M., W.T.—*Sir Michael* * (Orpington Nurseries), A.M., W.T.—*Souvenir de*

Madame Gaudichau * (G. P. Baker: Wallace), F.C.C., W.T.—*Trigo*, Silver Medal and C.M., I.S. New seedling. Standards blue, falls shaded purple.—*T. W. Thornton*,* R.W.T. Blue.—*Whitelegg's Seedling*, C.M. and Silver Medal I.S. Standards yellow, falls smoky purple.—*Yeoman* * (Orpington Nurseries), A.M., W.T.—*Yukon*, C.M., I.S. New seedling. Pale blue.

* Bearded.

IXORA *lutea*, A.M. Dwarf. Cream, 1912.

KERRIA *japonica*, A.G.M. (*Corchoris japonicus Thunberg*). Orange-yellow. H.Sh. Introduced from Japan (double form) about 1700. Single form first bloomed in Europe at the R.H.S. Chiswick Garden, 1835.

KNIPHOFIA *Excellence* (Prichard), A.M., W.T.—*Fireflame* (Ruys), A.M., W.T.—*Lemon Queen* (Notcutt), H.C., W.T.—*Wisley Seedling*, A.M., W.T. (R.H.S.).

LACHENALIA *Africa* (Rev. J. Jacob), H.C., W.T. Yellow and red.—*Arabia* (Rev. J. Jacob), A.M., W.T. Yellow.—*Boundii* (Bound), A.M., W.T. Vermilion.—*Calcutta* (Rev. J. Jacob), A.M., W.T. Yellow and red.—*Canada* (Rev. J. Jacob), A.M., W.T. Yellow.—*Goldfinch* (Mauger), H.C., W.T. Yellow and red.—*Leiden* (Rev. J. Jacob), A.M., W.T. Yellow.—*Mandalay* (Rev. J. Jacob), A.M., W.T. Yellow.—*Monaco* (Rev. J. Jacob), A.M., W.T. Yellow and red.—*Monte Carlo* (Mauger), H.C., W.T. Yellow and red. *Siam* (Mauger), A.M., W.T. Yellow.—*Tibet* (Rev. J. Jacob), A.M., W.T. Yellow.—*Tipperary* (Rev. J. Jacob), A.M., W.T. Yellow and red.

LAPEYROUSIA *grandiflora*, A.M. Bulb. Cool greenhouse. Red marked crimson. Discovered by Sir John Kirk near the Zambesi. S.E. Trop. Africa, 1858.

LARKSPUR (Annual) *Exquisite Rose* (Waller-Franklin Seed Co., California), A.M., W.T.—*Exquisite Pink Improved* (Waller-Franklin Seed Co.), A.M., W.T.—*La France* (Bodger), California A.M., W.T.

LATHYRUS *magellanicus*, A.M. Everlasting Pea. Blue shaded rosy purple. Cape Horn, 1744.

LEUCADENDRON *plumosum*. Cult. Com. Silver Tree. Greenhouse evergreen Sh. S. Africa, 1774.

LEUCOCORYNE *ixiodes var. odorata*, A.M. Bulb. H.H. Lilywort. Very fragrant. Blue and white. Chili, 1826.

LEWISIA *pygmaea*, A.M. White veined and flushed purple, red calices. Rocky Mountains, 1907.

LILIUM *philippense var. formosum, Price's var.*, A.M. White marked red.

LOASA *acanthifolia*, A.M. H.A. with stinging hairs. Orange. Chili, 1822.

LOBELIA *The Marvel*, A.M. Bedding or pot. Double. Blue.

LONICERA *hemsleyana*, A.M. Deciduous. Semi-transparent red berry. China.

LUPIN (Annual) *Hartwegi album* (Daehnfeldt & Jensen), A.M., W.T. White.—*Hartwegi Dark Blue* (Waller Franklin), H.C., W.T. Azure blue.—*Hartwegi superbus* (Watkins & Simpson), H.C., W.T. White to magenta.—*Hartwegi White* (Webb), A.M., W.T. White.—*Hybridus roseus* (Barr), A.M., W.T. Pale rose to crimson.—*luteus Romulus* (Benary: Heinemann), A.M., W.T. Yellow.—*mutabilis* (Barr), H.C., W.T. White tinged lavender.—*nanus* (Daehnfeldt & Jensen: Barr), H.C., W.T. Blue.—*nanus Blue* (Benary), H.C., W.T. Blue.—*tricolor rosa* (Sluis and Groot), A.M., W.T. Rose to magenta. (Perennial) *Ada* (Simpson: Harkness), H.C., W.T.—*Delight* (Simpson), H.C., W.T.—*Edna* (Simpson), A.M., W.T.—*Elizabeth Arden* (Simpson), H.C., W.T.—*Emperor* (Downham), H.C., W.T.—*Exquisite* (Simpson), A.M., W.T.—*Highlander* (Simpson), A.M., W.T.—*Northern Beauty* (Dickson & Robinson), H.C., W.T.—*Northern Fire* (Dickson & Robinson), A.M., W.T.—*Northern Lass* (Simpson: Dickson & Robinson), H.C., W.T.—*Northern King* (Simpson: Dickson & Robinson), A.M., W.T.—*Northern Torchlight* (Dickson & Robinson), H.C., W.T.—*polyphyllus var. Duke of Richmond*, R.W.T. Rose.—*p. var. Grace Fanwell*, R.W.T. Keel buff, standard terra-cotta.—*p. var Reason*, R.W.T. Pink bicolour.—*Rosalind* (Simpson), H.C., W.T.—*Saint George* (Simpson), H.C., W.T.—*Taplow Blue* (Barr), H.C., W.T.—*Twilight* (van Tubergen), H.C., W.T.

MAGNOLIA *Brozzonii*, F.C.C. Soulangeana hybrid. White marked purple.

MARICA *gracilis*, A.M. White and blue Irid. Brazil, 1830.

MERTENSIA *moltkioides*, A.M. Free flowering. Blue. Himalayas.

NARCISSUS *Ace of Diamonds*, 2nd Mid. Daf. Soc. Poeticus Div.—*Advance Guard*, R.W.T. Trumpet Daf. Yellow.—*Adventure*, A.M., Incomp. Div. Yellow.—*Alchemist*, 1st Mid. Daf. Soc. Trumpet Daf. Yellow.—*Askelon*, 2nd Mid. Daf. Soc. Trumpet Daf. White.—*Beersheba*, A.M., 1st Daf. Ex. Trumpet Daf. Good for cutting.—*Bridegroom*, A.M. Barrii Div. Bicolor; cream, cup yellow edged orange.—*Brimstone*, A.M. Trumpet Daf. Sulphur.—*Chandlers Ford*, 1st Daf. Ex. Incomp. Div.—*Commander Byrd*, A.M. Haarlem. Trumpet Daf. Lemon trumpet, sulphur perianth.—*Coverach Gem*, 1st Daf. Ex. Barrii Div.—*Crimea*, A.M. Mid. Daf. Soc. Barrii Div. Bicolor. Orange cup.—*Croesus*, 2nd Mid. Daf. Soc. Incomp. Div. Yellow.—*Curlew*, 2nd Mid. Daf. Soc. Bicolor Incomp. Div.—*Dactyl*, 1st Daf. Ex. Poeticus Div.—*Damson*, 1st Yellow Incomp. Daf. Ex.—*Daphne*, F.C.C. Double. Good for market and garden.—*Edgar Thurston*, R.W.T. Trumpet Daf. Yellow—*Estelle*, A.M. Haarlem. Incomp. Div. Lemon, deep orange cup.—*Fanny Currey*, A.M. Leedsii Div. Cream, cup flushed apricot.—*Farthingdale*, 1st Mid. Daf. Soc. Incomp. Div. Yellow.—*Festive*, 1st and A.M. Mid. Daf. Soc. Incomp. Div.

Bicolor, white, orange-scarlet.—*Finality*, A.M. Poeticus Div. Yellow cup edged red.—*Firetail*, 1st Mid. Daf. Soc. Barrii Div. White.—*Folly*, 1st Bicolor Barrii Daf. Ex., A.M. Mid. Daf. Soc. White, red-orange.—*Friar*, A.M. Haarlem. Leedsii Div. Sulphur, yellow cup.—*Glorious*, 1st Mid. Daf. Soc. Tazetta Div.—*Golden Goblet*, 1st Daf. Ex., Jonquilla hybrid.—*Golden Ingot*, A.M. Incomp. Div. Primrose, yellow cup.—*Goodwin*, 1st Daf. Ex. Cyclamineus hybrid.—*Gregalach*, 1st bicolor Trumpet Daf.—*Harpist*, 2nd Mid. Daf. Soc. Trumpet Daf. White.—*Harvest Moon*, 1st Daf. Ex. Triandus hybrid.—*Henna*, A.M. Haarlem. Incomp. Div. Market flower. Deep lemon, orange cup.—*Honey*, 2nd Mid. Daf. Soc. Leedsii Div.—*Huon*, A.M. Poeticus Div. White, yellow corona edged red-orange.—*Inglescombe*, 1st Daf. Ex. Double.—*Irene Copeland*, F.C.C. Haarlem. Double.—*J. K. Ramsbottom*, A.M. Haarlem. Barrii Div. White, yellow cup bordered orange.—*Jorrocks*, A.M. Mid. Daf. Soc. Incomp. Div. Canary, orange crown.—*Kantara*, A.M. Mid. Daf. Soc. Trumpet Daf. White.—*Khatmandu*, A.M. Leedsii Div. White, crown shaded green.—*Kilter*, 1st Daf. Ex. Barrii Div.—*Lloyd*, 1st Mid. Daf. Soc. Double.—*Market Glory*, A.M. Mid. Daf. Soc. Incomp. Div. Canary, orange-yellow crown.—*Marvellous*, A.M. Haarlem. Trumpet Daf. Sulphur-white perianth, golden trumpet.—*Mary Copeland*, 2nd Mid. Daf. Soc. Double.—*May Glory*, A.M., Poeticus Div. Orange cup.—*May Molony*, A.M. Mid. Daf. Soc. Leedsii hybrid. Cream, cup primrose.—*Medusa*, 2nd. Mid. Daf. Soc. Tazetta Div.—*Minafon*, 2nd Mid. Daf. Soc. Barrii Div. Yellow.—*Mitylene*, 1st Mid. Daf. Soc. Leedsii Div.—*Moira O'Niell*, 1st Mid. Daf. Soc. Bicolor Trumpet.—*Mr. Nijgh*, A.M. Haarlem. Barrii Div. white, orange cup.—*Mrs. Watts*, A.M. Mid. Daf. Soc. Incomp. Div. Cream, orange crown.—*Muriel Bibby*, 2nd Mid. Daf. Soc. Barrii Div. White.—*Naomi*, A.M. Haarlem. Barrii Div. Sulphur, yellow cup bordered deep orange.—*Opera*, 1st Mid. Daf. Soc. Poeticus Div.—*Orange Circlet*, A.M. Haarlem. Incomp. Div. Lemon, cup yellow bordered orange-red.—*Orange Glory*, 1st Mid. Daf. Soc. Cyclamineus Hybrid.—*Peerless*, A.M. Haarlem. Poetaz Div. Apricot, orange cup.—*Peter Lower*, A.M. Mid. Daf. Soc. Tazetta Div. White, orange cup.—*Radium*, A.M. Mid. Daf. Soc. Barrii Div. White suffused buff, orange cup.—*Recessional*, A.M. Poeticus Div. White, primrose crown.—*Red Knight*, A.M. Haarlem. Incomp. Div. Cream, yellow cup bordered orange.—*Red Rim*, A.M. Haarlem. Poeticus Div. Market flower. Cup orange-red border.—*Royalist*, 1st Daf. Ex. Trumpet Daf. Yellow.—*St. Egwin*, 1st bicolor Barrii Daf .Ex.—*Seraglio*, 1st Mid. Daf. Soc. Barrii Div. Yellow.—*Silver Salver*, 1st Daf. Ex. Leedsii Div.—*Silver Plane*, 1st and A.M. Mid. Daf. Soc.

Leedsii Div. White, canary cup.—*Solleret*, A.M., 1st Mid. Daf. Soc. Jonquilla hybrid. Yellow.—*Sumaria*, A.M. Mid. Daf. Soc. White.—*Sunstar*, A.M., A.M. Mid. Daf. Soc. Barrii Div. Bicolor. Cream, orange red.—*Taffy*, 2nd Mid. Daf. Soc. Leedsii Div.—*Tenedos*, 1st giant Leedsii Daf. Ex; 2nd Mid. Daf. Soc.—*Triplex*, A.M. Semi-double. White.—*Twinkle*, A.M. Haarlem. Barrii Div. Apricot, cup orange.—*Van Waveren's Giant*, 1st Kilmarnock.—*Venetia*, 1st Daf. Ex. Triandus Div. 1st and 2nd Mid. Daf. Soc. Triandus Hybrid.—*Vixen*, A.M. Haarlem. Incomp. Div. Sulphur-white, orange cup.—*Wide Wing*, A.M. Haarlem. Poeticus Div. Cup yellowish-red border.—*Whiteley Gem*, A.M. Incomp. Div. Yellow, apricot cup.—*Whitewell*, 1st Paisley.

OENOTHERA *trichocalyx*, A.M. Grey leaves. White shaded primrose. N. America.

OMPHALOGRAMMA *sp. K.W., 6,821*, A.M. Blue.

OURISIA *alpina*, A.M. Lilac. Chili.

PAEONIA *Gilded Splendour*, R.W.T. Rose, carmine and gold.—*Kelway's Remembrance*, A.M. York.—*Lord Kitchener*, A.M. York.—*Mlokosewitschii*, A.M. Herbaceous. Yellow. Caucasus, 1908.—*Una Howard*, R.W.T. Semi-double. Carmine.

PENTSTEMON *antirrhinoides*, A.M. H.H. Shrub. Yellow. Found by Dr. Coulter in California, 1824.—*Eatonii*, A.M. Crimson-scarlet. California, 1883.—*procerus* (*confertus caeruleo-purpureus*), A.M. Hardy. Blue tinted mauve. N. America, 1827.—*strictus* (*p. comarrhenus*), A.M. Glaucous grey leaves. Rosy-lavender. N.W. America.

PERNETTYA *leucocarpa*, A.M. Dwarf creeping shrub. White fruit. Found by Comber. Chili, 1926.

PHACELIA *campanularia*, A.G.M. Annual. California, 1882.

PHASEOLUS *Caracalla*, A.M. Climbing Leguminosae. Greenhouse. White, cream and purplish-blue. India, 1690.

PHILADELPHUS *insignis*, A.M. Very floriferous.

PHLOX (*Drummondii*) *grandiflora alba* (Dobbie: Barr), A.M., W.T. White.—*grandiflora coccinea* (Barr: Benary; Veitch), H.C., W.T. Scarlet.—*grandiflora oculata* (Barr), A.M., W.T. Rosy-red.—*grandiflora Scarlet* (Morris), H.C., W.T.—*grandiflora stellata splendens* (Barr), H.C., W.T. Scarlet.—*Mixed* (Spruijt), H.C., W.T. Various.—*nana compacta Fireball* (Watkins & Simpson: W. H. Simpson), H.C., W.T. Scarlet.—*nana compacta Snowball* (Barr), H.C., W.T. White.—*nana compacta White* (Watkins & Simpson), H.C., W.T.—*Red Prince* (Barr), H.C., W.T. Scarlet.—*Paragon Dwarf Mixed* (Webb), H.C., W.T. Various.

(Perennial) *Magna Charta*, R.W.T. Pink, carmine eye.—*Mrs. Symons-Jeune*, R.W.T. Large flowers. Blush pink, carmine eye.

(Alpine) *atropurpurea* (Bakers), H.C., W.T.—*Fairy* (Bakers:

Hemsley), H.C., W.T.—*Lavinia* (Miss M. C. Taylor), A.M., W.T.—*Moerheimii* (Bakers), A.M., W.T.—*Seraph* (Barr), A.M., W.T.—*Sprite* (Arends), A.M., W.T.

PINGUICULA *gypsicola*, A.M. Insectivorous. Mauve. Mexico, 1911.

POLYGONUM *Aubertii*, A.G.M. Climber. White tinged green and pink. Collected W. Szechwan, by Père Aubert, 1899.—*baldschuanicum*, A.G.M. Climber. White tinged pink. Introduced by Dr. Albert Regel, 1883.

POPPY (Annual) *New Double Queen* (Barr), A.M., W.T.—*Taplow Pink* (Barr), A.M., W.T.

PRIMULA *hybrida var. Sir George Thursby* (*P. japonica x P. Lissadell hybrid*), A.M. Deep rose-pink, crimson zone.—*Peakland Beauty*, R.W.T. Very floriferous Primrose. Blue.—*Polyanthus Barrowby Gem* (Mrs. MacColl), A.M., W.T.

PRUNUS *davidiana alba*, A.G.M. (*P.D. albiflora*). Hardy in the south. Introduced by M. Carrierè. China, 1872.—*nana*, A.M. Dwarf Russian Almond. 1683.

PYRETHRUM *Red Emperor*, R.W.T. Single. Crimson.

RAMONDIA *Nathaliae*, A.M. R.G. Blue.

RHODODENDRON *adenopodium*, 1st Rh.A. Pink. Half hardy. Central China, 1909.—*amoena*, 1st Rh.A.—*arboreum*, 1st Rh.A. Scarlet. Himalayas, 1820.—*Aucklandii Pink Seedling*, 1st Rh.A.—*Baileyi*, 1st Rh.A. Lepidotum series.—*bullatum*, 1st Rh.A.—*campanulatum*, 1st Rh.A. Pink. Himalayas, 1825.—*campylocarpum*, 1st Rh.A. Yellow. Sikkim, 1851.—*charitopes* (?) *Forrest 25,270*, A.M. Evergreen. Dwarf. Pink.—*Dairy Maid*. Best in Show, Rh.A.—*Davidsonianum*, 1st Rh.A. Szechuan, 1913.—*Delight* (*R. praecox x R. ciliatum*), A.M. Flushed pink.—*dichoranthum x neriiflorum*, 1st Rh.A.—*euchaites*, A.M. Forrest, 12,125. K.W. 3,040. Red.—*exium x Falconeri*, 1st Rh.A.—*Falconeri*, 1st Rh.A. White. Himalayas, 1850.—*fastigiatum x Augustinii*, 1st Rh.A. Alpine.—*fictolacteum*, 1st Rh.A.—*Fortune's Triumph*, A.M. Pale pink.—*Gill's Triumph*, 1st Rh.A.—*Glory of Penjerrick*, 1st Rh.A.—*Griffithianum*, 1st Rh.A.—*Hinodigerii*, 1st Rh.A. Evergreen Azalea.—*irroratum*, 1st Rh.A.—*Keiskii*, A.M. Rh.A. Trifolium series. Pale yellow. Japan, 1908.—*K.W. 6273*, A.M. White.—*lacteum*, 1st Rh.A. White. China, 1909.—*Loderi*, 1st Rh.A.—*Loder's Pink Diamond*, 1st Rh.A. Hybrid.—*lutescens*, 1st—Rh.A.—*Morii*, 1st Rh.A. Barbatum series.—*Muriel Messel*, A.M. (*R. Loder's Whitex R. Loderi*). Pink.—*neriiflorum*, 1st Rh.A.—*oresotrephes*, 1st Rh.A.—*Richard Gill*, 1st Rh.A.—*rubiginosum*, 1st Rh.A. Pink. Yunnan, 1898.—*russatum*, 1st Rh.A. Lapponicum series.—*semanteum*, A.M. Rh.A. Lapponicum series. Rosy-mauve. Discovered by Forrest. S.W. Szechuan, 1921.—*Soulei*, 1st Rh.A. Rose-pink. China, 1909.—*taliense*, 1st Rh.A.—*tephropeplum*, A.M. Rh.A. Campylogynum series. Pink. Discovered by Farrer. Upper Burma,

1920.—*Thomsonii*, 1st Rh.A. Red. Nepal and Sikkim, 1851.—*Thomsonii x neriiflorum*, 1st Rh.A. Hybrid.—*Vanessa* (*R. Souliei-Fortunei x R. Griersonianum*), F.C.C. Dwarf. Salmon-pink.

RIBES *sanguineum splendens*, A.G.M. Hardy Sh. 6'. Flowers better colour and size than type.

ROSA *Admiration*, 1st Glasgow. H.T. Cream tinted pink.—*Anne*, Best in Show Glasgow. H.T. Pink.—*Aroma*, Clay Cup. Light crimson. Very fragrant.—*Aureate*, Gold Med. N.R.S. H.T. Scented. Yellow.—*Autumn*, A.M. H.T. Shaded rose and gold.—*Barbara Richards*, A.M. H.T. Fragrant. Cream flushed yellow.—*Caledonia*, C.M., N.R.S. Garden and exhibition. H.T. White shaded lemon.—*Crette*, 1st Glasgow. White.—*Crimson Glow*, C.M., N.R.S. H.Wich. Semi-double. Red.—*Dame Edith Helen*, 1st Southport. H.T. Pink.—*D. T. Poulson*, C.M., N.R.S. Poly. Bedding. Semi-double. Crimson.—*Duchess of Athol*, Nickerson Cup, N.R.S.; A.M. Shaded orange.—*Earl Haig*, 1st (Red) Glasgow; 2nd Southport. H.T. Deep crimson.—*Elizabeth Arden*, Gold Med. N.R.S. H.T. White tinted pink.—*Frau Karl Druschki*, 1st. White. Glasgow. H.P. White.—*Gigantea*, Cult. Com. Coppery red to white. Burma, 1888.—*Gladys Benskin*, Gold Med. N.R.S. H.T. Sweet scented. Pink.—*Golden Dawn*, C.M., N.R.S. H.T. Scented (*Elegante x Ethel Somerset*). All purposes. Vigorous. Pale yellow, reverse flushed old rose.—*James Gibson*, C.M., N.R.S. H.T. Crimson.—*James Rea*, Gold Med. N.R.S. H.T. Deep rose.—*Julien Potin*, C.M., N.R.S. Pern. Yellow.—*Katherine King*. Scented. H.P. Pink. C.M., N.R.S.—*Lady Inchiquin*, 1st Glasgow. H.T. Shaded pink.—*Lt.-Col. A. Fairrie*, C.M., N.R.S. Cream flushed apricot.—*Lucie Marie*, C.M., N.R.S. Garden and bedding. H.T. Yellow to orange.—*Mabel Morse*, 1st (Yellow) Glasgow. H.T. Yellow.—*Miss Willmott*, 1st Glasgow. H.T. Cream white.—*Molly Darragh*, C.M., N.R.S. Yellow shaded rose.—*Mrs. A. R. Barraclough*, 1st Dumbarton. H.T. Carmine shaded yellow—*Mrs. C. Aveling*, C.M., N.R.S. H.T. Semi-double. Shaded orange-red.—*Mrs. Courtney Page*, Best Bloom (Professional) Colchester. H.T. Shaded cerise.—*Mrs. Henry Bowles*, 1st and 1st (Pink) Glasgow; 1st Southport. H.T. Rose pink—*Mrs. Henry Morse*, Best in Show, Falkirk. H.T. Rose.—*Mrs. H. G. Johnston*, C.M., N.R.S. Exhibition H.T. Pink.—*Mrs. Lamplough*, 1st (Cream) Glasgow.—*Mrs. Sam McGredy*, Gold Med. H.T. Orange-red.—*Nellie Parker*, Best Bloom (Amateur), Colchester. H.T. Shaded cream.—*Peter Pan*, C.M., N.R.S. *Emma Wright* sport. Garden. H.P. Salmon-coral.—*Portadown*, Gold Med. N.R.S. H.T. Red.—*President Hoover*, A.M. H.T. Shaded pink.—*Senorita de Alvarez*, C.M., N.R.S. Single. H.T. Bright pink.—*Tom Barr*, C.M., N.R.S. Garden. H.T.

Apricot flushed rose.—*Trigo*, C.M., N.R.S. H.T. All purposes. Shaded yellow.—*W. E. Chaplin*, C.M., N.R.S. H.T. Deep rose pink.—*Winnie Bell*, F.C.C. Glasgow.

SALVIA (Bedding) *Early Dwarf Bedder* (Sluis & Groot), A.M., W.T. Scarlet.—*Farinacea* (Benary), H.C., W.T. Lavender-blue.—*Fireball* (Morris), A.M., W.T. (Heinemann) H.C., W.T. Scarlet.—*Harbinger* (Veitch), A.M., W.T. (Watkins & Simpson: Pearson), H.C., W.T. Scarlet.—*Harbinger Improved* (Watkins & Simpson), H.C., W.T. Scarlet.—*patens* (Veitch), A.M., W.T. Gentian-blue.—*patens var. Cambridge Blue*, A.M. Sky-blue. H.H.P.—*splendens var. Simmonsii*, R.W.T. Dwarf, free flowering. Scarlet.

SAXIFRAGE *Beauty of Ronsdorf* (Ruys), C., W.T.—*Bee's Pink* (Ruys), A.M., W.T.—*Enchantress* (Barr), C., W.T.—*Mrs. E. Piper* (Roger), H.C., W.T.—*Triumph* (Arends), A.M., W.T.—*Tumbling Waters*. Cult. Com.

SCILLA *siberica*, A.G.M. Hardy bulb. Blue, white, and pink. Siberia, 1796.

SEDUM *spectabile*, A.G.M. Hardy. Japan and China, 1868.

SPIRAEA *venusta*, A.G.M. (*Synonyms: S. palmata Lin, S. lobata, Filipendula rubra, F. lobata, Ulmaria rubra*). Hardy H. 3–5'. Pink. N. America, 1765.

STAPELIA *nobilis*, A.M. Succulent. Biscuit marked purple. S. Africa, 1901.

STATICE *profusa var. superba*, A.M. Very floriferous. Purple.

STREPTANTHERA *cuprea*, A.M. Bulb. Dwarf. Irid. Terra-cotta, purple zone. S. Africa, 1825.

STREPTOCARPUS *Improved Aldenham Strain*, A.M. Various colours.

SWEET PEA *Admiration* (F. C. Woodcock), C.M., S.N.S.P.T. Rosy lavender.—*All Bright*, Gold Med. S.N.S.P.T. Cerise-scarlet.—*Ascot*, Best, Colchester.—*Beatall* (Bolton), C.M., S.N.S.P.T. Cerise-pink.—*Big Ben*, 2nd N.S.P.—*Bluebell*, 1st N.S.P. Blue.—*Colorado*, 1st S.N.S.P. Orange.—*Craigwell* (F. C. Woodcock), C.M., S.N.S.P.T. Salmon-pink.—*Excelsior* (Dobbie), C.M., S.N.S.P.T. Blue.—*Fire Glow*, 1st (Novelty), Southport. Cerise.—*Flaming June*, Gold Med. N.S.P.T.; 1st N.S.P.; 2nd N.S.P. Scarlet.—*Gleneagles*, 1st N.S.P. Blue.—*Glorious*, 1st N.S.P.; 1st S.N.S.P. Cerise.—*Gold Crest*, 1st Southport.—*Grenadier*, 1st S.N.S.P. Orange-scarlet.—*Honour*, 1st N.S.P.; 1st S.N.S.P. Crimson.—*Ivory Picture*, 1st N.S.P. Cream.—*Leviathan* (Stark), C.M., S.N.S.P.T. Maroon.—*Lilac Queen*, 1st N.S.P.; Best in show S.N.S.P., Aberdeen. Blush lilac.—*Loch Lomond* (Bolton), F.C.C., S.N.S.P.T. Maroon.—*Lustre* (J. Stevenson), C.M., S.N.S.P.T. Carmine.—*Magnet*, 1st N.S.P.; 1st (Pink) Southport.—*Majestic* (W. E. Sands), F.C.C., S.N.S.P.T. Purple.—*Michael*, 1st N.S.P.; 2nd N.S.P. Orange-salmon.—*Miss California*, 2nd N.S.P. Cream-pink.—*Model*, 1st N.S.P.; 1st S.N.S.P. White.—*Mrs. A. Searles*, Gold and

enamel Medal and 1st (Cerise) Southport.—*Mrs. Cinders* (Ireland & Hitchcock), C.M., S.N.S.P.T. Orange-scarlet.—*Olympia*, 1st (Purple) Aberdeen.—*Picture*, 1st S.N.S.P. Cream.—*Pink Glow*, 1st N.S.P.—*Pinkie*, 1st N.S.P.; 1st (Pink) Aberdeen.—*Powerscourt*, Gold Med. and 1st (Purple) Southport; 1st S.N.S.P.; 1st (Lavender) Aberdeen.—*Purity* (J. Stevenson), C.M., S.N.S.P.T. White.—*Purple Flame* (W. E. Sands), F.C.C., S.N.S.P.T.—*Purple Monarch*, 1st S.N.S.P. Purple.—*Royal Mauve*, 1st N.S.P.; 1st S.N.S.P. Mauve.—*Royal Scot*, 1st N.S.P.—*Royal Sovereign*, 1st N.S.P. Orange.—*Scintillant* (J. Stevenson), F.C.C., S.N.S.P.T. Rose.—*Sheila* (W. E. Sands), Gold Med. S.N.S.P.T. Deep rose.—*Sunkist*, 2nd N.S.P. Picotee edged.—*The Prince*, 1st (Crimson) Aberdeen.—*Tom Webster*, 2nd N.S.P. Blue.—*Vectis*, 1st N.S.P. White.—*Victor*, 1st (White) Aberdeen.—*Warrior*, 1st N.S.P. Maroon.—*What Joy*, 1st (Cream) Southport; 1st (Cream) Aberdeen.—*Youth*, 1st N.S.P.; 1st (Picotee-edged) Southport.

TAXUS *baccata fructo-luteo*, A.M. Large pale orange fruit. Ireland.

TILLANDSIA *splendens var. major*, A.M. Stove. Leaves marked chocolate, scarlet bracts.

TROLLIUS *asiaticus var. Salamander* (Ruys), A.M., W.T.—*Etna* (Ladhams: van Tubergen: Ruys), H.C., W.T.—*europaeus var. superbus* (Perry), A.M., W.T.—*Fire Globe* (Ruys), H.C., W.T.—*Golden Wonder* (Ruys), H.C., W.T.—*Goldquelle* (Ladhams: van Tubergen), A.M., W.T.—*His Majesty* (Ruys), A.M., W.T.—*Lightball* (Ruys), A.M., W.T.—*Newry Giant* (Ruys), A.M., W.T.—*Orange Globe* (Ladhams: van Tubergen), H.C., W.T.—*Orange Princess* (Bakers: van Tubergen), H.C., W.T.—*T. Smith* (Ruys), H.C., W.T.

TROPAEOLUM *azureum* (*violaeflorum*), A.M. Greenhouse climber. Blue. Chili.

TULIP *Clos de Vougeot*, A.M. Darwin. Deep crimson.—*Dorothy Ann*, A.M. Red and white.—*George Hayward*, 1st Feathered Chelsea.—*Lady Ernle*, A.M. Orange-scarlet.—*Mars*, Special 1st Breeder Chelsea. Orange-scarlet, yellow base.—*Sam Barlow*, 1st Flamed Chelsea.—*Prince of Austria*, 1st Kilmarnock; 1st Paisley.

VENIDIUM *fastuosum*, A.M. Southport. A. Yellow. S. Africa.

VERBENA *corybosa* (C.E. 354), A.M. Herbaceous. Deep lavender. Chili, 1928.

VERONICA (Herbaceous) *austriaca* (Forbes), A.M., W.T. Blue. Austria, 1748.—*Blue Peter* (W. A. Collier), H.C., W.T.—*exalta* (Forbes), A.M. Blue. Siberia, 1816.—*gentianoides* (Forbes), A.M., W.T. Violet. Levant, 1748.—*incana* (Barr), H.C., W.T. Blue. Russia, 1759.—*longifolia* (Barr), A.M., W.T. Blue. S. Europe, 1731.—*prostrata* (*rupestris*) (Kelway), A.M., W.T. Blue.—*prostrata var. alba* (Arends), A.M., W.T.—*prostrata var. pallida* (Arends), H.C., W.T.—*Royal Blue* (Den

Ouden: Forbes: Kelway: Barr), A.M., W.T.—*rupestris* (Forbes), A.M., W.T.—*Shirley Blue* (Den Ouden), A.M., W.T.

VIBURNUM *Burkwoodii* (*V. Carlesii x V. utile*), A.M. Sub-evergreen. Fragrant. White.

VIOLA *Andrew Jameson*, 1st L.V.P.S. Fancy.—*Ann Walker*, C.M., S.P.V.S.; C.M. Glasgow. Cream edged lavender.—*Archie Grant*, 1st N.V.P.S.—*cornuta var. Lavender Gem*, R.W.T. Blue-lavender.—*cornuta var. White Gem*, R.W.T. White, yellow tube.—*Dr. R. M. Craig*, C.M., S.P.V.S.—*Isa Muir*, C.M., S.V.P.S. Canary edged lavender.—*Isobel*, C.M. Glasgow. —*James M. Whyte*, C.M., S.P.V.S.—*Jersey Gem* (*? x ?*), A.G.M. Very floriferous, tufted. Dark violet-blue.—*John Adamson*, 1st L.V.P.S. Yellow.—*John Gourlay*, C.M., S.P.V.S. Fancy.—*Mrs. H. J. Milner*, 1st L.V.P.S. Cream edged lavender.—*Mrs. Marrison*, 1st N.V.P.S. Bicolor.—*Nessie Douglas*, C.M., S.P.V.S.; C.M. Glasgow.—*William G. Whyte*, C.M. Glasgow.

XANTHOSOMA *violaceum*, A.M. Tender Aroid. Stems and fls. deep violet, spathe yellow. W. Indies, 1864.

ZEPHYRANTHES *Atamasco*, A.M. Atamasco Lily. Bulb. R.G. or cold greenhouse. White with green base. Virginia, 1629.

ORCHIDS

ADAGLOSSUM *Pittsii* (*Ada. aurantiaca x Odontoglossum catorei*), A.M. Man.

AËRIDES *Fieldingii*. Cult. Com. India, 1885.

ANSELLIA *congoensis*, *Whitley var.*, A.M.

BRASSO-CATTLEYA *Apollo var. majestica*, A.M., Man.—*British Queen, Stonehurst var.* (*B.-C. Digbyano-Mendelii x C. Lord Rothschild*), A.M.—*Doris, Langley var.*, A.M., Man.—*Orange Glory* (*L.-C. Elinor x B.-C. heatonense*), F.C.C.—*Prince Olaf* (*C. Prince Shimadzu x B.-C. Nena*), F.C.C.—*The Duchess* (*B.-C. Illustris x B.-L.-C. The Baroness*), A.M.—*The Globe var. Mrs. Simon Gay* (*B.-C. Cliftonii x C. Trianae*), A.M.—*Spriglide, Stonehurst var.* (*B.-C. Maroniae x C. Mossiae*), F.C.C.—*Springtide var. The Node* (*C. Mossiae x B.-C. Maronaie*), F.C.C.

BRASSO-LAELIO-CATTLEYA *Alfred Mollett var. Vivid*, Silver-gilt Med. and F.C.C., Man.—*Ambaurea* (*B.-L.-C. Amber x C. aurea*), F.C.C.—*Golden Crown var. John Band* (*B.-L.-C. Joan x C. Venus*), A.M.—*Gordon Highlander var. Majestic* (*L.-C. Aphrodite x B.-C. Maronae*), A.M.—*Heliolata* (*C. Heliodor x B.-L.-C. maculata*), A.M.—*Heliolata, Dell Park var.* (*C. Heliodor x B.-L.-C. maculata*), F.C.C.—*Queen Elizabeth* (*B.-C. British Queen x L.-C. Ivanhoe*), F.C.C.—*Vashti* (*L.-C. Beatrice x B.-C. Bianca*), A.M.

BULBOPHYLLUM *grandiflorum*, Bot. Cert. Man. Pale green. New Guinea, 1866.

CATASETUM *Bungerothii*, Cult. Cert. Man. Creamy white. Tropical America.

CATTLEYA *Canberra var. Prince of Wales*, F.C.C., Man.—*Etta var. The Pearl*, F.C.C. Man.—*Gloriette var. The Node* (*C. Tityus x C. Hardyana var. Warneri*), A.M.—*Gladiator* (*C. Dowiana x C. Gladys*), A.M.—*Hardyana var. alba exquisitum*, A.M., Man.—*Heros* (*C. Heliodor x C. Sunbeam*), F.C.C.—*Helioglow* (*C. Golden Glow x C. Heliodor*), A.M.—*Linda var. Vestal*, A.M., Man.—*Lorna var. gigantea*, F.C.C. Man.—*Mantinii var. splendens*, Cult. Cert. Man.—*Mimosa var. Primrose Queen* (*C. Venus x C. Triumphans*), A.M.—*Monarch var. Salford*, F.C.C. Man.—*Mrs. Medo var. Regina*, A.M., Man.—*Prince Shimadzu var. King George* (*C. Tityus x C. Hardyana*), F.C.C.—*Remy Chollet var. President* (*C. Monarch x C. Trianae*), A.M.—*Susan var. alba* (*C. Suzanne Hye de Crom x C. Cowaniae var. alba*), A.M.—*Susan var. Vestal* (*Susanne Hye de Crom x Cowaniae alba*), F.C.C., Man.—*Valencia, Towneley Grove var.*, F.C.C., Man.—*Vesta var. Queen Mary*, F.C.C., Man.—*Wavriniana* (*C. granulosa x C. gigas*), F.C.C., Man.

CYCNOCHES *Loddigesii*, A.M. Surinam, 1830.

CYMBIDIUM *Albania* (*C. albanensis x C. Alexanderii*), F.C.C.—*Alexanderii var. Evansiae*, F.C.C., Man.—*atropurpureum*, Bot. Cert.—*Eagle*, A.M., Man.—*Giant Rose* (*C. Alexanderii x C. Schlegelii*), F.C.C., Man.—*Gold Crest* (*? x ?*), F.C.C.—*Letty, Wyld Court var.* (*C. Merlin x C. Gottianum*), F.C.C.—*Marabou, Exbury var.* (*C. insigne x C. Vesta*), A.M.—*Morvyth, Exbury var.* (*C. Redstart x C. Alexanderii*), A.M.—*Pipit var. Mandarin* (*C. Gottianum x C. Miranda*), A.M.—*Plover, Wyld Court var.* *C. Lowio-grandiflorum x C. Pauwelsii*), A.M.—*Puffin var. Calypso* (*C. Dryad x C. Martin*), A.M.—*Ralph Sander, Old Quarry var.* (*C. Cooperi x C. l'Ansoni*), A.M.—*Rosanna* (*C. Kittiwake x C. Alexanderii*), A.M.—*Vesta* (*C. Alexanderii x C. insigne Sanderi*), A.M.—*Vesta var. sanguinolentum* (*C. Alexanderii x C. insigne*), A.M.

CYPRIPEDIUM *Amazon* (*C. Memoria F. M. Ogilvie var. Rex x C. Perseus*), A.M. Man.—*Amazon var. Sultan* (*C. Memoria var. F. M. Ogilvie var. Rex x. C. Perseus*), F.C.C., Man.—*Amun Ra* (*C. Gwen Hannen x C. Nirvana*), A.M., Man.—*Ardaco* (*C. Grand Duke Nicholas x ?*) F.C.C., Man.—*Aureades var. Whitecap*, A.M. Man.—*Baldoran*, A.M.—*Baldovan* (*C. Chloris x C. Nellie Pitt*), A.M.—*bellatulum var. King George*, A.M.—*Buddha* (*C. Christopher Grand Duke Nicholas x C. Warrior*), F.C.C., Man.—*Charlesworthii var. Bromilowiae* Cult.Cert. Man.—*Elidia* (*C. Elise II x C. Idina Leeana*), A.M. Man.—*Elaine* (*C. Mona x Leeanum*), A.M. Man.—*Esther* (*C. Selene x C. concolor*), A.M.—*Eurydore* (*C. Euryades splendens x C. Commodore*), A.M. Man.—*Eurystopher var. Daleii* (*C. Eurybiades x C. Christopher Grand Duke Nicholas*) F.C.C., Man.—*Fad* (*C. Chrysostum x* (*?*),

F.C.C., Man.—*Genitor* (*C. Earl of Tankerville x. C. Vashti*), A.M. Man.—*Gerda* (*C. Swallow x C. Garibaldi*), A.M.—*Golden Dawn*, D.M., O.C.—*Griselda* (*C. Dreadnought x C. Amandinae*), A.M. Man.—*Gwen Hanmer var. album*, F.C.C. Man.—*Helsa var. Ingrid* (*C. Helen II x C. Satyr*), A.M. Man.—*Huglii* (*C. Pyramus x C Elise II Keeling's var.*), A.M. Man.—*Hurrellianum* (*C. Curtisii x C. Argus*), A.M. Man.—*Juliet var. magnificum* (*C. Mulatto x C. Swallow*), A.M.—*Jungfrau, Brockhurst var.*, A.M.—*Kestrel* (*C. nitens Leeanum Bectontiae x C. Swallow*), A.M. Man.—*King Arthur var. Tamworth*, A.M. Man.—*Leeanum var. Clinkaberryanum*, Cult.Com.—*Littlecot* (*C. J. M. Black x C. Perseus Alpha*), A.M.—*Llancayo* (*C. Mrs. Richards x ?*), A.M.—*Maori* (*C. Thisbe-Beckton x C. Budhoni*), D.M., O C.—*Makedam Stonehurst var.* (*C. Charles Dillon x C. Cardinal Mercier*), A.M.—*Melody var. Vega*, P.D., O.C.—*Mena* (*C. Thisbe-Beckton x C. Chrysostom*), D.M., O.C.—*Mimosa var. Monarch* (*C. Moonbeam x C. Christopher*), A.M.—*Miss Dorothy Sharpe* (*C. Cardinal Mercier x C. Nubia*), A.M.—*Miss Queenie Dale C. Grand Duke Nicholas x C. Eurybiades*), F.C.C. Man.—*Mist o' the Moon* (*C. nitens-Leeanum var. Becktoniae x C. Desdemona*), D.M., O.C.—*Mona var. Dolcis*, A.M. Man.—*Mona var. Virginale*, A.M. Man.—*Mowghlii* (*C. Pyramus x C. Becktoniae*), A.M. Man.—*Mrs. A. E. Dale* (*C. Christopher var. Grand Duke Nicholas x C. Shogun*), A.M. Man.—*Nepertiti* (*C. bingleyense x C. Alport Caesar*), A.A. Man.—*New Year* (*C .Christopher x C. The Ghurka*), A.M. Man.—*Rothschildianum, Northaw House var.*, Cult.Com, —*Strombole* (*C. Nubia x C. Gaston*), F.C.C.—*Sumurun var. Snowball*, A.M. Man.—*Trigo* (*C. Antinous x C. Odin*), F.C.C. Man.—*Vesper var. Virginia* (*C. Vivid II x C. Alcibiades*), A.M., F.C.C. Man.—*Volga* (*C. Zaria x C. Cardinal Mercier*), A.M. Man.—*Waratah var. Chieftain* (*C. Euryades Carter Place var. x. C. Swallow*), A.M. Man.—*Windrush var. Mentieth* (*C. Zena x C. Memoria F. M. Ogilvie var. The King*), A.M.

DENDROBIUM *atroviolaceum*, Cult. Com. New Guinea, 1890.—*Gatton Monarch*, A.M. Man.—*infundibulum*, Cult.Cert. Man. White, orange disc. Burma, 1863.—*nobile, Towneley Monarch*, A.M., Man.—*Prince Arthur var. Colussus* (*D. Regium x D. Euryalus rubens, Gatton Park var.*), A.M.—*Renown var. Carmen*, P.D., O.C.—*Victoria Regina*, Cult.Cert., Man. Dark blue and white. Philippines, 1897.—*wardianum*, Cult.Cert. Man. White tipped rose. Assam and Burma, 1863.

ERIA *rhyncostyloides*, Bot. Cert. Man. White tinted rose. Java, 1907.

GONGORA *maculata* A.M. Yellow, dotted brown. Demerara, 1832.

HABENARIA *Lugardi*, A.M. White and green. N'gamiland, 1900.

LAELIO-CATTLEYA *Astroite* (*L. aurea x L.-C. Istria*), F.C.C.—*Berenice* (*L.-C. Lustre x L.-C. Madame Brasseur Hye*), A.M.—*Bungalow* (*C. Suzanne Hye x L.-C. Ernestii*), A.M. Man.—*Canberra var. Golden Queen*, A.M. Man.—*Canberra var. Sunset*,

F.C.C., Man.—*Cassandra, Melchett var.* (*L.-C. Sargon x L.-C. Gladiator*), A.M.—*Cavalese, Stonehurst var.* (*L.-C. Lustre x C. Fabia*), A.M.—*Cavalese var. Excelsa* (*L.-C. Lustre x C. Fabia*), A.M.—*Chimera*, F.C.C. Man.—*Hassallii var. alba, Arddorroch var.* (*L. Britannia var. alba x C. gigas*), A.M.—*Hilary*, F.C.C. Man.—*Ivanhoe var. Desdemona*, Cult.Cert. Man.—*Modosa* (*L.-C. St. Gothard x C. Hardyana*), A.M. Man.—*Molock var. Stromboli* (*L.-C. St. Gothard x L.-C. Sargon*), A.M.—*Profusion, Hye House var.*, A.M. Man.—*Profusion, Stonehurst var.* (*L.-C. Serbia x C. Hardyana*), A.M.—*Profusion, var. Cassie*, A.M. Man.—*Profusion var. illuminata*, Silver-gilt Med. and F.C.C., Man.—*Queen Mary var. Crimson Glory* (*L.-C. Lustre x C. Peetersii*), F.C.C.—*Queen Mary, Stonehurst var.* (*L.-C. Lustre x C. Peetersii*), F.C.C.—*Sargon var. Vesuvius* (*C. Hardyana x L.-C. Lustre*), F.C.C.—*Schröderae*, Cult.Cert. Man.—*Schröderae var. Alpha*, Cult.Com.—*Sunbelle, Brockhurst var.* (*L.-C. Serbia x C. Thora*), F.C.C.—*Titymona* (*C. Tityus x L.-C. Momus*), F.C.C.—*Titymona Stonehurst var.* (*C. Tityus x L.-C. Momus*), F.C.C.—*Titymona var. Rotunda* (*C. Tityus x L.-C. Momus*), A.M.—*Vega* (*L.-C. Soulange x L.-C. Rubens*), A.M.

LISSOCHILUS *speciosus*, A.M. Cape of Good Hope, 1818.

LYCASTE *Skinneri*, Cult.Cert. Man. White, crimson. Guatemala, 1842.—*Skinneri, Wivelsfield var.*, A.M. Man.

MASDEVALLIA *houtteana*, Cult.Cert., Man. White, brown purple. Colombia, 1874.

MAXILLARIA *lepidota*, Cult.Cert., Man. Light yellow. Colombia, 1878.

MEGACLINIUM *Bufo*, Cult.Cert. Brown, purple. Tropical Africa, 1839.

MILTONIA *Armstrongii* (*M. Miss Louisa Fowler x M. William Pitt*), Pre. Com.—*Bleuana var. Longley Ruby* (*M. Bleuana var. Reine Elizabeth selfed*), A.M.—*gattonensis, Exbury var.* (*M. Bleuana x M. Charlesworthii*), F.C.C.—*Hyeana var. King William*, F.C.C., Man.—*Kennie var. Princes Elizabeth*, F.C.C., Man.—*Lucia var. Fidelia*, Cult.Cert., Man.—*Lucia var. Molly Paterson* (*M. vexillaria x M. Princess Margaret*), A.M.; F.C.C.—*Lycaena, orchidhurst var.* (*M. Princess Margaret x M. Lord Lambourne*), F.C.C.—*Lydia var. Regina* (*M. Princess Mary x M. Beau Brummel*), A.M.—*Lydia Stonehurst var.* (*M. Princess Mary x M. Beau Brummel*), F.C.C.—*memoria H. T. Pitt var. Exquisita*, Cert. Pre.Rec.—*Nadia var. Helen Paterson* (*M. Charlesworthii x M. Princess Margaret*), A.M.—*Phalaenopsis*, Cult.Cert.; Cult.Cert. Man. Columbia, 1850.—*pulcra var. Enchantress* (*M. William Pitt x M. Lycaena*), A.M.—*pulchra var. Lyoth* (*M. William Pitt x. M. Lyceana*), F.C.C.—*St. Andre var. Distinction*, A.M. Man.—*schroederiana*, Bot.Cert., Man. Brazil, 1889.—*T. B. Armstrong* (*M. vexillaria var. Leopoldii x M. William Pitt*), F.C.C.

—*vexillaria var. Duke of York*, F.C.C., Man.—*Vida, Paterson's var.* (*M. Bleuana var. Reine Elizabeth x M. William Pitt*), Pre.Com.—*William Pitt, Baron Schröder's var.*, F.C.C.

ODONTIODA *Acis* (*O. Ithone x O. Clovis*), A.M., Man.—*Acis var. Radiant* (*O. Royal Gem x O. Orion*), A.M.—*Bradshawiae var. Perfecta*, A.M., Man.—*Bluebell* (*? x ?*), A.M.—*Cardinal Mercier* (*? x ?*), A.M.—*Colinge var. Evansiae*, A.M. Man.—*Elaine Jarvisbrook var.*, A.M. Man.—*Freda*, F.C.C., Man.—*Gwentara* (*O. Alcantara x O. Gwendoline*), A.M.—*Louise*, A.M., Man.—*Laura, Exbury var.* (*Oda. Brewii x Oda. Coronation*), F.C.C.—*Leeana var. Vivid* (*Cochlioda noetzliana x Odm. crispo-Harryanum*), A.M.—*Leonatus* (*cochlioda noetzliana x Odontoglossum Thompsonii*), A.M. Man.—*Mildred* (*O. Aphrodite x O. Naomi*), F.C.C. Man.—*Marie Antoinette var. excelsa* (*Oda. Colinge x Odm. President Poincaré*), A.M.—*Matador* (*O. St. André x O. Leander*), A.M.—*Prince Olaf* (*? x ?*), F.C.C.—*Velasquez* (*O. Coronation x O. ?*), A.M.—*Zarina var. Brilliant* (*Oda. Chanticler x Odm. crispo-Harryanum*), A.M.

ODONTOGLOSSUM *amabile, Jarvisbrook var.*, A.M. Man.—*crispum var. Osiris*, F.C.C. Man.—*crispum var. Trianae magnificum*, A.M., Man.—*Doreen var. Perfection*, F.C.C. Man.—*Goliath*, Cult.Cert. Man.—*Harold var. Distinction* (*O. eximium x O. Jasper*), A.M.—*Llewellyn var. Purple Gem*, A.M. Man.—*Maharajah*, Cult.Cert.—*Meredithiae* (*O. Rossi x O. venustulum*), A.M. Man.—*mirum aureum* (*O. crispum x O. Wilckeanum*), A.M.—*Mirum var. Walden*, A.M., Man.—*perciltum, Jarvisbrook var.*, A.M. Man.—*Pescatorei var. Peachblossom*, A.M. Man.—*Red Admiral var. Brilliant*, A.A., Man.—*venustulum, Wivelsfield var.*, A.M. Man.

ODONTONIA *Etna* (*Miltonia chelseaensis x Odm. Ithone*), F.C.C., Man.—*Vesta* (*O. Dora x Miltonia William Pitt*), A.M.

ONCIDIUM *cavendishianum*, Cult.Com. Yellow. Guatemala.—*tigrinum, Towneley Grove var.*, A.M. Man.—*varicosum var. Rogersii*, Cult.Cert. Man. Yellow and brown. 1869.

PHAIUS *Cooksonii var. magnificus*, F.C.C., Man.; Cult.Cert., Man.

PHALAENOPSIS *amabilis var. Elizabethae* (*P. amabilis x P. rimestadiana*), A.M.—*Elizabethiae* (*P. amabilis x P. rimestadiana*), F.C.C. Man.—*Gilles Gratiot* (*P. Aphrodite x P. rimestadiana*), F.C.C.

PLATYCLINIS *uncata*, Cult.Cert. Man. Philippines.

POTINARA *Dorothy, Dell Park var.* (*Sophro-Laelio-Cattleya Prince Hirohito x Brasso-Laelio-Cattleya maculata*), F.C.C.—*Rosita* (*Sophro-Laelio-Cattleya langleyensis x Brasso-Cattleya Rosita*), A.M.

SOPHRO-LAELIO-CATTLEYA *Gertrude Geidels* (*S.-L.-C. Flamingo x S.-L.-C. His Majesty*), A.M.—*Jean* (*Sophronitis grandiflora x L.-C. Orange Blossom*), A.M.—*Margrand var. Tangerine* (*S.-L.-C. Marathon x S. grandiflora*), F.C.C., Man.—*Yokohama* (*S.-L.-C. Prince Hirohito x C. Hesperus*), F.C.C.

SOPHRONTIS *grandiflora*, Cult.Cert. Man. Red. Organ Mountains, 1837.

TRICHOPILIA *Hennessii*, F.C.C., Man.

VANDA *Batemannii* (*Stauropsis lissochiloides*), Cult. Com. Climber. Crimson, yellow. Philippines, 1894.—*coerulea var. Salfordii*, F.C.C. Man., and Cult.Cert.

VUYLSTEKEARA *Etna, Stamperland var.* (*Miltonioda Harwoodii x Odontioda Charlesworthii*), F.C.C.—*Rudra var. Atlas* (*V. Brewii x Odm. Prince Edward*), F.C.C., Man.

ZYGOPETALUM *Wendlandii*, Bot.Cert. Man.

FRUIT

APPLE *Bramley's Seedling*. Heaviest dish in show, Guildford.—*Charles Ross*, 1st Derby.—*Cox's Orange Pippin*, 1st Exeter.—*Epicure* (*Cox's Orange Pippin x Wealthy*), Bunyard Cup.—*Howgate Wonder*, A.M., R.W.T. Culinary.—*Newton Wonder*, 1st Brighton.—*St. Edmund's Russet*, 1st Fruit Ex. Desert.—*Woolbrook Pippin*, A.M. Seedling from Cox's Orange Pippin.

BULLACE *Langley Bullace*, 2nd Fruit Ex.

CHERRY *Amber* (*Kentish Bigarreau*), 1st Cherry Ex.—*Napoleon*, Champion basket Cherry Ex.—White. *Noble*, 1st Cherry Ex.—*Roundell*, 1st Cherry Ex.—*Waterloo*, 1st Cherry Ex.

CURRANT (Black), *Davidson's Eight*, 3rd Cherry Ex.—*Edina*, 1st Cherry Ex.—*Seabrook's Black*, 2nd Cherry Ex.—(Red) *Daniel's Perfection*, 2nd Cherry Ex.—*Fay's Prolific*, 1st Cherry Ex.

DAMSON *King of the Damsons*, 1st Fruit Ex.

GOOSEBERRY *Lancashire Lad*, 1st Cherry Ex.

GRAPE *Alicante*, 1st Exeter; 2nd Fruit Ex.; 1st Birmingham. Black.—*Appley Towers*, 1st Fruit Ex. Black.—*Black Alicante*, 1st Corbridge.—*Black Hamburgh*, 2nd Fruit Ex.—*Canon Hall Muscat*, 2nd Birmingham. White.—*Gros Colmar*, 1st Brighton. Purple.—*Muscat Hamburgh*, 1st Fruit Ex. Reddish.—*Muscat of Alexandria*, 1st and 2nd Fruit Ex.; 1st Birmingham; 1st Surbiton; 1st Brighton. White.

MELON *Blenheim Orange*, 1st Fruit Ex.—*Countess*, 2nd Fruit Ex.—*Hero of Lockinge*, 3rd Fruit Ex.

PEAR *Charles Ernest*, 1st Fruit Ex. Late var.—*Doyenne du Comice*, 1st Exeter.—*Marie Louise*, 1st Birmingham.—*Triomphe de Vienne*, 1st Fruit Ex. Early var. Best flavoured, Fruit Ex.

PLUM *Black Prince* (*Kentish Black Diamond x Bradley's King Damson*), R.W.T.—*Bountiful* (*Red Magnum Bonum x Victoria*).—*Delicious* (*Coe's Golden Drop x Pond's Seedling*).—*Goldfinch* (*Early Transparent Gage x Jefferson*).—*Jefferson*, 1st Fruit Ex.—*President*, 2nd Fruit Ex.—*Utility* (*Jefferson x Peach Plum*).—*Victoria Plum Seedling*, R.W.T.

RASPBERRY *Lloyd George*, 1st Cherry Ex; 1st Fruit Ex.—*Queen Alexandria*, 2nd Fruit Ex.

VEGETABLES

BEANS (Broad) *Champion Longpod* (Dobbie), A.M., W.T.—*Exhibition (Bunyard's)*, (W. H. Simpson), H.C., W.T.—*Exhibition Giant* (King), A.M., W.T.—*Exhibition Longpod* (Clucas), H.C., W.T.; (Pennell), H.C., W.T.—*Four Seeded Green Windsor* (Middlehursts), C., W.T.—*Four Seeded Windsor, re-selected* (Hurst), H.C., W.T.—*Green Leviathon* (Carter), A.M., W.T.—*Hangdown* (Sluis en Groot), H.C., W.T.—*Homestead Green Windsor* (Carter), C., W.T.—*Kinver Mammoth* (Webb), H.C., W.T.—*Longpod Selected* (Webb), H.C., W.T.—*Mammoth Longpod* (Pennell), H.C., W.T.—*Mammoth Windsor* (Carter), C., W.T.—*Mammoth New Green Longpod* (Barr), H.C., W.T.—*Olympic Green-longpod* (Hurst), A.M., W.T.—*Prolific* (Dickson & Robinson), H.C., W.T.—*Seville Longpod* (Watkins & Simpson), H.C., W.T.—*Sussex Wonder Longpod* (Watkins & Simpson), H.C., W.T.—*Unrivalled Green Windsor* (Sutton), H.C., W.T.—(Dwarf) *African Wonder* (Cooper Tabor), H.C., W T.—*Bounteous* (Watkins & Simpson), A.M., W.T.—*Canadian Express* (Carter), H.C., W.T.—*Canadian Wonder* (Harrison), H.C., W.T.—*Earliest of All* (Nutting), H.C., W.T.—*Early Prolific* (Carter), A.M., W.T.—*Early Warwick (Early Prolific)*, (Harrison), H.C., W.T.—*Fifty Days* (Carter), A.M., W.T.—*Harbinger* (Webb), C., W.T.—*Helmingham Early Prolific* (C. Orchard), H.C., W.T.—*Holborn Wonder Stringless* (Carter), C., W.T.—*Langport Wonder* (Kelway), C., W.T.—*Kidney Wax* (Burpee), H.C., W.T. Wax-pods.—*Lightening* (Carter), H.C., W.T.—*Magpie* (Carter: Harrison), H.C., W.T.—*Monster Negro* (W. H. Simpson), H.C., W.T.—*Ne Plus Ultra Selected* (Hurst), H.C., W.T.; (Kelway), C., W.T.—*Perfection Butter* (Barr), A.M., W.T. Wax-pods.—*Perpetual* (Carter), H.C., W.T.—*Saxa* (Zwaan and Van der Molen), C., W.T.—*Saxa Stringless* (Zwaan & van der Molen: Heinemann), C., W.T. Edible green pod.—*Schlossperle* (Heinemann), H.C., W.T. Wax-pods.—*Superlative* (Nutting), H.C., W.T.—*Supreme* (Webb), C., W.T.—*The Wonder* (Watkins & Simpson), F.C.C., W.T.; (Dobbie) A.M., W.T.—*The Prince*, 1st Veg. Ex.—*Unrivalled* (Clucas), A.M., W.T.—*Wonder Improved (Flageolet Rouge)*, (W. H. Simpson), F.C.C., W.T.
(Runner) *Prizewinner*, 1st Veg. Ex.—*Tip Top* (A. Mitchelson), A.M., W.T.

BEET (Globe) *Sutton's Globe*, 1st Veg. Ex.—(Long) *Amsterdam Market* (Zwaan and van der Molen), H.C., W.T.—*Black* (Sutton), H.C., W.T.—*Blood Red* (Carter), H.C., W.T.—*Cheltenham*

(Watkins and Simpson: Nutting), A.M., W.T.—*Cheltenham Greenleaf* (Harrison), H.C., W.T.—*Cheltenham Green-top* (Morris: Finney: Clucas: Carter: Dobbie: Zwaan and van der Molen: Zwaan and van de Wiljes), H.C., W.T.—*Cheltenham Selected* (Cooper Tabor), H.C., W.T.—*Covent Garden* (Barr), H.C., W.T. —*Dark Red Salad* (Daniels), H.C., W.T.—*Dell's Crimson* (Barr: Nutting), A.M., W.T.—*Dobbie's Purple* (Dobbie: Morris), H.C., W.T.—*Exhibition Black* (Stuart and Mein), H.C., W.T.— *Exhibition Brydon's* (Hurst), A.M., W.T.—*Greentop* (Sutton), H.C., W.T.—*Greentop* (Webb), H.C., W.T.—*Green-top Selected* (Dobbie), H.C., W.T.—*Non-Bleeding* (Zwaan and van der Molen), A.M., W.T. (W. H. Simpson), H.C., W.T.—*Northumberland Dwarf* (Nutting), H.C., W.T.—*Pragnell's Exhibition* (Hurst), H.C., W.T.—*Veitch's Exhibition* (Veitch), H.C., W.T. —*Victoria* (Nutting), H.C., W.T.—*Volunteer* (Webb), H.C., W.T.

BRUSSELS SPROUTS *Exhibition*, 1st Veg. Ex.

CABBAGE *Goliath*, 1st Veg. Ex.

CARROT *Amsterdam Forcing* (Zaaizaadvereeniging: Zwaan & van der Molen: Atlee Burpee: Sluis & Groot: Spruijt: Harrison: Daehnfeldt & Jensen: Benary), C., W.T.—*Carenton* (Nutting), A.M., W.T.—*Chantenay* (Morse), H.C., W.T.—*Dutch Early Short Scarlet* (Sluis & Groot), C., W.T.—*Early Gem* (Simpson), H.C., W.T.—*Early Guerande* (Speed), A.M., W.T.—*Early Horn Improved* (Carter), H.C., W.T.—*Early Scarlet Horn* (Simpson: Morris), H.C., W.T.—*Oxheart* (Morse), H.C., W.T.—*Intermediate Selected* (Dobbie), A.M., W.T.—*James' Intermediate* (Carter), A.M., W.T.—*Nantes Selected* (Zwaan & van der Molen), A.M., W.T.—*Paris Market* (Olsen), H.C., W.T.—*Perfection* (Bath), A.M., W.T.—*Scarlet Horn* (Morse:Webb), H.C., W.T.

CAULIFLOWER *All Seasons* (Harrison: Cooper Tabor), A.M., W.T.— *All the Year Round* (Hurst: Zwaan and van der Molen: Dobbie: Daniels: Kelway: Watkins and Simpson: Webb: Finney: W. H. Simpson: Clucas: Cullen: Nutting: Dickson and Robinson: Bath: Barr: Harrison), A.M., W.T.—*All the Year Round, Driancourt's Stock* (Carter), A.M., W.T.—*All the Year Round Selected* (Carter), A.M., W.T.—*Autumn Giant*, 1st Veg. Ex.— *Danish Giant* (Zwaan and van der Molen), A.M., W.T.; (Hansen), H.C., W.T.—*Driancourt* (Nutting: Veitch: Morris: Speed), A.M., W.T.—*Early Dwarf Best of All* (Barr), C., W.T.—*Early Favourite* (Barr), H.C., W.T.—*Early Six Weeks* (Barr), A.M., W.T.—*Le Cerf* (Zwaan and van der Molen), H.C., W.T.—*Mont Blanc* (Clucas), C., W.T.—*Primo* (Zwaan and van der Molen), H.C., W.T.—*Reliance* (Dickson and Robinson: Bath), A.M., W.T.—*Snowball* (Dobbie), C., W.T.—*White Queen* (Speed), H.C., W.T.

CUCUMBER *Butcher's Improved*, 1st Cherry Ex.—*Butcher's Disease Resister*, 2nd Cherry Ex.

LETTUCE (Cabbage), *All the Year Improved Round* (Cooper), C.,

W.T.—*All the Year Round* (Cooper: Finney: W. Simpson: Clucas: Middlehursts: Cullen: Veitch: Nutting: Barr: Dobbie), C., W.T.—*All the Year Round re-selected* (Carter), C., W.T.—*Best of All* (Heinemann), H.C., W.T.—*Big Boston* (Burpee), H.C., W.T.—*Bohemia* (Heinemann), H.C., W.T.—*Californian Cream Butter* (Burpee), H.C., W.T.—*Criterion* (Webb), C., W.T.—*Continuity* (Daniels: Simpson: Barr: Dobbie), A.M., W.T.—*Defiance Long Stander* (Clucas), H.C., W.T.—*Distinction* (Dickson & Robinson), C., W.T.—*Hercules* (Dobbie), H.C., W.T.—*Konfit* (Daehnfeldt & Jensen), A.M., W.T.—*Market Favourite (Unrivalled)* (Clucas), A.M., W.T.—*May King* (Dickson & Robinson: Harrison: Heinemann: Clucas: Middlehursts: Olsen: Zwaan & van der Molen), H.C., W.T.—*Neapolitan* (Dobbie), H.C., W.T.—*New York* (Cooper), H.C., W.T.—*New York Selected* (Finney), H.C., W.T.—*Perfect Gem* (Veitch: Dawkins: Nutting: Carter), H.C., W.T.—*Tom Thumb* (Morris: W. Simpson: Speed: Olsen: Dobbie), H.C., W.T.—*Tom Thumb Selected* (Webb: Barr), H.C., W.T.—*Trocadero* (Nutting), H.C., W.T.—*Unrivalled* (Middlehurst), A.M., W.T.—*Wayahead* (Burpee: Barr: Carter), H.C., W.T.—*White Big Boston* (Burpee), H.C., W.T.—*Winter Density* (Nutting), C., W.T.—*Wonderful* (Dobbie: Morris: Webb: Middlehursts: Harrison: Daehnfeldt & Jensen), H.C., W.T.—*Wonderful or New York* (Clucas), H.C., W.T.—*Yellow Longstanding* (Heinemann), A.M., W.T.

ONION *Ailsa Craig*, 1st Newport, I.W.

PEA *Laxton's Progress*, Voted best dwarf, Cardiff.

POTATO *Arran Banner*, 1st R.C.H.—*Arran Comrade*, 1st (Round, white) Aberdeen.—*Climax*, 1st (Round, coloured) Aberdeen.—*Duke of York*, 1st (Kidney, white) Aberdeen.—*Exhibition Kidney*, 1st (Kidney, coloured) Aberdeen.—*No.* 675 (MacKelvie), C.M. Ormskirk. Late. Heavy cropper. Kidney shaped. Free from virus disease.—*Red King*, 2nd R.C.H.

RHUBARB *Appleton's Forcing* (Appleton), H.C., W.T. Early.—*Buck's Early Red* (R.H.S.), H.C., W.T.—*Collis's Seedling* (R.H.S.), H.C., W.T. Late.—*Crimson Queen* (Kelway), H.C., W.T. Early.—*Cutbush's Seedling* (Cutbush), H.C., W.T. Early.—*Hawke's Champagne* (W. Poupart), A.M., W.T. Early.—*Laxton's No.* 1 (Laxton), C., W.T.—*The Streeter* (Hon. Vicary Gibbs), H.C., W.T. Late.—*The Sutton* (Sutton), A.M., W.T. Late.

SAVOY *Best of All*, 1st Veg. Ex.

TOMATO *Bide's N.C.O.* R.W.T. Red fruit. Heavy cropper.—*Edmund's No.* 2, 1st Cherry Ex.—*Essex Wonder* (Dobbie), A.M., W.T.—*Primrose Bloom*, R.W.T. Yellow fruit.—*Radio* (Simpson), A.M., W.T.—*Wright's A.*1, 2nd Cherry Ex.

WISLEY TRIALS [1921-8]

RESULTS in recent years published in the R.H.S. *Journal*:

Flowers:—Annuals, 1926, vol. lii. p. 269. Antirrhinums under Glass, 1922, vol. xlviii. pt. 1, p. 92. Aquilegias, 1927, vol. liii. pt. 1, p. 161. Asters, Perennial, 1925, vol. li. pt. 1, p. 101. Aubretias, 1927, vol. liii. pt. 1, p. 165. Calandrinias, 1926, vol. lii. p. 269. Carnations, Winter, 1921–3, vol. xlix. pt. 1, p. 78. Chrysanthemums, Early, 1923, vol. xlix. pt. 1, p. 100. Cosmos, 1926, vol. lii. pt. 2, p. 273. Dahlias, 1922, vol. xlviii. pt. 1, p. 98; 1923, vol. xlix. pt. 1, p. 62; 1924, vol. l. pt. 1, p. 106; 1925, vol. li. pt. 1, p. 138; 1926, vol. lii. pt. 1, p. 88; 1927, vol. liii. pt. 1, p. 167; 1928, vol. liv. pt. 1, p. 226; Delphiniums, 1924–5, vol. li. pt. 1, p. 124. Everlasting Flowers, 1926, vol. lii. pt. 2, p. 271. Freesias, 1926–7, vol. liii. pt. 2, p. 340. Gladioli, 1926, vol. lii. pt. 1, p. 98; 1926–7, vol. liii. pt. 2, p. 345. Helianthemums, 1924–5, vol. li. pt. 1, p. 114. Irises, 1925–7, vol. liii. pt. 2, p. 116. Lachenalias, 1926–7, vol. liv. pt. 1, p. 223. Lavatera, 1926, vol. lii. pt. 2, p. 277. Linums, 1926, vol. lii. pt. 2, p. 279. Lobelias, Perennial, 1921, vol. xlviii. pt. 2, p. 239. Lupins, Annual, 1928, vol. liv. pt. 1, p. 230. Narcissus, 1924–7, vol. liii. pt. 2, p. 345. Nemesia, 1926, vol. lii. pt. 2, p. 274. Nemophila, 1926, vol. lii. pt. 2, p. 278. Phloxes, 1922, vol. xlviii. pt. 2, p. 241. P. Drummondii, 1928, vol. liv. pt. 2, p. 427. Poppies, Annual, 1927, vol. liii. pt. 2, p. 332. Portulacas, 1926, vol. lii. pt. 2, p. 270. Roses, 1924–5, vol. li. pt. 1, p. 92; vol. lii. pt. 1, p. 92. Salpiglossis, 1923, vol. xlix. pt. 1, p. 67. Salvias, 1928, vol. liv. pt. 1, p. 234. Scabious, Annual, 1924, vol. li. pt. 1, p. 113. Stocks, Summer-flowering, 1922, vol. xlviii. pt. 1, p. 113. Sweet Peas, 1921–5, vol. xlviii. pt. 1, p. 106; vol. xlix. pt. 1, p. 71; vol. l. pt. 1, p. 112; vol. li. pt. 1, p. 109. Tropaeolums, Dwarf, 1923, vol. xlix. pt. 1, p. 97. Violas, 1922, vol. xlviii. pt. 1, p. 121. Viscarias, 1926, vol. lii. pt. 2, p. 276. Wallflowers, 1923–4, vol. l. pt. 2, p. 263.

Vegetables:—Beans, Broad, 1922, vol. xlviii. pt. 1, p. 74; Climbing French, 1923, vol. xlix. pt. 1, p. 117; Runner, 1923, vol. xlix. pt. 1, p. 115. Beet, 1922, vol. xlviii. pt. 1, p. 68; 1927, vol. liii. pt. 2, p. 392. Brussels Sprouts, 1923, vol. xlix. pt. 2, p. 246. Carrots in frames, 1921–2, vol. xlix. pt. 2, p. 250. Celeriac, 1921–2, vol. xlviii. pt. 1, p. 84; 1926, vol. lii. pt. 2, p. 287. Celery, 1921–2, vol. xlviii. pt. 1, p. 79. Endives, 1924, vol. l. pt. 2, p. 269. Kales, 1923–4, vol. xlix. pt. 2, p. 252. Kohlrabi, 1926, vol. lii. pt. 1, p. 101. Leeks, 1922–3, vol. xlviii. pt. 2, p. 236. Lettuces, Cos, 1918–24, vol. li. pt. 1, p. 144. Lettuces, Winter, 1922–3, vol. xlix. pt. 2, p. 255. Onions, 1923, vol. xlix. pt. 2, p. 262. Parsley, 1927, vol. liii. pt. 1, p. 175. Peas, 1925–6, vol. lii. pt. 1, p. 103; Late, 1922, vol. xlviii. pt. 1, p. 86; Late, 1927, vol. liii. pt. 2, p. 395. Potatoes, 1924–6, vol. lii. pt. 1, p. 117. Savoys, 1926–7, vol. lii. pt. 2, p. 280. Swedes, 1926, vol. lii. pt. 2, p. 284. Sweet Corn, 1927, vol. liii. pt. 1, p. 178. Turnips, 1925, vol. li. pt. 1, p. 163. Vegetable Marrows, 1923, vol. xlix. pt. 1, p. 118.

Fruit:—Currants, 1920–1, vol. xlix. pt. 2, p. 242. Raspberries, 1922–5, vol. li. pt. 1, p. 158.

OFFICIAL NOTICES AND ORDERS

BEES AND FRUIT-SPRAYING.—Owing to the spraying of fruit trees with washes containing arsenate of lead when the blossoms were open large numbers of bees were destroyed. The Ministry of Agriculture requests that all such cases should be reported to the Ministry.

DESTRUCTION OF RATS AND MICE (Act of 1919).—It is a statutory obligation upon occupiers of land or buildings to take steps from time to time for the destruction of rats and mice. Fine on conviction for default up to £5; or, after serving with notice to take such steps, £20.

DESTRUCTION OF WILD FLOWERS.—At a conference at the Home Office a provisional by-law was drawn up which county councils have been recommended to adopt. It was approved that:—

> No person shall (unless authorised by the owner or occupier, if any, or by law, so to do) uproot any ferns or other plants growing in any road, lane, roadside waste, roadside bank, or hedge, common, or other place to which the public have access.
>
> Every person who shall offend against the foregoing shall be liable for every such offence to a fine not exceeding, for the first offence 40s., and for a subsequent offence not exceeding £5.

IMPORTATION OF PLANTS.—In order to ensure that plants imported for propagation shall be of a reasonably satisfactory standard of health an Order was issued in 1922 requiring imported plants to be accompanied by an official certificate that they are generally healthy, and also free from certain specified diseases and insect pests. When ordering plants from abroad (except herbaceous plants, which are not subject to the Order), it is advisable to ask for the health certificate, since uncertified consignments are not allowed to be distributed until they have been examined by a Ministry's Inspector and passed as healthy, which involves the payment of a fee by the consignee.

The importation of the following is forbidden:—

Potatoes from Canada and the United States, on account of the Colorado Beetle.

Plants, potatoes, and tomatoes from specified districts in France for the same reason.

Elm trees from any European country, on account of the Dutch Elm Disease.

By an amendment of November 24, 1927, to the Destructive Insects and Pests Order of 1922, no unrooted cuttings or rooted plants of Chrysanthemums may be landed in England and Wales from any country other than Scotland, Ireland, and the Channel Islands without an official certificate from the country of origin stating that on inspection by that country's officials the plants or cuttings were free of Chrysanthemum Midge (*Diarthronomyia hypogaea*). This certificate must be posted to the Horticultural Division of the Ministry of Agriculture before the plants are despatched. If from a country with no recognised service of plant inspection the consignment must be subjected to examination by an Inspector of the Ministry. Costs will be charged to importer.

EXPORTATION OF PLANTS.—Information regarding the regulations affecting the importation of plants from England into the Dominions, Colonies, and foreign countries should be obtained from the Ministry of Agriculture.

Consignments of Narcissus or Daffodil bulbs to the Scilly Isles must be accompanied by a licence or certificate issued by an Inspector of the Ministry.

IMPORTED TOMATOES.—The Standing Committee under the Merchandise Marks Act recommended an order for the marking of imported tomatoes with indication of origin on each container.

INSPECTION AND CERTIFICATION OF STRAWBERRY PLANTS AND BLACK CURRANT BUSHES.—The Ministry arranges, on application, for the inspection of (*a*) Strawberry plants from which runners are intended to be taken for sale, (*b*) Black Currant bushes. Object: the certification of the stocks if found to be true to type, reasonably free from rogues, and, in the case of Black Currant bushes, free from reversion at the time of inspection. Registers are published giving names and addresses of growers whose stocks are certified; copies, and further particulars, can be obtained from the Ministry.

The *Black Currant Mite* (*Norfolk*) *Order* 1928 came into operation on January 1, 1929.

The Board of Agriculture for Scotland inaugurated a scheme for the inspection of Black Currant bushes in Scotland. Certificates were issued only to pure healthy stocks apparently free from Reversion, and are valid till April 30, 1930. Lists may be obtained from the Board.

INSTRUCTIONS TO HIGHWAY ENGINEERS.—" Every care shall be taken to safeguard existing amenities and to provide new ones."

Verges, slopes, and embankments " should be soiled and seeded,

or . . . turfed and planted with shrubs.
Trees not to be felled " unless absolutely unavoidable."
Tree-planting to be encouraged.

NATIONAL MARK.—During 1928 the Minister of Agriculture was empowered by Parliament to define grades by regulation, and to establish a National Mark for graded English and Welsh agricultural and horticultural produce which would constitute a guarantee to the buyer that his purchases were of the desired standard of quality. The Mark is at present applicable to apples, pears, and tomatoes; it will be extended, it is hoped, in course of time to other horticultural produce. Growers who wish to avail themselves of the " National Mark " are required to undertake to grade their produce in accordance with standards laid down in regulations issued under the Agricultural Produce (Grading and Marking) Act, 1928, and to pack it in the prescribed manner.

The Department of Agriculture for Scotland, after consultation with tomato growers and traders, wholesale and retail, issued directions for the grading of Scottish grown tomatoes for sale under the National Mark.

P.O. CASH ON DELIVERY.—Packets must be registered if sent by Letter Post. Maximum value of packet accepted = £40. Name and address of sender must be on cover. C.O.D. Fee, in addition to postage: 10s., 4d.; £1, 6d.; £2, 8d.; £5, 10d.; 2d. on each additional £5. Packets up to £10 are delivered. Over £10 addressee is notified, and must call for it. Consignments by rail: sender must send document entitling addressee to take delivery by C.O.D. letter, registered. Soft fruit, cut flowers, and other highly perishable stuff will not be accepted for transmission by rail under the C.O.D. arrangement.

FRUIT BY POST.—The postal authorities drew attention to the inadequate packing of soft fruits sent through the post, to the damage not only of the fruit, but of other parcels. Senders of fruit are advised to pack in a metal box, with a tightly fitting lid tied with string in both directions. Postal officials are authorised to refuse acceptance of any parcel of soft fruit packed in a chip or wicker basket, a cardboard box, or a tin with inadequately fitting lid. All fruit parcels should be clearly marked FRUIT—WITH CARE.

POTATOES—*Wart Disease.—Purchase of Seed Potatoes.*—The Wart Disease of Potatoes Order of 1923 prescribes that potatoes may not be sold for planting in England and Wales unless they are the subject of a certificate. Every purchaser of seed potatoes should be furnished by the seller with a written statement containing the number of the certificate, with the particulars as to class, variety, size, and dressing required by the Seeds Act and Regulations. Certificates are of two kinds: *True*

Stock certificate, issued only for approved immune varieties, and indicating that the crop was inspected while growing, and found to be true to type and reasonably free from rogues (the number of such certificates bears the prefix T.S. or A.T.S.); *Clean Land* certificate, issued for potatoes grown in clean districts, or from crops which have been inspected, and on which no wart disease has been found (prefix letter C.L. or A.C.L.). *On no account must potatoes with certificates bearing the letter A in the prefix be planted in clean land not within an infected Area.* The varieties in the following lists have been recognised by the Potato Synonym Committee of the National Institute of Agricultural Botany and by the Ministry of Agriculture as being distinct varieties. There is a number of other distinct varieties, both immune and susceptible, which have been omitted, as they are no longer of any practical importance. Many of the varieties in the lists have from time to time been sold under other names. Readers who are offered stocks of potatoes under names which do not occur in these lists can in most cases obtain reliable information about them by applying to the Secretary, N.I.A.B., Huntingdon Road, Cambridge.

I. VARIETIES OFFICIALLY RECOGNISED BY THE MINISTRY OF AGRICULTURE AND FISHERIES AS IMMUNE FROM WART DISEASE.

Early Varieties.—America, Arran Crest, Arran Rose, Coronation, Di. Vernon, Early Field, Herald, Immune Ashleaf, Snowdrop.

Second Early Varieties.—Alannah, Argyll Favourite, Arran Comrade, Balcarres, Balvaird, Ben Lomond, Boston Kidney (Dargill Early), Catriona, Clovullin, Cluny, Edzell Blue, Katie Glover, Macbeth's Castle, Mr. Bresee, Norna, Scales' Pride, The Baron.

Early Maincrop Varieties.—Aberdeen Favourite, Abundance, Ally, Arran Banner, Best of the Bunch, Cardinal, Crusader, Doon Star, Early Market, Early Templar, Edinchip, Electron, Gigantic, Glenalmond, Glen Ericht, Great Scot, International Kidney, King George, K. of K., Lord Tennyson, Majestic, Marquis of Bute, Mauve Queen, Rathmore, Response, Sefton Wonder (a russet "Great Scot"), Sunrise, Tinwald Perfection, Wonderful.

Late Maincrop Varieties.—Arran Consul, Arran Victory, Ben Cruachan, Bishop, Bounty, Boxer, Buchan Beauty, Celurca, Champion, Claymore, Corona, Duke of Perth, Dunaverney, Dunbar Cavalier, Dundarave, Early Manistes, Flourball, Glasgow Favourite, Golden Marvel, Golden Wonder, Gregor Cups, Hopeful, Harcarse Red, Incomer, Inverness Favourite, Irish Chieftain, Irish Queen, Keay's Champion, Kerr's Pink, Langworthy, Lochar, Main's Surprise, Main's Triumph, Medland, Perth Favourite, Quality, Ranfurly Red, Rhoderick Dhu, Royal Stewart, Sharp's Pink Seedling, Southesk, The Cherry, The Craigie, Utility, White City.

II. VARIETIES SUSCEPTIBLE TO WART DISEASE.

(These may not be planted on land infected with Wart Disease or to which the planting restrictions of the Wart Disease of Potatoes Order, 1923, apply.)

Early Varieties.—Beauty of Hebron, Duke of York, Eclipse, Epicure, May Queen, Ninetyfold, Sharpe's Express, Sharpe's Victor.

Second Early Varieties.—British Queen, Evergood, Royal Kidney.

Early Maincrop Varieties.—King Edward (Red), King Edward VII.

Late Maincrop Varieties.—Arran Chief, Field Marshal, General, Northern Star, President, Up-to-Date.

FOREIGN POTATOES.—It is illegal to plant any potatoes imported from abroad unless a licence has first been obtained from the Ministry of Agriculture.

WARE POTATOE GRADING.—Draft Regulations under the Agricultural Produce (Grading and Marking) Act, 1928. These provide for variations in size, with a common standard of dressing as regards damage, dirt, disease, etc.

SALE OF DISEASED PLANTS.—The sale is prohibited under an Order of 1927 of plants substantially attacked by (1) Fruit Tree Cankers caused by any parasitic fungi or (2) American Gooseberry Mildew (*Sphaerotheca morsuvae*); (3) Silver Leaf (*Stereum purpureum*); (4) Black Currant Mite (*Eriophyes ribis*); (5) Woolly Aphis (*Eriosoma lanigerum*); (6) All Scale Insects (*Coccidae*); (7) Brown Tail Moth (*Nygmia Phaeorrhaea*); (8) Rhododendron Bug [*Leptobyrsa* (*Stephanitis*) *rhododendri*]; (9) Corky or Powdery Scab of Potatoes (*Spongospora subterranea*); (10) Apple Capsid (*Plesiocoris rugicollis*); and under other Orders (1921)—Onion and Leek Smut (*Urocystis cepulae*), and (1923)—Wart Disease of Potatoes (*Synchytrium endobioticum*).

SILVER LEAF.—The Silver Leaf of Plums Order, 1923, requires that all dead wood on plum and apple trees shall be cut out and burnt before July 15th in each year. The earliness of this date is because during the early summer months the spores of the fungus are less readily distributed than is the case during the autumn and winter months; there is therefore less risk of re-infection if the dead wood is removed during May, June, and early July.

SCOTLAND.—Under the Department of Agriculture the following orders apply: Destructive Insects and Pests, Sale of Diseased Plants, Silver Leaf, Horticultural Produce (Sales on Commission), similar to those in force in England. Also: The American Gooseberry Mildew (Scotland) Order, 1920; requires notification of disease on bushes grown for sale, or for sale of fruit; prohibits movement of diseased bushes and sale of diseased fruit. No bushes may be imported, except from Great Britain and the Channel Isles, without licence.

Wart Disease of Potatoes (Scotland) Order, 1923: restricts planting Potatoes not of an approved immune variety; requires notification of disease, prohibits sale of diseased tubers, schedules infected areas.

NORTHERN IRELAND.—The following applies: Horticultural Sales on Commission Act (Northern Ireland), 1927. Similar to that in force in England.

IRISH FREE STATE.—The following apply: Destructive Insects and Pests Order, Sale of Diseased Plants Order, Colorado Beetle, similar to those in force in England. Also: Black Scab in Potatoes Orders: require notification of disease; compel destruction of infected crops; planting of infected districts, prohibit planting varieties susceptible to wart disease in infected districts; prohibit movement of potatoes out of scheduled districts; prohibit movement of mangels, turnips, and cabbages out of scheduled districts.

Potatoes Importation Order: prohibits importation without licence.

American Gooseberry Mildew and Black Currant Mite Order: requires notification of disease; prohibits importation without licence.

Importation of Elm Trees Order: prohibits importation from all countries, including England, Wales, and Scotland.

OBITUARY, 1929

ALLEN, ERNEST SATOW. Interested in botany and ornithology.

BALLANTINE, HENRY, V.M.H. For twenty-five years a member of the R.H.S. Orchid Committee. One of the original members of the R.H.S. Committee in 1889.

BANNATYNE, JOHN. Partner in Messrs. Bannatyne & Jackson, for many years Sec. and Tres. of the Hamilton and District Gardeners and Forestry Association.

BENSTED, GEORGE, of Ulcombe. Fruit grower.

BENZIE, A. EMSLIE, of Morkeu. Vice-Pres. of the R.H.S. of Aberdeen, and a financial supporter of that Society.

CANCELLOR, HENRY LANNOY. Originator and Hon. Tres. of the Basingstoke Home for Boys on Probation started eleven years ago by a grower of fruit and vegetables. The boys receive training and have an interest in the sales of produce. (See *Year Book* 1928, p. 10.)

CARLES, WILLIAM RICHARD, C.M.G., of Bankside, Pangbourne. When on furlough in Korea discovered *Viburnum Carlesii*.

CHISHOLM, ARCHIBALD. Horticulturist in charge of the Government Provincial Gardens, Bloemfontein, S. Africa.

CHIVERS, JOHN. Founder and Managing Director of Chivers & Sons, Ltd. Vice-Pres. of the West Cambridgeshire Fruit Growers' Association.

CLARK, WALTER CHILD, of Michelgrove House, Boscombe. A keen rosarian. His fine gardens for many years were opened to the public at a small fee to assist the local Hospital.

COCKBURN, SIR JOHN, K.C.M.G., M.D., of Dean's Hill, Harrietsham, Kent. Chairman of governing body of Swanley Horticultural College. Governor 1902–1919.

COLDSTREAM, WILLIAM. Reported to Government on fruit culture in the Himalayas and on the forests of the Simla Hill States. Publication: *Monograph on Grasses of the Southern Punjab.*

COLLETT, ANTHONY. Botanist and ornithologist. Publications: *A Handbook of British Inland Birds; The Heart of a Bird.*

COLTMAN-ROGERS, CHARLES COLTMAN, J.P., D.L., Co. Radnor, J.P. Salop and Herefordshire, of Stanage Park, Radnorshire, and Hagnaty Priory, Lincs., Lord-Lieut. of Radnorshire. Interested in agriculture and forestry. Chairman of the Botanical, Zoological, and Forestry Committees of the R. Agric. Soc., 1909. Member of Council of the R. Abor. Soc. Publication: *Conifers and Their Characteristics.*

COOPER, REV. W. H. WINDLE, M.A., of Owthorpe, Bournemouth. Interested in orchids.

COWAN, JOHN, of Liverpool. Orchid importer.

DAVIDSON, EDWARD. For thirty years Sec. and Tres. of the R. English Arbor. Soc., and son of its founder.

DIXON, CHARLES. For many years a member of the R.H.S. Floral Committee.

EARDLEY-WILMOT, SIR SAINTHILL, K.C.I.E., of Tolegate Cottage, Henley-on-Thames. Insp. Gen. of Forests in India, 1903–9. Publication: *Forest Life and Sport in India, etc.*

ELLMAN, REV. ERNEST. Botanist. Collected flowers in the Southern Counties, the Alps, Riviera, and Spain.

EVERARD, SIR NUGENT, BART., of Randlestown, Navan. Keenly interested in Irish tobacco growing. Had plantations of tobacco at Randlestown, where tobacco was grown and prepared for market, and various experiments were carried out to discover the best species to grow in Ireland.

GARNETT, GERALD, youngest son of the late H. Garnett, Esq., of Wyreside, Dolphinholme. A keen rosarian and successful exhibitor.

GOODRIDGE, REAR-ADMIRAL WALTER SOMERVILLE, C.I.E., of Rudwick Grange, Sussex. At the Rudwick Fruit Farm had thirty years of up-to-date commercial fruit growing.

GRATRIX, SAMUEL, of West Point, Whalley Range, Manchester. One of the founders and Vice-Pres. of the Manchester and North of England Orchid Society, and a leading orchid amateur in the North of England.

GROSVENOR, SIBELL MARY LUMLEY, COUNTESS OF, of Saighton Grange, Chester. Her "Saints" Garden, planted with flowers that are supposed to bloom on certain Saints' days, was described last year (pp. 69–71).

HARRISON, JOHN, of Leicester. President of the Horticultural Trades Association. Member of the R.H.S. Fruit and Vegetable Committee for many years.

HARVEY-GIBSON, PROF. ROBERT JOHN, C.B.E., M.A., D.Sc., F.R.S.E., D.L., J.P. Co. Palatine, of Lancaster. Emeritus Prof. of Botany Liverpool Univ. Lecturer on Botany; Prof. of Botany, 1894–1921. Examiner in Botany, Universities of New Zealand, Bristol, Aberdeen, Ireland, and the Pharmaceutical Society of Great Britain. Publications: *Outlines of the History of Botany; Primer of Biology; British Plant Names and Their Derivations; The World of Plants; Two Thousand Years of Science* (posthumous, edited by Dr. A. W. Titherley), and papers in various journals.

HENDERSON, LT.-COL. GEORGE, M.D., F.R.G.S., F.L.S. As Medical officer with Sir Douglas Forsyth's Mission to Yarkhand in 1870 collected information about flora and fauna. Discovered many rare plants. Director of the Calcutta Royal Botanic Gardens and Professor of Botany at Calcutta University. Designed public gardens at Amritsar and Lahore. Imported Ipecacuanha

plants to India, and discovered which species of Eucalyptus would grow there.

HILL, F. President of the Great Yarmouth and Dist. Hort. Society.

HOWARD, JOHN, Agent-General for Nova Scotia. Contributed to the horticultural press.

HUFFEY, WILLIAM, of Tonbridge. Well known as an exhibitor of Sweet Peas. Won (outright) the Hawlmark Cup in 1928 and the *Amateur Gardening* Challenge Cup in 1929.

HUGHES, GEORGE PRINGLE, J.P., of Middleton Hall, Wooler. Interested in forestry. Collected fine specimens of trees in many parts of the world.

JEFFERIES, WILLIAM JOHN, of Messrs. John Jefferies & Son, Ltd., Cirencester. Past-President Hort. Trades Association.

JONES, CONWAY, of Gloucester. Well known as a rose grower. Won the N.R.S. Amateur Champion Challenge Trophy and N.R.S. Gold Medal.

KEMSHEAD, C. T. T., of Lisheen, Uplyme, Dorset. For twenty years lecturer in Modern Languages at Magdalen College, Oxford. An enthusiastic gardener.

KIRCH, CARL, of Albemarle Rd., Beckenham. Had one of the largest stocks of rare alpines.

LANKASTER, SIR RAY, K.C.B., M.A., LL.D, F.R.S., D.Sc., etc. Director of the British Museum National History Dept., 1898–1907.

LOWE, JOSEPH, V.M.H. Founded the firm of Lowe and Shawyer, Nurserymen, Uxbridge. Specialised in cut flowers for market.

MEATH, REGINALD BRABAZON, 12th Earl of, P.C., G.C.V.O., G.B.E., K.P. Founder and Chairman of the Metropolitan Gardens Assoc. First Chairman of the Parks Committee, L.C.C.

MELROSE, JAMES, J.P., in his 101st year. Lord Mayor of York, 1876–7. A well-known Yorkshire horticulturist. *See* pp. 19, 123, last issue.

MELVILL, DR. JAMES COSMO, D.Sc., of Meole Brace Hall, Shrewsbury, F.L.S. A well-known botanist and conchologist.

MONTAGU OF BEAULIEU, JOHN WALTER EDWARD DOUGLAS-SCOTT-MONTAGU, K.C.I.E., C.S.I., C.C., J.P., V.D., D.L., Verderer of the New Forest of Beaulieu Hants. Had expert knowledge of the Forest flora and fauna.

MOSLEY, SETH LISTER, of Wasp Nest Rd., Huddersfield. Naturalist. Remodelled the Bethnal Green and other museums in this country, in Melbourne, and in Philadelphia. Taught botany for many years. Curator of the Technical College Museum for many years, and Secretary of the Huddersfield Naturalists' Soc. Founded the Christian Nature Study Mission.

NUTTALL, MRS. GERTRUDE CLARKE, B.Sc. One of the first women to take a degree (Botany). Publications: *Wild Flowers as They Grow; Beautiful Flowering Shrubs; Trees and How They Grow.*

PAUL, THE VERY REV. DAVID, M.A., D.D., LL.D., F.L.S. President of the Botanical Society of Edinburgh, 1899–1901. President of the British Mycological Society, 1918. President of the Cryptogamic Society of Scotland, 1922. President of the Scottish Alpine Botanical Club, 1923. Publications: Papers in the Botanical Society of Edinburgh *Transactions*, and the Berwickshire Naturalists' Club *Transactions*.

PEARSON, CHARLES E., V.M.H., F.L.S., of Lowdham, Notts. Head of the firm Messrs. Pearson & Sons. Founded the Horticultural Trades Association. Hon. Secretary for many years. Founded and edited the *Horticultural Advertiser*. One of the oldest members of the R.H.S. Floral Committee. Chiefly interested in florists' flowers and hardy plants.

RANDALL, SAMUEL GEORGE. Florist and market gardener. Twice Chairman of the Skegness Urban District Council.

TODD, GEORGE. Secretary of the East Anglian Hort. Club.

VEITCH, PETER C. M., V.M.H., J.P. Head of the firm of Veitch & Sons, and great-grandson of the Mr. John Veitch who came to Devon at the end of the eighteenth century. Collected plants in Australia, Fiji, South Sea Islands, New Zealand, and Borneo, and introduced many new flowers and types of fruit. Member of R.H.S. Fruit and Vegetable Committee. Past-president Horticultural Trades Association. Revived the Devon and Exeter Hort. Society.

VENNER, E. An employee of the Bournemouth Corporation. Discovered by accident that if water was left running over a rubber mat on grass leather-jackets collected in masses under it could be easily destroyed.

VERT, JAMES, of Vert & Sons, Ltd., Nurserymen, seedsmen, and florists of Saffron Walden.

WAGER, DR. HAROLD, W. T., D.Sc., F.R.S., F.L.S. Formerly Lecturer in Botany, Yorkshire College and University of Leeds. Presided over the Section of Botany at the British Association Meeting, S. Africa, 1905. President of the British Mycological Society, 1910. President of the Yorkshire Naturalists' Club, 1913. Also President of the Leeds Naturalists' Club. Publications: *Physiology of Plants; Teaching of Botany; Memoirs on the Cytology and Reproductions of the Lower Organisms.*

YAPP, RICHARD HENRY, M.A. Mason Professor of Botany at Birmingham University. Frank Smart Student of Botany at Gonville and Caius, Cambridge, 1899–1902. Curator Cambridge University Herbarium, 1900–3. Botanist to the Cambridge University Scientific Exploration Expedition to Siamese-Malay States, 1899–1900. Professor of Botany University College, Aberystwyth, 1904–14. Professor of Botany Queen's University, Belfast, 1914–19. President of the British Ecological Society. Publications: *Text-book of Botany*. Various papers on botanical subjects. Secretary and subsequently Recorder of Botanical Section British Association, 1902–11.

BOTANIC GARDENS

BRISTOL UNIVERSITY BOTANIC GARDENS.

The Gardens were laid out in 1881 under the direction of Prof. A Leipner, Professor of Botany at the University. In 1905, under the direction of Mr. J. H. Priestley, a trained gardener from Kew reorganised the grounds. In 1911 Prof. Darbishire became Head of the Department, and a year later Mr. G. F. Gardiner was appointed Superintendent of the Gardens. Since that date many developments have taken place, including the formation of salt-marsh and sand gardens. The Gardens are maintained by the University to supply material for study. There are glass-houses for tender subjects, and one for plant breeding on Mendelian lines. There is also one for the study of Cryptomatic Botany, and a Laboratory for Plant Physiology. The public are admitted on the afternoons of Tuesdays and Fridays, or by appointment.

CAMBRIDGE UNIVERSITY BOTANIC GARDEN.

Director: H. Gilbert Carter, M.A., M.B., Ch.B. *Superintendent:* F. G. Preston. *Telephone:* 101 Cambridge.

This can take a place among the leading Botanic Gardens in the world, although the present Garden is apparently young in comparison to many. As far back as 1696, plans were drawn up and measurements taken by Dr. Echard, with the assistance of "Loudon," who was gardener to William III, but little more was done at that time, and the scheme fell through. Some years later, in 1724, a Professor Bradley made hollow promises to start one, but, although he continually mentioned what he intended to do in that respect, nothing whatever came of his promises. Seven years later things looked more hopeful ; many conferences were held between the Vice-Chancellor, Professor John Martyn, and Mr. Philip Miller (Curator of the Chelsea Physic Garden), and particulars were gone into respecting the estate of Mr. Brownell, of Willingham, a small village a few miles from Cambridge, with the intention of devoting this establishment to a Botanic Garden, but the estate was diverted into another channel.

Some time later, through the liberality of a Dr. Walker, who was at that time Vice-Master of Trinity College, a plan was put into effect, for in 1761 Dr. Walker purchased a piece of ground for £1,600, the site of the Monastery of the Austin Friars in the parish of St. Edwards, and this, with some adjoining property, which

belonged to Dr. Walker, over five acres in all, was made over to the University by an indenture dated August 24, 1762. Thus started the first Botanic Garden in Cambridge. The study of Botany had previously been carried on with great success by the celebrated naturalist, John Ray, and was continued at this time by Dr. John Martyn, who was appointed first Reader in Botany, the first Curator of the Garden being Charles Miller, son of the famous Philip Miller, of Chelsea. In consequence of the erection of buildings in the neighbourhood, the site had become ill-suited to the purpose of a garden, while the number of species introduced into the country at that time, and the requirements for Science, had so increased that the space was found to be far too limited. It was decided to remove the plants to another site. For this purpose Parliament in 1831 sanctioned an exchange of lands between the University and Trinity Hall for the removal of the site of the Botanic Garden to the spot where the Botanic Garden now is, which was then cornfields. Laboratories now stand on the site of the Old Botanic Garden, and the only evidence of it remaining is a very magnificent specimen of *Sophora japonica*, recorded as one of the two largest specimens in the country. Although the site of the present Botanic Garden was taken over in 1831, it was not until 1846 that the Garden was officially opened by the Rev. R. Tatham, D.D., Master of St. John's College, when the lime tree standing by the main gates was planted to celebrate the event. These very fine gates were from the Old Botanic Garden, and were erected in their present position in 1909.

The site of the Botanic Garden at Cambridge is about 40 acres in extent. A portion is let out in allotments, with the view of taking them for botanical work when extension is possible. As a collection of plants, it is second only to Kew in the country—to use the expression of the late W. Watson, Curator of Kew, Cambridge was "Kew in a Nutshell." No other garden in the world plays such a big part in education, supplying as many as 100,000 specimens annually (one year over 137,000 were supplied) to the various labora tories during term, which is roughly half the year. Two men devote the whole of their time, and sometimes others help, to gather the specimens which are sent to the laboratories every day for lectures in Botany, Physiology, Forestry, Agriculture, Cytology, Biochemistry, Genetics, Plant Pathology, etc. Large classes visit the garden regularly, while various experimental work and investigation is carried on. Much work is done out of term in the preparation of material for future use, some having to be quite twelve months in advance, and only one who has seen this work, or helped to do it during the year, can realise the magnitude of it. Apart from material supplied for University Lectures, some of the schools in the town are supplied for a moderate fee, while Cambridge Locals, Oxford and Cambridge Examinations, and many others about the country, are supplied with botanical specimens which amount to several thousands a year.

The Garden is opened to the public during the week, on Sundays to members of the University and other townsmen, who are key-holders. It contains a good collection of plants, both hardy and under glass, with well-planned range of glass-houses, whilst a pond —originally a large gravel pit opened to provide gravel for building the original houses, and to make the paths—is utilised for the growing of aquatics and bog plants. The water garden adjoining was one of the first in the country, as was the Bamboo Garden. Plants to note are : *Clusia grandiflora*, by far the largest specimen in the country—probably the only one, until small plants struck from it were sent to Kew, Edinburgh, and other establishments. *Welwitschia mirabilis*, probably the only living specimen in the country. *Pinus gerardiana*, by far the largest in the country. *Pinus monophylla*, probably the largest specimen in the country. An exceptionally good specimen of *Pinus montana uncinata*. The finest Judas Tree (*Cercis Siliquastrum*) in the country. *Asimina triloba*, the American Papaw, recognised as the largest specimen in the country. The finest specimen of *Xanthoceras sorbifolia*. The largest —and probably the only—specimen of *Prunus cantabrigiensis*. While there are other fine specimens, in some cases not equalled elsewhere in the country, of *Ailanthus glandulosa*, *Alnus nitida*, *Aegle sepiaria*, *Crataegus tanacetifolia*, *Garrya elliptica*, *Gymnocladus dioica*, *Hippophaë salicifolia*, *Juglans nigra*, *Koelreuteria paniculata*, *Rosa macrophylla*, *Tilia petiolaris*. A magnificent group of *Pterocarya caucasica* not equalled elsewhere in the country. While *Opuntia* and other succulents with many other tender plants, such as *Hedychiums*, *Crinums*, *Erythrina*, *Bomarea*, growing in the open all the year round, are one of the features of Cambridge.

F. G. P.

CHELSEA PHYSIC GARDEN.

Curator : William Hales, A.L.S. *Clerk to the Trustees :* E. R. Warre, Esq., 3 Temple Gardens, Temple, E.C. 4.

The site of the Garden was secured in 1673 by the Apothecaries' Society. Records show that the Garden was "in being" in 1676. In 1712 the freehold of the Garden was purchased by Dr.—afterwards Sir—Hans Sloane who in 1722 conveyed the Garden to the Apothecaries' Society, "that the Garden might be continued as a Physic Garden . . . that the apprentices of the Society and others might better distinguish good and useful plants from those that bear resemblance to them and yet are hurtful."

Towards the end of the last century the Apothecaries' Society approached the Charity Commissioners with a view to the relinquishment of the trust. The Commissioners in 1899 established a scheme by which the Trustees of the London Parochial Charities were appointed Trustees of the Garden, with a Committee of Management for administration. The Trustees and Committee put the Garden into thoroughly good working order, and erected glass-houses, a

Lecture Room, Curator's residence, and a Laboratory constructed to meet the special requirements of botanical biology. The Garden has since provided for the needs of a large number of students in the way of research and material for teaching purposes. Admission: By ticket, free on application to the Clerk of the Trustees.

Publications: *Memorandum on the Origin and History of the Garden. Annual Seed Exchange List.*

CRUICKSHANK BOTANIC GARDENS.

Hon. Keeper: Professor W. G. Craib, M.A., F.R.S.E., F.L.S.

The Gardens were founded by Miss Cruickshank in memory of her brother, Dr. Cruickshank.

EDINBURGH ROYAL BOTANIC GARDEN.

Regius Keeper: William Wright Smith, M.A., F.L.S., F.R.S.E. *Curator:* Robert Lewis Harrow, V.M.H.

Telephone: 21347 Central (Regius Keeper), 20838 Central (Accounts Office).

Founded 1670 by Andrew Balfour and Robert Sibbald, eminent Edinburgh physicians, who made a Physic Garden of St. Ann's Yards, to the south of Holyrood House. James Sutherland was appointed to take "Care of the Garden." He became custodian of the Royal Garden on the north side of the Palace, and made it into a Physic Garden for instruction. The original plot was, apparently, given up. In 1676 Balfour and Sibbald leased the garden of Trinity Hospital in addition, with adjacent ground, and Sutherland became Intendant. About 1702 the College Garden was made in ground by the College buildings, with Sutherland as custodian. He was made Botanist to the King in Scotland by Royal Warrant, and empowered to "set up a Profession of Botany." The Town Council appointed him Professor in the Town's College (now Edinburgh University) to lecture on Botany. He published *Hortus Medicus Edinburgensis, or a Catalogue of the Plants in the Physical Garden at Edinburgh,* in 1683. By 1724 the College Garden had fallen into disorder and was turned to other uses. In 1729 the Town Council appointed Charles Alston, Regius Professor of Botany and King's Botanist in charge of the Royal Garden, as Professor of Botany in the University. In 1763 the Royal and Town's Gardens being unsatisfactory and too small, the plants were transferred to ground at Leith Walk. In 1820 the lease was sold, and by three years later all the plants had been moved to a new site in the Park of Inverleith. Further addition was made in 1858, and again in 1865, when the Caledonian Horticultural Society resigned the lease of its experimental garden to the Crown. The present area was completed in 1876 by further purchases of the Inverleith property. Under Sir Isaac Bayley Balfour the Botanic Garden became a centre of botanical and horticultural research and instruction.

The teaching of Botany has been the chief object since the foundation of the Garden. The buildings include, in addition to plant houses, Museum, Laboratories, Lecture Hall, Library, and Herbarium. Since 1892 a special Course of Instruction for young gardeners and foresters has been carried on. Specimens are supplied to visitors, teachers, and students for private study.

Publications : *Notes from the Royal Botanic Garden, Edinburgh*, published occasionally. *Sketch of the Garden. Seed List*, published in December (seeds available for exchange).

FORBURY GARDENS, READING.

Curator : H. C. Loader.

For many years past some rare Economic Plants have been grown in the Forbury Gardens. Most of these plants have been arranged in a series of beds, so as to illustrate some of the departments of Economic Botany, and more especially the services rendered by the vegetable world in supplying Food, Clothing, Dyes, and Medicines. In addition to these, a group of economic trees and other miscellaneous plants have been exhibited from time to time. Each plant bears a descriptive label, giving the English and Latin name as well as the Natural Order and the economic product derived from it. During the winter the more delicate plants are removed from the beds and preserved from frost in adjacent conservatories.

Not far from the Forbury Gardens is the Museum of Economic Botany. All the principal foods, fibres, dyes, and medicines are exhibited in show-cases. The proximity of Garden and Museum has the advantage of greatly facilitating the study of Economic Botany, since the plant and its economic products can be readily examined.

GLASGOW BOTANIC GARDENS.

Director : William Besant. *Assist. Director :* James Atkinson. *Curator :* George H. Banks.

Founded 1891 by the Corporation under the City of Glasgow Act. The wooded slopes on the north bank of the Kelvin were acquired between 1922–6, and on the south bank in 1900.

The general collection of indoor plants in these gardens is very fine, embracing all the different sections and containing many splendid specimens. The Tree Ferns in the Kibble Palace (Winter Garden) are worthy of special notice, being probably the finest in the United Kingdom. The collection of filmy ferns and mosses is also unique in British Gardens. Of economic plants there is a large and varied representation. The collection of herbaceous plants is comprehensive and valuable, and the garden has been admirably laid out to be of exceptional value to the students of Botany, who are afforded every facility for practical observation.

Glasgow University is supplied from these gardens with all necessary specimens for the use of the Professor of Botany.

Publication : *Seed List for distribution in January.*

GLASNEVIN BOTANIC GARDENS.

Keeper: J. W. Besant, Botanic Gardens, Glasnevin, Dublin. *Telephone:* Drumcondra 97.

Founded 1790. Indoor collections of note : Botanical Orchids, Cycads, Palms, etc. Outdoor collections of note : Rock Garden, Herbaceous Plants, Pinetum, Bog and Water Gardens. Lectures on Botany and Horticulture are given by the Keeper to the gardeners in training. The Gardens are used by Professors of Botany and Forestry for lectures and demonstrations. Large numbers of specimens are supplied to Schools, Colleges, etc., for Botany, Art, and Rural Science. The Gardens are open every day, including Sundays.

MOUNT USHER GARDENS.

The beautiful grounds near Wicklow, sometimes called the Walpole Gardens, are a part of the private gardens of Mount Usher, the residence of E. H. Walpole, Esq. The public are not admitted, but members of the R.H.S.I. are allowed to visit the place, and bring a certain number of friends. *See Y.B.* 1929, pp. 60–1.

NATIONAL PINETUM AT BEDGEBURY.

Owing to the effects of London smoke and fog, the satisfactory cultivation of a large number of Conifers, more especially Firs and Spruces, became impossible at Kew. H.M. Government consented to a new pinetum being established at Bedgebury in Kent under the joint auspices of Kew and the Forestry Commission. The area allotted for the purpose is fifty acres. A beginning with the planting was made in March 1925, when over 300 trees were put out. The bulk of the collection was planted in the early part of 1926, when about 1,200 more trees were given places. Bedgebury is situated about ten miles east of Tunbridge Wells and twelve miles south of Maidstone. Stations: Goudhurst and Cranbrook.

OXFORD BOTANIC GARDEN:

Founded 1621. The oldest in England. Henry, Earl of Danby, bought out the existing tenant of five acres of land, and arranged that the University should lease the ground from Magdalen College and build a conservatory. Jacob Bobart was the first Keeper, appointed in 1632. His catalogue, 1648, contains the names of 1,600 varieties of plants.

A. G. T.

ROYAL BOTANIC GARDENS, KEW.

Director: Arthur W. Hill, M.A., C.M.G., Sc.D., DSc. (Adelaide), F.R.S., F.L.S. *Curator:* T. W. Taylor.

The 288 acres of the Gardens consist almost entirely of the grounds originally belonging to Kew House and Richmond Lodge. Queen Caroline employed Bridgman, the landscape-gardener, and Kent, architect and landscape artist, on her grounds at Richmond Lodge. Sir Henry Capel, who married the heiress of Kew House, was a keen horticulturist, and imported many new and rare plants. The property passed to a grand-niece, Lady Elizabeth Molyneux, and at her death was leased to Frederick, Prince of Wales. His widow, Princess Augusta, began the formation of the Botanic Gardens, assisted by the Earl of Bute, Sir William Chambers, and William Aiton, recommended for charge of the new garden by Philip Miller, of the Chelsea Physic Garden. George III had the present Rhododendron Dell made by "Capability" Brown, Sir Joseph Banks acting as unpaid Director of the Gardens till his death.

In 1841 Kew became a National Institution, with Sir William Hooker as the first Director, and the Gardens were opened to the public. In 1853 the Herbarium and Library were founded. The former contains nearly four million specimens of plants, and the Library about 40,000 volumes. In 1875–6 the Jodrell Laboratory, for physiological and anatomical research, was built. In 1882 Miss Marianne North gave the North Gallery, with over 800 of her paintings of flowers and plants. In 1897 the Queen's Cottage and grounds were given by Queen Victoria.

The national and imperial work done at Kew includes (1) the advancement of Botany and the study of plant life, (2) the introduction of new and valuable plants to the Empire, (3) the upkeep of the Gardens as a public resort, (4) a school of Horticulture.

Publications: Popular Official Guide to the Royal Botanic Gardens, Kew, with map, 1928, 6d. The Royal Botanic Gardens, Kew, Illustrated Guide, with map, 1928, 1s. Key Plan to the Royal Botanic Gardens, Kew, 3d. Official Guides to the Museums, I.—Dicotyledons (under revision); II.—Monocotyledons and Cryptogams; III.—Timbers and Gymnosperms; IV.—British Forestry; 1s. each. North Gallery (6d.), and Catalogue of Portraits of Botanists (Museums), 6d. Hand-lists of Plants Grown in the Royal Botanic Gardens, Kew (from 5d. to 4s. 6d.). Picture Postcards. The Kew Bulletin of Miscellaneous Information (issued as an occasional publication). Price varies. Vols. for 1887–92 and 1912 out of print. *Additional Series:* I.—Economic Resources of the West Indies, 1s. 6d. II.—Vegetable Fibres (Reprint) (Selected Papers from the *Kew Bulletin*), 3s. 6d. III.—Catalogue of the Library of the Royal Gardens, Kew, 7s. 6d. III.—2. Supplement, £1. IV.—List of published Names of Plants introduced to cultivation, 1876–1896, 4s. V.—Wild Fauna and

Flora of the Royal Botanic Gardens, 2s. VII.—Rubber (selected Papers from the *Kew Bulletin*), 1s. 6d. VIII.—New Genera and Species of Cyperaceae, 1s. 6d. IX.—The Useful Plants of Nigeria. Part I, 2s. ; Part II, 2s. 6d. ; Part III, 3s. 6d. ; Part IV, 20s. X.—Flora of Kwantung and Hong-Kong, 4s. 6d. XI.—General Index to the Volumes of the *Kew Bulletin* for the years 1887–1918, 7s. 6d.

See also Schools (p. 123).

SINGLETON PARK EDUCATIONAL GARDEN, SWANSEA.

Superintendent: Daniel Bliss. *Telephone:* 8177.

The Educational Garden was laid down in Singleton Park in 1925–6 by the Swansea Parks Committee. It is a valuable site for the cultivation of collections of plants for the betterment of the knowledge of plant life and kindred subjects among school-children and the general public. It enables the University College Students to study from living specimens arranged in order.

The collections are : (1) species of the British Flora ; (2) all the important plants of economic value ; (3) plants of botanical interest. Most of the British plants are planted in long narrow beds of various lengths, one natural order to each bed. There is a small lake for the cultivation of aquatics and a series of rockery beds for Alpines, wall plants, etc. Suitable beds and borders have been prepared for the reception of bog, seashore plants, etc. Roughly about 1,400 species of our native flora have been collected and about 700 species having an economic value. The wide borders on the north and west sides of the Garden are devoted to collections of economic plants, arranged as far as possible in groups of foods, fibres, dyes, medicines, and herbs, and a new glass-house has been erected for tropical and semi-tropical species. The two other glass-houses have been filled with succulent plants, and plants of botanical interest, such as the Pitcher Plants (*Nepenthes*), Sundews (*Drosera*), and those which illustrate mutations, etc., of interest to students. In a small glass-house formerly used as a shelter, several glass cases have been installed in which is shown an ever-increasing number of economic plant products. Important new additions have been made to the collection of British plants.

Seeds are collected each year, and a printed list is distributed to various botanical institutions in Europe and at home, for the purpose of exchange.

Publications : *Lists of Seeds. Index of the Economic Plants.*

D. Bliss.

TRINITY COLLEGE, DUBLIN, BOTANIC GARDEN.

Director: H. H. Dixon, Sc.D., F.R.S., School of Botany, Trinity College, Dublin.

Founded 1806. Additions were made in 1832 and 1848. The

Garden is near Ball's Bridge. The original Garden contains a collection of the principal Natural Orders of hardy plants for teaching purposes. Choice and tender exotics are grown in heated houses. Herbaceous, Alpine, and bulbous plants fill a considerable extent of borders of rock-edging ; aquatic and marsh plants are by a pond. A collection of Siamese plants, made and presented by Dr. A. F. G. Kerr, containing many new species and unique specimens, is worthy of special notice.

Classes for students in Arts and Medicine are held in the Gardens as occasion arises. Keys giving admission are granted under specified conditions to residents in Dublin. Other visitors are admitted by orders from the Provost or any of the Fellows or Professors of the College.

The primary function is to provide material for research, and for practical instruction in the School of Botany.

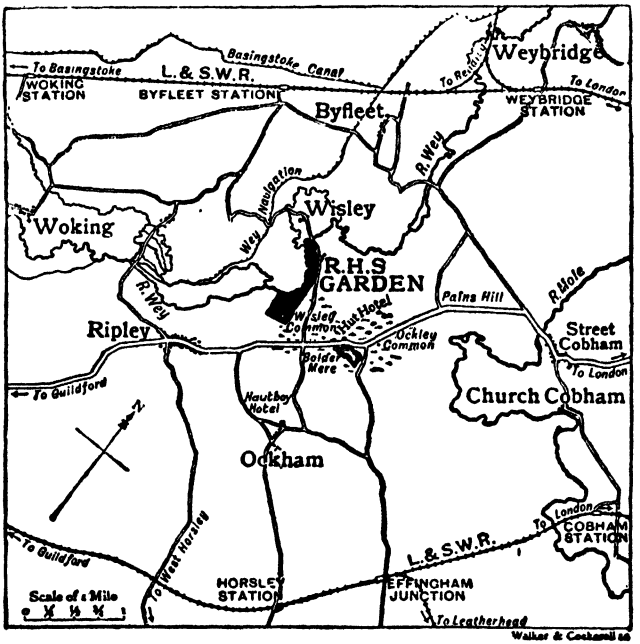
WISLEY, THE ROYAL HORTICULTURAL SOCIETY'S GARDENS.

Director : F. J. Chittenden, F.L.S., V.M.H., R.H.S. Gardens, Wisley, Ripley, Surrey.

The R.H.S. Gardens were originally started in March 1818, when a small piece of walled market-garden was taken nearly opposite Holland House. Further ground was rented at Ealing in 1820. A year later a tract of 33 acres was taken at Chiswick. The whole garden was designed for experiments upon plants, and as a nursery for imported and newly acquired plants. The grounds at Kensington and Ealing were given up. The Society in 1859 was offered 22½ acres of the Gore House Garden at Kensington. A garden was laid out and offices built. In 1903 Sir T. Hanbury, K.C.V.O., presented the garden and land of the late Mr. G. F. Wilson, V.M.H., in trust for the use of the Society, and there—at Wisley—the Society now has its gardens, trial grounds, glass-houses, with a library and laboratory in a large building, which contains accommodation for the work of the various members of the scientific staff and also for the instruction of the thirty students, who receive a thorough training both in the science and practice of gardening.

The whole of the work at Wisley is under the control of the President and Council of the Society, whose object is to develop the garden in such a way that it will meet all the requirements of horticulture and serve not only for the enjoyment and instruction of Fellows, but also for the advancement of Horticultural Science. To this end the Council has appointed a Garden Committee to advise it upon all things connected with the work at Wisley. The Gardens are devoted to (1) testing new and improved varieties of Fruits, Flowers, and Vegetables to see if they bear the character given them by their introducers or raisers ; (2) investigating the best means of combating the attacks of harmful insects and diseases of plants ; (3) investigating the relative values of plants, etc., from

both their economic and food points of view ; (4) encouraging the practice of open-air gardening in all directions; and (5) contrasting the value of different varieties of flowers from a garden, as distinguished from a show, point of view. Trials of plants, fruits, vegetables, and sundries are held annually with the object of discovering the best of their several kinds and varieties. The work



necessarily involves the raising and propagation of plants of all kinds. The surplus is distributed annually to Fellows in March.

The Gardens are open daily to Fellows and others showing Fellows' Transferable Tickets, except on Sundays from October to March, inclusive, Good Friday, and Christmas Day. The public is not admitted at any time. Students and gardeners may obtain orders on application to the Secretary, Vincent Square, which will secure them special facilities for observation and study.

HORTICULTURAL INSTITUTIONS, COLLEGES AND SCHOOLS

MINISTRY OF AGRICULTURE AND FISHERIES.

Minister of Agriculture: The Rt. Hon. Noel Buxton, M.P. *Principal Assistant Secretary Education and Research (Agriculture and Horticulture) Division:* H. E. Dale, C.B. *Horticulture Commissioner:* H. V. Taylor, O.B.E. *Director, Plant Pathological Laboratory, Harpenden:* J. C. F. Fryer, O.B.E. *Assistant Director:* Dr. G. H. Pethybridge. *Senior Staff Officer, Horticulture Branch:* J. L. Bryan, M.B.E., Whitehall Place, S.W. 1.

The Ministry was constituted under an Act of 1919 (9 and 10 Geo. V. Ch. 91), amending the Acts of 1889–1909. "Agriculture" is defined to include Horticulture. The Education and Research (Agriculture and Horticulture) Division deals with Horticulture, plant diseases and pests, educational propaganda, and other advisory and technical work. The Commercial and Tithe Division deals with questions relating to Fertilisers and Seeds, and prepares the Journal. The Market Division deals with Marketing and Exhibitions.

Kew Gardens are under the control of the Ministry.

PUBLICATIONS (Horticultural): *Journal of the Ministry of Agriculture.* Miscellaneous Publications: 35. Hedge and Stump Clearing Devices, 2/6. 37. Beneficial Insects, 4d. 44. Wasps, 4d. 51. Rats, and how to Exterminate them, 3d. 52. Fungus and Allied Diseases of Crops, 1922–4, 4/–. 54. Edible and Poisonous Fungi, 2/6. 57. Poisonous Plants on the Farm, 2/–. 58. Modern Fruit Tree Spraying and what it Costs, 6d. 61. Weeds of Arable Land, 2/6. 62. Report on the Occurrence of Insect Pests on Crops, 1925–7, 2/–. Coloured Wall Diagrams of Plant Pests and Diseases: *No.* 1. Apple Blossom Weevil. *No.* 2. Winter Moths. *No.* 3. Apple and Pear Scab. *No.* 4. Silver Leaf. Unmounted 3/–. Mounted 5/- each. *Monograph No.* 3. Sugar Beet, by A. Bridges and R. N. Dixey, 1/- net. *No.* 6. Survey of the Soils and Fruit of the Wisbeck Area, 3/6. *Volumes of Leaflets: No.* 1. Fungus Diseases of Fruit Trees, 8d. *No.* 2. Insect Pests of Fruit Trees, 10d. *No.* 3. Cultivation and Diseases of Potatoes, 8d. *No.* 4. Fruit: Its Cultivation, Marketing, etc., 1/6. *No.* 8. Manures and Manuring, 9d. *No.* 11. Insect Pests of Farm and Garden Crops, 1/3. *No.* 12. Cultivation of Vegetables. *Leaflets:* 362. The Selection, Storage, and Treatment of Seed Potatoes. 17. Watercress and its Cultivation. 91. Peppermint: Its Cultivation and Distillation. 123. Cultivation (and Diseases and Pests) of Cucumbers. 124. Cultivation of the Vegetable Marrow. 181. Peas and Beans. 188. Fumigation with Hydrocyanic Acid Gas. 191. Asparagus Cultivation. 209. Practical Soil Sterilisation by Heat for Glass-house Crops. 224. Narcissus Cultivation. 264. The Cultivation of Onions. 276. Commercial

Mushroom Cultivation. 309. Suggestions to Allotment Holders for Autumn Treatment of Land. 313. Cultivation of Parsnips. 315. Suggestions and Chart for the General Cropping, Manuring, and Cultivation of Allotments. 316. Lavender: Its Cultivation for Marketing and Distilling. 320. Manuring of Vegetable Crops. 323. Cultivation and Marketing of Cabbages and Savoys. 332. Carnations. 359. Brussels Sprouts. 393. Tomato Culture. 77. Finger and Toe in Turnips. 178. Downy Mildew of the Onion. 200. Black Rot of Cabbages, Turnips, etc. 238. Leaf Spot of Celery. 242. Stripe Disease of Tomatoes. 262. Tomato Leaf-mould Disease. 343. Leaflet on Potato Wart Disease, specially prepared for Children . . . and for Amateurs. 345. The White Rot Disease of Onion Bulbs. 356. Onion Smut. 156. Hedgerow Timber. *Economic Series: No.* 9. Marketing of Potatoes.* *No.* 15. Fruit Marketing.* *No.* 21. Preparation of Fruit for Market. Pt. I.—Apples, Pears, Plums, and Strawberries.*

HORTICULTURAL STAFF, ENGLAND AND WALES, other than part-time instructors, employed by the County Councils in connection with schemes of Horticultural Education recognised by the Ministry of Agriculture:—

Ad. = Advisor. Ins. = Instructor. Lec. = Lecturer.
Org. = Organiser. Prin. = Principal. Sup. = Superintendent.

BEDFORD.—No Hort. Ins.; Director of Education, Shire Hall, Bedford.

BERKSHIRE.—Hort. Ins.: A. E. Barnes, The University, Reading.

BUCKINGHAMSHIRE.—Hort. Ins.: A. E. B. Langman, C.D.H., Education Sub-Office, Kingsbury Square, Aylesbury.

CAMBRIDGESHIRE.—Hort. Ad: A. T. Paskett, F.R.H.S., County Hall, Cambridge.

CHESHIRE.—Hort. Sup.: W. E. Shewell-Cooper, C.D.H., Cheshire School of Agriculture, Reaseheath, Nantwich. Asst.Ins.: C. Savidge.

CORNWALL.—Hort. Sup.: H. W. Abbiss, D.C.M., M.M., N.D.H., Education Department, County Hall, Truro. Asst. Lec. W. J. Moyse, N.D.A.

CUMBERLAND AND WESTMORLAND (JOINT STAFF).—Hort. Org.: D. S. Anderson, Newton Rigg Farm School, Penrith.

DERBYSHIRE.—Hort. Ins.: W. H. Tuck, N.D.H., Derbyshire Agricultural Institute Offices, St. Mary's Gate, Derby.

DEVON.—Hort. Sup.: D. Manning, 1 Richmond Road, Exeter. Sup. of School Gardening and Org. of Women's Hort. Work: Miss E. M. Gunnell, N.D.H.

DORSETSHIRE.—Hort. Ins.: T. P. P. McPhail, F.R.H.S., County Offices, Dorchester.

DURHAM.—Hort. Ins.: W. S. Sharp, F.R.H.S., Shire Hall, Durham. Asst. Ins.: L. Buss.

ESSEX.—Hort. Lec.: C. Wakely, F.R.H.S., East Anglian Institute of Agriculture, Chelmsford. Ins. in Commercial Hort.: H. Fraser, N.D.H.

GLOUCESTERSHIRE.—Hort. Ins.: J. Coombes, County Education Office, Shire Hall, Gloucester.

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* Obtainable from H.M.S.O., Adastral House, W.C. 2, or any bookseller. 9d. each, post free.

HAMPSHIRE.—Hort. Ins.: C. J. Gleed, N.D.H., F.R.H.S., 92 High Street, Winchester. Asst. Ins.: A. P. King.

HEREFORDSHIRE.—Hort. Ins.: A. J. Manning, High Town, Hereford.

HERTFORDSHIRE.—Hort. Ins.: C. E. Hudson, N.D.H., F.R.H.S., Hertfordshire Institute of Agriculture, Oaklands, St. Albans. Asst. Ins.: E. R. Saltmarsh, N.D.H.

HUNTINGDONSHIRE.—Hort. Ad.: F. Tunnington, County Education Offices, Walden House, Huntingdon.

ISLE OF ELY.—Hort. Sup.: W. G. Kent, N.D.H., F.R.H.S., County Hall, March.

ISLE OF WIGHT.—Hort. Ins.: C. Martin, F.R.H.S., County Hall, Newport, Isle of Wight.

ISLES OF SCILLY.—Hort. Ad.: G. W. Gibson, F.L.S., Council Office, St. Mary's, Isles of Scilly.

KENT.—Asst. Hort.: H. C. Elsdon, N.D.H. Ins. in Commercial Hort.: R. Hart, N.D.A., N.D.D., Borden Farm Inst., nr. Sittingbourne.

LANCASHIRE.—Hort. Ins.: N. J. Macpherson, County Council Farm, Hutton, Preston. Hort. Ins.: W. L. Steer.

LEICESTERSHIRE.—Hort. Ins.: T. G. Bullock, F.R.H.S., 6 St. Martin's, Leicester.

LINCOLNSHIRE (HOLLAND).—Prin. Agric. Org. and Hort. Sup.: J. C. Wallace, M.C., The Kirton (Holland) Agricultural Institute, Boston, Lincs.

LINCOLNSHIRE (KESTEVEN).—Agric. Org., Kesteven Agric. Committee, Jermyn Street, Sleaford.

LINCOLNSHIRE (LINDSEY).—Hort. Org.: J. G. Murray, F.L.S., 286 High Street, Lincoln.

MIDDLESEX.—Hort. Sup.: J. Lawson, 40 Eccleston Square, Westminster, London, S.W. 1. Hort. Ins.: G. W. Pyman. Asst. Ins.: Miss M. Mason, B.Sc.

NORFOLK.—Hort. Ins.: H. Goude, N.D.H., The Shire House, Norwich. Asst. Ins.: E. G. Davison.

NORTHAMPTONSHIRE.—Hort. Ins.: C. F. Lawrance, F.R.H.S., County Farm Institute, Moulton, Northampton. Asst.: H. J. Wyles.

NORTHUMBERLAND.—Hort Ins.: C. W. Mayhew, 8 Westmorland Road, Newcastle-on-Tyne.

NOTTINGHAMSHIRE.—Hort. Sup.: C. Taborn, F.R.H.S., F.I.S., Shire Hall, Nottingham. Asst. Hort. Ins.: H. J. Manser. Asst. Hort. Ins.: R. A. Drummond.

OXFORDSHIRE.—Hort. Ins.: S. Heaton, F.R.H.S., County Offices, New Road, Oxford.

RUTLAND.—Hort. Ins.: J. H. Woolley (part-time), 20 Catmose Street, Oakham.

SHROPSHIRE.—Hort. Ad.: G. T. Malthouse, 5 Belmont, Shrewsbury. Hort. Lec.: Miss M. Heron, N.D.H.

SOKE OF PETERBOROUGH.—No Hort. Ins. Clerk to the Education Committee, Committee Clerk's Office, Peterborough.

SOMERSETSHIRE.—Hort. Sup.: A. D. Turner, N.D.H., Somerset Farm Institute, Cannington, Bridgwater. Hort. Ins.: J. Glavin, F.R.H.S. Asst. Ins.: J. E. Forshaw. Ins. in Gardening and Head Gardener: K. V. Cramp.

STAFFORDSHIRE.—Hort. Ad.: J. Stoney, F.R.H.S., County Farm Institute, Penkridge, Stafford. Hort. Ins.: C. D. Dempster. Ins. Gard.: J. Apse.

SUFFOLK, East.—Agric. Org., County Hall, Ipswich. Hort. Ins.: T. Payne; W. C. White, N.D.; A. B. Thorn.

SUFFOLK, WEST.—Hort. Ins.: E. G. Creek, Shire Hall, Bury St. Edmunds.

SURREY.—Hort. Ad.: A. E. Burgess, M.B.E., F.R.H.S., County Agricultural Offices, County Hall Annexe, Kingston-on-Thames. Hort.Ins.: C. H. Middleton, F.R.H.S.; C. H. Walkden.

SUSSEX, EAST.—Hort. Sup.: G. C. Johnson, County Hall, Lewes.

SUSSEX, WEST.—Hort. Sup.: F. W. Costin, N.D.H., F.R.H.S., Southgate House, Chichester.

WARWICKSHIRE.—Hort. Ad.: G. H. Nash, N.D.H., County Education Office, Warwick. Asst. Hort. Ad.: C. R. S. Gregory, N.D.H.

WESTMORLAND (*see* CUMBERLAND).

WILTSHIRE.—Hort. Sup.: W. C. Crisp, N.D.H., Polebarn House, Trowbridge.

WORCESTERSHIRE.—Hort. Ins.: H. Patience, Dept. of Agric., Shire Hall, Worcester.

YORKSHIRE.—Hort. Org. and Lecturer: A. S. Galt, the University, Leeds. Hort. Ins.: J. W. Eves; W. Lodge; H. E. Brooks, N.D.H.; F. Hawkins.

WALES.

ANGLESEY.—Hort. Ins.: W. C. Williams, Shire Hall, Llangefni, Anglesey.

BRECON AND RADNOR (JOINT STAFF).—Hort. Ins.: J. G. Watson, F.R.H.S., Agricultural Offices, Builth Wells, Brecon.

CAERNARVONSHIRE.—Hort. Ins.: J. Roberts, Madryn Castle Farm School, Bodfean, Caernarvonshire.

CARDIGANSHIRE.—Hort. Ins.: W. Lewis, F.H.R.S., Agricultural Offices, Lampeter, Cardigan.

CARMARTHENSHIRE.—Hort. Ins.: W. Roadley, Pibwrlwyd Farm Institute, Carmarthen.

DENBIGHSHIRE.—Hort. Ins.: C. Roberts, Llysfasi Farm Institute, Ruthin, Denbighshire.

FLINTSHIRE.—Hort. Sup.: H. L. Jones, N.D.H., County Education Offices, Mold, Flintshire.

GLAMORGANSHIRE.—Hort. Sup.: E. W. Withers, 5 Pembroke Terrace, Cardiff. Hort. Ins.: A. D. Harrison.

MERIONETHSHIRE.—Hort. Ins.: C. H. Jones, F.H.R.S., N.D.H., County Offices, Dolgelly, Merioneth.

MONMOUTHSHIRE.—Hort. Ins.: W. H. C. Bevan, F.R.H.S., Monmouthshire Agricultural Institution, Usk, Mon.

MONTGOMERYSHIRE.—Hort. Ins.: O. Oakley, Agricultural Office, Welshpool, Mont.

PEMBROKESHIRE.—Hort. Ins.: H. W. Evans, County Offices, Haverfordwest, Pembs.

RADNORSHIRE (*see* BRECON).

Institutions in England and Wales recognised by the Ministry in respect of the provision of Horticultural education marked *.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

Director of Food Investigation : Sir William B. Hardy, D.Sc., LL.D., F.R.S., 16 Old Queen Street, Westminster, S.W. 1. *Telephone :*

Victoria 7940. *Telegrams:* Resciendus, Parl, London. Address inquiries to the Director.

Investigations are undertaken on the advice of the Food Investigation Board (*Chairman:* Sir Joseph G. Broodbank), which supervises the work. Investigations on the storage of fruit and vegetables are carried out at the Low Temperature Research Station, Cambridge (in conjunction with the University). There is a small laboratory at Covent Garden Market where a survey is made of the various types of wastage in produce passing through the market. A new station, Ditton Laboratory, East Malling, nr. Maidstone, is being erected where further research on the storage of fruit will be conducted.

PUBLICATIONS: No. 12. *Brown Heart—A Functional Disease of Apples and Pears,* 4/6. No. 16. *Canned Fruit,* 1/3. No. 20. *The Problems of Apple Transport Overseas,* 9d. No. 21. *The "Gas" Content and Ventilation of Refrigerated Holds carrying Apples,* 1/3. No. 22. *"Brown Heart" in Australian Apple Shipments,* 1/3. No. 23. *Functional Diseases of Apples in Cold Storage, Bitter Pit in Apples,* 1s. No. 29. *Temperature Conditions in Small Cold Storage Chambers containing Fruit,* 1s. No. 30. *Gas Storage of Fruit,* 1s. 9d —H.M.S.O. Adastral House, Kingsway. W.C. 2.

DEPARTMENT OF AGRICULTURE FOR SCOTLAND.

Secretary: Sir Robert Greig, M.C., LL.D., M.Sc., F.R.S.E. *Asst. Secretaries:* C. Weatherill, J. Mather, F.S.I., H. M. Conacher, J. M. Caie, M.A., B.L., B.Sc.(Agr.), York Buildings, Queen Street, Edinburgh. *Telegrams:* Boas, Edinburgh.

Horticultural Education in Scotland is mainly carried out by the three Agricultural Colleges: Edinburgh and East of Scotland College of Agriculture; North of Scotland College of Agriculture; West of Scotland Agricultural College, 6 Blythswood Square, Glasgow.

DEPARTMENT OF AGRICULTURE, IRISH FREE STATE.

Telegrams: Resources, Dublin. *Telephone:* Dublin 61521.

HORTICULTURAL INSTRUCTORS.

CARLOW.—J. McKenzie, c/o Secretary, Main Street, Tullow. CAVAN.—J. MacNamara, Courthouse, Cavan. CLARE.—J. Grennan, Courthouse, Ennis. CORK.—T. Behan, S. Cavanagh, F. T. Rose, Courthouse, Cork. DONEGAL.—F. W. B. Hume, Courthouse, Lifford. DUBLIN.—P. J. Gray, 11 Parnell St., Dublin. GALWAY.—J. Lombard, P. J. McNicholas, Prospect Hill, Galway. Kerry.—W. F. Earls, Courthouse, Tralee. KILDARE.—W. Tyndall, Co. Offices, Naas. KILKENNY.—E. Purcell, Courthouse, Kilkenny. LAOIGHIS.—J. J. O'Doherty, Courthouse, Portlaoighise. LEITRIM.—Thomas Devine, Co. Hall, Carrick-on-Shannon. LIMERICK.—J. Malone, J. J. Cleary, 82 O'Connell St., Limerick. LOUTH.—J. Harney, Courthouse, Dundalk. LONGFORD.—P. J. Carroll, Richmond St., Longford. MAYO.—Wm. McGarry, T. F. Reilly, Courthouse, Castlebar. MEATH.—J. C. Clarke, Co. Hall, Navan. MONAGHAN.—J. G. Toner, Co. Offices, Main St., Ballybay, Monaghan. OFFALY.—E. Clarke, Co. Buildings, Tullamore. ROSCOMMON.—G. Vennard, Courthouse, Roscommon. SLIGO.—J. J. Curley, Courthouse, Sligo. TIPPERARY (N. R.).—J. Bracken, Court-

house, Nenagh; (S. R.)—J. Dunne, Co. Buildings, Clonmel. WATERFORD.—P. O'Shea, Courthouse, Dungarven. WESTMEATH.—W. J. Young, Technical School, Mulingar. WEXFORD.—W. Hillock, Fortview, Wexford. WICKLOW.—P. Cullen, Courthouse, Wicklow.

MINISTRY OF AGRICULTURE, NORTHERN IRELAND.

Minister: The Rt. Hon. Sir E. M. Archdale, Bart., D.L., M.P. *Permanent Secretary:* James S. Gordon, Esq., D.Sc., C.B.E., Ministry of Agriculture, Wellington Place, Belfast. *Horticultural Inspectors:* E. Turner, Esq., A.R.C.Sc. (I); G. Doolan, Esq. *Telegrams:* Tillage, Belfast. *Telephone:* Belfast 5301–2.

PUBLICATION: *Journal*, annually, 2s. 6d. net.

Horticultural Instructors employed by the County Committees of Agriculture in Northern Ireland:—

COUNTY ANTRIM: R. H. Clarke, Esq., 21 Ridgeway Street, Stranmillis Road, Belfast; W. R. Saunderson, Esq., Eden Vale, Ballymoney Rd., Ballymena. COUNTY ARMAGH: J. Hagan, Esq., Roseneath, Armagh; J. Scrimgeour, Esq., Derrybeg, Camlough Rd., Newry. COUNTY DOWN: D. W. Baillie, Esq., Ballydown, Banbridge; A. E. Johnston, Esq., A.R.C.Sc. (I), Moville, Donaghadee Rd., Newtownards. COUNTY FERMANAGH: J. C. Johnston, Esq., The Picotee, Enniskillen. COUNTY LONDONDERRY: A. McL. May, Esq., Nedeen, Coleraine. COUNTY TYRONE: D. McKenzie, Esq., c/o Mrs. McCausland, High St., Omagh.

SEED TESTING AND PLANT DISEASES RESEARCH DIVISION.
Director: Prof. S. P. Mercer, B.Sc., Queen's University, Belfast.

PLANT BREEDING RESEARCH DIVISION.
Director: I. W. Seaton, B.Sc., Stormont, Belfast.

ALDERSEY HALL HORTICULTURAL COLLEGE, Handley Cheshire.

Principal: Miss C. Wheeler, N.D.Hort.

Fees: 90 and 100 guineas per annum. Publications: *Prospectus* (on application); *College Gazette*, annually.

AVONCROFT COLLEGE.

Principal: J. Dudley, M.Sc., Avoncroft College, Offenham, Evesham. *Hort. Ins.:* R. C. Wood, N.D.A. *Telephone:* Evesham 277.

The Horticultural Course includes Plant Biology, Soils, Fertilisers, Recognition and treatment of Pests, Bacteria. Fees: £75 per annum, inclusive of board and residence in the College.

BINGLEY. *See* Leeds University.

BORDEN FARM INSTITUTE

Instructor in Commercial Hort.: R. Hart, Borden Farm Institute, Nr. Sittingbourne, Kent. *Telegrams and Telephone:* Sittingbourne 239.

Founded 1929, to provide technical education to sons of tenant farmers, etc., who wish to take up farming and/or Fruit growing as

a livelihood. Pupils taken for six months and one year courses. Terms commence October, January, and April. Fees, including board and lodging, £1 per week for residents in Kent, £2 per week for extra-territorial.

BOTLEY. *See* Hampshire C.C. Fruit Station.

BRIDGWATER. *See* Nat. Inst. Agric. Botany.

BRISTOL UNIVERSITY.

Director: Professor B. T. P. Barker, M.A.

There is a special Department of Agriculture and Horticulture associated with the National Fruit and Cider Institute at Long Ashton and the Fruit and Vegetable Preserving Station at Chipping Campden, mainly for research and advice.

BRITISH EMPIRE VEGETATION COMMITTEE.

Chairman: Professor A. G. Tansley, M.A., F.R.S. *Secretary:* Dr. T. F. Chipp, Royal Gardens, Kew.

A temporary body appointed by the Imperial Botanical Conference held in London in 1924, to carry into effect certain resolutions of the Conference. The Committee secured the collaboration of a number of prominent investigators throughout the Empire, who contributed papers embodied in *Aims and Methods in the Study of Vegetation*, published by the Committee and the Crown Agents for the Colonies. The Committee has also undertaken the preparation of Abstracts of publications dealing with the vegetation of the Overseas Empire. These are published as a Supplement to the *Journal of Ecology*, but are also obtainable separately from the Secretary.

BRITISH MUSEUM (NATURAL HISTORY), Cromwell Road, S.W. 7 (Department of Botany).

Keeper: J. Ramsbottom, M.A., O.B.E. *Telegrams:* Nathismus, Southkens, London. *Telephone:* Western 6323.

THE DEPARTMENT OF BOTANY.—The botanical collections date from the foundation of the Museum in 1753. In that year the nation acquired the extensive collections of Sir Hans Sloane, and the Museum was founded to house these and two important collections of prints and drawings, and manuscripts respectively. Sloane's herbarium, consisting of more than 300 large folio volumes, contained dried plants from all parts of the world. It is still kept intact. It was transferred in 1827 to a separate botanical department which was established to receive the great herbarium accumulated during his life-time by Sir Joseph Banks, and containing among many other collections the plants obtained by Banks during Capt. Cook's first voyage of discovery (1768–1771). Banks' herbarium was bequeathed to the British Museum. The first Keeper of the Department was the eminent botanist Robert Brown, who had been Banks' librarian and curator, and had himself made extensive plant-collections in New Holland, as Australia was then called, on Capt. Flinders' expedition, which he accompanied as surgeon and naturalist. Since its foundation the Department has grown continuously, and is now one of the most valuable botanical collections in the world. It is of special importance from the large number of historical collections which it contains.

The removal from its cramped quarters at the mother building in Great Russell Street in 1881 to the Natural History Museum, South Kensington, gave opportunity for more convenient arrangement and for expansion of the collections. As at present arranged on the upper floor of the East Wing of the Museum, the Department consists of an exhibition gallery, open to the public, and the herbarium and library for the use of students. The main feature of the exhibition gallery is a systematically arranged illustration of the great groups of the plant-kingdom and their families. A complete series of British plants is exhibited. Features of interest in the life and manner of growth of plants are illustrated in separate exhibits. Three bays in the Central Hall are also devoted to botany. The herbarium consists of three sections: the great herbarium, containing the collections of flowering plants from the whole world outside Europe; the European and the British herbarium, also of flowering plants; and the Cryptogamic herbarium, containing the remaining groups, namely Ferns, Mosses, Seaweeds, and Fungi. Attached to the latter is a well-equipped laboratory. The herbarium is consulted by workers from all parts of the world, as well as by students at home. The library has been formed especially with a view to taxonomic work, and is extremely rich in this aspect of botany. A series of publications prepared in the Department is issued by the Trustees. These include monographs of large groups of plants, as well as smaller handbooks helpful to amateurs. A large series of coloured postcards has been prepared, illustrating our native flora.

A. B. RENDLE.

PUBLICATION: *Natural History Magazine*, quarterly, 1s. 1d. post free.

CAMBRIDGE UNIVERSITY.

HORTICULTURAL RESEARCH STATION.—*Director :* Sir R. H. Biffen. Established in 1924 in co-operation with the Ministry of Agriculture.

CHADACRE AGRICULTURAL INSTITUTE,* Hartest, Bury St. Edmunds, Suffolk.

Principal: W. R. Seward, N.D.A., Dip. Agr. (Wye). *Telegrams and Telephone:* Hartest 4.

Pupils (45). Boys and girls. Fees: Boys free; Girls 15/- per week. Terms: Michaelmas to Lady Day, 2 winters course for boys. May-July, 3 months course for girls. Publication: *Annual Report*, issued in March.

CHESHIRE SCHOOL OF AGRICULTURE.*

Horticultural Superintendent : W. E. Shewell-Cooper, C.D.H.(Lond.), F.R.H.S. *Assistant Lecturer:* C. Savidge, C.D.H.(Reading). *Head Gardener and Practical Inst.:* P. Shaw, M.M., R.H.S. Cert. *Address:* Cheshire School of Agriculture, Reaseheath, Nantwich. *Telephone:* Nantwich 5385. Hort. Sup. Nantwich 5206.

Courses provided for sons and daughters of fruit-growers, market gardeners, and others taking up (1) posts as instructors, (2) commercial and (3) private horticulture. Men students reside at Reaseheath Hall (Fees—County, £1 per week; Extra County, £1 15s.). Women

students in the New Hostel (separate rooms) (Fees—County, 15s. per week; Extra County, £1 10s.). Day students (Fee, 2s. 6d. per day). First and second year courses from October to June. Practical work in the summer (optional). All students must have a year's practical work before taking lectures. First and second year Certificates offered and students take the R.H.S. Certificate. Scholarships (Free, and Half Fees) offered annually by the County Education Committee and by the Ministry of Agriculture. The curriculum includes Commercial Fruit Culture and Vegetables, Cut Flowers for Market, Flowers and Shrubs (ornamental), Glass-houses, Nursery Work, Preserving Fruit and Vegetables, Bee-keeping, Chemistry, Entomology, Biology, Mycology, Surveying, and Book-keeping. There are over 21 acres divided into orchards, experimental land, market gardens (fruit and vegetables), shrubberies, lawns, herbaceous borders, etc., for experiments, growing for market, and for private gardening work.

CHESHUNT EXPERIMENTAL AND RESEARCH STATION.

Director: W. F. Bewley, D.Sc. *Telegrams:* Research Station, Cheshunt. *Telephone:* Waltham Cross 150. *Station:* Cheshunt, L.N.E.R. All communications to the Secretary, Experimental and Research Station, Cheshunt, Herts.

PUBLICATION: *Annual Report,* 10s. 6d.

The purpose of this Station is to investigate the many problems connected with the cultivation of plants under glass. The equipment consists of a Laboratory, Offices, and twenty Experimental Glass-houses. There is a staff of eight scientific investigators under the direction of Dr. W. F. Bewley. The Station welcomes inquiries from growers of glass-house produce who may wish to seek advice.

CHIPPING CAMPDEN RESEARCH STATION.

Acting Resident Director: F. Hirst, M.Sc., A.R.C.Sc., University of Bristol Fruit and Vegetable Preservation Research Station, Campden, Glos. *Telephone:* Campden 9. *Station:* Campden, G.W.R.

The Station investigates Research problems on the preservation of fruit and vegetables, and is the advisory centre for the canning industry. Ten-day courses of instruction are given in summer. Fees: £2 2s. (Tuition and materials) £3 10s. (Board for Students in residence.) Men and Women.

PUBLICATIONS: Leaflets on the preservation of fruits and vegetables by means of jam, jelly, canning, bottling, etc., 1d. each, plus postage.

CIRENCESTER. *See* Royal Agricultural College.

CLAPHAM SCHOOL OF NATURE STUDY AND GARDENING.

Principals: Miss F. Collins; Miss C. Cracknell, N.D.H., School of Nature Study and Gardening, Clapham, nr. Worthing, Sussex. *Station:* Angmering. *Telegrams:* Patching.

Certificate two years. Short courses arranged. Fees £100 to £132 per annum, inclusive. Practical and theoretical training in all general branches of Gardening, Glass-house work, Bees, Poultry, and Dairy. Preparation for R.H.S. examinations.

CORSTORPHINE SEED TESTING AND PLANT REGISTRATION STATION.

Director: T. Anderson, East Craigs, Corstorphine, Midlothian. *Telegrams and Telephone:* Corstorphine 83. Fees: £5 5s. a term—June-September. Publication: *Biennial Report.*

The Seed Testing Station deals with the control of the sale of seeds in terms of the provisions of the Seeds Act, 1920, and provides certificates of analysis of seeds to merchants and others to enable them to comply with the obligations imposed on them by the Act.

CRAIBSTONE SCHOOL OF RURAL ECONOMY.

Lady Superintendent: Mrs. H. Bisset. *Secretary:* A. A. Prosser, 41½ Union Street. Aberdeen.

Girls and young women are received for a Course of Training which includes Gardening and Beekeeping. Courses commence January and July. Fee, £35 for the course, inclusive of tuition, residence, board and laundry (payable in advance). Bursaries are granted to suitable applicants by the Education Authorities in the College Area.

EAST ANGLIAN INSTITUTE OF AGRICULTURE.*

Acting-Principal: Alexander Hay, N.D.A., N.D.I. *Lecturer and Hort. Sup.:* C. Wakeley, F.R.H.S. *Lecturer and Advisor in Commercial Hort.:* H. Fraser, N.D.H., F.R.H.S., East Anglian Institute, Chelmsford. *Telegrams:* Agricultural Institute, Chelmsford. *Telephone:* 124 Chelmsford.

Pupils taken for instruction in Agriculture, Dairy, Poultry, and Horticulture. Certificates and Diploma, also Final B.Sc. (Lond.). Fees, £15 per annum. Essex residents half fees. Publication: *Calendar* issued at end of July.

EAST MALLING HORTICULTURAL RESEARCH STATION.

Director: Ronald G. Hatton, M.A., East Malling, Kent. *Telephone:* Aylesford 29. *Telegrams:* Research, East Malling. *Stations:* Aylesford and East Malling Halt, S.R.

The principal subjects under investigation at East Malling may be classified under the headings: (*a*) Pomology, (*b*) Pathology, (*c*) Hop Investigations.

The main lines of work already under investigation and likely to be continued for some years are as follows:—

(*a*) *Pomology.*—Activities include systematic, cultural, and breeding work. The confusion existing with regard to the naming of horticultural varieties necessitated preliminary work in identification, selection, description, and the raising of pure lines. Such work has already been undertaken in the cases of the root-stocks upon which fruit trees are grafted, and also with Black Currants and Raspberries. Upon the cultural side East Malling has set itself to study the effects of various operations upon the plant's individuality. In the case of root-stocks for apples the work has been shared with the Long Ashton Institute. All such work involves a special study of methods of vegetative propagation and subsequent selection and breeding of desirable types of root-stock. Different methods of planting and pruning are being studied in relation to the tree as a whole and to particular varieties. The effects of spray fluids upon the tree, apart from their fungicidal

or insecticidal value, are being traced. The cultural programme has as its object the establishment of the best possible plant under the best growing conditions. In order to establish cultivation upon a sound foundation, an intensive study of the physiology of the plant is essential; hence, in collaboration with the Imperial College of Science, the physiological aspects of root formation, root-stock influence, etc., are being considered.

(*b*) *Pathology*.—The investigations relate to both fungus diseases and insect pests. The true lines of plants established at East Malling afford specially suitable material for study. Different varieties of root-stock and soft fruits show varying degrees of susceptibility to diseases and pests. The susceptibility of apple stocks to the permanent apple aphis, the woolly aphis, and crown gall is under especial study. In many cases resistant plants are being selected or bred (this latter in collaboration with the John Innes Horticultural Institution, Merton) and vegetatively propagated. The effect of different Plum Stocks upon the incidence on the trees of Silver Leaf, and possible preventive and control measures for that disease in the field, are being worked out in conjunction with the School of Botany, Cambridge. The possible reaction of different root-stocks upon the scions grafted thereon is also being carefully observed in the case of apple mildew, canker, and scab. Study is being made of the diseases of Raspberry varieties. Particular attention is also being paid to the bacterial diseases of fruit trees, the brown rot diseases, and the control of apple mildew and scab. The entomological branch is also specialising upon the gall mites, many of which, especially on Black Currants and Rubi, are of great importance to the fruit grower. So-called "Reversion" of currants and other soft fruits is being studied and a beginning has been made in the life-history and control of the apple saw-fly. Reliable methods for estimating the effectiveness of various insecticides in the field are being worked out, especially in connection with winter egg-killing washes.

RONALD G. HATTON.

EAST SUSSEX AGRICULTURAL INSTITUTE,* Plumpton.

Director: R. H. B. Jesse, B.Sc., N.D.A. *Hort. Sup.:* G. C. Johnson, Agricultural Institute, Plumpton, Sussex. *Telephone:* Plumpton 54.

Founded 1926, to meet the needs of Farmers' sons and others who intend to return to farm work on the completion of their course. A limited number of girl students reside in the Farm House; 18 male students reside in the Institute. Terms begin October, January, and April. Fees £1 per week for residents in the county; £1 10s. for extra-territorial.

EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE.

Principal: Professor E. Shearer, M.A., B.Sc. *Hort. Lecturer* J. S. Chisholm. *Asst. Lecturers:* G. M. Stuart, N.D.H., D. G. Henry, N.D.H., J. W. Hull, N.D.H., 13 George Square, Edinburgh. *Telegrams:* Rural, Edinburgh. *Telephone:* Edinburgh 42017.

Degrees in Agriculture and Forestry. Horticultural courses over two winter sessions. Instruction is given at the Demonstration Garden. Diploma and certificates in Horticulture. Fees: (Hort.) £15 15s. first year, £12 12s. second year.

EDINBURGH ROYAL BOTANIC GARDEN.

A course of instruction in Horticulture and Forestry is held for young men who desire to become gardeners and foresters. Entrants are in the position of Probationers, as a special class in the service of the Garden. They must be unmarried, and not over twenty-five. They attend, free of charge, a course of instruction in the sciences underlying the practice and the principles of Horticulture and Forestry, and have the use of the Library and the Reading Room. They receive a grant in aid (subsistence allowance). The curriculum extends from two and a half to three years.

EDINBURGH SCHOOL OF GARDENING FOR WOMEN, Corstorphine, Midlothian.

Principals : Misses Barker and Morrison.

EDINBURGH UNIVERSITY, Botanical Department.

Professor of Botany : William Wright Smith, M.A., F.L.S., F.R.S.E. *Reader in Mycology and Bacteriology :* Malcolm Wilson, D.Sc., F.L.S., F.R.S.E. *Lecturer on Forest Botany and Indian Forest Trees :* James Lindsay Salmond Smith, M.A., B.Sc. *Lecturer on Botany :* James Robert Matthews, M.A., F.L.S., F.R.S.E. *Lecturer on Plant Physiology and Agricultural Botany :* Robert James Douglas Graham, M.A., D.Sc., F.R.S.E.

Instruction in Botany is given to the students of the University in the Royal Botanic Garden.

GOOD EASTER. See Nat. Inst. Agric. Botany.

GREENMOUNT AGRICULTURAL AND HORTICULTURAL COLLEGE, Muckamore, Co. Antrim, Northern Ireland.

Principal: R. J. Fannen, A.R.C.Sc., N.D.A. *Instructor in Horticulture and Bee-keeping:* W. J. Chambers.

The Horticultural Course is intended for those who desire to specialise in vegetable and fruit cultivation. Certificates are awarded to those who add to a competent practical knowledge a thorough grasp of the scientific and technical principles involved. Applicants for admission to this course must be over seventeen on October 1st, and must pass an entrance examination. Scholarships covering tuition, board residence, and ordinary medical attendance are provided by each County in Northern Ireland. Preference given to students who have attended a Winter Agricultural Class in the County. Scholarships awarded on result of examination held by Ministry of Agriculture, North Ireland. Fees for non-Scholarship holders, £65 for the Course, inclusive.

GULVAL EXPERIMENTAL STATION.

Hort. Sup.: H. W. Abbiss, N.D.H., County Hall, Truro. *Telegraph and Telephone:* Truro 182. *Station:* Penzance, 1 mile.

Opened 1903. It serves the intensive growers of the Penzance Peninsula as an experimental, advisory, and demonstrative centre. Chief crops: Fruit—apples and soft fruits. Broccoli, spring cabbage, salads, early legumes, bulbs and other flowers, early potatoes and new

crops of commercial value where frost is practically unknown. Students taken. No premium required but no wages given. Open to the public on week-days.

HAMPSHIRE C.C. FRUIT STATION, Botley.

Superintendent: C. J. Gleed, N.D.H., Hort. Sup. Agric. Education Office, 82 High Street, Winchester. *Telegrams:* Fruit Station, Botley.

Founded 1923, mainly to carry out experiments to assist commercial growers in South Hants. Experiments on manuring and in testing the value of different strains and varieties of strawberries are carried on; also testing of commercial varieties and types of Black Currants, Red Currants, Gooseberries, and Raspberries. Visits by appointment with Superintendent. Publication: *Yearly Progress Report.*

HARPER ADAMS AGRICULTURAL COLLEGE,* Newport, Salop.

Principal: Charles Crowther, M.A., Ph.D. *Hort. Lecturer:* G. T. Malthouse.

Instruction in Horticulture is included in Agriculture and Poultry Courses. Fees: £115 per annum.

HAZELBROOK GARDENS, Terenure, Dublin.

Manager : Miss Stella Frost, Gold Medalist, R.H.S.

The Gardens were started to meet the demand for a supply of fresh fruit and vegetables direct to the consumer. Advice is given in various branches of garden work. A certain number of non-resident students are taken for a two years' course of practical and scientific gardening. Students are prepared for the R.H.S. examinations. A Certificate for a high standard of proficiency is given. Fees: 18 guineas per annum.

HERTFORDSHIRE INSTITUTE OF AGRICULTURE.*

Principal : J. Hunter-Smith, B.Sc., N.D.A., N.D.D. *Vice Principal and Hort. Inst. :* C. E. Hudson, N.D.H., F.R.H.S., Herts. Institute of Agriculture. Oaklands, St. Albans. *Stations :* Hill End (L. & N.E.), half a mile; St. Albans (City, L.M.S.), 2 miles. *Telegrams :* Oaklands, St. Albans. *Telephone :* 326.

Founded 1920. Horticulture, Dairying and Poultry-keeping, and Commercial Cropping under Glass. Pupils, not under 16 (both sexes), 40 residential. Fees: County residents 35/–, extra-territorial 50/– per week for board, residence, and tuition. Scholarships offered. Three terms (10–14 weeks). Summer School for Women, 3 weeks Horticultural course, from April 28th. Special short courses for Teachers. Special courses in Commercial Cropping under Glass. Publications: Leaflets, No. 5, *The Pruning of Fruit Trees, with Notes on Fruit Stocks;* No. 6, *Principles of Manuring;* No. 9, *The Control of the Commoner Pests and Diseases.*

HUDDERSFIELD TECHNICAL COLLEGE. *See* Leeds University.

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY.

Chairman of Governing Body : The Rt. Hon. Lord Buckmaster.

Director of Institute : Prof. V. H. Blackman, Sc.D., F.R.S., Imperial College, South Kensington, S.W. 7. *Telephone :* Kensington 6444. *Telegrams :* Scientist, Southkens, London.

The Research Institute in Plant Physiology of the Imperial College is one of the Research Institutes engaged in original investigation in sciences related to Agriculture and as such receives from the Ministry of Agriculture a grant from the Development Commission. The Institute investigates physiological problems in relation to agriculture and horticulture, and works in close association with the Rothamsted Experimental Station, the East Malling Research Station, and the Cheshunt Experimental Station. At present the Institute is engaged on investigations relating, among others, to (1) the effect of minute electric currents on the growth of crops; (2) the effect on the growth of plants of the enrichments of the air with carbon dioxide; (3) the action of fertilisers on the growth of plants in pot-culture; (4) the effect of various conditions on the rooting of cuttings. A study is also being made of the effect of various fertilisers on the physiological behaviour of crop-plants in the field, the rate of growth of the whole plant, the rate of growth of the leaves, the increase in weight, the rate of assimilation of the leaves, etc., being followed throughout the growing season.

V. H. BLACKMAN.

ISLES OF SCILLY EXPERIMENTAL STATION.

Director: Gordon W. Gibson, F.L.S. *Telegrams:* Experimental Station, Scilly.

Founded in 1923. The purpose of this Station is to undertake investigations into the problems affecting the flower and bulb industry and Agriculture of the Islands. The equipment consists of a small Laboratory and 10 acres of ground with glass-house and buildings, where experiments and trials are carried out. Advisory work in the County is undertaken, and responsibility is accepted for the large commercial bulb-treating plant run in connection with the Bulb Diseases (Isles of Scilly) Orders of 1923 and 1924. The Station welcomes inquiries from growers of bulbs who may wish to seek advice.

JOHN INNES HORTICULTURAL INSTITUTION.

Director : Sir Daniel Hall, K.C.B., F.R.S. *Garden Superintendent :* A. Hosking, Mostyn Road, Merton Park, Wimbledon, S.W. 19. *Stations:* Wimbledon (S.R. and District R.), 1 mile; S. Wimbledon (Underground), 1 mile. *Telephone and Telegrams:* Wimbledon 3645.

The work of the Institution is primarily research in genetics and cytology, but a certain number of young gardeners are received for training. Grants are given for maintenance during the course of instruction (two years). Vacancies are advertised annually in late summer.

KENNINGTON NURSERY, OXFORD.

The nursery, situated 2 miles from Oxford, is three acres in extent. It is owned by the Imperial Forestry Institute and maintained by H.M. Forestry Commission. It is used for research, experiment, and for teaching purposes. The research work of the Forestry Commission into the raising of coniferous and broad-leaved trees is located at this

nursery. A number of the investigations conducted have been published in the Forestry Commission Bulletin No. 11. A part of the instruction into methods of nursery practice and silvicultural research is given here to students of the Imperial Forestry Institute and the School of Forestry.

KENT INCORPORATED SOCIETY FOR PROMOTING EXPERIMENTS IN HORTICULTURE.

See East Malling Research Station.

KIRTON AGRICULTURAL INSTITUTE.*

Principal: J. C. Wallace, M.C., Kirton, nr. Boston, Lincs. *Telegrams:* Wallace, Kirton, Boston. *Telephone:* Kirton 36. *Station:* Kirton, L.N.E.R.

Founded 1921. The buildings of the Kirton Grammar School were altered for the purpose. Lecture rooms, teaching laboratory, and private biological and chemical laboratories for the use of the staff, were arranged. There is no residential accommodation provided for staff or students. Students come by road each day, or live in approved apartments in Kirton. The Institute is also the centre for County advisory work. A farm of 100 acres of land is attached. The whole of this area is devoted to experimental purposes, and a considerable amount of experimental work has been done on the potato, wheat, cabbage, broccoli, and sugar-beet crops.

J. C. WALLACE.

LANCASHIRE COUNTY COUNCIL FARM,* Hutton, Preston, Lancs.

Principal: J. J. Green, B.Sc. *Hort. Inst.:* N. J. Macpherson. *Telephone:* Preston 1020. *Telegrams:* Lancs. County Council Farm, Hutton, Preston.

A limited number of pupils are taken. Terms March–May, May–July, July–Sept. Fees, for residence and tuition per term of nine weeks: County residents £9; extra-territorial £16 10s. Publications: Sundry Bulletins.

LAWES AGRICULTURAL TRUST. See Rothamsted.

LEEDS UNIVERSITY.*

Head of Department of Agriculture: Prof. R. S. Seton, B.Sc. *Hort. Lecturer and Organiser:* A. S. Galt. Communications to be addressed to the Professor of Agriculture, The University, Leeds. *Telegrams:* Seton, University, Leeds. *Telephone:* 28367.

The University, acting on behalf of the Yorkshire Council for Agricultural Education, is the organising centre for Agricultural and Horticultural education in the administrative areas of the three Ridings of Yorkshire. A Demonstration Fruit Centre was established at Osgodby, near Selby, in 1921. This can be visited on the first Saturday in each month, or at other times by arrangement.

In-University instruction is confined to a short course of lectures given as part of the Course for the University Diploma in Agriculture. Members of the University staff conduct courses in Horticulture at the Teachers' Training Colleges at Bingley and Leeds, and at Huddersfield Technical College.

LITTLE WILDERNESSE HERB FARM.

Principal: Miss D. G. Hewer, B.Sc., F.R.H.S., Little Wildernesse Herb Farm, Seal, Sevenoaks, Kent. *Telephone:* Sevenoaks 616.

Instruction is given in plant structure and physiology (sufficient to understand the gardening operations involved); care and treatment of the soil; cultivation, life-histories, harvesting, drying, preparation for market, and propagation of special herbs; kitchen gardening; etc. There is a Cottage Hostel for students.

LLYSFASI FARM INSTITUTE,* Ruthin, Denbighshire.

Spring Course, Horticulture, Dairying, Poultry, and Domestic Science, for Women; 8 weeks, April–June.

LONDON, UNIVERSITY OF.

Chancellor: The Rt. Hon. the Earl Beauchamp, K.G., K.C.M.G., P.C. *Academic Registrar:* Edwin Deller, LL.D., University of London, South Kensington, S.W. 7. *Telegrams:* University, Southkens, London. *Telephone:* Kensington 7000.

The University offers Degrees in Agriculture and in Horticulture. The subjects for the Intermediate Examination in Horticulture are Chemistry, Botany, Zoology, Applied Physics, Geology, Surveying; for the Final in Horticulture, Practice of Horticulture, Book-keeping, Principles of Horticulture, and Entomology. Graduates in Horticulture may proceed to the higher Degrees of M.Sc., Ph.D., and D.Sc.

The Course for the B.Sc. Degree in Horticulture extends over three years, and consists of training in Practical as well as Scientific Horticulture.

LONG ASHTON RESEARCH STATION.

Director: B. T. P. Barker, M.A., Prof. of Agric. Biology, Bristol University. *Deputy Director:* T. Wallace, M.Sc., M.C., A.I.C. *Secretary:* E. P. West, Long Ashton, Bristol. *Telephone:* Long Ashton 15. *Station:* Flax Bourton, G.W.R.

The University of Bristol Agricultural and Horticultural Research Station (National Fruit and Cider Institute).

LONG SUTTON. See Nat. Inst. Agric. Botany.

MADRYN CASTLE FARM SCHOOL,* Bodfean, Caernarvonshire.

Summer Course, Horticulture, Poultry, and Bees; 12 weeks, April–July. Fees: £10 10s.;[1] extra-territorial £15. Special courses in Horticulture 25s. per week.

MANCHESTER UNIVERSITY.

Prof. of Bot.: F. E. Weiss, D.Sc., F.R.S. *Lect. Agric. Bot.:* E. Holmes Smith, B.Sc. *Prof. of Zoology:* J. S. Dunkerley, D.Sc., Ph.D. *Lect. Agric. Entomology:* H. W. Miles, M.Sc., N.D.A. *Inst. Gardening:* Edith Middleton (Bangor Univ. Col.). *Telephone:* Ardwick 2681.

No special horticultural course. Students taking B.Sc. Degree or Degree with Honours in Botany, Zoology, or General Science, can then specialise in Horticultural Mycology or Entomology for M.Sc. Degree. For terms, fees, and scholarships apply The Registrar, Victoria University, Manchester.

MIDLAND AGRICULTURAL COLLEGE,* Sutton Bonnington, Loughborough.

Principal: Thos. Milburn, Ph.D., N.D.A., N.D.D.

Founded 1915. Residential, with separate hostels for men and women, and separate central-heated study-bedrooms. Large laboratory and lecture rooms. Courses: One year Certificate Course (commences Sept. 24th), and a twelve weeks' Course in Horticulture (commences April 22nd). Preparation for R.H.S. Junior Certificate. Fees: about £3 3s. 9d. per week, inclusive.

MONMOUTHSHIRE AGRICULTURAL AND HORTICULTURAL INSTITUTE,* Usk, Mon.

Principal and County Agricultural Organiser: G. H. Purvis, F.C.S. *Hort. Lect.:* W. H. C. Bevan, F.R.H.S. *Telegrams:* Purvis, Usk. *Telephone:* Usk 26. *Station:* Usk (G.W.R.).

Course comprises: One year for Certificate; two years for Diploma in General Agriculture, Horticulture, Dairying and Dairy Farming, and Poultry Keeping. Of the 337 acres of the farm twelve are devoted to intensive market gardening, including the cultivation of hard and soft fruits and vegetables, and some five acres to grass orcharding.

NATIONAL INSTITUTE OF AGRICULTURAL BOTANY.

Director: W. H. Parker. *Secretary:* F. C. Hawkes, Huntingdon Road, Cambridge. *Telephone:* Cambridge 1001. *Telegrams:* Niab, Phone, Cambridge.

Founded 1919 to improve the yield and quality of farm crops by discovering the best varieties of each crop, by introducing improved varieties, and by testing the purity and viability of the seed sold to the farmer.

The Crop Improvement Branch is engaged in building up an authoritative body of information about the suitability of different varieties for the varying environments of England and Wales. It tests the relative merits of old and new varieties of agricultural plants at six trial stations—Cambridge, Sprowston (nr. Norwich), Good Easter (nr. Chelmsford), Long Sutton (nr. Basingstoke), Bridgwater (Somerset), and Newport (Salop). At each station there is a resident Crop Recorder. If a new variety included in the trials proves itself superior to the others of its class, the Institute is prepared by agreement with the breeder to grow a bulk of seed and to market it through the seed trade.

The Official Seed Testing Station for England and Wales at Cambridge (*Chief Officer:* A. Eastham) tests some 30,000 samples of seed annually, and issues reports on purity and germination to sellers to enable them to comply with the provisions of the Seeds Act, 1920, and to purchasers for their own information (at reduced fees). The Station is also engaged on important investigations into such problems as seed-borne diseases, the longevity of seeds, and the value of "hard" seeds, and it is in a position to help farmers and merchants with advice on most questions concerning seeds.

The Potato Testing Station (*Superintendent:* H. Bryan) is at Ormskirk, Lancashire, where trials of new varieties for immunity from Wart Disease are carried out annually for the Ministry of Agriculture.

Varieties entered for them are examined by the Institute's Potato Synonym Committee, with a view to preventing the practice of giving new names to old varieties. There are also annual Susceptibility Trials designed to assist plant breeders by testing the reaction of their new seedlings to wart disease at a very early stage. Important field investigations into the resistance of varieties to virus diseases, and the possibility of growing healthy stocks of seed potatoes in England, were begun in 1927. Other potato work at Ormskirk includes the Lord Derby Gold Medal Trials, which test the yield and maturity of new immune varieties, and yield and maturity trials of established varieties. The latter trials are repeated at Kirton and Truro. The Institute is in a position to give growers reliable information about the principal varieties, and takes steps to include in yield and maturity trials all promising new variants at an early stage.

PUBLICATIONS: *Annual Report* (free), which summarises the work in progress. *Journal*, 2/6.

NEWPORT. (*See above*).

NEWTOWN RIGG FARM SCHOOL.

Principal: J. H. Faulder, B.Sc., N.D.D., Newtown Rigg, Penrith. *Hort. Ins.:* D. S. Anderson. *Telephone:* 131 Penrith.

Lectures and demonstrations, but no special Horticultural course.

NORTHAMPTONSHIRE FARM INSTITUTE,* Moulton, Northampton.

Summer Course, 14 weeks (April–July), Dairy, Poultry, and Horticulture. Resident pupils: County 23/– per week, extra-territorial 31/6. Non-resident: County 5/– per week, extra-territorial 10/–.

NORTH OF SCOTLAND COLLEGE OF AGRICULTURE.

Lecturer in Horticulture: Geo. E. Greenhowe. *Assist. Lecturer:* J. Ames. *Secretary:* A. A. Prosser, 41½ Union Street, Aberdeen. *Telegrams:* Nosca, Aberdeen. *Telephone:* 1046.

Horticultural experiments are carried out at the College Experimental Station at Craibstone.

ORMSKIRK POTATO TESTING STATION.

See National Institution of Agricultural Botany.

PIBWRLWYD FARM INSTITUTE,* Carmarthen.

Director: J. L. Lloyd, M.Sc. *Hort. Inst.:* W. Roadley. *Telephone:* Carmarthen 190. *Telegrams:* Farm Institute, Carmarthen.

No experiments are carried out, only a few trials and demonstrations. Winter and Spring Terms of 22 weeks. Fees: £1 2s. 6d. for board, residence, and tuition.

PRIVATE TRAINING CENTRES WHERE PUPILS ARE INSTRUCTED.

†Miss Bradford, Eden Hall, Edenhall, Carlisle.
†The Director, Lyewood Nurseries, Ropley, Hants.
†Miss Swindale, Girton College, Cambridge. Garden. Premium, £80 per annum, resident.

† Private Farms and Gardens where pupils are taken, but which have not been personally inspected by the Women's Farm and Garden Association.

‡Misses Havergal and Sanders, Pusey Fruit and Flower Farm. Faringdon, Berks.
‡Mrs. Chew, Bettyfold Nurseries, Hawkshead, Ambleside.
‡Misses Bergne and Haley, Cottage Nurseries, Harpenden, Herts.
†Miss Fairhead, Maycroft, Shanklin, Isle of Wight. Gardening training. Premium.
†Mrs. Walker, Wallingford French Garden, Berks.
†Miss Clapp, Shenley Nurseries, Shenley, Barnet.

READING UNIVERSITY.*

Practical Instructor and Manager of Fruit Farm and Gardens: A. J. Cobb. *Registrar:* H. Knapman, The University, Reading.

The University offers a B.Sc. (Horticulture) degree. The minimum period of the course of study is three years, divided into two parts: the first of one year being completed by an intermediate examination in Chemistry, Botany, and Zoology, and one other subject (Pure Mathematics, Applied Mathematics, Physics, or Geology); the second of two years, completed by a Final Examination in Horticulture, Chemistry, Botany, Entomology, Surveying, Engineering, and Book-keeping. By studying for a fourth year and passing an examination in Plant Breeding and Genetics, or Plant Diseases, a person may be awarded the pass degree "with distinction." The University offers also a two-years' Diploma Course.

ROTHAMSTED EXPERIMENTAL STATION, LAWES AGRICULTURAL TRUST.

Director: Sir John Russell, D.Sc., F.R.S. *Assist. Director:* B. A. Keen, D.Sc., F.Inst.P. *Sec.:* W. Barnicot, Rothamsted Experimental Station, Harpenden. *Telephone and Telegrams:* Harpenden 21.

Founded in 1842 by the late Sir John Lawes. For nearly sixty years he had the co-operation of Sir J. H. Gilbert. Their joint work constitutes one of the longest and most fruitful partnerships in the history of science. The work of the station arose from early experiments made by Lawes on phosphatic manures, and the successful marketing of his invention of "superphosphate" brought a considerable sum of money, which enabled him to continue the research work, and in 1889 to arrange for its permanent endowment with an income of £2,400, derived from a Trust Fund of £100,000. The classical results of Lawes's and Gilbert's researches have long since found their way into the practice and teaching of agricultural science. The experimental plots that they laid down are still being carried on, and are constantly providing fresh and valuable sources of information on one of the fundamental inquiries of agricultural science—the soil conditions and the growth of the plant both in health and disease. Under the scheme for agricultural research devised by the Ministry of Agriculture and the Development Commission, the work of the station is now concentrated entirely on this inquiry. The station is organised into a number of departments staffed by some fifty highly

† Private Farms and Gardens where pupils are taken, but which have not been personally inspected by the Women's Farm and Garden Association.
‡ Recommended by the Women's Farm and Garden Association.

trained scientists and post-graduate workers. The investigations fall into four great groups—biological, chemical, physical, and statistical—and are carried out under controlled laboratory conditions. The conclusions are tested under practical conditions in graduated stages—firstly, in pots in greenhouses, then in small plots under close observation, and, finally, under full field conditions. The field tests are made not only at Rothamsted, but at many carefully chosen centres throughout the country, so that a wide range of climatic and soil conditions is obtained. Although the main purpose of the station is to obtain knowledge in as reliable and accurate a form as the resources of modern science permit, every endeavour is made to keep in close touch with the practical problems in the industry itself. Visits of parties of farmers and horticulturists to the station are welcomed. In the winter months various members of the staff give lectures to farmers' and horticultural associations on a variety of subjects connected with the industry. Particulars of arrangements for visits and subjects of lectures can be obtained from the Secretary.

ROYAL AGRICULTURAL COLLEGE, Cirencester.

Principal: J. A. Hanley, A.R.C.S., Ph.D. *Telephone:* Cirencester 29. *Telegrams:* Hanley, Cirencester. *Stations:* Cirencester (G.W.R.), 1 mile; Cirencester (M. and S.W.R.), 1½ miles.

One-year course in Agriculture and Horticulture. Two-year Diploma course in Agriculture and Estate Management.

ROYAL BOTANIC GARDENS, KEW.

There is no public school for garden pupils connected with Kew, but Student Gardeners are taken for a limited period of training. Applicants must be unmarried, between twenty-one and twenty-five years of age, and have had not less than four years' employment in good gardens or nurseries.

ROYAL BOTANIC SOCIETY OF LONDON PRACTICAL GARDENING SCHOOL.

Principal: Miss M. McCammond Jack, Inner Circle, Regent's Park, N.W. 1.

Course of instruction extends over three years and provides sound training in the various branches of Horticulture, outdoor and under glass, and in elementary Meteorology. The Society's Diploma is granted to students who pass the final examination. Certificates are granted for shorter courses. Fees, £30 per annum.

SCOTTISH SOCIETY FOR RESEARCH IN PLANT BREEDING.

SCOTTISH PLANT BREEDING STATION, CRAIGS HOUSE, CORSTORPHINE.

Director of Research: William Robb, N.D.A. *Secretary:* John Stirton, 3 George IV Bridge, Edinburgh. *Telephone:* Corstorphine 81. *Telegrams:* Society, Edinburgh. *Station:* Corstorphine (L.N.E.R.).

The research work carried out by the Society has for objective the production of improved varieties of cultivated plants—mainly those of agricultural importance in Scotland. The crop plants on which

TAMAR VALLEY (ELLBRIDGE) EXPERIMENTAL STATION.

Hort. Superintendent : H. W. Abbiss, N.D.H., County Hall, Truro. *Head Gardener :* F. W. Staddon. *Telegraph and telephone :* Truro 182. *Station :* Saltash G.W.R., 5 miles. *Bus:* Saltash—Callington.

Opened in 1927. Serves the intensive fruit and flower growers of the Cornish side of the Tamar Valley as an experimental, advisory, and demonstrative centre. Chief crops: apples, plums, soft fruit, early vegetables, potatoes, sundry flower crops. Undertakes work in conjunction with the Nat. Inst. of Agricultural Botany, and is a R.H.S. Fruit Sub-station. Distributes stocks and strains of soft fruit to growers in the area served. Students taken. No premium required, but no wages given.

WEST OF SCOTLAND AGRICULTURAL COLLEGE. 6 Blythswood Square, Glasgow.

Lecturer: D. V. Howells, Agric. Dip. (U.C.W.), F.R.H.S. *Asst. Lecturers:* W. Good, F.R.H.S., B. P. Perry, N.D.H., F.R.H.S., A. E. Livingston, F.R.H.S.

WISLEY SCHOOL OF HORTICULTURE.*

Director : F. J. Chittenden, F.L.S., V.M.H.

In 1823 young men, preferably sons of gardeners, were taken into service at the Society's Chiswick Gardens as students and under-gardeners. In 1920 arrangements were made to give twenty war-disabled men a year's training in market gardening and fruit-growing in connection with the Government's land settlement scheme. Thirty students are now taken for training. Applicants for admission as students must be between sixteen and twenty-two years of age, healthy, and free from physical defect. They must also be prepared to perform all kinds of gardening work, including the humblest. Certain scholarships are awarded to assist students.

R.H.S. EXAMINATIONS IN HORTICULTURE.†

National Diploma in Horticulture.—A final Examination in Horticulture conducted by the Society. Established in 1912, with the sanction of the Board of Agriculture, and as a test of real professional ability. For the benefit of Florists, Fruit Growers, Gardeners, Horticultural Inspectors, Horticultural Instructors, Landscape Gardeners, Market Gardeners, Nurserymen, Public Park Gardeners, and Seedsmen.

Teachers' Examinations in School and Cottage Gardening.—Not exclusively confined to members of the Scholastic Profession, but open to all candidates who can furnish a satisfactory Certificate of having done practical work. This Examination has been revised by the Society's Board of Examiners and an Advanced Section has been introduced with practical work.

General Examination for students at County Council Schools, Technical Institutes, Schools, Gardeners' Mutual Improvement Societies,

† The Regulations and Syllabus for any of the Examinations can be obtained by writing to the Secretary and enclosing a stamped addressed foolscap envelope for reply.

and other bodies to promote instruction in practical Horticulture. Seniors eighteen years of age and over, Juniors under eighteen.

Scholarships.—The Major Scholarship of the value of £50 a year for two years awarded on the results of an examination designed to test the Candidate's ability to profit by a course of instruction in Horticulture. Questions will not be confined to Horticulture. Candidates must be of the male sex and between the ages of eighteen and twenty-two years. Tenable for two years, the first year at least must be at the Society's School of Horticulture at Wisley. Intending candidates should apply for further particulars to the Secretary, Vincent Square.

The Knott Scholarship of £30 a year for two years, established by Sir James Knott, Bart., is also offered for award on the same conditions.

Four Scholarships, carrying remission of fees and a weekly maintenance allowance up to 35s., are also available at Wisley for young gardeners with at least three years' experience in private gardens or nurseries, and appointments to these are made after due consideration of experience, attainments, and other circumstances.

Entries, except for National Diploma, should be made on the form in the syllabus, obtainable from the Secretary, R.H.S., Vincent Square, S.W.1.†

WORSHIPFUL COMPANY OF GARDENERS, THE.

Master: J. Edward N. Sherwood, Esq., J.P. *Clerk of the Company:* E. A. Ebblewhite, Esq., LL.D., 5 Essex Court, Temple, E.C. 4.

The Guild existed as a Fraternity in 1345, and was incorporated by Letters Patent, 18th September, 3 James I, 1605, as "The Master, Wardens, Assistants, and Commonalty of the Company of Gardeners of London." Its privileges have been further secured by Royal Charters 9th November, 14 James I, 1616; 3rd December, 10 Charles I, 1634; and 9th June, 5 Edward VII, 1905.

The Freedom of the Company may be obtained: (1) By servitude (having been bound to a Freeman, according to the custom of the City). (2) By patrimony (being the son or daughter of a Freeman, born after the admission of the father, and having attained the age of twenty-one years). (3) Gift or Honorary Freedom. (4) By redemption or purchase.

Sons of Citizens and Gardeners are eligible for grant of £20 for apprenticeship from the Trustees of "John Land's Gifts." Loans are made to Freemen under certain conditions. Children of Freemen, or Freewomen, are eligible under certain conditions for education at the Freemen's Orphan School and Collyer's School. Freemen, their widows and daughters, in indigent circumstances, are eligible for relief from the Charity Fund. A Scholarship of £50 per annum for two years is offered biennially to the student who passes highest in the R.H.S. Examination. Scholars must study for a year at Wisley, but the second year may go to some other place, at home or abroad, approved by the Company and the R.H.S. The Company's Library (at the Guildhall Library) is available for reference to members, and also to the general public. Meetings and Dinners are held at the Bakers' Hall.

† For dates, see Fixtures for Jan. 13, Feb. 1, March 12, 22, 31, April 30, May 3, June 13, 17, 18, 19, 20.

TAMAR VALLEY (ELLBRIDGE) EXPERIMENTAL STATION.

Hort. Superintendent : H. W. Abbiss, N.D.H., County Hall, Truro. *Head Gardener :* F. W. Staddon. *Telegraph and telephone :* Truro 182. *Station :* Saltash G.W.R., 5 miles. *Bus:* Saltash—Callington.

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WISLEY SCHOOL OF HORTICULTURE.*

Director : F. J. Chittenden, F.L.S., V.M.H.

In 1823 young men, preferably sons of gardeners, were taken into service at the Society's Chiswick Gardens as students and under-gardeners. In 1920 arrangements were made to give twenty war-disabled men a year's training in market gardening and fruit-growing in connection with the Government's land settlement scheme. Thirty students are now taken for training. Applicants for admission as students must be between sixteen and twenty-two years of age, healthy, and free from physical defect. They must also be prepared to perform all kinds of gardening work, including the humblest. Certain scholarships are awarded to assist students.

R.H.S. EXAMINATIONS IN HORTICULTURE.†

National Diploma in Horticulture.—A final Examination in Horticulture conducted by the Society. Established in 1912, with the sanction of the Board of Agriculture, and as a test of real professional ability. For the benefit of Florists, Fruit Growers, Gardeners, Horticultural Inspectors, Horticultural Instructors, Landscape Gardeners, Market Gardeners, Nurserymen, Public Park Gardeners, and Seedsmen.

Teachers' Examinations in School and Cottage Gardening.—Not exclusively confined to members of the Scholastic Profession, but open to all candidates who can furnish a satisfactory Certificate of having done practical work. This Examination has been revised by the Society's Board of Examiners and an Advanced Section has been introduced with practical work.

General Examination for students at County Council Schools, Technical Institutes, Schools, Gardeners' Mutual Improvement Societies,

† The Regulations and Syllabus for any of the Examinations can be obtained by writing to the Secretary and enclosing a stamped addressed foolscap envelope for reply.

and other bodies to promote instruction in practical Horticulture. Seniors eighteen years of age and over, Juniors under eighteen.

Scholarships.—The Major Scholarship of the value of £50 a year for two years awarded on the results of an examination designed to test the Candidate's ability to profit by a course of instruction in Horticulture. Questions will not be confined to Horticulture. Candidates must be of the male sex and between the ages of eighteen and twenty-two years. Tenable for two years, the first year at least must be at the Society's School of Horticulture at Wisley. Intending candidates should apply for further particulars to the Secretary, Vincent Square.

The Knott Scholarship of £30 a year for two years, established by Sir James Knott, Bart., is also offered for award on the same conditions.

Four Scholarships, carrying remission of fees and a weekly maintenance allowance up to 35s., are also available at Wisley for young gardeners with at least three years' experience in private gardens or nurseries, and appointments to these are made after due consideration of experience, attainments, and other circumstances.

Entries, except for National Diploma, should be made on the form in the syllabus, obtainable from the Secretary, R.H.S., Vincent Square, S.W.1.†

WORSHIPFUL COMPANY OF GARDENERS, THE.

Master: J. Edward N. Sherwood, Esq., J.P. *Clerk of the Company:* E. A. Ebblewhite, Esq., LL.D., 5 Essex Court, Temple, E.C. 4.

The Guild existed as a Fraternity in 1345, and was incorporated by Letters Patent, 18th September, 3 James I, 1605, as "The Master, Wardens, Assistants, and Commonalty of the Company of Gardeners of London." Its privileges have been further secured by Royal Charters 9th November, 14 James I, 1616; 3rd December, 10 Charles I, 1634; and 9th June, 5 Edward VII, 1905.

The Freedom of the Company may be obtained: (1) By servitude (having been bound to a Freeman, according to the custom of the City). (2) By patrimony (being the son or daughter of a Freeman, born after the admission of the father, and having attained the age of twenty-one years). (3) Gift or Honorary Freedom. (4) By redemption or purchase.

Sons of Citizens and Gardeners are eligible for grant of £20 for apprenticeship from the Trustees of "John Land's Gifts." Loans are made to Freemen under certain conditions. Children of Freemen, or Freewomen, are eligible under certain conditions for education at the Freemen's Orphan School and Collyer's School. Freemen, their widows and daughters, in indigent circumstances, are eligible for relief from the Charity Fund. A Scholarship of £50 per annum for two years is offered biennially to the student who passes highest in the R.H.S. Examination. Scholars must study for a year at Wisley, but the second year may go to some other place, at home or abroad, approved by the Company and the R.H.S. The Company's Library (at the Guildhall Library) is available for reference to members, and also to the general public. Meetings and Dinners are held at the Bakers' Hall.

† For dates, see Fixtures for Jan. 13, Feb. 1, March 12, 22, 31, April 30, May 3, June 13, 17, 18, 19, 20.

SOCIETIES

The Editor will be grateful if Secretaries of Societies will send corrections and additions for 1931 *as early as possible.*

For dates of Hort. Shows, see p. 313.

* *Affiliated to the R.H.S.* ** *R.H.S. Kindred Socs.* † *Affiliated to the National Sweet Pea Soc.* ‡ *Affiliated to National Rose Soc.*

Note re Awards.—See previous issues. Owing to pressure on space these are not included in this issue.

ABBEY PARK FLOWER SHOW.*

Superintendent: R. Lisle, Abbey Park, Leicester. Founded 1889.

ABERGAVENNY AGRIC. SOC.*

Patron: Major-General The Lord Treowen, C.B., C.M.G. *Sec.:* H. J. Rice, Bro Dawel, Deri Rd., Abergavenny. Founded 1870.

ACCRINGTON & DIST. CHRYSANTHEMUM SOC.

Sec.: A. A. Crabtree, Arden View, Hodder St., Accrington.

ADMIRALTY HORT. SOC.

President: Sir Oswyn A. R. Murray, K.C.B. *Hon. Sec.:* W. G. Cull, Esq., Medical Dept. of the Navy, Queen Anne's Chambers, Tothill St., S.W. 1. Founded 1928. Monthly lectures. Garden materials purchased for members at discount rates. Library: books lent to members.

ALDERLEY EDGE & WILMSLOW HORT. & ROSE SOC.

President: Alick S. Agnew, Esq. *Sec.:* E. E. Loose, Orchard Green, Alderley Edge. Founded 1888.

ALLOTMENTS ORGANISATION SOC. & SMALLHOLDERS LTD.

Sec.: G. W. Giles, 40 Broadway, Westminster, S.W. 1. *Telephone:* Victoria 0716. Organising and propagandist. Co-operative. Non-sectarian and non-political. Gives advice and assistance to allotment and smallholding associations in England and Wales. Is a Central Bureau of Information, supplies literature, etc.

ALNWICK HORT. SOC.

Sec.: Mrs. G. D. Glass, Northumberland St., Alnwick.

ALPINE GARDEN SOC.

President: Sir William Lawrence, Bart. *Hon. Sec.:* Selwyn Duruz, 11 Montagu Gardens, Wallington, Surrey. To encourage the cultivation of Alpine Plants. Information will be furnished to members going abroad to see plants in their native habitats. PUBLICATIONS: *Bulletins.*

ASSOCIATION OF BOTANIC GARDENS AND PARK SUPERINTENDENTS.

President: Mr. W. Besant, Director of Parks, Glasgow. *Sec. and Tres.:* Mr. A. Blackburn, Supt. Parks, 480 Talbot Road, Blackpool. *Telephone:* Blackpool 75.

Founded 1926, to secure the advancement and to facilitate the

acquisition of that knowledge which constitutes the profession of a Park or Botanic Garden Superintendent. Diplomas granted to successful examination candidates.

AYR CHRYSANTHEMUM SOC.

President: J. Durward. *Sec.:* John S. Smith, 42 Robsland Av., Ayr. Founded 1901.

BARE MORECAMBE HORT. SOC.

President: A. V. Hammond, Esq., Milestones, Mayfield Drive, Bare Morecambe, Lancs.

BARROW CHRYSANTHEMUM SOC.

President: Capt. J. Fisher. *Hon. Sec.:* James Bull, 172 Park Av., Barrow-in-Furness.

BARTLEY HORT. SOC.*

President: Maj. R. C. H. Sloane-Stanley. *Hon. Sec.:* Brig.-Gen. T. N. Howard, Woodhayes, Woodlands, Southampton.

BATH & DIST. HORT. SOC.†

President: The Rt. Hon. The Lord Mildmay of Flete. *Sec.:* F. J. Cashnella, 7 Cambridge Place, Bath.

BATH & WEST & SOUTHERN COUNTIES SOC.*

President: Maj.-Gen. T. C. P. Calley, C.B., M.V.O. *Sec.:* F. H. Storr, O.B.E., 3 Pierrepont St., Bath. *Telegrams:* Agriculture, Bath. *Telephone:* Bath 3010. Established 1777.

BATTLE FLORAL & HORT. SOC.*

Hon. Sec.: W. C. Allwork, 72 High St., Battle, Sussex.

BIDEFORD & DIST. HORT. SHOW.

President: Mr. W. B. Seldon. *Sec.:* H. Page, 18 Chanter's Lane, Bideford, Devon. Founded 1889.

BIRMINGHAM & MIDLAND COUNTIES GARDENERS' MUTUAL IMPROVEMENT ASSOC.

President: Dr. Jessie Bayliss Elliott. *Sec.:* Mr. P. G. Catt, The Lodge, Westbourne, Edgbaston. Founded 1880. Lectures and Meetings are held at No. 7 Chamber of Commerce, New St., Birmingham, every Monday evening till the end of March. Library.

BIRMINGHAM CHRYSANTHEMUM, FRUIT & FLORICULTURAL SOC.

President: Roland A. Felton, Esq. *Sec.:* Alfred Noakes, 148 Bristol St., Birmingham. Established 1864.

BLETCHLEY & DIST. HORT. SOC.*

President: Lady Fanny Leon. *Sec.:* Mr. Hedley J. Clarke, 43 Bletchley Rd., Bletchley. *Telephone:* Bletchley 5.

BOARD OF EDUCATION HORT. SOC.

President: Sir Aubrey V. Symonds, K.C.B. *Hon. Sec.:* G. Sangster, Board of Education, Whitehall, S.W. 1. Founded 1927.

BOURNEMOUTH HORT. SOC.*‡

President: The Mayor of Bournemouth. *Hon. Sec.:* E. Chamberlain, Lansdowne, Bournemouth. *Telephone* 396.

BRIGHTON, HOVE & SUSSEX HORT. SOC.*†‡

President: Sir Cooper Rawson, M.P. *Sec.:* H. J. Bingham, 128 Queen's Park Rd., Brighton. Founded 1853.

BRITISH CARNATION SOC.**

Patroness: H.R.H. Princess Mary, Countess of Harewood. *President:* Lady Hudson. *Sec.:* F. W. Alesworth, 17 Avenue Road, Isleworth, Middlesex. PUBLICATION: *The Carnation Year Book.*

BRITISH DELPHINIUM SOC.**

President: The Most Hon. The Marchioness of Londonderry. *Hon. Sec.:* S. Halford Roberts, 3 Warwick Rd., Thornton Heath, Surrey. Founded 1928. To encourage, extend, and improve the cultivation of the Delphinium. PUBLICATION: *Handbook.*

BRITISH ECOLOGICAL SOC.

President & Hon. Sec.: Prof. E. J. Salisbury, D.Sc., University College, London, W.C. 1. Founded 1913 for the study of the ecological relations of plants and animals. PUBLICATION: *Journal of Ecology.*

BRITISH FLORISTS' FEDERATION.

President: C. Engelmann. *Sec.:* C. H. Curtis, F.L.S., 5 Tavistock St., Covent Garden, W.C. 2.

BRITISH GLADIOLUS SOC.**

President: Maj. George Churcher, *Hon. Sec.:* A. E. Amos, F.I.C., F.R.H.S., 10 Bergholt Rd., Colchester. Founded 1926. Certificates new varieties. PUBLICATIONS: *The Gladiolus Annual* and *Calendar.* A lending library is being formed.

BRITISH MYCOLOGICAL SOC.

President: Miss E. M. Wakefield, M.A., F.L.S. *Gen. Sec.:* J. Ramsbottom, O.B.E., M.A., Sec.L.S. British Museum (Nat. Hist.), Cromwell Rd., London, S.W. 7. Founded 1896, for the study of Mycology in all its branches. The Society now fully represents Imperial Mycology (including Lichenology, Bacteriology, and Mycetozoology): there is a sub-committee for Plant Pathology. Mycologists visiting England are invited to attend any meetings. The contact with Horticulture is made through disease caused by fungi. PUBLICATIONS: *Programme for the Year* (January), *Transactions* (Quarterly).

BRITISH PTERIDOLOGICAL SOC.**

President: W. B. Cranfield, Esq., F.L.S., F.R.H.S. *Hon. Sec.:* Dr. F. W. Stansfield, 120 Oxford Rd., Reading. Founded 1891. PUBLICATION: *The British Fern Gazette.*

BUXTON & DIST. CHRYSANTHEMUM SOC.

President: C. Swain, Esq. *Sec.:* A. Nevill, Thornwood Cottage, Carlisle Rd., Buxton. Founded 1905.

CARDIFF & COUNTY HORT. SOC.*†

President: The Rt. Hon. the Earl of Plymouth. *Secs.:* Messrs. Seel, Old Vestry Hall, 75 St. Mary's St., Cardiff. *Telephone:* 350 Cardiff.

CHARFIELD FÊTE & FLOWER SHOW.

President: Sir Stanley W. Tubbs, Bart. *Sec.:* S. Benson, F.R.H.S., The Nursery, Charfield, Glos. *Telephone:* 52 Wotton-under-Edge. Founded 1905.

CHELTENHAM SPA FLORAL FÊTE.

Hon. Sec.: Cyril Cassidy, 438 High St., Cheltenham. *Telephone:* Cheltenham 2100. Founded 1923.

CHIPPENHAM HORT. & HORSE SOC.

President: Lt.-Col. Sir Audley D. Neeld, Bart., D.L., C.B., M.V.O. *Sec.:* W. Small, Market Place, Chippenham.

CHORLEY & DIST. CHRYSANTHEMUM SOC.

Sec.: J. Brimley, 103 Devonshire Rd., Chorley.

CLEVEDON & DIST. HORT. SOC.*†

President: Sir A. Elton, Bart. *Sec.:* E. G. Hole, 13 Old Church Rd., Clevedon, Som. Founded 1869.

CORNWALL SPRING FLOWER SOC.

Patroness: H.M. The Queen. *Hon. Sec.:* Major Godfrey Williams, Tredrea, Perranwell, S.O. *Asst. Hon. Sec.:* Mr. A. P. Worth, Lemon St., Truro.

COUNCIL FOR THE PRESERVATION OF RURAL ENGLAND.

President: The Earl of Crawford and Balcarres, K.T. *Hon. Sec.:* Prof. Patrick Abercrombie, M.A. *Gen. Sec.:* H. G. Griffin, 17 Great Marlborough St., Regent St., W. 1. *Telephone:* Gerrard 4744. Founded 1926, to co-ordinate the efforts of societies, etc., interested in preserving rural scenery (and wild flowers) and artistic and historic features in towns and villages.

COUNTRY GENTLEMEN'S ASSOC., LTD.

The "C.G.A.," Letchworth, Herts; London, and Glasgow. *Telephone:* 195, 196 Letchworth; London, Regent 3052. *Telegrams:* Ruralness, Letchworth. Founded 1902, as a practical business organisation to bring the principle of co-operation within the experience of all interested in the management of land. PUBLICATIONS: *The Estate Magazine* (monthly); *The Estate Book and Diary; C.G.A. Price Books,* etc.

CROWBOROUGH & DIST. HORT. SOC.

President: W. Troy, Esq. *Hon. Sec.:* Mr. J. Baker, Killarney, St. John's, Crowborough.

CROYDON CHRYSANTHEMUM SOC.

President: Francis Allen, Esq., J.P. *Sec.:* T. Aley, The Firs, 29 Highbarrow Rd., Addiscombe. Founded 1881.

CROYDON HORT. SOC.*†‡

President: The Mayor of Croydon. *Sec.:* W. E. Bream, 2 Courtney Rd., Croydon. Established 1869.

DERBYSHIRE HORT. ASSOC.*

Patron: The Duke of Devonshire, K.G. *President:* J. A. Aiton, Esq. *Sec.:* W. Wardman, 5 St. Augustine St., Derby.

DORSET HORT. SOC.

Sec.: H. R. Tuffin, Ranston Gardens, Blandford.

DUNDEE HORT. SOC.*

President: W. H. Buist, Esq., O.B.E., J.P. *Hon. Sec.:* J. M. Martin, J.P., 53 West Port, Dundee. *Telephone:* Dundee 4738. Founded 1826. The Society has a Library, lodged in the Dundee Reference Library. Members may borrow books.

EASTBOURNE HORT. SOC.*†‡

President: The Mayor of Eastbourne, Lt.-Col. Roland Gwynne, D.S.O. *Sec.:* J. Ticehurst, 4 Bakewell Rd., Eastbourne. Founded 1878.

ELGIN HORT. SOC.†

President: Lord Provost Wittet. *Sec.:* Councillor T. L. Mann, 12 South St., Elgin. Founded 1848.

ELSTREE & DIST. HORT. SOC.

President: The Hon. Vicary Gibbs, Aldenham Park, Elstree. *Sec.:* W. J. Pritchard, High St., Elstree.

FAVERSHAM CHRYSANTHEMUM SOC.

President: Capt. C. W. Hastings Wheler, J.P. *Sec.:* Capt. R. A. Darney, F.R.H.S., 1 Alethea Villas, London Rd., Faversham. Founded 1888.

FLORISTS' TELEGRAPH DELIVERY ASSOC., BRITISH UNIT.

President: C. J. Hammond. *Hon. Sec.:* J. S. Brunton, Russell Chambers, Covent Garden, W.C. 2.

GARDEN CLUB.
Managing Director: Mrs. G. Sutor. *Sec.:* Col. Ewen A. Cameron, The Garden Club, Ltd., 96 Chesterfield Gdns., W. 1. *Telephone:* Grosvenor 2972. *Telegrams:* Delphinium, Audley, London. Formed for the benefit of those interested in gardening. Garden Dinners (with Guest of Honour) alternate Tuesdays. Dances.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.
Patron: H.M. The King. *Patroness:* H.M. The Queen. *President:* H.R.H. The Prince of Wales, K.G. *Sec.:* George J. Ingram, 92 Victoria St., S.W. 1. *Telephone:* Victoria 5142. Founded 1838. To relieve Gardeners, Market Gardeners, Market Growers, Nurserymen, Seedsmen, and other persons of like occupation, and their widows, in old age and distressed circumstances.

GLASGOW & WEST OF SCOTLAND HORT. SOC.
President: Sir John Reid, K.B.E., D.L., J.P. *Sec.:* J. Carrick Kerr, 115 St. Vincent St., Glasgow. *Telephone:* Central 55923.

GLENFIELD & KENNEDY HORT. SOC.
Sec.: A. F. Ferguson, Glenfield & Kennedy, Ltd., Kilmarnock.

GREAT YARMOUTH & DIST. HORT. SOC.
President: *Sec.:* D. W. S. Walpole, Anmer, Sandringham Av., Gt. Yarmouth. Founded 1924. Summer Show in July.

GUILD FOR PROMOTION OF GARDENING AMONGST THE BLIND & PARTIALLY BLIND (MYOPE).*‡
President: Mrs. Adolphus Duncombe. *Sec.:* Maj. P. H. Short, D.S.O., 224 Gt. Portland St., W. 1. *Telephone:* Museum 9701.

GUILDFORD & DIST. GARDENERS' ASSOC.*†
President: Alderman W. T. Patrick, J.P. *Hon. Show Sec.:* Mr. P. Pettit. PUBLICATION: *Monthly Journal.*

GUILDFORD & DIST. ROSE SOC.‡
President: William Harvey. *Hon. Sec.:* J. McCraken, Ardwell, London Rd., Guildford. *Telephone:* 1224. Founded 1927.

GUILDFORD CHRYSANTHEMUM SOC.
President: F. F. Smallpiece, Esq. *Sec.:* W. Miles, 44 North Place, Guildford.

HAILSHAM HORT. & SWEET PEA SOC.*†
President: Dr. T. S. Taylor, J.P. *Hon. Sec.:* J. Payne, F.R.H.S., 3 Garfield Rd., Hailsham. Founded 1914.

HAMPSTEAD GARDEN SUBURB HORT. SOC.*‡
President: Herbert P. Merriman, Esq., F.R.H.S. *Hon. Sec.:* Mr Stanley Dudman, F.R.H.S., Twonine, Brookland Rise, N.W. 11. *Telephone:* Speedwell 2976. Founded 1909.

HANLEY HORT. SHOW.*
Sec.: W. Poulson, Town Hall, Hanley.

HARROGATE AGRIC. SOC. & HORT. SHOW.
Patron: H.R.H. Princess Mary, Countess of Harewood. *President:* The Earl of Harewood, K.G., D.S.O. *Sec.:* George Morrell, 1 Commercial St., Harrogate. *Telephone:* 3347 Harrogate.

HAYWARDS HEATH & MID-SUSSEX HORT. SOC.*
President: Col. Stephenson R. Clarke, C.B. *Sec.:* Geo. Prevett, The Rosery, Haywards Heath.

HENFIELD CHRYSANTHEMUM SOC.
President: The Rev. Canon Reginald J. Lea, R.D. *Sec.:* J. M. Musson, Ivy Cottage, Henfield. Founded 1889.

HEREFORD & WEST OF ENGLAND ROSE SOC.††
President: Sir Geoffrey Cornewall, Bart. *Hon. Sec.:* The Rev. C. H. Stoker, Brinsop Vicarage, Hereford. Founded 1867.
HEREFORDSHIRE SPRING FLOWER SOC.*
President: Sir John Cotterell, Bart. *Hon. Sec.:* Mr. W. N. Earle, Lugg Vale, Hereford.
HIGHGATE & DIST. CHRYSANTHEMUM SOC.
President: R. M. Montgomery, Esq., K.C. *Sec.:* W. Kiy, 16 Holmesdale Rd., Highgate, N. 6. Founded 1885.
HITCHIN CHRYSANTHEMUM SOC.*
President: Sir Charles Nall-Cain, Bart. *Secs.:* W. G. P. Clark; J. S. Rusted, 4 York Rd., Hitchin, Herts.
HOLLAND (LINCS.) COUNTY POTATO SHOW.
Sec.: J. C. Wallace, Esq., Agric. Inst., Kirton, nr. Boston, Lincs.
HORTICULTURAL CLUB.
Hon. Sec.: G. F. Tinley, 855 London Rd., Westcliffe-on-Sea. Instituted for the purpose of social intercourse among those who are interested in Horticulture. The Club holds monthly Dinners and Lectures during the Winter and Spring Sessions. Headquarters: St. Ermin's Hotel, St. James's Park, S.W. 1.
HORTICULTURAL EDUCATION ASSOC.
President: Sir William Lobjoit, O.B.E., J.P. *Hon. Sec.:* F. W. Costin, N.D.H., F.R.H.S., Southgate House, Chichester.
HULL & EAST RIDING CHRYSANTHEMUM SOC.
President: Sir Arthur Atkinson, K.B.E. *Sec.:* E. Mennell, 10A Spring St., Hull. Founded 1900.
HULL & EAST RIDING ROSE SOC.‡
President: Sir Arthur Atkinson, K.B.E. *Sec.:* Mr. W. F. Procter, 38 Tavistock St., Hull. *Telephone:* Hull, Central 7450.
IMPERIAL FRUIT SHOW.
Chairman: Sir William Lobjoit, O.B.E., J.P. *Sec.:* J. F. Tamblyn, 5 Bloomsbury Sq., London, W.C. 1. *Telephone:* Holborn 2205. *Telegrams:* Impfrushow, Westcent, London. Established 1921. An annual Exhibition organised by the Imperial Fruit Show, Ltd.
INSTOW SPRING FLOWER SHOW.
Sec.: Miss Hinchliff, Worlington House, Instow, N. Devon. Organised and managed by the Sec. No judges and no prizes.
IPSWICH & DIST. GARDENERS' ASSOC.*
President: W. Bradbury, Esq. *Sec.:* R. Ball, Chantry, Ipswich.
IRIS SOC. OF ENGLAND.**
President: Sir William Lawrence, Bart. *Hon. Sec.:* Geoffrey L. Pilkington, Esq. PUBLICATIONS: *Year Book; Leaflets.*
KINGSTON & SURBITON CHRYSANTHEMUM & GARDENERS IMPROVEMENT SOC.
President: F. G. Wigley, Esq. *Sec.:* W. H. Divers, V.M.H., Westdean, Hook, Surbiton. Founded 1907.
KING'S WALDEN HORT. SOC.
President: Maj. J. F. Harrison. *Secs.:* A. J. Hartless, The Gardens, King's Walden Bury, Hitchin; Edgar Field, Estate Office Buildings, Offley, Herts.
KIRKCONNEL HORT. SOC.
President: J. I. McConnel, Esq., Hoddom Castle. *Secs.:* J. Hardie and T. Smith.

LANCASTER & DIST. HORT. & ALLOTMENT HOLDERS' ASSOC.
President: C. E. Harriss, Esq. *Hon. Sec.:* Wm. Dell, 138 Coulston Rd., Lancaster. Meetings of the Assoc. are held at the Lecture Theatre, Storey Institute, from Sept. to March, on Sats. (usually) at 7 p.m.
CHRYSANTHEMUM SOC.
President: C. E. Harriss, Esq. *Hon. Sec.:* George Thompson, 1 Milking Stile Lane, Lancaster.
LAUNCESTON UNITED GARDEN SOC.†
Hon. Sec.: F. W. R. Blank, Esq., Wooda, Launceston.
LEEDS PAXTON SOC.
President: T. R. Trigg, Esq., F.R.H.S. *Sec.:* F. Stabler, The Gardens, Cookridge Hall, Horsforth, Leeds.
LEICESTERSHIRE AGRIC. SOC.
President: The Duke of Rutland. *Sec.:* P. L. Kirby, 16–18 Halford St., Leicester. *Telegrams:* Land, Leicester. *Telephone:* 1613 Leicester. Founded 1834. First Hort. Show, 1926.
LINCOLNSHIRE DAFFODIL SOC.
President: Col. Swan, C.M.G., J.P. *Hon. Sec.:* J. C. Custance, Halton Rd., Spilsby, Lincs.
LINCOLNSHIRE GARDENERS' ASSOC.*
President: C. H. Newsum, Esq., J.P., D.L. *Sec.:* H. F. Young, 3 Outer Circle Green, St. Giles, Lincoln. Founded 1883. Monthly meetings.
LINNEAN SOC.
President: Sir Sidney F. Harmer, K.B.E., F.R.S. *Librarian and Asst. Sec.:* Spencer Savage. *Zoological Sec.:* Dr. G. P. Bidder. *Botanical Sec.:* J. Ramsbottom, O.B.E., M.A., Burlington House, W. 1. *Telephone:* Gerrard 4940. Founded 1788 by Sir James Smith (then Dr. Smith), who purchased the collections of Linnæus in 1784 from the widow of the Swedish botanist. Work is practically confined to meetings, library, and publications. PUBLICATIONS: *Journal* (1) *Botany*, (2) *Zoology; Transactions; Zoology; Proceedings; List of the Society.*
LIVERPOOL HORT. ASSOC.
President: The Rt. Hon. Henry M. Miller, Lord Mayor of Liverpool. *Hon. Sec.:* W. D. Skinner, Brooklands, Waterloo Pk., Waterloo.
LLANELLY HORT. SOC.*
Sec.: S. E. Bowser, Highlands, Felinfoel, Llanelly.
LONDON CHILDREN'S GARDENS & RECREATION FUND.
President: The Lady Forres. *Hon. Sec:* Lady Lyons, 3 Cambridge Square, W. 2. Founded 1911. To provide gardens in the poorest districts of London, where boys and girls are given a small plot in which to learn, under trained supervision, to grow vegetables and flowers. The child is sole owner of the plot and takes home the produce. The gardens are open after school hours, and are also used by neighbouring schools for Nature Study Classes in the mornings.
LONDON & SOUTH OF ENGLAND VIOLA & PANSY SOC.**
President: Eric Holroyd, Esq. *Sec.:* John H. Little, Brent Tor, Brentwood Rd., Romford, Essex. Founded 1926.
LONDON GARDENS GUILD.*
President: Lieut.-Col. Cecil B. Levita, C.B.E., M.V.O., L.D., J.P., Chairman L.C.C. *Hon. Org. Sec.:* R. Sudell. Offices: 9 Gower Street, W.C. 1. *Telephone:* Museum 9222. Founded 1916. The first Gardens Guild to be formed. Now consists of many branches and affiliated societies. PUBLICATION: *The Guild Gardener.*

LONDON SCHOOL GARDENING ASSOC.

President: Sir A. Daniel Hall, K.C.B., M.A., F.R.S. *Hon. Sec.:* T. J. Child, 95 Arngask Rd., Catford, S.E. 6. *Headquarters:* 95 Belgrave Rd., S.W. 1. Founded 1920. Work is chiefly educational among teachers. Lectures and preparation for R.H.S. Teachers' Exam. School flower shows are organised and A.M. given. Co-operative bulb sale and distribution. Special public lectures occasionally.

MANCHESTER & NORTH OF ENGLAND ORCHID SOC.

President: Alderman H. Astley-Bell. *Sec.:* H. Arthur, The Bungalow, 44 Mere Rd., Blackpool. *Headquarters:* Houldsworth Hall, 90 Deansgate, Manchester.

MANCHESTER PARKS & CEMETERIES DEPTS. SOC.

President: W. W. Pettigrew. *Hon. Sec.:* J. Williams. PUBLICATION: *Journal.*

MARLOW & DIST. CHRYSANTHEMUM SOC.

President: C. Glidden Osborne, Esq. *Hon. Sec.:* H. A. Elkington.

MEN OF THE TREES.

Chairman: Sir Francis Younghusband, K.C.S.I., K.C.I.E. *Hon. Sec.:* The Hon. Mrs. Grant Duff, 16 Mulberry Walk, Chelsea. Founded 1924. First started among African Tribesmen in the Highlands of Kenya by R. St. Barbe Baker, Asst. Conservator of Forests, in 1922. Objects: To encourage the planting and care of trees, to educate public opinion on Forestry needs throughout the world, and to foster the love of trees in every section of the community without distinction of class, race, or creed—especially in the rising generation. PUBLICATIONS: *A Short Account of the Men of the Trees,* by R. St. Barbe Baker, 6d.; *The Tree Lovers' Calendar,* 5s., 48s. per doz.

METROPOLITAN PUBLIC GARDENS ASSOC.

Patrons: H.M. The King, H.M. The Queen. *Sec.:* Basil Holmes, Esq., J.P., C.C., Denison House, 296 Vauxhall Bridge Rd., S.W. 1. *Telephone:* Victoria 5037. Founded by the late Earl of Meath, 1882. Meetings first Wednesday in the month (except August and September). Work includes laying out public gardens and recreation grounds; assisting to preserve open spaces, organising prize competitions for window-box gardens and vegetable gardens, etc.

MIDLAND BANK HORT. SOC.*

President: J. C. Trotter, Esq. *Hon. Sec.:* G. D. Ruffle, Midland Bank Ltd., Poultry and Princes St., E.C. 2. Founded 1924.

MIDLAND DAFFODIL SOC.

President: The Rev. T. Buncombe. *Hon. Sec.:* Herbert Smith, 19 Tenby St. North, Birmingham.

MILTON & DIST. HORT., ETC., ASSOC.*

President: Mrs. Tinker. *Hon. Sec.:* A. S. Clarke, Elmhurst, Elm Av., New Milton, Hants.

MORAY & NAIRN FORESTRY SOC.

President: E. S. Grant, Altyre, Forres. *Sec.:* Chas. G. Asher, Gordon Castle, Fochabors, Morayshire.

NATIONAL AURICULA SOC.

President: K. Thompson, Esq. NORTHERN SECTION.—*Sec.:* C. F. Faulkner, 45 Queen St., Manchester. SOUTHERN SECTION.**—*President:* Francis Whitbourne, Esq. *Sec.:* A. S. Hampton, Esq., 63 Tilehurst Rd., Reading. Founded 1873. First Show at Crystal Palace, April 24, 1877. PUBLICATION: *Report,* 1s.

NATIONAL BULB SOC.**

Hon. Sec.: A. K. Lock, 9 Gower St., Bedford Sq., W.C. 1. *Telephone:* Museum 9222. PUBLICATION: *The Bulb Year Book.*

NATIONAL CARNATION & PICOTEE SOC.**

President: Edmund Charrington, Esq. *Hon. Sec.* (*Southern Section*): A. E. Amos, 10 Bergholt Rd., Colchester. (*Northern Section*): John A. Hewitt, Rock St., Tilsmoor, Sheffield.

NATIONAL CHRYSANTHEMUM SOC.**

President: The Hon. Sir John Ward, Bart. *Sec.:* C. H. Curtis, F.L.S., 5 Tavistock St., Covent Garden, W.C. 2.

NATIONAL DAHLIA SOC.**

President: Reginald Cory, Esq. *Hon. Sec.:* W. E. Chittenden, Merissa, Colborne Way, Worcester Park, Surrey. Founded to encourage, improve, and develop the cultivation of the Dahlia, by holding exhibitions, issuing publications, conducting trials of new varieties, etc. Open to amateurs and professionals. Trials are held at Wisley in co-operation with the R.H.S. PUBLICATION: *The Dahlia Year Book.*

NATIONAL FARMERS' UNION.

President: John Garton, Esq. *Gen. Secs.:* Cleveland Fyfe; J. B. Guild, M.B.E., M.A., 45 Bedford Sq., W.C. 1. *Telegrams:* Fatmesuni, Westcent, London. *Telephone:* Museum 7526 and 7527. The National Farmers' Union, since the amalgamation of the Federation of British Growers with that Organisation, is the national body to which the majority of commercial fruit and vegetable growers belong. The Union has 62 County Branches and 1,000 Local Branches in every administrative County in England and Wales. Sir William Lobjoit is Chairman of the Central Fruit and Vegetables Committee. The N.F.U. is constantly engaged in work of interest to fruit and vegetable growers. The Headquarters Fruit and Vegetables Committee consists of growers from all the important fruit-growing areas in Great Britain. Sub-committees deal with fruit, vegetables, glasshouse produce, and hops. PUBLICATIONS: *The N.F.U. Year Book; The N.F.U. Record* (monthly); *Farmers' Accounts Diary*, 2s. 3d.; *Analysed Account Book*, 1s. 6d. and 2s. 4d.; *Memorandum of the Law relating to the Occupation of Farm Cottages*, 6d. All post free.

NATIONAL GARDENS GUILD.

Patroness: H.M. The Queen. *Hon. Sec.:* Richard Sudell. Offices: 9 Gower St., W.C. 1. Formed to encourage and assist the growing of flowers in all parts of Great Britain, and to federate Gardens Guild branches. Gardens Guild centres have been formed in Birmingham, Cardiff, Manchester, Halifax, Dublin, Liverpool, and Sheffield, and are being formed in all parts of the country. PUBLICATIONS: *The Guild Gardener*, 6d. monthly; *Town Gardening Handbook* (new ed.), 2s. 6d. cloth, 1s. 6d. paper.

NATIONAL PLAYING FIELDS ASSOC.

President: H.R.H. The Duke of York, K.G. *Gen. Sec.:* L. W. Chubb, Esq., 71 Eccleston Sq., London, S.W. 1. *Telephone:* Victoria 9274–5. Founded 1925. AIMS AND OBJECTS: To secure adequate playing fields for all sections of the community; to save open spaces in and around cities and towns; to co-operate with Local Authorities and other Bodies in promoting schemes for recreation throughout the country.

NATIONAL ROSE SOC.**

Patroness: H.M. The Queen. *President:* H. R. Darlington. *Hon.*

Sec.: Courtney Page, 28 Victoria Street, London, S.W. 1. *Telegrams:* Natiorose, Sowest, London. *Telephone:* Victoria 0959. Founded 1876. To encourage, improve, and extend the cultivation of the Rose. SHOWS: Spring Show, Great Summer Show, Show of New Roses, Autumn Show, Provincial Shows. The Dean Hole Memorial Medal is awarded to those who, in the opinion of the Society, have done good work on behalf of the Flower. PUBLICATIONS: *The Rose Annual,* 10s. 6d.; *Enemies of the Rose,* 7s. 6d.; *Select List of Roses, with Instructions for Pruning,* 5s.; *Hints on Planting Roses,* 1s. All free to members.

NATIONAL SWEET PEA SOC.**

President: Samuel Walbruck, Esq. *Sec.:* A. C. Bartlett, 19 Bedford Chambers, Covent Garden, London W.C. 2. Founded 1897. To promote the cultivation, exhibition, and raising of new varieties of Sweet Peas. The principal members of the Society will give lectures on payment of out-of-pocket expenses. Trials of Novelty Sweet Peas are held yearly. PUBLICATION: *The Sweet Pea Annual.* THE HENRY ECKFORD MEMORIAL FUND awards an annual Medal to one who has rendered conspicuous service in the cause of the Sweet Pea. Medalists: 1921, Mr. Robert Bolton; 1922, Mr. S. B. Dicks; 1923, Mr. Charles H. Curtis; 1924, Mr. Thomas Jones; 1925, Mr. Andrew Ireland; 1926, Mr. William Cuthbertson, V.M.H.; 1927, Mr. Alfred Watkins, V.M.H.; 1928, Mr. E. W. King; 1929, Mr. J. Stevenson.

AFFILIATED SOCIETIES (ADDITIONAL TO THOSE MARKED †).

AINSDALE HORT. SOC.: *Mr. John Walmesley,* 25 Station Road, Ainsdale, Southport.

BANGOR HORT. SOC.‡: *Mr. John C. Moore,* 4 College Avenue, Bangor, Co.Down.

BEARSTED AND THURNAM HORT. SOC.: *Mr. F. A. Simmonds,* Bearsted, Maidstone.

BILSTON HORT. SOC.: *Mr. J. W. Pearson,* 146 Wellington Road, Bilston.

BRISLINGTON FLOWER SHOW: *Mr. A. M. Smith,* 42 Manworthy Road, Brislington, Bristol.

CANTERBURY AND WINCHEAP DIST. ALLOT. HOLDERS' ASSOC.: *Mr. A. J. Sole,* 38 Wincheap Street, Canterbury.

CLAY CROSS FLORAL AND HORT. SOC.: *Mr. H. S. Stanley,* East Street, Clay Cross, nr. Chesterfield.

COALVILLE AND DIST. COTTAGERS' HORT. SOC.: *Mr. D. Summers,* 145 Belvoir Road, Coalville Road, Leicester.

CRAWLEY AND DIST. GARDENERS' SOC.: *Mr. Thomas Earl,* Fairview, County Oak, Crawley, Sussex.

DOVER HORT. SOC.‡: *Mr. Ernest H. Fox,* 335 Folkestone Road, Dover.

FAVERSHAM SWEET PEA AND ROSE SOC.: *Mr. H. Cox,* 18 Kingswood Road, Faversham.

FORMBY HORT. SOC.‡: *Mr. J. M. Sykes,* The White Cottage, Formby, Liverpool.

FRODSHAM HORT. AND AGRIC. SOC.: *Mr. Stanley Dennett,* Kingsway, Frodsham, Cheshire.

GREENFIELD PARK SWEET PEA ASSOC.: *Mr. J. B. Ford,* 40 Fairfield Avenue, Greenfield Park, Quebec, Canada.

HALIFAX FLORAL ASSOC.: *Mr. M. H. Howell,* P.O. Box 127, Dartmouth, Nova Scotia, Canada.

HEXHAM GARDENERS' SWEET PEA SOC.: *Mr. G. W. Byerley,* Maryvale, Causey Hill, Hexham.

HIGH LANE AND DIST. HORT. SOC.: *Mr. Alan Hibbert,* Wayside, Windlehurst Road, High Lane, nr. Stockport.

ILMINSTER AND DIST. HORT. SOC.: *Mr. C. W. Wyatt* and *Mr. G. E. Parrett,* Ilminster.

JERSEY HORT. SOC.‡: *Mr. E. G. Merett,* 3 Mulcaster Street, St. Heliers, Jersey.

KNARESBOROUGH AND DIST. HORT. SOC.: *Mr. W. H. Wheeler*, Oakfield, Knaresborough, Yorks.
LLANDUDNO AND DIST. HORT. SOC.: *Mr. A. L. Statham*, The Rock Gardens, Queen's Road, Llandudno.
MANSFIELD HORT. SOC.: *Mr. Wm. Beazley*, 82 Union Street, Mansfield, Notts.
MENSTON HORT. SOC.: *Mr. S. Baker*, Derry Hill, Menston, nr. Leeds, Yorks.
NORTH MARSTON FLORAL AND HORT. SOC.: *Mr. Edward C. Lambourne*, Gransborough Road, North Marston, Winslow, Bucks.
PAUL HORT. SOC.: *Mr. J. H. Murley*, Churchtown, Paul, Penzance.
PEEL SWEET PEA SOC.: *Miss Mary Morrison*, Athol Street, Peel, Isle of Man.
PENWORTHAM AND DIST. AGRIC. AND HORT. SOC.: *Mr. Walter Atkinson*, F.C.A., 25A Winckley Square, Preston.
RINGWOOD SHOW: *Mr. W. H. Hobson*, 19 John Street, Brimington, Chesterfield, Derbyshire.
RISCA AND CROSS KEYS HORT. SOC.: *Mr. S. J. Sullivan*, 17 Exchange Road, Risca, Mon.
SALTAIRE, SHIPLEY, AND DIST. ROSE SOC.‡: *Mr. L. P. Ratcliffe*, 12 Piccadilly, Bradford.
SANDIACRE SWEET PEA SOC.: *Mr. W. Hull*, Stowe House, Derby Road, Sandiacre, Derbyshire.
SHANGHAI HORT. SOC.‡: *Mr. D. McGregor*, Administration Buildings, 15 Hankow Road, Shanghai, China.
SISSINGHURST GARDENERS' AND COTTAGERS' FLOWER AND VEGETABLE SOC.: *Mr. E. L. Morgan*, School House, Sissinghurst, Cranbrook, Kent.
SKIPTON ALLOT. HOLDERS' ASSOC.: *Mr. J. Speight*, 51 Clitheroe Street, Skipton, Yorks.
SLOUGH HORT. AND ALLOT. HOLDERS' SOC.: *Mr. G. Thomas*, 5 La Place de Fort, Mill Street, Slough, Bucks.
SOUTHPORT ALLOT. HOLDERS' AND GARDEN CULTIVATORS' SOC.: *Mr. R. Blundell*, 8 Chase Keys, Southport.
ST. MARTIN'S AND FOREST COTTAGE GARDEN AND HORT. SOC.: *Mr. C. H. Carter*, Les Croisy, Saints Road, St. Martin's, Guernsey, C.I.
STOUGHTON HORT. SOC.: *Mr. A. Drane*, 30 Shepherds Hill, Stoughton, Guildford.
STREATHAM ROSE AND SWEET PEA SOC.‡: *Mr. W. B. Strong*, 6 Killieser Avenue, Streatham Hill, S.W. 2.
SUDBURY, WEMBLEY, AND ALPERTON HORT. SOC.: *Mr. Geo Fruin*, 10, Chaplin Road, Wembley, Middlesex.
TETTENHALL AND DIST. ALLOT. AND GARDEN HORT. SOC.: *Mr. Arthur H. Rudge*, Church Walk, Tettenhall, Wolverhampton.
THE DUNEDIN HORT. SOC.: *Mr. A. D. Miller*, 3 Vogel Street, Dunedin, New Zealand.
THE PROVINCE OF SASKATCHEWAN GOVERNMENT SERVICES ASSOC. HORT. SOC.: *Miss A. Dorothy Call*, Parliament Buildings, Regina, Sask.
TIBSHELF FLORAL AND HORT. SOC.‡: *Mr. Wm. Thomas Harpham*, Colliery Institute, Tibshelf, nr. Alfreton, Derbyshire.
TYRLEY PARISH HORT. SOC.: *Mr. Arthur Hunt*, School House, Hales, Market Drayton.
VERDUN HORT. SOC.: *Mr. W. J. Smith*, 49 Third Avenue, Verdun, Montreal, Canada.
WELLINGBOROUGH SWEET PEA AND ROSE SOC.‡: *Mr. Anthony Allen*, Killick, Swanspool, Wellingborough.
WIDCOMBE SWEET PEA SOC.: *Mr. Geo. T. Short*, 16 Poultenay Gardens, Bath.
WINSCOMBE HORT. SOC.: *Mr. Chas. Pulsford*, Winterhead Hill, Winscombe, Somerset.
YATTON AND DIST. HORT. AND AGRIC. SOC.: *Mr. Walter T. Cox*, Claverham Road, Claverham, nr. Bristol.
YORKTON (SASK.) HORT. SOC.: *Mr. C. Holmes*, Yorkton Hort. Soc., Yorkton, Sask., Canada.

NATIONAL TULIP SOC.**

President: Sir Daniel Hall, K.C.B., Merton, Wimbledon. *Hon. Sec.:* W. Peters, Farcet House, Cambridge. Founded 1849, with the object of promoting the cultivation of the old Florists' Tulip, then a very popular "fancy." Sympathetic help in the formation of a collection extended to recruits who will grow and show.

NATIONAL UNITED ORDER OF FREE GARDENERS FRIENDLY SOC.

Gen. Sec.: George Wright, J.P., F.F.I., 8 High St., Sandbach, Cheshire. *Telegrams:* Gardeners, Sandbach, 37. *Telephone:* Sandbach 37. Established 1820. An Approved Society under the National Insurance Acts. PUBLICATION: *Journal*, monthly 2d.

NATIONAL VIOLA & PANSY SOC.

Patron: Sir William Waters Butler, Bart. *President:* Robert Fife, Esq. *Hon. Sec.:* W. W. Allison, 10 Elland Grove, Tibland Rd., Acocks Green, Warwickshire. Founded to encourage the cultivation of Violas and Pansies. AFFILIATED SOCIETIES: Birmingham Hort. Soc.; Handsworth Allotment Soc.; Harborne Tenants' Soc.; Hugglescote Hort. Soc.; Hurst Hill Viola and Pansy Soc.; Leeds Hort. Soc.; London and South of England Soc.; Manchester and Dist. Soc.; Salford Hort. Soc.; South Vancouver B.C. Hort. Assoc.; Wadhurst Rose and Sweet Pea Show. PUBLICATION: *Report.*

NEWCASTLE & DIST. HORT. SOC.*

President: The Lord Mayor of Newcastle. *Hon. Sec.:* G. W. Patterson, Fawdon, Gosforth, Newcastle. Founded 1891. Shows are held monthly, and a Chrysanthemum Show in November.

NEWPORT & DIST. HORT. SOC.*

President: C. Basham, Esq. *Hon. Sec.:* F. W. Caddy, 95 Stow Hill, Newport, Mon.

NEWPORT SUMMER ROSE SHOW.

President: Sir Garrod Thomas, M.P., J.P., D.L. *Sec.:* H. G. Brooks, 18 Oxford St., Newport, Mon.

NEWPORT CHRYSANTHEMUM SHOW.

President: C. Basham, Esq. *Hon. Sec.:* W. J. Sheppard, 10 Usk St., Newport, Mon.

NORTHAMPTON MUNICIPAL HORT. SOC.††

President: The Mayor of Northampton. *Hon. Sec.:* H. Curtis, Parks Superintendent, Abingdon Park, Northampton. OBJECTS: To promote horticulture, provide healthy recreation, and subscribe to funds for recreation of inhabitants of the Borough.

NORTH OF ENGLAND HORT. SOC.*

President: Lord Brotherton of Wakefield, LL.D., The Hall, Rounday, Leeds, and Kirkham Abbey, York. *Hon. Sec.:* W. Arthur Taylor, Esq., Gresford, Harrogate. *Telephone:* Harrogate 4527. Founded 1911, Reconstituted 1924. To promote the interests of all sections of horticulturists in the North of England.

ORCHID CLUB (THE).

President: Sir William Thom. *Hon. Sec.:* B. J. Beckton, Daisy Bank, Irlams-o'-the-Height, Manchester. Founded 1923. An association of amateurs, whose common ground is interest in Orchids and their cultivation, with the object of promoting good fellowship and understanding among amateurs, and of adding to the knowledge of the natural history, cultivation, and hybridisation of Orchids by the

exhibition of plants, and the periodical inspection of collections, and facilitating discussion thereon, and by stimulating interest in the investigation of the various problems involved. The exhibition of Orchids and the appraisement of their relative merits is accessory to this essential work of the Club. Headquarters: The Houldsworth Hall, Deansgate, Manchester.

PAISLEY FLORIST SOC.

President: Mr. Alex. McGregor. *Sec.:* Thomas Couper, 2 Porterfield Rd., Renfrew. Founded 1782.

PENRITH HORT. SOC.

President: The Rt. Hon. The Earl of Lonsdale. *Sec.:* J. Richardson, 5 Duke St., Penrith.

PENZANCE WESTERN COMMERCIAL HORT. SPRING SHOW.

President: Lord St. Levan. *Sec.:* H. W. Abbiss, 2 Trelawney Rd., Truro. Founded 1923. To improve commercial growing and marketing in the district.

PERSHORE HORT. SOC.

Chairman: W. Wood. *Sec.:* Mr. Fearnside.

PETERBOROUGH AGRIC. SOC.

Sec.: Robert Bibby, Agricultural Offices, Cross St., Peterborough. *Telephone:* Peterborough 349. Founded 1797.

POST OFFICE RESEARCH DEPT. HORT. SOC.

President: S. A. Pollock, Esq. *Sec.:* A. E. Halliday, P.O.Research Station, Dollis Hill, N.W. 2. Founded 1928.

PROFESSIONAL GARDENERS' ASSOC.

President: J. T. McCormack. *Gen. Sec.:* G. Reid, Pollard Hall Gdns., Gomersal. Founded 1920. Headquarters: Guildford Hotel, Leeds. Monthly meetings. *Branches:* Harrogate, Newcastle, Bradford, Huddersfield.

READING GARDENERS' ASSOCIATION.*

President: Frank E. Moring, Esq. *Sec.:* H. G. Cox, 80 Hamilton Rd., Reading.

REIGATE, REDHILL, & DIST. GARDENERS' ASSOC.

President: Sir Jeremiah Coleman, Bart., V.M.H. *Hon. Sec.:* P. Sherlock, 11 Norbury Rd., Reigate, Surrey. Founded 1902. Fortnightly lectures at Ree's Rooms, Warwick Rd., Redhill, Sept.–April.

RHODODENDRON ASSOC.**

President: L. de Rothschild, Esq. *Sec.:* Gurney Wilson, F.L.S., R.H.S. Hall, Vincent Sq., S.W. 1. For particulars apply to the Sec. PUBLICATION: *Year Book.*

ROADS BEAUTIFYING ASSOC. (THE).

President: Col. The Rt. Hon. Wilfrid Ashley. *Hon. Sec.:* Dr. Wilfrid Fox, 34 Chandos House, Palmer St., Westminster, S.W. 1. *Telephone:* Victoria 6543. Founded July 1928. Objects: Planting the roads of Great Britain with suitable trees, shrubs, and plants. To restore natural beauty. To retain existing trees and bits of woodland wherever possible when new roads are constructed.

ROADS OF REMEMBRANCE COMMITTEE.

Hon. Sec.: H. M. Morrison, 47 Victoria St., S.W. 1. Founded 1919. Temporary object—to urge planting trees along highways in remembrance of men killed in the War. Restarted 1927 for practical work: to induce gifts of trees for blossom and fruit; shrubs and flowers; seats for wayfarers; wayside strips of land for planting; trophy milestones; statuary (not only in remembrance of men killed in the War).

ROMSEY & DIST. GARDENERS' ASSOC.*

President: Lt.-Col. W. J. Langford. *Hon. Sec.:* G. F. Frampton, 3 Station Rd., Romsey. Founded 1924. Meetings monthly.

ROYAL AGRIC. SOC. OF ENGLAND.

Patron: H.M. The King. *President:* The Rt. Hon. the Earl of Harewood, K.G., D.S.O. *Sec.:* T. B. Turner, 16 Bedford Sq., W.C. 1.

ROYAL BOTANIC SOC. OF LONDON.

Patrons: H.M. The King, H.M. The Queen, H.R.H. The Prince of Wales. *President:* The Rt. Hon. the Earl of Harewood, K.G., D.S.O. *Sec.:* Henry W. Woodford, Inner Circle, Regent's Park, N.W. 1. *Telephone:* Welbeck 1187 (Office), Welbeck 1074 (Fellows' Rooms). Incorporated 1839 for the " Promotion of Botany in all its branches and its application to Medicine, Arts, and Manufactures, and also for the formation of extensive Botanical and Ornamental Gardens within the immediate vicinity of the Metropolis." Fellows have admission to the Gardens, Fellows' Rooms, Library, and Museum, can introduce visitors, attend Lectures, and can use the hard tennis-courts (extra annual subscription and playing fees). Members have the privilege of admission to the Gardens. Students are admitted on orders for three months, granted free to individuals or classes on the recommendation of the Fellows or recognised teachers or professors. Specimens of plants and flowers are supplied gratuitously to schools and colleges (London area) for study and examination purposes. There is an open-air school for Fellows' children. Among the varied activities of the Society is much educational work. In addition to the Practical Gardening School (*see* p. 269), parties are admitted free from Educational Societies, Natural History Clubs and Schools, and the Curator acts as Conductor. PUBLICATION: *Quarterly Summary and Meteorological Readings.*

ROYAL BOTANICAL & HORT. SOC. OF MANCHESTER.

Patron: H.M. The King. *President:* The Earl of Derby, K.G. *Chairman and Tres.:* H. Broome, Esq., P.O. Box 35, 12 Sackville St., Manchester.

ROYAL CALEDONIAN HORT. SOC.

Hon. President: The Rt. Hon. Sir Herbert E. Maxwell, Bart. *President:* John T. Jeffrey, Esq. *Sec.:* Donald Mackenzie, Esq., 4A St. Andrew Sq., Edinburgh. Founded 1809. Received Charter of Incorporation from King George IV in 1824. Shows held from 1810 with few interruptions: till 1827 in the Hall of the Royal College of Physicians; till 1863 in the Experimental Garden leased from the Barons of Exchequer, and amalgamated with the Royal Botanic Garden in 1865. From 1866 to 1877 the Assembly Rooms, George Street, were used; in 1877 the Shows were transferred to the Waverley Market, and finally to the Industrial Hall. In 1865, 1869, 1875, 1882, 1891, 1905, and in 1925 the Society organised International Exhibitions. Monthly Meetings are held for the discussion of horticultural and allied subjects. In 1921 the Society incorporated the Scottish Horticultural Association, and now carries on the work formerly done by it. PUBLICATION: *Transactions* (Papers read at Monthly Meetings).

ROYAL ENGLISH ARBORICULTURAL SOC.

President: W. B. Havelock, Esq. *Sec.:* J. E. Davidson, Estate Office, Haydon Bridge, Northumberland. Founded 1882. PUBLICATION: *Quarterly Journal of Forestry* (free to members).

ROYAL GARDENERS' ORPHAN FUND.

Patron: H.M. The Queen. *Sec.:* A. C. Bartlett, 19 Bedford Chambers, Covent Garden, W.C. 2. Committee meets third Wednesday in the month.

ROYAL GUERNSEY AGRIC. & HORT. SOC.*

Patron: H.M. King George V. *President:* A. W. Bell, Esq. *Hon. Sec:* Ernest de Garis. Founded 1842. For mutual help and guidance, and for the public good. To further among other things Agriculture and Horticulture, and promote the highest standard of horticultural production.

ROYAL HORT. & ARBORIC. SOC. OF IRELAND.

Patron: H.M. The King. *President:* The Most Noble the Marquis of Headfort. *Hon. Sec.:* Sir Frederick W. Moore, M.A. *Sec.:* Edward Knowldin, F.R.H.S., 5 Molesworth St., Dublin. Founded 1830, on what appears to have been the basis of an original society organised by the Huguenots in Dublin. Queen Victoria granted the privilege of the title " Royal," subsequently continued by King Edward and King George. Members are admitted to the Walpole Gardens (*see* p. 245) with five friends, on all days except Saturdays, Sundays, and Bank Holidays. PUBLICATIONS: *Annual Report*, with Schedules of Prizes for Spring and August Shows.

ROYAL HORTICULTURAL SOC.

Patrons: H.M. The King, H.M. The Queen, H.M. The Queen of Rumania, H.R.H. Princess Mary, Countess of Harewood, H.R.H. The Duke of Connaught. *President:* G. W. E. Loder, Esq., F.L.S. *Prof. of Botany:* Dr. A. B. Rendle, M.A., F.R.S., V.M.H. *Sec.:* F. R. Durham, C.B.E., M.C., R.H.S. Hall, Vincent Sq., S.W. 1. *Telegrams:* Hortensia Sowest London. *Telephone:* Victoria 5563. Founded 1804. Incorporated 1809. The Society was started on March 7, 1804, at a meeting summoned by Mr. John Wedgwood and held at Hatchards, in Piccadilly. Its objects were "to collect every information respecting the cultivation and treatment of all plants and trees," and "to foster and encourage every branch of Horticulture." It received the Royal Charter on April 7, 1809, setting forth that it aimed at "the improvement of horticulture, ornamental as well as useful." In 1811 the first award—a Silver Medal—was made, and in May 1820 the Banksian Medal was instituted. Fêtes for Fellows and friends were held in 1827–9, 1830–1, at the Society's Chiswick Garden, and a Fruit Show was held there in 1833. In 1855 the Society from lack of funds was forced to sell its unique collection of orchids, palms, etc., and in 1859 its most valuable drawings and books. On May 8, 1861, a new charter was granted and the premises at South Kensington were opened with an exhibition. In 1888 the Society's Shows were transferred to the Drill Hall of the London Scottish Volunteers in St. James's St., and held there till the Old Hall in Vincent Sq. was built in 1902 as a centenary memorial. The New Hall was opened in 1928. The first Show at the Temple was held in 1888.

An important branch of the work done by the Society has always been the collection of seeds and plants from all parts of the world, by special collectors sent to places where a variety of new plants could be secured. Among the collectors are the names of such well-known botanical explorers as Fortune, Hartweg, Farrer, Forrest, and Kingdon Ward. It is essentially an Educational Society in both the Practice

and Science of Horticulture. At its Halls it holds Meetings and Shows throughout the year; also lectures by experts on various horticultural topics are frequently given. In 1909 the Masters Lectures were instituted in memory of Dr. Maxwell T. Masters, F.R.S., F.L.S. An eminent scientist is invited to lecture on recent scientific discoveries as applied to horticulture. There are also held occasionally special meetings of allied Societies which are open to holders of Fellows' Tickets. At its gardens at Wisley the Society conducts trials of vegetables, fruits, and flowers, and maintains a School of Horticulture. The Society co-operates with the Ministry of Agriculture in holding the examinations for the National Diploma in Horticulture, and conducts examinations for testing the knowledge of young gardeners and of those who give instruction in horticultural matters in our primary and secondary schools. Arrangements are made by which Fellows can have their gardens inspected and the soil analysed at Wisley. Fellows may obtain information and advice from the Society as to names of flowers and fruits, on points of practice, insect and fungoid attacks, by applying to the Secretary.

The Society is trustee for the Library of the late Dr. Lindley, purchased out of the proceeds of the International Horticultural Exhibition of 1866. Additions are constantly made, both by gift and purchase, and there has thus been formed a large collection of books of horticultural interest, which may be readily consulted by Fellows.

That the Society outgrew its home was a natural consequence of its continued prosperity. At the Annual General Meeting in 1924 the Council obtained authority to acquire a site and erect the New Hall in Greycoat St., Westminster, almost adjoining Vincent Sq.

VICTORIA MEDAL OF HONOUR IN HORTICULTURE.—V.M.H.

Established A.D. 1897, to confer conspicuous honour on those British Horticulturists resident in the United Kingdom, who might from time to time be considered deserving of special honour at the hands of the Society.

1926 ALEXANDER, H. G., Westonbirt Gardens, Tetbury, Glos.
1928 ATKINSON, WM., J.P., c/o Fisher, Son & Sibray, Ltd., Royal Nurseries, Handsworth, Sheffield.
1927 BALFOUR, F.R.S., M.A., D.L., 13 Collingham Gardens, S.W. 1.
1924 BARNES, N. F., Eaton Gardens, Chester.
1923 BARTHOLOMEW, A. C., 75 Tilehurst Road, Reading.
1917 BEAN, W. JACKSON, I.S.O., Royal Gardens, Kew.
1906 BECKETT, EDWIN, Aldenham House Gardens, Elstree.
1922 BILNEY, WILLIAM A., J.P., Monks View, Newbury, Berks.
1922 BOSCAWEN, Rev. ARTHUR T., Ludgvan Rectory, Cornwall.
1916 BOWLES, E. A., M.A., F.L.S., F.E.S., Waltham Cross.
1914 CHEAL, JOSEPH, Lowfield Heath, Crawley.
1917 CHITTENDEN, FREDERICK J., F.L.S., Wisley, Ripley, Surrey.
1908 COLMAN, Sir JEREMIAH, Bart., Gatton Park, Reigate.
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EVENING WORLD FLOWER SHOWS: *G. W. Patterson*, Fawdon, Gosforth, Newcastle-on-Tyne.
EWELL HORT. SOC.: *K. Griffiths*, Sheen Cottage, West St., Ewell, Surrey.
EXPERIMENTAL & RESEARCH STATION: *G. Bell*, Research Station, Cheshunt.
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FALKIRK IRON WORKS HORT. SOC.: *W. Robertson*, Falkirk Ironworks, Falkirk.
FALKLAND ISLANDS HORT. SOC.: *C. A. Parkinson*, Government House Gardens, Port Stanley, Falkland Isles.
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FELTHAM, BEDFONT, HANWORTH ALLOT. SOC.: *W. G. Cossum*, 44 Tachbrook Rd., Feltham, Middlesex.
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GIPSEYVILLE & DIST. HORT. SOC.: *B. Corp*, 23 Priory Grove, Gipseyville, Hull.
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GOFFS OAK COMRADES & CUFFLEY HORT. SOC.: *W. F. Ettridge*, Oldhouse, Goffs Oak, Herts.
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GORRINGE PK. & DIST. ALLOT. ASSOC.: *E. J. Hedge*, 76 Links Rd., Tooting, S.W. 17.
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GRAFFHAM HORT. SOC.: *E. W. Fuller*, Lavington Park Gardens, Petworth.
GRAVESEND ALLOT. SOC.: *E. D. Smith*, The Lodge, Gordon Grounds, Gravesend.
GRAVESEND & DIST. ROSE, CARNATION, & SWEET PEA SOC.†: *P. R. Cook*, 11 Whitehall Rd., Gravesend.
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GREAT SHELFORD HORT. SOC., *W. C. Ecclestone*, Great Shelford, Cambs.
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HEATHFIELD HORT. SOC.: *E. Uffield*, Stanstead, Heathfield.
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HINDLEY ALLOT. ASSOC.: *O. P. Abbott*, Cinnamon House, Ince-in-Makerfield.
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HOOK & DIST. HORT. SOC.: *J. E. Roberts*, Francis House, Hook Rd., Surbiton.
HOOK WARSASH HORT. SOC.: *W. Dimmick*, Furze Cottage, Warsash, Southampton.
HOREHAM RD. HORT. SOC.: *R. A. Crowley*, Bernards, Horeham Rd., Sussex.
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HORSELL COTTAGE GARDENERS' ASSOC.: *J. D. Edes*, 30 Arthur's Bridge, Horsell, Woking, Surrey.
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HUTT VALLEY HORT. SOC.: *A. J. Nicholls*, P.O. Box 19, Lower Hutt, Wellington, N.Z.
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IBIS HORT. SOC.: *A. C. Barnett*, 142 Holborn Bars, E.C.
ILFORD HORT. ASSOC.: *F. G. Hasler*, 196 Kingston Rd., Ilford.

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IVER HEATH HORT. SOC.: *S. M. Hargrave*, Leslie Lodge, Iver Heath, Bucks.
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JERUSALEM HORT. SOC.: *M. Brown*, c/o Director of Agric. Forests, American Colony, Jerusalem.
KELSTON HORT. SOC.: *Mrs. Poynton*, Kelston Rectory, Bath.
KENSINGTON & CHELSEA SCHOOL DIST.: *C. J. Holliday*, 241 King St., Hammersmith, W. 6.
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KENYA, HORT. SOC. OF: *C. E. Bennett*, P.O. Box 27, Nairobi, B. E. Af.
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KIDDERMINSTER HORT. SOC.: *H. Cartright*, 200 Stourport Rd., Kidderminster.
KIMPTON HORT. SOC.: *J. R. Ely*, Kempton Hoek, Welwyn.
KING EDWARD BUILDINGS (G.P.O.) HORT. SOC.: *H. E. Rapley*, 11 Hereford Gardens, Longhurst Rd., S.E. 13.
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KINGSWORTHY & DIST. HORT. SOC.: *R. Jowitt*, Chilland, nr. Winchester, Hants.
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KNAPTON & DIST. FLOWER SHOW: *Miss A. M. Dunell*, Craft Cottage, Paston, Norwich.
KNEBWORTH HORT. SOC.: *C. A. Robinson*, Hornbeam Corner, Rabley Heath, Welwyn.
KNOWLE HORT. SOC.: *W. J. Martin*, 42 Belluton Rd., Knowle, Bristol.
LANGTON & DIST. HORT. SOC.: *F. Norwood*, The Hollands Gdns., Langton, Tunbridge Wells.
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LEE, BLACKHEATH, & LEWISHAM HORT. SOC.: *H. G. Fennell*, 95 Mount Pleasant Rd., Lewisham.
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LEEDS & DIST. FED. ALLOT. ASSOC.: *A. Cavanagh*, 6 Nowell Place, Harehills Lane, Leeds.
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LEIGH COTTAGE GARDEN SOC.: *G. A. Beadle*, Leigh, Reigate.
LEIGH-ON-SEA HORT. SOC.†: *E. A. Turner*, The Rosery, Oakleigh Park Drive, Leigh-on-Sea.
LE JARDIN D'AGREMENT: *Dr. de Keyser*, 16 rue de la Sablonnière, Brussels.
LENTON & DIST. HORT. SOC.: *C. A. Burton*, 197 Castle Boulevard, Nottingham.
LEWES HORT. SOC.: *W. H. Drumbell*, 1 South Court, Lewes.
LEWISHAM HORT. SOC.: *J. B. Heathfield*, 42 Levendale Rd., Forest Hill, S.E. 13.
LEXDEN & STANWAY COTTAGERS' HORT. SOC.: *H. Just*, 70 Colne Rd., Colchester.
LEYTON ALLOT. SOC.: *T. J. Judd*, 38 William St., Leyton, E.
LICHFIELD ALLOT. GARD. & SMALL HOLDINGS SOC.: *W. Armstou*, 27 Ivanhoe Rd., Lichfield, Staffs.
LICKEY & DIST. HORT. SOC.: *O. W. Rowlands*, The Lodge, Barnt Green, nr. Birmingham.
LIDLINGTON ALLOT. ASSOC.: *R. B. Hill*, Lidlington, Ampthill.
LIMPLEY STOKE & DIST. HORT. SOC.: *Miss A. Hotchkiss*, Claverton, Bath, Somerset.
LIMPSFIELD GARDENERS' SOC.: *A. J. French*, Woodside Lodge, Limpsfield, Surrey.

LINCOLNSHIRE GARDEN SOC.: *H. F. Young*, 18 Burns Gdns., St. Giles, Lincoln.
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LITTLE THURROCK HORT. SOC.: *J. B. Chawner*, 59 High View Avenue, Grays, Essex.
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LOCKERLEY & DIST. HORT. SOC.: *S. Brierley*, Lockerley Green, nr. Romsey.
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LLANELLY & DIST. HORT. SOC.: *S. E. Bowser*, Bedford House, Derwent St., Llanelly, S. Wales.
LONDON DIST. ALLOT. & GARDEN SHOW: *J. M. Risden*, 71 Maryland Rd., N. 22.
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LOWESTOFT ALLOT. SOC.: *G. R. Bryant*, 9A Berresford Rd., Lowestoft.
LOWESTOFT & NORTH SUFFOLK HORT. SOC.: *E. C. S. Shaw*, Upland, Carlton Colville, Lowestoft.
LOWTON HORT. SOC.: *G. H. Coe*, 258 Newton Rd., Lowton, Newton-le-Willows.
LYMINGE & DIST. GARD. SOC.: *T. C. Clarke*, Normandy, Lyminge.
LYONS (GREENFORD) HORT. SOC.: *L. Maloney*, c/o Messrs. Lyons & Co., Greenford.
MAGDALEN PARK SOC.: *F. W. Hirst*, 61 Magdalen Rd., Wandsworth, S.W. 18.
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MALTA HORT. SOC.†: *J. Briffa, M.B.E.*, 83 Strada St. Antonio, Casal Attard, Malta.
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MANCHESTER P.O. HORT. SOC.: *W. Thompson*, 7 Legh Grove, Ardwick, Manchester.
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MICKLEHAM FLOWER SHOW: *Chas. J. Bravery*, Mickleham, Dorking.
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MIDSOMER NORTON, RADSTOCK, & DIST. HORT. SOC.: *J. C. Bright*, Beacon View, Oakhill, Bath.
MILL HILL HORT. & ALLOT. SOC.: *A. Simmonds*, The Lodge, Belmont, Mill Hill, N.W.
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NEWCASTLE HORT. SOC.: *G. W. Patterson*, Fawdon, Gosforth, Newcastle-on-Tyne.
NEW FOREST AGRIC. SOC.: *C. W. Loveless*, Monxton Villas, Ringwood Rd., Totton.
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NEW SOUTHGATE ALLOT. ASSOC.: *A. M. Blann*, 75 Carpenter Gdns., N. 21.
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NORTH WEALD HORT. SOC.: *S. H. Rous*, P.O., North Weald, Essex.
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OFFERTON BOYS' SCHOOL: *A. Binks*, Boys' School, Offerton, Stockport.
OLD WOKING & DIST. HORT. SOC.: *I. B. Bantoft*, Rose Ferns, Lower Westfield, Woking.
Orpington Hort. Soc.: *E. G. Livermore*, Bank House, Orpington.
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PARKSTONE GARDENERS' ASSOC.: *A. May*, Stratton, Hillman Rd., Parkstone.
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PENRITH HORT. SOC.: *J. Richardson*, 5 Duke St., Penrith.
PEPPARD HORT. SOC.: *Mrs. Stokes*, Peppard Common, Oxon.
PETERSFIELD HORT. SOC.: *G. Bailey*, Chapel St., Petersfield.
PETERSHAM HORT. SOC.: *Lieut.-Col. Cottingham*, Craigmyle, River Lane, Petersham.
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Sec.: Capt. W. J. Maxfield, Town Hall, Wolverhampton. *Telephone:* 1430. Founded 1892.
WOMEN'S FARM & GARDEN ASSOC.*†
President: H.R.H. Princess Louise, Duchess of Argyll. *Sec.:* Miss Vanderpant, 29 Park Rd., Upper Baker St., N.W. 1. *Telephone:* Paddington 3856. Founded 1899. To unite all professional land workers, and those interested in outdoor work for women; to help and advise outdoor workers; to influence public opinion in connection with women's land work. Information is given in regard to training at Horticultural and Agricultural Colleges. An Employment Register is kept for trained workers. The Association is in touch with the Overseas Settlement of British Women, and has up-to-date information with regard to openings for women landworkers in the Dominions. A Club for members was opened in 1918, and a year later moved to its present premises, 27–9 Park Rd. In 1920 an estate was purchased at Lingfield, Surrey, for the establishment of smallholdings for women. The Association has an Outfit Department for the sale of land kit. Women working on the land for a salary or running their own farms join as Working and Ordinary Members; others interested as Associate Members. PUBLICATIONS: *Report* and *Journal* in March. Leaflets in June, September, and December.
WORCESTERSHIRE ROOT, FRUIT, GRAIN & FLOWER SOC.
President: The Rt. Hon. the Earl of Coventry. *Sec.:* Mr. R. C. Gaut, Shirehall, Worcester. Founded 1921.
YORKSHIRE HORT. SHOW & GALA.*
President: Col. Sir Edward Brotherton, Bart. *Sec.:* P. Mennim, The Assembly Rooms, York.

FORTHCOMING EVENTS, 1930

THE Office of Works and the Empire Marketing Board have arranged for a third display of home-grown Tulips in the London parks. The chief display will be in St. James's Park. The Empire Marketing Board also arranged for a display in the Cardiff public parks. Bermuda Lilies, again the gift of the Bermuda Department of Agriculture, will be seen in Hyde Park.

Lindley Library. Owing to reconstruction of the R.H.S. offices and the removal of the Lindley Library to new rooms, there will be no accommodation for readers between the months of February and April. So far as possible books will still be lent out to Fellows.

The Royal English Arboricultural Society will again offer prizes for the best essay on Trees from children.

The annual meeting and conference of the Hort. Education Association will be held at the Midland Agricultural College in September.

The World Tractor Trials, to be held near Oxford, will give special attention to testing small mechanical equipment suitable for market-garden use.

The National Sweet Pea Trials for 1930 will be grown on Mr. J. Stevenson's ground at New Milton, Dorset. A fee of 2s. 6d. will be charged by the Committee for providing shade for orange and salmon varieties, in addition to the entry fee of 7s. 6d. per set. Not less than 36 seeds of any variety are required for trial. Seed pockets may be obtained from the Secretary of the Society.

As the R.A.S.E. Show is to be held at Manchester this year, the Royal Lancashire Show will not be held.

On January 17th, Dr. A. B. Rendle retires from the post of Keeper of Botany, British Museum (Nat. Hist.).

INTERNATIONAL HORTICULTURAL CONGRESS

AT the Eighth International Horticultural Congress, held at Vienna, Austria, in 1927, an invitation from the R.H.S. to hold the next International Horticultural Congress in London was accepted. It was decided that the Ninth International Horticultural Congress should be held in London from August 7 to August 15, 1930, immediately before the Fifth Inter-

national Botanical Congress, which is to be held in Cambridge from August 16th to August 23rd. An Executive Committee was appointed by the Society to make the necessary arrangements for the Congress. The members are Professor B. T. Barker, M.A., Mr. E. A. Bowles, M.A., V.M.H., F.L.S., F.E.S., Mr. E. A. Bunyard, F.L.S., Mr. F. J. Chittenden, F.L.S., V.M.H., Sir Daniel Hall, K.C.B., M.A., F.R.S., Mr. R. G. Hatton, M.A., Sir William Lawrence, Bart., Mr. G. W. Leak, Mr. C. T. Musgrave, V.M.H., Dr. A. B. Rendle, M.A., F.R.S., V.-P.L.S., V.M.H., Mr. H. V. Taylor, O.B.E., B.Sc., the Secretary of the R.H.S. acting as Secretary.

The subscription for membership of the Congress will be *£1, which should be paid to the Secretary of the R.H.S., Vincent Square, S.W.1. Early notification to the Secretary of intention to attend the Congress is particularly requested.*

The main subject for discussion at the Congress will be "Propagation, vegetative and seminal," for which papers and communications have been and are invited, and Dr. Van der Lek (Holland), Dr. R. J. Graham (Great Britain), Professor Priestley (Great Britain), Niels Esbjerg (Denmark), G. E. Yerkes (U.S.A.), Carl A. Dahl (Sweden), Dr. Webber (U.S.A.), Professor Faes (Switzerland), Franz Richter (France), Professor Denny (U.S.A.), Miss M. E. Reid (U.S.A.), Dr. Redcliffe Salaman (Great Brtiain), and Dr. Erwin Baur (Germany), etc., etc., have signified their intention of presenting papers. There will be other sections, and the Committee is prepared to receive suggestions for papers for consideration. The Committees appointed at the Congress held in Vienna in 1927 will present their reports: Committee I.—On Nomenclature; Committee II.—On Awards; Committee III.—On Colour; Committee IV.—On Horticultural Institutions and Research; Committee V.—On International Exchange of Young Gardeners; Committee VI.—On the Development of the International Committee.

Communications made to the Congress by means of paper or participation in the general discussion will be permissible in English, French, and German. Further information will be sent in due course to all who signify their intention to attend the Congress, or will be issued to the Press from time to time.

An extensive programme for visits to research stations and

gardens of horticultural interest throughout the Kingdom is being arranged.

All correspondence should be addressed to the Secretary of the R.H.S., London, S.W.1.

F. R. DURHAM.

FIFTH INTERNATIONAL BOTANICAL CONGRESS

The Congress will be held at Cambridge in August. A meeting of British botanists is arranged to take place on January 10th at the Linnean Society's Rooms, Burlington House. All interested in the subject are invited to attend.

Among the subjects for discussion at the Conference are: Nomenclature; Life cycles of bacteria; Selective fertilization; Action of sulphur as a fungicide; The oldest known terrestrial vegetation. Information from the Hon. Secs., E. T. Brooks, Esq., Botany School, Cambridge, and Dr. T. F. Chipp, R. Botanic Gardens, Kew.

HORTICULTURAL FIXTURES FOR 1930

(Owing to the earlier date of going to Press many Societies were unable to supply dates of fixtures.)

January

1 W *Bank Holiday in Scotland.*
Nat. Carnation Soc. (Northern Section). Meeting.
Rotherham Hort. Soc. Meeting.
Reigate Gard. Soc. Lecture. 7.

3 F

4 S Prof. Gard. Asn. Meeting. 7.
Leeds Paxton Soc. Evening Ex.

5 *S*

6 M Romsey Gard. Asn. Meeting.
Taunton Gard. Asn. Lecture.
Derbyshire Hort. Asn. Annual Meeting.

7 T Kingston and Surbiton Gard. Lecture. 8.
R. Caledonian Hort. Soc. Meeting.

8 W Salisbury Gard. Soc. Meeting.
Wimbledon Gard. Soc. Meeting.

9 Th Linnean Soc. Meeting.

10 F Manchester and N. of Eng. Orchid Soc. Meeting.
British botanists meet at Linnean Soc. Rooms.
R.H.S. Ireland. Meeting.
Dundee Hort. Soc. Meeting.

11 S Leeds Paxton Soc. Annual Meeting.

12 *S*

13 M *Plough Monday.*
Birmingham and Mid. Co. Asn. Annual Meeting. 7.30.
R.H.S. General and Teachers' Exams. Entries close.

14 T R.H.S. Ex. 1–5.

15 W Reigate Gard. Soc. Lecture. 7.
Glasgow Hort. Soc. Lecture.
Eastbourne Hort. Soc. Meeting.

16 Th Ipswich Gard. Asn. Meeting.
Lincoln Gard. Asn. Annual Meeting.

17 F Dundee Hort. Soc. Annual Meeting.

18 S Leeds Paxton Soc. Evening Ex.

19 S

20 M Taunton Gard. Asn. Lecture.

21 T Winchester Hort. Soc. Meeting.

January

22 W Salisbury Gard. Soc. Meeting.
Newcastle Hort. Soc. Meeting.
Wimbledon Gard. Soc. Meeting.
Sheffield Chrys. Soc. Annual Meeting.

23 Th Linnean Soc. Meeting.
Brit. Florists' Fed. Annual Meeting.
Gard. Royal Ben. Inst. Annual Meeting.

24 F Manchester and N. of Eng. Orchid Soc. Meeting.
Kingston Chrys. Soc. Annual Meeting.

25 S Lancaster Hort. Asn. Lecture and Compet. 7.
Leeds Paxton Soc. Annual Dinner.

26 *S*

27 M Birmingham and Mid. Co. Asn. Lecture. 7.30.

28 T R.H.S. Ex. 1–5.

29 W Reigate Gard. Soc. Lecture. 7.

30 Th

31 F Dundee Hort. Soc. Meeting.

February

1 S Prof. Gard. Asn. Meeting. 7.
R.H.S. Nat. Dip. Exam. Entries close.
Lindley Library closes for alterations.
Dunfermline Hort. Soc. Meeting.

2 *S*

3 M Romsey Gard. Asn. Meeting.
Nat. Chrys. Soc. Annual Meeting.
Taunton Gard. Asn. Lecture.

4 T Kingston and Surbiton Gard. Lecture. 8.
R. Caledonian Hort. Soc. Meeting.

5 W Salisbury Gard. Soc. Meeting.
Wimbledon Gard. Soc. Meeting.
Rotherham Hort. Soc. Meeting.

6 Th Linnean Soc. Meeting.
Bideford Hort. Soc. Meeting.

7 F Manchester and N. of Eng. Orchid Soc. Meeting.
Dundee Hort. Soc. Meeting.

8 S Leeds Paxton Soc. Evening Ex.

9 *S*

10 M Birmingham and Mid. Co. Asn. Lecture. 7.30.
Derbyshire Hort. Asn. Meeting.

11 T R.H.S. Ex. 1–5.
Faversham Chrys. Asn. Annual Meeting.

12 W Reigate Gard. Soc. Lecture. 7.
Glasgow Hort. Soc. Lecture.
R. Gard. Orphan Fund. Annual Meeting.
Sheffield Chrys. Soc. Lecture.

13 Th

February

14 F R.H.S. Ireland. Meeting.
Sundridge Hort. Soc. Meeting.

15 S Leeds Paxton Soc. Evening Ex.

16 *S*

17 M Taunton Gard. Asn. Lecture.

18 T Winchester Hort. Soc. Meeting.

19 W Salisbury Gard. Soc. Meeting.
Eastbourne Hort. Soc. Meeting.
Wimbledon Gard. Soc. Meeting.

20 Th Linnean Soc. Meeting.
Ipswich Gard. Asn. Meeting.
Lincoln Gard. Asn. Meeting.

21 F Manchester and N. of Eng. Orchid Soc. Meeting.

22 S Lancaster Hort. Asn. Lantern Lecture and Compet. 7.
Leeds Paxton Soc. Evening Ex.

23 *S*

24 M Birmingham and Mid. Co. Asn. Lecture. 7.30.

25 T R.H.S. Ex. 1–5. Annual Meeting. 3.

26 W Reigate Gard. Soc. Lecture. 7.
Newcastle Hort. Soc. Meeting.

27 Th

28 F Sundridge Hort. Soc. Meeting.

March

1 S Prof. Gard. Asn. Meeting. 7.

2 *S*

3 M Birmingham and Mid. Co. Asn. Social Evening.
Romsey Gard. Asn. Meeting.
Leeds Paxton Soc. Lecture.
Taunton Gard. Asn. Vegetable Night and Social Evening.

4 T Kingston and Surbiton Gard. Lecture.
R. Caledonian Hort. Soc. Meeting.
Nottingham Chrys. Soc. Meeting.

5 W Salisbury Gard. Soc. Meeting.
Nat. Carnation Soc. (N. Section) Meeting.
Rotherham Hort. Soc. Meeting.

6 Th Linnean Soc. Meeting.
Bideford Hort. Soc. Meeting.
Western Commercial Hort. Spring Show. 1st day.

7 F Dundee Hort. Soc. Meeting.
Western Commercial Spring Show. 2nd day.

8 S

9 *S*

10 M Birmingham and Mid. Co. Asn. Lecture. 7.30.
United Hort. Ben. Soc. Annual Meeting.
Derbyshire Hort Asn. Meeting.

11 T R.H.S. Ex. 1st day. 1–5.

March

12 W R.H.S. 2nd day. 10–5.
R.H.S. General Exam.
Glasgow Hort. Soc. Lecture.
Reigate Gard. Soc. Lecture. 7.

13 Th

14 F R.H.S. Ireland. Meeting.
Sundridge Hort. Soc. Meeting.

15 S Lancaster Hort. Asn. Lecture. 7.
Leeds Paxton Soc. Evening Ex.
Bolton Hort Soc. Bulb Show.

16 *S*

17 M *St. Patrick's Day.*
Taunton Gard. Asn. Lecture.

18 T Winchester Hort. Soc. Meeting.

19 W Salisbury Gard. Soc. Meeting.
Eastbourne Hort. Soc. Meeting.
Wimbledon Gard. Soc. Meeting.

20 Th Linnean Soc. Meeting.
Ipswich Gard. Asn. Meeting.
Lincoln Gard. Asn. Meeting.

21 F *Vernal Equinox.*

22 S R.H.S. Teachers' Exam.
Kilmarnock Bulb Ex.
Leeds Paxton Soc. Evening Ex.
Bermondsey Spring Bulb Show.

23 *S*

24 M Ideal Home Ex. Opens. Gardens in Annexe.
Birmingham and Mid. Co. Asn. Lecture. 7.30.

25 T R.H.S. Ex. 1st day. 1–5.

26 W R.H.S. 2nd day. 10–5.
Reigate Gard. Soc. Lecture. 7.
Bournemouth Hort. Soc. Spring Show. 1st day.
Newcastle Hort. Soc. Meeting.

27 Th Bournemouth. 2nd day.
Taunton Bulb and Spring Flower Ex.

28 F Sundridge Hort. Soc. Meeting.

29 S Lancaster Hort. Asn. General Meeting and Compet. 7.

30 *S*

31 M R.H.S. Scholarship Exam. Entries close.

April

1 T Kingston and Surbiton Gard. Lecture. 8.
R. Caledonian Hort. Soc. Meeting.
Nottingham Hort. Soc. Meeting.

2 W Tamar Valley Commercial Show, Plymouth. 1st day.
Nat. Carnation Soc. (N. Section) Meeting.
Rotherham Hort. Soc. Meeting.
Wimbledon Gard. Soc. Meeting.

April

3 Th Linnean Soc. Meeting.
Plymouth, 2nd day.

4 F Manchester and N. of Eng. Orchid Soc. Meeting.
Bideford Hort. Soc. Meeting.
Dundee Hort. Soc. Meeting.

5 S Prof. Gard. Asn. Meeting. 7.

6 S

7 M Romsey Gard. Asn. Meeting.
Taunton Gard. Asn. Lecture.

8 T R.H.S. Ex. and Nat. Bulb Soc. Ex. 1st day. 1–7.

9 W Brighton Spring Ex. 1st day.
R.H.S. and Bulb Ex. 2nd day. 10–5.
Glasgow Hort. Soc. Lecture.
R.H.S. Ireland. Spring Ex. 1st day.
Herefordshire Spring Flower Ex.
Instow Spring Show.

10 Th Brighton. 2nd day.
R.H.S. Ireland. Ex. 2nd day.
Sundridge Hort. Soc. Meeting.

11 F

12 S

13 S *Summer time begins.*

14 M

15 T R.H.S. Daffodil Ex. 1st day. 1–7.

16 W Daffodil Ex. 2nd day. 10–5.
Eastbourne Hort. Soc. Meeting.

17 Th Lincoln Gard. Asn. Meeting.
Ideal Home Ex. Last day.

18 F *Good Friday.*

19 S *Primrose Day.*

20 S *Easter Sunday.*

21 M *Bank Holiday.*

22 T

23 W R.H.S. and Nat. Auricula and Primula Soc. Ex. 1st day. 1–7.
Newcastle Hort. Soc. Meeting.

24 Th R.H.S. and N.A.P.S. Ex. 2nd day. 10–5.
Midland Daf. Soc. Ex., Birmingham. 1st day.
Harrogate Spring Ex. 1st day.

25 F Birmingham. 2nd day.
Manchester and N. of Eng. Orchid Soc. Meeting.
Nat. Rose Soc. Spring Ex.
Harrogate. 2nd day.

26 S

27 S

28 M Manchester Spring Ex. Entries close.

29 T Rhododendron Asn. Ex., R.H.S. Hall. 1st day. 1–7.

30 W Rhododendron Ex. 2nd day. 10–5.
R.H.S. Scholarship Exam.

May

1 Th Linnean Soc. Meeting.
Bideford Hort. Soc. Meeting.

2 F

3 S R.H.S. Nat. Dip. Exam.
Prof. Gard. Asn. Meeting. 7.

4 *S*

5 M Romsey Gard. Asn. Visit gardens.

6 T R.H.S. Ex. 1st day. 1–7.
R. Bot. and Hort. Soc. Manchester Spring Ex., and Nat. Auricula and Primula Soc. 58th Ex., Town Hall, Manchester. 1st day.
Cornwall Spring Flower Ex., Truro. 1st day.
Kingston and Surbiton Gard. Lantern Lecture. 8.
R. Caledonian Hort. Soc. Meeting.
Nottingham Hort. Soc. Meeting.

7 W R.H.S. 2nd day.
Manchester. 2nd day.
Truro. 2nd day.
Rotherham Hort. Soc. Meeting.
Nat. Carnation Soc. (N. Section) Meeting.

8 Th Alpine Gard. Soc. Ex., R.H.S. Hall. 1st day.

9 F R.H.S. Ireland. Meeting.
Alpine Ex. 2nd day.
Sundridge Hort. Soc. Meeting.

10 S

11 *S*

12 M

13 T Nat. Tulip Soc. Ex.

14 W Sheffield Chrys. Soc. Lecture.

15 Th Linnean Soc. Meeting.
Lincoln Gard. Asn. Meeting.

16 F Manchester and N. of Eng. Orchid Soc. Meeting.

17 S

18 *S*

19 M

20 T

21 W R.H.S. Chelsea Ex. 1st day. 8–10 (Fellows), 10–8.
Eastbourne Hort. Soc. Meeting.

22 Th Chelsea. 2nd day. 8–10 (Fellows), 10–8.
Hort. Ed. Asn. General Meeting at Chelsea.

23 F Chelsea. 3rd day. 9–5.
Sundridge Hort. Soc. Meeting.

24 S Linnean Soc. Anniversary Meeting.

25 *S*

26 M

27 T

28 W Torquay Ex. 1st day.
Newcastle Hort. Soc. Meeting.

29 Th Torquay. 2nd day.

May

30 F Torquay. 3rd day.
Manchester and N. of Eng. Orchid Soc. Meeting.

31 S Torquay. 4th day.
Prof. Gard. Asn. Meeting. 7.

June

1 S

2 M Romsey Gard. Asn. Visit gardens.

3 T R.H.S. Ex. 1st day. 1–7.
R. Caledonian Hort. Soc. Meeting.

4 W R.H.S. Ex. 2nd day. 10–5.
Nat. Carnation Soc. (N. Section) Meeting.

5 Th Bideford Hort. Soc. Meeting.

6 F

7 S Glasgow Hort. Soc. Afternoon outing.
Dunfermline Hort. Soc. Excursion.

8 S *Whit Sunday.*

9 M *Bank Holiday.*

10 T Three Counties' Show, Worcester. 1st day.

11 W Iris. Soc. Ex. R.H.S. Hall. 1st day. 1–7.
Worcester. 2nd day.
Sheffield Chrys. Soc. Lecture.

12 Th Iris Ex. 2nd day. 10–5.
Worcester. 3rd day.

13 F Leicester Agric. Soc. Hort. Ex. 1st day.
R.H.S. Teachers' Exam. Practical (Advanced).
R.H.S. Ireland. Meeting.
Sundridge Hort. Soc. Meeting.

14 S Leicester. 2nd day.
R. Caledonian Soc. Excursion.

15 S

16 M

17 T R.H.S. Ex. 1st day. 1–7.
Yorkshire Flower Show. 1st day.

18 W R. Norfolk Asn. Ex. Diss. 1st day.
R.H.S. 2nd day. 10–5.
R. Norfolk Agric. Asn. Summer Ex. 1st day.
Yorkshire Ex. 2nd day.
Eastbourne Hort. Soc. Meeting.

19 Th R. Norfolk. 2nd day.
R. Norfolk Ex. 2nd day.
Yorkshire Ex. 3rd day.

20 F Manchester and N. of Eng. Orchid Soc. Annual Meeting.

21 S

22 S

23 M

24 T ***Midsummer Day.***
R.H.S. Amateur Ex. 1–7.

June

25 W Guildford Rose Soc. Summer Ex.
Cheltenham Floral Fête. 1st day.
Colchester Rose Ex.
Newcastle Hort. Soc. Meeting.

26 Th Delphinium Soc. Ex., R.H.S. Hall. 1–7.
Cheltenham. 2nd day.

27 F Sundridge Hort. Soc. Meeting.

28 S Worcester Pk. Hort. Soc. Rose Ex.

29 *S*

30 M Romsey Gard. Asn. Ex.

July

1 T R.H.S. Ex., and Lon. and S. Eng. Pansy and Viola Soc. 4th Ex. 1st day. 1–7.
Peterborough Summer Ex. 1st day.

2 W Brighton Summer Ex. 1st day.
Croydon Hort. Soc. Ex.
Peterborough. 2nd day.

3 Th Brighton. 2nd day.
Peterborough. 3rd day.
Bideford Hort. Soc. Meeting.
Newport (Mon.) Rose Ex.

4 F Nat. Rose Soc. Summer Ex. 1st day.

5 S Hampstead Gard. Suburb. Early Ex.
Prof. Gard. Asn. Meeting. 7.
Nat. Rose Soc. Ex. 2nd day.

6 *S*

7 M Romsey Gard. Asn. Visit gardens.

8 T Nat. Sweet Pea Soc. Ex., R.H.S. Hall. 1st day. 1–8.
P.O. Savings Bank Hort. Soc. Ex.

9 W Hereford Rose Soc. Ex.
Sweet Pea Ex. 2nd day. 10–6.
Reigate Ex.
Nat. Rose Soc. Provincial Ex. 1st day.
Guildford Gard. Asn. Ex.
W. Surrey Hort. Soc. Ex.

10 Th Nat. Rose Soc. Provincial Ex. 2nd day.

11 F R.H.S. Ireland. Meeting.
Sundridge Hort. Soc. Meeting.

12 S Hull Rose Ex.
Windsor Rose Ex.
Leigh-on-Sea Hort. Soc. Ex.
Norwood Gar. Soc. Ex.

13 *S*

14 M

15 T *St. Swithin.*
R.H.S. Ex., and Brit. Carnation Soc. Summer Ex. 1st day. 1–7.
Wolverhampton Floral Fête. 1st day.

July

16 W Carnation Ex. 2nd day. 10–6.
Kent Co. Agric. Soc. Ex. 1st day.
Haywards Heath Hort. Soc. Ex.
Sundridge Hort. Soc. Ex.
Hereford Rose Ex.
Wolverhampton. 2nd day.

17 Th Kent Co. Ex. 2nd day.
Wolverhampton. 3rd day.

18 F Birmingham Hort. Soc. Ex.
Kent Co. Ex. 3rd day.

19 S Alderley Edge Hort. and Rose Soc. Ex.
Guildford Ex.
Dumbartonshire Sweet Pea Ex.
Sundridge Hort. Soc. Ex.
Elstree Hort. Soc. Ex.
Worcester Pk. Show.

20 *S*

21 M

22 T Nat. Rose Soc. Ex. New Roses.

23 W Portsmouth & Nat. Sweet Pea Soc. Ex. 1st day.
Bartley Show and Fête.

24 Th Portsmouth. 2nd day.
Newcastle Hort. Soc. Meeting.

25 F Derby Hort. Ex. 1st day.
Portsmouth. 3rd. day.

26 S Derby. 2nd day.
Leeds Paxton Soc. Meeting.

27 *S*

28 M

29 T R.H.S. Ex. 1–7.

30 W

31 Th

August

1 F *Lammas Day.*

2 S Prof. Gard. Ash. Meeting. 7.
Leeds Paxton Soc. Meeting.

3 *S*

4 M *Bank Holiday.*
Chippenham Hort. Ex.
Hampstead Gard. Suburb. Summer Ex.
Bletchley Ex.
Leicester Flower show. 1st day.
Creigiau Hort. Soc. Ex.
King's Lynn Hort. Soc. Ex.
Ticehurst Flower Show.

5 T R. Caledonian Hort. Soc. Meeting.
Leicester. 2nd day.

August

6 W King's Walden Ex.
R.H.S. Ireland. Ex. 1st day.
Leicester. 3rd day.

7 Th International Hort. Congress, R.H.S. Hall. 1st day.
Newport Rose Ex.
Bideford Hort. Soc. Meeting.
R.H.S. Ireland. Ex. 2nd day.

8 F Inter. Hort. Congress. 2nd day. Lectures in afternoon.
Harrogate Ex. 1st day.
R.H.S. Ireland. Ex. 3rd. day

9 S Inter. Hort. Congress. 3rd day. Excursions.
Harrogate. 2nd day.
Glasgow Hort. Soc. Outing.
Nat. Carnation Soc. (N. Section.) Meeting.

10 S Inter. Hort. Congress. 4th day. Excursions.

11 M Inter. Hort. Congress. 5th day. Lectures.
Romsey Gard. Asn. Visit gardens.

12 T Inter. Hort. Congress. 6th day. Lectures.
Clay Cross Floral Ex.

13 W Inter. Hort. Congress. 7th day. Excursions.
Gladiolus Soc. International Ex., Taunton. 1st day.
Banffshire Hort. Asn. Ex.

14 Th Inter. Hort. Congress. 8th day. Lectures in morning. Ex. afternoon.
Gladiolus Ex. 2nd day.
Aberdeen R.H.S. Ex. 1st day.

15 F Inter. Hort. Congress. 9th day and Ex. 2nd day. Final Report.
Charfield Ex.
Aberdeen. 2nd day.

16 S Fifth International Botanic Congress, Cambridge. 1st day.
Aberdeen. 3rd day.

17 S Inter. Bot. Conf. 2nd day.

18 M Inter. Bot. Conf. 3rd day.

19 T Inter. Bot. Conf. 4th day.

20 W Shrewsbury Floral Fête. 1st day.
Perth Hort. Soc. Ex. 1st day.
Bangor Hort. Soc. Ex. 1st day.
Eastbourne Hort. Soc. Ex.
Perth. 2nd day.
Bangor. 2nd day.
Inter. Bot. Conf. 5th day.

21 Th Shrewsbury. 2nd day.
Inter. Bot. Conf. 6th day.
Bangor Ex. 2nd day.

22 F Montrose Hort. Soc. Ex.
Inter. Bot. Conf. 7th day.

August

23 S Peebleshire Hort. Soc. Ex.
Inter. Bot. Conf. 8th day.

24 S

25 M R. Eng. Arboric. Soc. Summer Meeting.

26 T R.H.S. and Brit. Gladiolus Soc. Ex. 1–6.

27 W Southport Show and Nat Sweet Pea Soc. Conf. 1st day.

28 Th Sandy Annual Ex.
Southport. 2nd day.
Stirling Hort. Soc. Ex.

29 F London Allotments and Gard. Soc. Ex., R.H.S. Hall. 1st day, 2.30–8.
Southport. 3rd day.
W. Cumberland Ex.
Dunfermline Hort. Soc. Ex. 1st day.

30 S London Allotments. 2nd day.
Falkirk Hort. Sec. Ex.
Dunfermline. 2nd day.

31 S

September

1 M Brit. Pteridological Soc. Annual Meeting.
Romsey Gard. Asn. Meeting.
Bedwelty Ex.
Romsey Gard. Asn. Meeting.

2 T Salford Ex. 1st day.
Glasgow Ex. Kelvin Hall. 1st day.
R. Caledonian Hort. Soc Meeting.
Nottingham Hort. Soc. Meeting.

3 W Salford. 2nd day.
Glasgow. 2nd day.
Rotherham Hort Soc. Meeting.
Nat. Carnation Soc. (N. Section.) Meeting.

4 Th Abergavenny Ex.
Bideford Hort. Soc. Meeting.
Salford. 3rd day.
Glasgow. 3rd day.
Newtownards Hort. Soc. Ex.

5 F

6 S Prof. Gard. Asn. Meeting. 7.
Leeds Paxton Soc. Meeting.

7 S Kilmarnock Autumn Ex.

8 M

9 T R.H.S. Ex. 1–6.

10 W R. Caledonian Hort. Soc. Autumn Ex. 1st day.
Sheffield Chrys. Soc. Lecture.

September

11 Th Nat. Dahlia Soc. Ex., R.H.S. Hall. 1st day. 12–7.
R. Caledonian. 2nd day.

12 F. Dahlia Ex. 2nd day.
R.H.S. Ireland. Meeting.
Sundridge Hort. Soc. Meeting.
Dundee Hort. Soc. Meeting.

13 S Gainsborough Allot. Ex.
Leeds Paxton Soc. Meeting.

14 *S*

15 M

16 T Winchester Hort. Soc. Meeting.

17 W R.H.S. Nat. Dip. Exam. (Prelim.). 1st day.
Altrincham Agric. Soc. Ex.
Harrogate Autumn Ex. 1st day.
Eastbourne Hort. Soc. Meeting.

18 Th R.H.S. Nat. Dip. Exam. (Prelim.). 2nd day.
Ipswich Gard. Asn. Meeting.
Lincoln Gard. Asn. Meeting.
Thame Flower Show.
Harrogate. 2nd day.

19 F R.H.S. Nat. Dip. Exam. (Final). 1st day.
Nat. Rose Soc. Autumn Ex. 1st day.
Harrogate. 3rd day.

20 S R.H.S. Nat. Dip. Exam. (Final). 2nd day.
Glasgow Hort. Soc. Afternoon outing.
W. Norwood Allot. Ex.
Worcester Pk. Hort. Soc. Autumn Ex.
Nat. Rose Soc. Ex. 2nd day.
Leeds Paxton Soc. Meeting.

21 *S*

22 M

23 T *Autumnal Equinox.*
P.O. Savings Bank Hort. Soc. Ex.

24 W Glasgow Hort. Soc. Lecture.
N. of Eng. Hort. Soc. Autumn Ex. 1st day.
Newcastle Hort. Soc. Meeting.

25 Th R.H.S. Autumn Ex. Open-air Plants and Roses. 1st day. 9–7.
N. of Eng. Hort. Ex. 2nd day.

26 F R.H.S. Autumn Ex. 2nd day. 10–5.
N. of Eng. Hort. Ex. 3rd day.
Sundridge Hort. Soc. Meeting.

27 S Hampstead Gard. Suburb. Autumn Ex.
Leigh-on-Sea Hort. Soc. Autumn Ex.
Leeds Paxton Soc. Meeting.

28 *S*

29 M

30 T

October

1 W R.H.S. Autumn Ex. Ornamental Trees and Shrubs. **1st day.** 9–7.
Nat. Carnation Soc. (N. Section.) Meeting.
Rotherham Hort. Soc. Meeting.

2 Th R.H.S. Autumn Ex. 2nd day. 10–5.
Bideford Hort. Soc. Meeting.
Foot's Cray Hort. Soc. Ex.

3 F Dundee Hort. Soc. Meeting.

4 S Prof. Gard. Asn. Meeting. 7.
High Wycombe Hort. Soc. Autumn Ex.

5 *S*

6 M Romsey Gard. Asn. Meeting.

7 T R. Caledonian Hort. Soc. Meeting.
Nottingham Hort. Soc. Meeting.

8 W Sheffield Chrys. Soc. Lecture.

9 Th

10 F Salisbury Gard. Soc. Annual Meeting.
R.H.S. Ireland. Meeting.
Sundridge Hort. Soc. Meeting.

11 S Leeds Paxton Soc. Meeting.

12 *S*

13 M

14 T R.H.S. Autumn Ex. Fruit and Vegetables Ex. **1st day.** 1–7.

15 W R.H.S. Autumn Ex. 2nd day. 10–4.
Glasgow Hort. Soc. Lecture.
Eastbourne Hort. Soc. Meeting.

16 Th Ipswich Gard. Asn. Meeting.
Lincoln Gard. Asn. Lecture.

17 F

18 S Leeds Paxton Soc. Meeting.

19 *S*

20 M

21 T Winchester Hort. Soc. Meeting.

22 W Newcastle Hort. Soc. Meeting.

23 Th

24 F Sundridge Hort. Soc. Meeting.

25 S Leeds Paxton Soc. Meeting.

26 *S*

27 M

28 T

29 W

30 Th Holland (Lincs) Co. Potato Ex., Boston.

31 F Hampstead Gard. Suburb. Gen. Meeting.

November

1 S Leeds Paxton Soc. Meeting.

2 *S*

3 M Romsey Gard. Asn. Meeting.

November

4 T R.H.S. Autumn Ex. Orchids, Stove and Greenhouse Plants. 1st day. 1–7.
Croydon Chrys. Ex.
Brighton Autumn Ex. 1st day.
W. of Eng. Chrys. Soc. Ex. 1st day.

5 W Lincoln Gard. Asn. Ex. 1st day.
Worcester Root, Fruit and Vegetable Ex. 1st day.
Bideford Chrys., Fruit and Vegetable Ex.
R.H.S. Autumn Ex. 2nd day. 10–4.
Brighton. 2nd day.
R. Ox. Hort. Soc. Chrys. Ex. 1st day.
Guildford Chrys. Ex.
Faversham Chrys. Ex.
Bridport Chrys. Ex.
Kingston Chrys. Ex.
W. of Eng. Chrys. Ex. 2nd day.

6 Th Derby Chrys. Ex. 1st day.
Nat. Chrys. Ex., R.H.S. Hall. 1st day. 1–8.
Bideford Hort. Soc. Meeting.
Lincoln. 2nd day.
Worcester. 2nd day.
Brighton. 3rd day.
Leicester Chrys. Ex. 1st day.
Bristol Chrys. Ex. 1st day.
Oxford Chrys. Ex. 2nd day.
W. of Eng. Chrys. Ex. 3rd day.

7 F Chrys. Ex. 2nd day. 10–5.
Derby. 2nd day.
Bletchley Chrys. Ex.
Bristol Chrys. Ex. 2nd day.
Leicester Chrys. Ex. 2nd day.

8 S Barrow Chrys. Soc. Ex.
Prof. Gard. Asn. Meeting. 7.
Derby. 3rd day.
Burton-on-Trent Chrys. Ex.
Leigh-on-Sea Chrys. Ex.
Leicester Chrys. Ex. 3rd day.

9 S

10 M Gloucester Root, Fruit and Grain Ex.

11 T Birmingham Chrys. Ex. 1st day.

12 W Birmingham. 2nd day.
Glasgow Hort. Soc. An. Gen. Meeting.
Gainsborough Chrys. Ex. 1st day.
Wimbledon Chrys. Ex.
Aberystwyth Chrys. Ex.

13 Th Birmingham. 3rd day.
Dumbartonshire Sweet Pea Soc. Annual Meeting.
Ipswich Gard. Asn. Ex.
Rotherham Chrys. Ex. 1st day.
Sheffield Chrys. Ex. 1st day.

November

13 Th Nottingham Chrys. Ex. 1st day.
Gainsborough Chrys. Ex. 2nd day.

14 F Rotherham Chrys. Ex. 2nd day.
Sheffield Chrys. Ex. 2nd day.
Nottingham Chrys. Ex. 2nd day.
Dunfermline Chrys. Ex.
R.H.S. Ireland Meeting.
Sundridge Hort. Soc. Meeting.

15 S Monmouth Hort. Inst. Old Students Reunion.
Leeds Paxton Soc. Meeting.
Rotherham Chrys. Ex. 3rd day.
Sheffield Chrys. Ex. 3rd day.
Nottingham Chrys. Ex. 3rd day.

16 *S* Leeds Paxton Soc. Chrys. Ex.

17 M

18 T Winchester Hort. Soc. Meeting.

19 W Ayr Chrys. Ex.

20 Th Ipswich Gard. Asn. Meeting.
Lincoln Gard. Asn. Meeting.

21 F Bolton Chrys. Ex. 1st day.
Newcastle Chrys. Ex. 1st day.

22 S Leeds Paxton Soc. Meeting.
Bolton Chrys. Ex. 2nd day.
Newcastle Chrys. Ex. 2nd day.

23 *S*

24 M

25 T R.H.S. Ex. 1–5.

26 W Brit. Carnation Soc. Autumn Ex., R.H.S. Hall. 1st day. 1–5.

27 Th Carnation Ex. 2nd day.

28 F Sundridge Hort. Soc. Meeting.

29 S Hexham Chrys. Ex.

30 *S*

December

1 M Romsey Gard. Asn. Meeting.

2 T R. Caledonian Hort. Soc. Meeting.
Nottingham Hort. Soc. Meeting.

3 W Rotherham Hort. Soc. Meeting.
Nat. Carnation Soc. (N. Section.) Meeting.

4 Th Bideford Hort. Soc. Meeting.

5 F Dundee Hort. Soc. Meeting.

6 S Prof. Gard. Asn. Meeting. 7.
Leeds Paxton Soc. Meeting.

7 *S*

8 M

9 T

December

10 W Glasgow Hort. Soc. Lecture.
Sheffield Chrys. Soc. Lecture.

11 Th Ipswich Gard. Asn. Meeting.

12 F R.H.S. Ireland. Meeting.
Sundridge Hort. Soc. Meeting.

13 S Leeds Paxton Soc. Meeting.

14 *S*

15 M

16 T R.H.S. Ex. 1–5.
Winchester Hort. Soc. Meeting.

17 W Eastbourne Hort. Soc. Meeting.

18 Th Lincoln Gard. Asn. Lecture.

19 F

20 S Dunfermline Hort. Soc. Annual Meeting.
Leeds Paxton Soc. Meeting.

21 *S*

22 M

23 T

24 W *Christmas Eve.*

25 Th *Christmas Day.*

26 F *Boxing Day.*

27 S Leeds Paxton Soc. Meeting.

28 *S*

29 M

30 T

31 *W* *New Year's Eve.*